

**CHAPTER**

**49**

**AUXILIARY  
POWER UNIT**





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

**CHAPTER 49**  
**AUXILIARY POWER UNIT**

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49-EFFECTIVE PAGES			49-00-00 (cont)			49-11-00 (cont)		
1 thru 10	Feb 15/2025		916	Feb 15/2024		221	Feb 15/2024	
49-CONTENTS			917	Oct 15/2024		222	Feb 15/2024	
1	Feb 15/2024		918	Oct 15/2024		223	Feb 15/2024	
2	Oct 15/2024		919	Feb 15/2024		224	Feb 15/2024	
3	Oct 15/2024		920	Feb 15/2024		225	Feb 15/2024	
4	Jun 15/2020		921	Feb 15/2024		226	Feb 15/2024	
5	Jun 15/2024		922	Oct 15/2024		227	Feb 15/2024	
6	Jun 15/2024		923	Feb 15/2024		228	Feb 15/2024	
7	Jun 15/2024		924	Oct 15/2024		229	Feb 15/2024	
8	Jun 15/2024		925	Feb 15/2024		230	Feb 15/2024	
9	Jun 15/2024		926	Oct 15/2024		231	Feb 15/2024	
10	Jun 15/2024		927	Feb 15/2024		232	Feb 15/2024	
11	Jun 15/2024		928	Oct 15/2024		233	Feb 15/2024	
12	Oct 15/2024		929	Oct 15/2024		234	Oct 15/2024	
13	Oct 15/2024		930	BLANK		235	Feb 15/2024	
14	Jun 15/2024	49-11-00				236	Feb 15/2024	
15	Jun 15/2024		201	Oct 15/2021		237	Feb 15/2024	
O 16	Feb 15/2025		202	Oct 15/2021		238	Feb 15/2024	
17	Jun 15/2024		203	Oct 15/2021		239	Oct 15/2024	
18	Jun 15/2024		204	Oct 15/2021		240	Oct 15/2024	
49-00-00			205	Oct 15/2021		241	Oct 15/2024	
901	Feb 15/2024		206	Oct 15/2021		242	Oct 15/2024	
902	Oct 15/2024		207	Oct 15/2021		243	Oct 15/2024	
903	Feb 15/2024		208	Feb 15/2024		244	Oct 15/2024	
904	Jun 15/2020		209	Oct 15/2024		245	Oct 15/2024	
905	Jun 15/2020		210	Feb 15/2024		246	Oct 15/2024	
906	Jun 15/2020		211	Oct 15/2021		247	Oct 15/2024	
907	Jun 15/2020		212	Oct 15/2021		248	Oct 15/2024	
908	Jun 15/2020		213	Oct 15/2021		249	Oct 15/2024	
909	Feb 15/2024		214	Feb 15/2024		250	Oct 15/2024	
910	Oct 15/2024		215	Oct 15/2024		251	Oct 15/2024	
911	Feb 15/2024		216	Feb 15/2024		252	Oct 15/2024	
912	Feb 15/2024		217	Feb 15/2024		253	Oct 15/2024	
913	Feb 15/2024	R 218	Feb 15/2025			254	Oct 15/2024	
914	Oct 15/2024	O 219	Feb 15/2025			255	Oct 15/2024	
915	Feb 15/2024	R 220	Feb 15/2025			256	Oct 15/2024	

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257	Oct 15/2024		406	Oct 15/2024		442	Oct 15/2024	
258	Oct 15/2024		407	Jun 15/2024		443	Jun 15/2024	
259	Oct 15/2024		408	Jun 15/2024		444	Jun 15/2024	
260	Oct 15/2024		409	Oct 15/2024		445	Jun 15/2024	
261	Oct 15/2024		410	Oct 15/2024		446	Jun 15/2024	
262	Oct 15/2024		411	Jun 15/2024		447	Jun 15/2024	
263	Oct 15/2024		412	Jun 15/2024		448	Jun 15/2024	
264	Oct 15/2024		413	Jun 15/2024		449	Jun 15/2024	
265	Oct 15/2024		414	Jun 15/2024		450	Jun 15/2024	
266	Oct 15/2024		415	Jun 15/2024		451	Jun 15/2024	
267	Oct 15/2024		416	Jun 15/2024		452	Jun 15/2024	
268	Oct 15/2024		417	Jun 15/2024		453	Jun 15/2024	
269	Oct 15/2024		418	Jun 15/2024		454	Jun 15/2024	
270	Oct 15/2024		419	Jun 15/2024		455	Jun 15/2024	
271	Oct 15/2024		420	Jun 15/2024		456	Jun 15/2024	
272	Oct 15/2024		421	Jun 15/2024		457	Oct 15/2024	
273	Oct 15/2024		422	Jun 15/2024		R 458	Feb 15/2025	
274	Oct 15/2024		423	Jun 15/2024		459	Oct 15/2024	
275	Oct 15/2024		424	Jun 15/2024		460	Oct 15/2024	
276	Oct 15/2024		R 425	Feb 15/2025		R 461	Feb 15/2025	
277	Oct 15/2024		426	Jun 15/2024		462	Oct 15/2024	
278	Oct 15/2024		427	Oct 15/2024		463	Oct 15/2024	
279	Oct 15/2024		428	Oct 15/2024		R 464	Feb 15/2025	
280	Oct 15/2024		R 429	Feb 15/2025		465	Jun 15/2024	
281	Oct 15/2024		430	Oct 15/2024		466	Jun 15/2024	
282	Oct 15/2024		431	Jun 15/2024		467	Jun 15/2024	
283	Oct 15/2024		R 432	Feb 15/2025		468	Jun 15/2024	
284	Oct 15/2024		433	Jun 15/2024		49-11-00		
285	Oct 15/2024		434	Jun 15/2024		501	Feb 15/2023	
286	Oct 15/2024		435	Jun 15/2024		502	Feb 15/2023	
49-11-00			436	Jun 15/2024		503	Jun 15/2019	
401	Oct 15/2022		437	Oct 15/2024		49-11-00		
402	Jun 15/2024		438	Oct 15/2024		504	BLANK	
403	Oct 15/2024		439	Jun 15/2024		601	Oct 15/2024	
404	Jun 15/2024		440	Oct 15/2024		602	Jun 15/2023	
405	Jun 15/2024		441	Oct 15/2024		603	Feb 15/2024	
						604	Oct 15/2024	

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49-11-00 (cont)			49-11-01 (cont)			49-11-02 (cont)		
605	Feb 15/2024		418	Oct 15/2023		212	Feb 15/2024	
606	Feb 15/2024		419	Oct 15/2023		213	Feb 15/2024	
607	Feb 15/2024		420	Oct 15/2023		214	Oct 15/2024	
608	Jun 15/2023		421	Oct 15/2023		215	Oct 15/2024	
609	Jun 15/2023		422	Oct 15/2023		216	Feb 15/2024	
610	Jun 15/2023		423	Oct 15/2023		49-13-11		
611	Jun 15/2023		424	Oct 15/2023		401	Feb 15/2023	
612	Jun 15/2023		425	Oct 15/2023		402	Jun 15/2022	
613	Jun 15/2023		426	BLANK		403	Jun 15/2022	
614	Oct 15/2024		49-11-01			404	Jun 15/2022	
615	Oct 15/2024		601	Feb 15/2023		405	Jun 15/2022	
616	Oct 15/2024		602	Feb 15/2023		406	Jun 15/2022	
617	Oct 15/2024		603	Feb 15/2023		407	Jun 15/2022	
618	BLANK		604	Oct 15/2014		408	Oct 15/2023	
49-11-00			605	Oct 15/2014		409	Jun 15/2022	
801	Jun 15/2021		606	BLANK		410	Jun 15/2023	
802	Feb 15/2023		49-11-01			411	Jun 15/2023	
803	Feb 15/2023		R 801	Feb 15/2025		412	Jun 15/2022	
804	Oct 15/2015		802	Feb 15/2015		413	Jun 15/2022	
49-11-01			803	Oct 15/2015		414	Jun 15/2022	
401	Feb 15/2023		R 804	Feb 15/2025		415	Jun 15/2022	
402	Feb 15/2023		805	Feb 15/2015		416	Jun 15/2022	
403	Oct 15/2015		806	Oct 15/2015		49-13-11		
404	Oct 15/2015		R 807	Feb 15/2025		601	Jun 15/2022	
405	Oct 15/2021		808	BLANK		602	Feb 15/2023	
406	Feb 15/2023		49-11-02			603	Feb 15/2023	
407	Oct 15/2023		201	Feb 15/2024		R 604	Feb 15/2025	
408	Oct 15/2023		202	Oct 15/2024		O 605	Feb 15/2025	
409	Oct 15/2023		203	Oct 15/2024		R 606	Feb 15/2025	
410	Oct 15/2023		204	Feb 15/2024		607	Jun 15/2022	
411	Oct 15/2023		205	Oct 15/2024		608	Jun 15/2022	
412	Oct 15/2023		206	Feb 15/2024		49-15-00		
413	Oct 15/2023		207	Jun 15/2020		501	Feb 15/2015	
414	Oct 15/2023		208	Jun 15/2020		502	Oct 15/2014	
415	Oct 15/2023		209	Jun 15/2020		503	Oct 15/2019	
416	Oct 15/2023		210	Jun 15/2020		504	Oct 15/2014	
417	Oct 15/2023		211	Jun 15/2020		505	Oct 15/2015	

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506	Oct 15/2015		805	Jun 15/2024		405	Feb 15/2019	
507	Oct 15/2019		806	BLANK		406	Feb 15/2019	
508	Oct 15/2015	49-15-22				49-15-41		
509	Oct 15/2015		301	Jun 15/2022		401	Feb 15/2022	
510	Feb 15/2023		302	Jun 15/2022		402	Feb 15/2022	
511	Feb 15/2023		303	Oct 15/2015		403	Feb 15/2023	
512	Feb 15/2023		304	BLANK		404	Jun 15/2022	
513	Feb 15/2022	49-15-22				405	Feb 15/2022	
514	Feb 15/2022		401	Feb 15/2024		406	Feb 15/2022	
515	Feb 15/2022		402	Feb 15/2024		49-16-11		
516	BLANK		403	Oct 15/2019		301	Oct 15/2024	
49-15-11			404	Feb 15/2024		302	Oct 15/2024	
401	Oct 15/2017		405	Feb 15/2024		303	Oct 15/2024	
402	Oct 15/2015		406	Feb 15/2024		304	Feb 15/2023	
403	Jun 15/2022		407	Feb 15/2024		305	Oct 15/2024	
404	Feb 15/2022		408	BLANK		306	Jun 15/2018	
49-15-11		49-15-23				49-16-11		
601	Feb 15/2015		401	Oct 15/2014		601	Feb 15/2023	
602	Oct 15/2014		402	Oct 15/2015		602	Feb 15/2023	
603	Oct 15/2015		403	Jun 15/2022		603	Oct 15/2020	
604	Oct 15/2015		404	Feb 15/2022		604	Oct 15/2020	
49-15-15			405	Feb 15/2022		49-16-11		
401	Oct 15/2023		406	Oct 15/2015	R 701	Feb 15/2025		
402	Oct 15/2023		407	Oct 15/2015	702	Oct 15/2023		
403	Oct 15/2023		408	Oct 15/2015	703	Oct 15/2023		
404	Oct 15/2022		409	Jun 15/2022	R 704	Feb 15/2025		
405	Oct 15/2022		410	Jun 15/2022	705	Oct 15/2024		
406	Oct 15/2022	49-15-31				706	Oct 15/2024	
407	Oct 15/2022		201	Feb 15/2015		707	Oct 15/2023	
408	Oct 15/2023		202	Oct 15/2018		708	Oct 15/2023	
409	Oct 15/2023		203	Oct 15/2015		709	Oct 15/2023	
410	Oct 15/2023		204	Feb 15/2015		710	Oct 15/2024	
49-15-15		49-15-31				711	Oct 15/2023	
801	Jun 15/2024		401	Oct 15/2018		712	Oct 15/2023	
802	Jun 15/2024		402	Feb 15/2019		713	Oct 15/2023	
803	Jun 15/2024		403	Oct 15/2015		714	Oct 15/2023	
804	Jun 15/2024		404	Feb 15/2019				

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401	Feb 15/2023		428	Oct 15/2023		604	Oct 15/2024	
402	Feb 15/2023		429	Oct 15/2023		605	Oct 15/2024	
403	Oct 15/2015		430	Oct 15/2023		606	Feb 15/2023	
R 404	Feb 15/2025		49-17-11			607	Feb 15/2023	
R 405	Feb 15/2025		601	Feb 15/2023		608	Feb 15/2023	
406	Feb 15/2023		602	Feb 15/2023		609	Feb 15/2023	
49-16-12			603	Feb 15/2019		610	Feb 15/2023	
701	Feb 15/2015		604	Feb 15/2023		611	Feb 15/2021	
702	BLANK		49-17-11			612	Feb 15/2021	
49-17-11			801	Feb 15/2024		613	Feb 15/2021	
401	Feb 15/2023		802	Feb 15/2024		614	Feb 15/2021	
402	Feb 15/2023		803	Feb 15/2024		615	Feb 15/2021	
403	Oct 15/2023		804	Feb 15/2024		616	Feb 15/2021	
404	Oct 15/2023		805	Oct 15/2015		617	Feb 15/2021	
405	Oct 15/2023		806	Feb 15/2024		618	Feb 15/2021	
406	Oct 15/2023		49-17-12			619	Feb 15/2021	
407	Oct 15/2023		601	Oct 15/2014		620	Feb 15/2021	
408	Oct 15/2023		602	Oct 15/2015		621	Feb 15/2021	
409	Feb 15/2021		49-21-00			622	Feb 15/2021	
410	Feb 15/2023		201	Feb 15/2023		623	Feb 15/2021	
411	Feb 15/2021		202	Feb 15/2023		624	Feb 15/2021	
412	Feb 15/2021		203	Feb 15/2023		625	Feb 15/2021	
413	Jun 15/2023		204	Jun 15/2016		626	Feb 15/2021	
414	Feb 15/2021		205	Feb 15/2023		627	Feb 15/2021	
415	Feb 15/2021		206	Feb 15/2023		628	Feb 15/2021	
416	Jun 15/2023		207	Feb 15/2023		629	Feb 15/2021	
417	Feb 15/2021		208	Feb 15/2023		630	Feb 15/2021	
418	Oct 15/2017		209	Feb 15/2023		631	Feb 15/2021	
419	Oct 15/2023		210	Feb 15/2023		632	Oct 15/2024	
420	Feb 15/2023		211	Feb 15/2023		633	Feb 15/2023	
421	Jun 15/2023		212	Feb 15/2023		634	Oct 15/2022	
422	Feb 15/2023		213	Feb 15/2023		635	Oct 15/2022	
423	Feb 15/2023		214	BLANK		636	Feb 15/2023	
424	Oct 15/2023		49-21-00			637	Feb 15/2023	
425	Oct 15/2023		601	Oct 15/2024		638	BLANK	
426	Oct 15/2023		602	Oct 15/2024				
427	Oct 15/2023		603	Oct 15/2024				

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49-21-00			49-31-14			49-31-21 (cont)		
701	Jun 15/2023		401	Jun 15/2023		R 406	Feb 15/2025	
702	Oct 15/2017		402	Jun 15/2023		49-41-01		
703	Oct 15/2017		403	Jun 15/2023		401	Oct 15/2022	
704	Nov 15/2022		404	Jun 15/2023		402	Oct 15/2017	
705	Oct 15/2017		R 405	Feb 15/2025		403	Oct 15/2024	
706	Oct 15/2017		406	Jun 15/2023		404	Oct 15/2022	
707	Oct 15/2017		407	Jun 15/2023		49-41-21		
708	BLANK		408	BLANK		401	Jun 15/2024	
49-31-00			49-31-14			402	Jun 15/2024	
201	Feb 15/2020		601	Oct 15/2014		403	Oct 15/2024	
202	Feb 15/2023		602	BLANK		404	Feb 15/2024	
203	Oct 15/2024		49-31-15			405	Feb 15/2024	
204	Oct 15/2024		401	Feb 15/2023		406	Feb 15/2024	
205	Oct 15/2024		402	Feb 15/2023		407	Feb 15/2024	
206	Oct 15/2015		403	Oct 15/2014		408	Feb 15/2024	
207	Oct 15/2015		404	Oct 15/2015		409	Feb 15/2024	
208	Feb 15/2020		405	Oct 15/2015		410	Jun 15/2024	
209	Feb 15/2023		406	Oct 15/2017		411	Jun 15/2024	
210	Nov 15/2022		407	Oct 15/2017		412	Jun 15/2024	
211	Nov 15/2022		408	Feb 15/2023		413	Jun 15/2024	
212	Feb 15/2023		49-31-16			414	Jun 15/2024	
49-31-11			401	Feb 15/2023		415	Oct 15/2024	
401	Feb 15/2024		402	Feb 15/2023		416	Jun 15/2024	
402	Feb 15/2024		403	Oct 15/2015		417	Jun 15/2024	
403	Feb 15/2024		404	Oct 15/2015		418	BLANK	
404	Oct 15/2015		405	Oct 15/2017		49-41-31		
405	Oct 15/2015		406	Feb 15/2023		401	Feb 15/2023	
406	Feb 15/2024		407	Feb 15/2023		402	Feb 15/2023	
407	Jun 15/2021		408	Feb 15/2023		403	Oct 15/2015	
408	Feb 15/2024		409	Oct 15/2020		404	Feb 15/2020	
409	Jun 15/2021		410	Feb 15/2023		405	Feb 15/2023	
410	Feb 15/2023		49-31-21			406	BLANK	
49-31-11			R 401	Feb 15/2025		49-41-51		
601	Feb 15/2023		402	Jun 15/2024		401	Feb 15/2023	
602	Feb 15/2023		403	Jun 15/2024		402	Feb 15/2023	
603	Oct 15/2015		R 404	Feb 15/2025		403	Oct 15/2015	
604	BLANK		R 405	Feb 15/2025		R 404	Feb 15/2025	

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49-41-51 (cont)			49-41-71 (cont)			49-52-13		
405	Feb 15/2023		403	Oct 15/2024		401	Feb 15/2024	
406	Feb 15/2023		404	Oct 15/2020		402	Feb 15/2024	
49-41-51			405	Oct 15/2024		403	Feb 15/2024	
601	Feb 15/2015		406	Oct 15/2020		404	Feb 15/2024	
602	Feb 15/2015		407	Feb 15/2024		405	Feb 15/2024	
603	Jun 15/2020		408	Oct 15/2024		406	Feb 15/2024	
604	Jun 15/2020		409	Oct 15/2024		407	Feb 15/2024	
605	Jun 15/2020		410	Feb 15/2024		408	BLANK	
606	Jun 15/2020		411	Feb 15/2024		49-52-31		
49-41-51			412	BLANK		401	Feb 15/2023	
701	Jun 15/2022		49-52-11			402	Feb 15/2023	
702	Feb 15/2022		401	Feb 15/2023		403	Oct 15/2022	
49-41-52			402	Feb 15/2023		404	Oct 15/2015	
401	Feb 15/2023		403	Oct 15/2015		405	Feb 15/2022	
402	Feb 15/2023		404	Jun 15/2024		406	Feb 15/2022	
403	Oct 15/2015		405	Jun 15/2024		407	Feb 15/2023	
404	Oct 15/2017		406	Jun 15/2024		408	BLANK	
405	Feb 15/2023		49-52-12			49-52-32		
406	BLANK		401	Jun 15/2023		401	Feb 15/2023	
49-41-52			402	Jun 15/2023		402	Feb 15/2023	
601	Oct 15/2014		403	Jun 15/2023		403	Oct 15/2015	
602	BLANK		404	Oct 15/2015		404	Feb 15/2022	
49-41-52			405	Oct 15/2015		405	Feb 15/2022	
701	Jun 15/2022		406	Oct 15/2023		406	Feb 15/2023	
702	BLANK		407	Jun 15/2023		49-52-32		
49-41-61			408	Jun 15/2023		601	Feb 15/2022	
401	Oct 15/2024		409	Jun 15/2023		602	Feb 15/2022	
402	Oct 15/2024		410	BLANK		603	Feb 15/2022	
403	Feb 15/2024		49-52-12			604	BLANK	
404	Feb 15/2024		501	Oct 15/2023		49-52-33		
405	Oct 15/2024		502	Feb 15/2023		401	Feb 15/2023	
406	Oct 15/2024		503	Feb 15/2023		402	Feb 15/2023	
407	Feb 15/2024		504	Oct 15/2015		403	Oct 15/2015	
408	BLANK		505	Oct 15/2015		404	Feb 15/2022	
49-41-71			506	BLANK		405	Feb 15/2022	
401	Feb 15/2024					406	Feb 15/2023	
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601	Feb 15/2022		O 222	Feb 15/2025		406	Feb 15/2023	
602	Feb 15/2022		O 223	Feb 15/2025		49-72-11		
603	Feb 15/2022		O 224	Feb 15/2025		401	Jun 15/2024	
604	BLANK		O 225	Feb 15/2025		402	Jun 15/2024	
49-52-41			O 226	Feb 15/2025		403	Oct 15/2015	
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404	Jun 15/2023		403	Oct 15/2015		49-81-11		
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406	Jun 15/2023		405	Feb 15/2021		402	Feb 15/2023	
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408	Jun 15/2023		49-61-21			404	Oct 15/2015	
409	Jun 15/2023		401	Feb 15/2023		R 405	Feb 15/2025	
410	BLANK		402	Feb 15/2023		R 406	Feb 15/2025	
49-61-00			403	Oct 15/2015		407	Oct 15/2024	
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Low Oil Pressure Switch Installation TASK 49-94-22-400-801					404	LOM ALL
<u>OIL SIGHT GLASS - REMOVAL/INSTALLATION</u>			49-94-51		401	LOM ALL
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AIRBORNE AUXILIARY POWER - 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 (DDG). These tasks prepare the airplane for flight with systems/components that are inoperative.
- B. This procedure also has the tasks that put the airplane back to its usual condition.
- C. These are the tasks for the systems/components in the airborne auxiliary power system:
  - (1) MMEL 49-1 (DDPG) Preparation - APU Inoperative
  - (2) MMEL 49-1 (DDPG) Restoration - APU Inoperative
  - (3) MMEL 49-4 (DDPG) Preparation - APU Annunciator MAINT Light On or Inoperative
  - (4) MMEL 49-4 (DDPG) Restoration - APU Annunciator MAINT Light On or Inoperative
  - (5) MMEL 49-6 (DDPG) Preparation - APU Air Inlet Door Inoperative
  - (6) MMEL 49-6 (DDPG) Restoration - APU Air Inlet Door Inoperative
  - (7) MMEL 49-7 (DDPG) Preparation - APU Bleed Air System Inoperative
  - (8) MMEL 49-7 (DDPG) Restoration - APU Bleed Air System Inoperative
  - (9) MMEL 49-15 (DDPG) Preparation - Start Power Unit Inoperative
  - (10) MMEL 49-15 (DDPG) Restoration - Start Power Unit Inoperative
  - (11) MMEL 49-16 (DDPG) Preparation - Start Converter Unit Inoperative
  - (12) MMEL 49-16 (DDPG) Restoration - Start Converter Unit Inoperative

**TASK 49-00-00-040-801**

**2. MMEL 49-1 (DDPG) Preparation - APU Inoperative**

(Figure 901)

**A. General**

- (1) This procedure is optional.
- (2) This task gives the steps to prepare the airplane for flight with the APU inoperative. To prepare the airplane for flight with the APU inoperative, you must deactivate the APU master switch and do a visual check of the APU fuel shutoff valve.
- (3) If the APU INOP tag is installed because of an APU start problem and there are other APU starts on the ground, you must do a visual inspection of the tailcone and flight control surfaces.

**B. Location Zones**

Zone	Area
117	Electrical and Electronics Compartment - Left
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
211	Flight Compartment - Left

**C. Access Panels**

Number	Name/Location
117A	Electronic Equipment Access Door

**D. APU Inoperative Preparation**

SUBTASK 49-00-00-860-001

- (1) Make sure that the APU master switch [12], on the P5 forward overhead panel, is in the OFF position and install an APU INOP tag.

EFFECTIVITY
LOM ALL

**49-00-00**



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SUBTASK 49-00-00-860-002

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

**LOM 465-999; LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464 PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1**

B 14 C01424 AUX POWER UNIT SCU FAN POWER

**LOM ALL**

This circuit breaker is inoperative and should remain open:

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

**LOM ALL**

SUBTASK 49-00-00-010-005

- (3) To get access to the P91 panel, open this access panel:

**Number      Name/Location**

117A      Electronic Equipment Access Door

SUBTASK 49-00-00-860-044



**WARNING**

WHEN YOU OPEN THE P91 AND P92 PANELS, MAKE SURE THAT THE OUTER DOOR STAYS AS OPEN AS POSSIBLE. IF THE OUTER DOOR TURNS IN, THE ATTACHED DOOR COMPONENTS COULD TOUCH THE INNER DOOR COMPONENTS. THIS CAN CAUSE AN ARC CONDITION WHEN YOU SUPPLY POWER. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT AND INJURY TO PERSONNEL CAN OCCUR.



**WARNING**

DO NOT TOUCH THE CONDUCTORS IN THE P91 AND P92 PANELS. BE CAREFUL WHEN YOU GET ACCESS TO THE CIRCUIT BREAKERS ON THE INNER SIDE OF THE P91 AND P92 PANELS (ROW F). IF IT IS POSSIBLE, REMOVE AIRPLANE ELECTRICAL POWER FIRST. THE P91 AND P92 PANELS HAVE HIGH VOLTAGES AND CURRENTS. ELECTRICAL VOLTAGE AND CURRENT CAN KILL YOU OR CAUSE INJURIES.

- (4) Open this circuit breaker and install safety tag:

**Power Distribution Panel Number 1, P91**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01336	APU START CONV

EFFECTIVITY  
**LOM ALL**

**49-00-00**



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SUBTASK 49-00-00-410-005

- (5) Close this access panel:

**Number      Name/Location**

117A      Electronic Equipment Access Door

SUBTASK 49-00-00-010-001

- (6) Get access to the APU fuel shutoff valve [17].

NOTE: The APU fuel shutoff valve is on the rear spar of the left wing in the wheel well.

SUBTASK 49-00-00-860-003

- (7) Make sure that the APU fuel shutoff valve [17] is fully closed.

NOTE: The manual override handle on the APU fuel shutoff valve gives an OPEN or CLOSED indication of the shutoff valve position.

- (a) If the APU fuel shutoff valve [17] is not fully closed, turn the manual override handle [16] to the CLOSED position.

SUBTASK 49-00-00-210-002

- (8) If it is necessary, examine the tailcone and flight control surfaces for signs of heat damage, delamination or paint blistering.

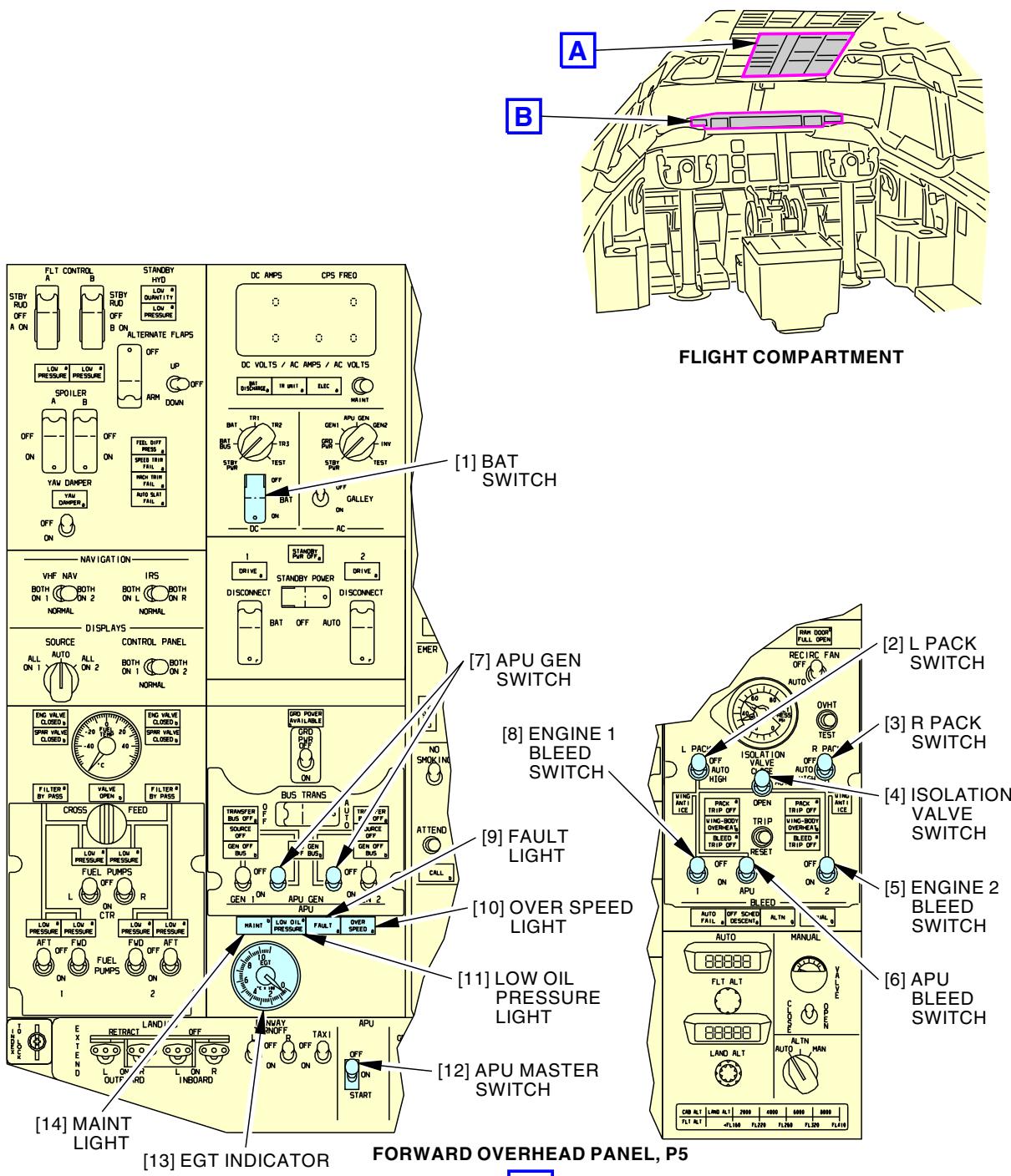
NOTE: You must examine the tailcone and flight control surfaces if there is one or more APU starts on the ground and the APU did not start.

- (a) If you find signs of heat damage, delamination or paint blistering, do the repair procedure in the structural repair manual before the subsequent airplane flight.

———— END OF TASK ————

EFFECTIVITY  
LOM ALL

**49-00-00**



G40440 S0006578905\_V2

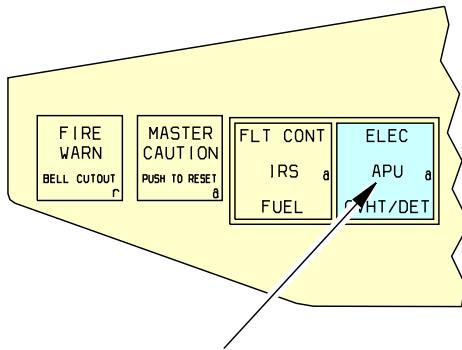
**Airborne Auxiliary Power Deactivation**  
**Figure 901/49-00-00-990-801 (Sheet 1 of 5)**

EFFECTIVITY  
LOM ALL

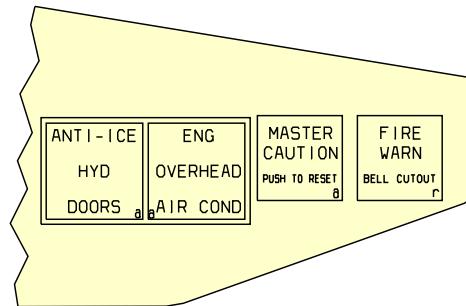
**49-00-00**



737-600/700/800/900  
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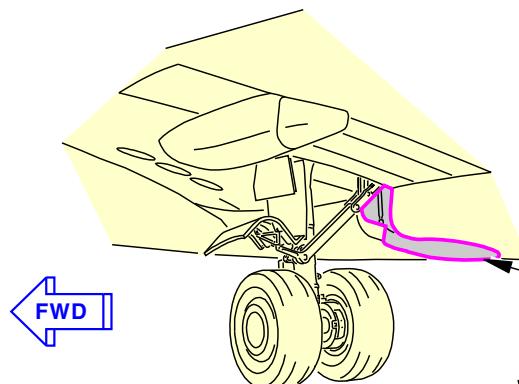


[15] APU ANNUNCIATOR LIGHT

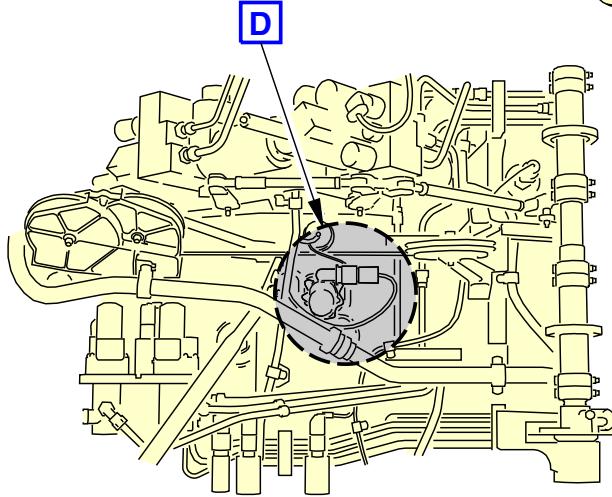


GLARESHIELD PANEL, P7

B

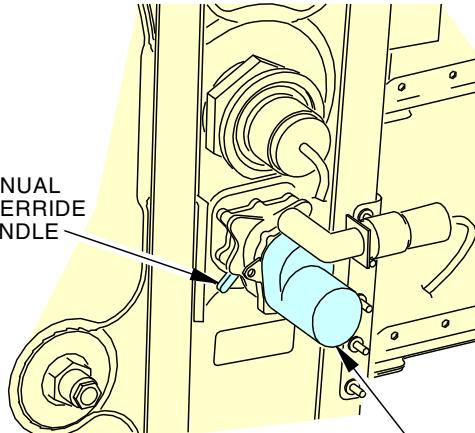


C



C

[16] MANUAL OVERRIDE HANDLE



[17] APU FUEL SHUTOFF VALVE

D

G40459 S0006578906\_V2

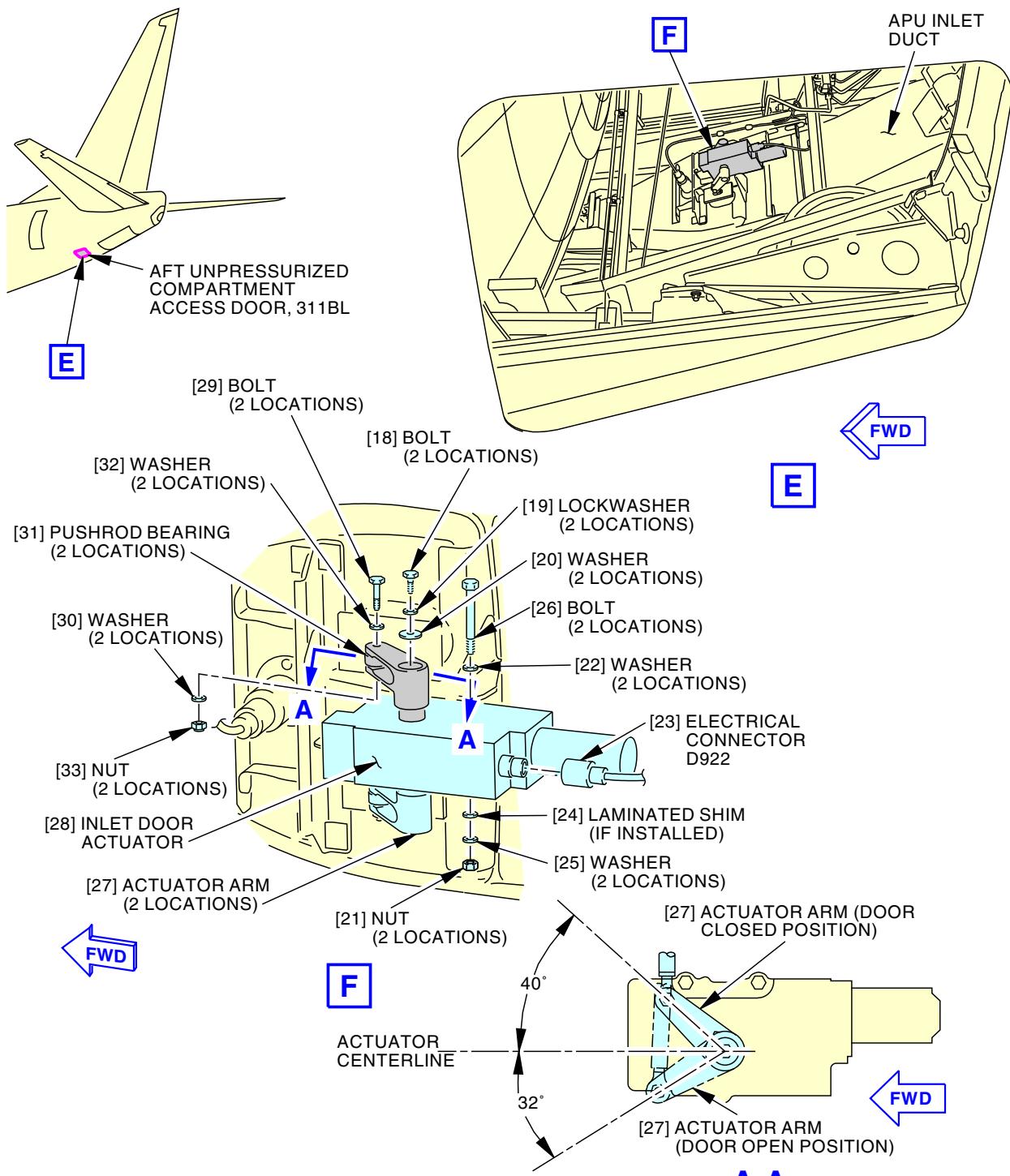
Airborne Auxiliary Power Deactivation  
Figure 901/49-00-00-990-801 (Sheet 2 of 5)

EFFECTIVITY  
LOM ALL

49-00-00

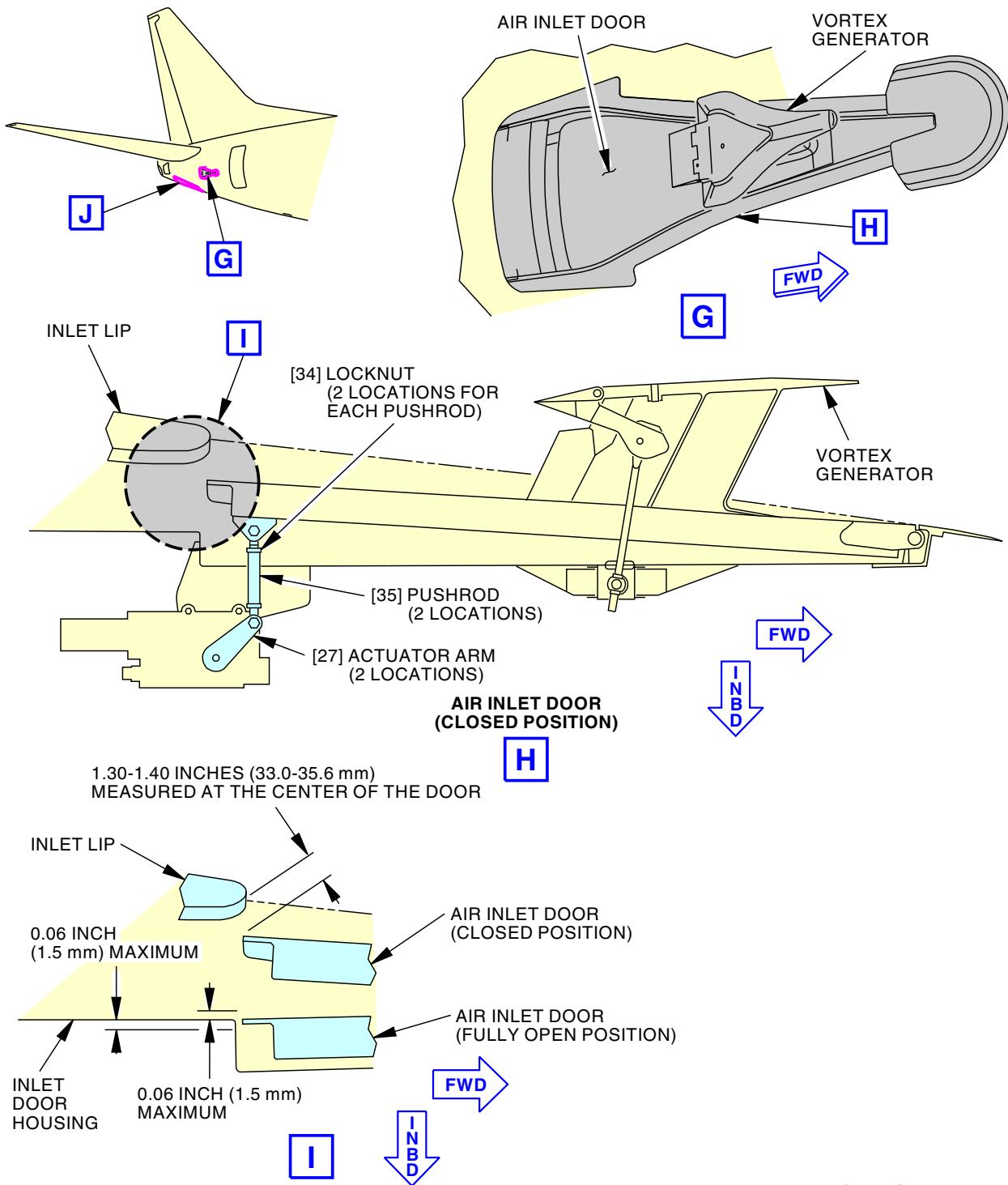
D633A101-LOM

ECCN 9E991 BOEING PROPRIETARY - See title page for details



**Airborne Auxiliary Power Deactivation**  
**Figure 901/49-00-00-990-801 (Sheet 3 of 5)**

49-00-00

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


G41874 S0006578908\_V2

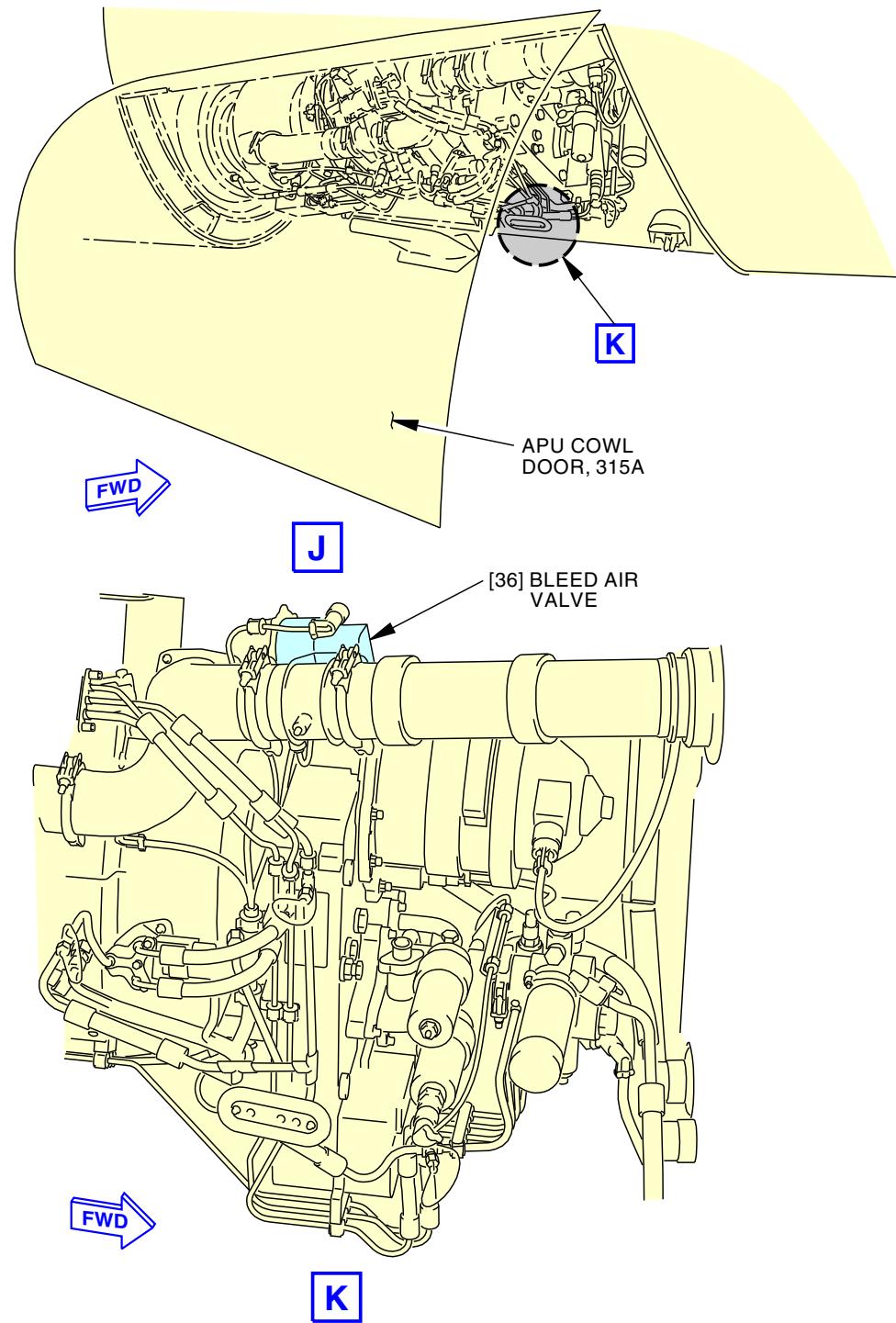
**Airborne Auxiliary Power Deactivation  
Figure 901/49-00-00-990-801 (Sheet 4 of 5)**

EFFECTIVITY  
LOM ALL

**49-00-00**



737-600/700/800/900  
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G40542 S0006578909\_V2

Airborne Auxiliary Power Deactivation  
Figure 901/49-00-00-990-801 (Sheet 5 of 5)

EFFECTIVITY  
LOM ALL

**49-00-00**

D633A101-LOM

ECCN 9E991 BOEING PROPRIETARY - See title page for details

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**TASK 49-00-00-440-801**

**3. MMEL 49-1 (DDPG) Restoration - APU Inoperative**

(Figure 901)

**A. General**

- (1) This task gives the steps to prepare the APU for operation after the deactivation procedure.

**B. References**

Reference	Title
26-15-00-710-801	APU Fire Detection - Operational Test (P/B 501)
49-11-00-710-801	APU Operational Test (P/B 501)
49-61-00-700-801	APU BITE Procedure (P/B 201)

**C. Location Zones**

Zone	Area
117	Electrical and Electronics Compartment - Left
211	Flight Compartment - Left

**D. Access Panels**

Number	Name/Location
117A	Electronic Equipment Access Door

**E. APU Inoperative Restoration**

SUBTASK 49-00-00-010-006

- (1) To get access to the P91 panel, open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 49-00-00-860-045



**WARNING**

WHEN YOU OPEN THE P91 AND P92 PANELS, MAKE SURE THAT THE OUTER DOOR STAYS AS OPEN AS POSSIBLE. IF THE OUTER DOOR TURNS IN, THE ATTACHED DOOR COMPONENTS COULD TOUCH THE INNER DOOR COMPONENTS. THIS CAN CAUSE AN ARC CONDITION WHEN YOU SUPPLY POWER. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT AND INJURY TO PERSONNEL CAN OCCUR.



**WARNING**

DO NOT TOUCH THE CONDUCTORS IN THE P91 AND P92 PANELS. BE CAREFUL WHEN YOU GET ACCESS TO THE CIRCUIT BREAKERS ON THE INNER SIDE OF THE P91 AND P92 PANELS (ROW F). IF IT IS POSSIBLE, REMOVE AIRPLANE ELECTRICAL POWER FIRST. THE P91 AND P92 PANELS HAVE HIGH VOLTAGES AND CURRENTS. ELECTRICAL VOLTAGE AND CURRENT CAN KILL YOU OR CAUSE INJURIES.

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

**Power Distribution Panel Number 1, P91**

Row	Col	Number	Name
A	11	C01336	APU START CONV

EFFECTIVITY  
LOM ALL

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SUBTASK 49-00-00-410-006

- (3) Close this access panel:

Number    Name/Location

117A        Electronic Equipment Access Door

SUBTASK 49-00-00-860-004

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

**LOM 465-999; LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464 PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1**

B        14     C01424     AUX POWER UNIT SCU FAN POWER

**LOM ALL**

This circuit breaker is inoperative and should remain open:

**F/O Electrical System Panel, P6-4**

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

**LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464 POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1**

B        14     C01424     AUX POWER UNIT SCU FAN POWER (INOP)

**LOM ALL**

SUBTASK 49-00-00-860-005

- (5) Remove the APU INOP tag from the APU master switch [12], on the P5 forward overhead panel.

SUBTASK 49-00-00-710-001

- (6) Do this task: APU Operational Test, TASK 49-11-00-710-801.

SUBTASK 49-00-00-740-001

- (7) During the APU operational test, do this task: APU BITE Procedure, TASK 49-61-00-700-801.

(a) If maintenance message(s) show for the APU, refer to the applicable Maintenance Message Index in the FIM.

SUBTASK 49-00-00-730-001

- (8) Do this task: APU Fire Detection - Operational Test, TASK 26-15-00-710-801.

———— END OF TASK ————



**49-00-00**



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AIRCRAFT MAINTENANCE MANUAL

**TASK 49-00-00-040-803**

4. **MMEL 49-4 (DDPG) Preparation - APU Annunciator MAINT Light On or Inoperative**  
(Figure 901)

**A. General**

- (1) This task gives the steps to prepare the airplane for flight with the APU annunciator MAINT light inoperative. If the APU is to be used, check APU oil quantity once each flight day. The MAINT light shows a low oil quantity for the APU or a problem with one of the six diodes in the APU starter-generator.

**B. References**

Reference	Title
12-13-31-200-801	APU Oil Level Inspection (P/B 301)

**C. Location Zones**

Zone	Area
211	Flight Compartment - Left

**D. Procedure**

SUBTASK 49-00-00-860-010

- (1) If the MAINT light [14] on the P5 forward overhead panel is inoperative, install an INOP tag.

SUBTASK 49-00-00-860-011

- (2) If the APU is to be used, do this task: APU Oil Level Inspection, TASK 12-13-31-200-801.

NOTE: You must examine the APU oil level at one time for each flight day. You can operate the APU after you do the oil level inspection.

———— END OF TASK ————

**TASK 49-00-00-440-803**

5. **MMEL 49-4 (DDPG) Restoration - APU Annunciator MAINT Light On or Inoperative**  
(Figure 901)

**A. General**

- (1) This task gives the steps to prepare the APU annunciator MAINT light for operation after the deactivation procedure.

**B. References**

Reference	Title
12-13-31-200-801	APU Oil Level Inspection (P/B 301)

**C. Location Zones**

Zone	Area
211	Flight Compartment - Left

**D. Procedure**

SUBTASK 49-00-00-860-012

- (1) Remove the INOP tag from the MAINT light [14] on the P5 forward overhead panel.

SUBTASK 49-00-00-200-001

- (2) Do this task: APU Oil Level Inspection, TASK 12-13-31-200-801.

———— END OF TASK ————

— EFFECTIVITY —  
**LOM ALL**

**49-00-00**



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**TASK 49-00-00-040-805**

**6. MMEL 49-6 (DDPG) Preparation - APU Air Inlet Door Inoperative**

(Figure 901)

**A. General**

- (1) This procedure is optional.
- (2) This task gives the steps to prepare the airplane for flight with the air inlet door inoperative. You can manually open the air inlet door if the operation of the APU is necessary in flight or on the ground.

**B. References**

<b>Reference</b>	<b>Title</b>
49-15-00-800-801	Air Inlet Door Adjustment (P/B 501)

**C. Location Zones**

<b>Zone</b>	<b>Area</b>
117	Electrical and Electronics Compartment - Left
211	Flight Compartment - Left
314	Stabilizer Torsion Box Compartment - Right

**D. Access Panels**

<b>Number</b>	<b>Name/Location</b>
117A	Electronic Equipment Access Door
311BL	Stabilizer Trim Access Door

**E. APU Air Inlet Door Inoperative Preparation**

**SUBTASK 49-00-00-860-015**

- (1) Make sure that the APU master switch [12], on the P5 forward overhead panel, is in the OFF position and install an APU INLET DOOR INOP OPEN tag.

**NOTE:** Use an APU INLET DOOR INOP - DO NOT USE APU tag if the air inlet door is inoperative in the closed or not fully open position.

**SUBTASK 49-00-00-040-001**

- (2) If the operation of the APU is necessary, do these steps to put the air inlet door in the fully open position:
  - (a) Open these circuit breakers and install safety tags:

**F/O Electrical System Panel, P6-2**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
A	14	C00033	AUX POWER UNIT CONT

- (b) Open this access panel:

**Number Name/Location**

311BL Stabilizer Trim Access Door

- (c) Disconnect the electrical connector D922 [23] from the inlet door actuator [28].
- (d) Install a cap chain on the electrical connector D922 [23] and actuator receptacle.

EFFECTIVITY  
LOM ALL

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- (e) Remove the nuts [33], washers [32], washers [30], and bolts [29] that attach the pushrod bearings [31] to the actuator arms [27].
- (f) Remove the nuts [21], washers [22], washers [25], and bolts [26] that attach the inlet door actuator [28] to the bracket.
- (g) Remove the inlet door actuator [28] and laminated shim [24], if installed.
- (h) Remove the bolts [18], lockwashers [19], and washers [20] from the actuator arms [27].
- (i) Move the actuator arms [27] on the actuator output shaft to the door open position.  
NOTE: The door open position is 32 degrees inboard from the centerline of the inlet door actuator.
- (j) Install the washers [20], lockwashers [19], and bolts [18].
  - 1) Tighten the bolts [18] to 22 in-lb (2.5 N·m) - 28 in-lb (3.2 N·m).
- (k) Move the pushrod bearings [31] approximately to the door open position of the actuator arms [27].
- (l) Put the laminated shim [24] and inlet door actuator [28] on the bracket.
- (m) Install the inlet door actuator [28] on the bracket with the bolts [26], washers [25], washers [22], and nuts [21].
  - 1) Tighten the nuts [21] to 63 in-lb (7.1 N·m) - 67 in-lb (7.6 N·m).
- (n) Put the pushrod bearings [31] in the actuator arms [27].
- (o) Install the bolts [29], washers [30], washers [32], and nuts [33] that attach the pushrod bearings [31] to the actuator arms [27].
  - 1) Tighten the nuts [33] to 63 in-lb (7.1 N·m) - 67 in-lb (7.6 N·m).
- (p) Measure the position of the air inlet door in the fully open position.
  - 1) Make sure that the gap between the air inlet door and door housing is 0.06 in. (1.52 mm) - 0.12 in. (3.05 mm).
  - 2) Make sure that the distance from the air inlet door to the inlet door housing (flushness alignment of the door) is less than 0.06 in. (1.52 mm).
- (q) If the air inlet door is not in the limits, do this task: Air Inlet Door Adjustment, TASK 49-15-00-800-801.
- (r) Close this access panel:  
Number    Name/Location  
311BL        Stabilizer Trim Access Door
- (s) Remove the safety tags and close these circuit breakers:  
**F/O Electrical System Panel, P6-2**  
Row    Col    Number    Name  
B            19        C01344        APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-00-00-040-002

- (3) If the operation of the APU is not necessary, do these steps to put the air inlet door in the closed position:

EFFECTIVITY  
LOM ALL

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

LOM 465-999; LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464 PRE  
SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B 14 C01424 AUX POWER UNIT SCU FAN POWER

**LOM ALL**

This circuit breaker is inoperative and should remain open:

**F/O Electrical System Panel, P6-4**

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

LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464 POST SB  
737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B 14 C01424 AUX POWER UNIT SCU FAN POWER (INOP)

**LOM ALL**

- (b) To get access to the P91 panel, open this access panel:

**Number      Name/Location**

117A      Electronic Equipment Access Door



WHEN YOU OPEN THE P91 AND P92 PANELS, MAKE SURE THAT THE OUTER DOOR STAYS AS OPEN AS POSSIBLE. IF THE OUTER DOOR TURNS IN, THE ATTACHED DOOR COMPONENTS COULD TOUCH THE INNER DOOR COMPONENTS. THIS CAN CAUSE AN ARC CONDITION WHEN YOU SUPPLY POWER. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT AND INJURY TO PERSONNEL CAN OCCUR.



DO NOT TOUCH THE CONDUCTORS IN THE P91 AND P92 PANELS. BE CAREFUL WHEN YOU GET ACCESS TO THE CIRCUIT BREAKERS ON THE INNER SIDE OF THE P91 AND P92 PANELS (ROW F). IF IT IS POSSIBLE, REMOVE AIRPLANE ELECTRICAL POWER FIRST. THE P91 AND P92 PANELS HAVE HIGH VOLTAGES AND CURRENTS. ELECTRICAL VOLTAGE AND CURRENT CAN KILL YOU OR CAUSE INJURIES.

- (c) Open this circuit breaker and install safety tag:

**Power Distribution Panel Number 1, P91**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01336	APU START CONV

- (d) Close this access panel:

**Number      Name/Location**

117A      Electronic Equipment Access Door

EFFECTIVITY  
**LOM ALL**

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- (e) Open this access panel:

**Number      Name/Location**

311BL      Stabilizer Trim Access Door

- (f) Disconnect the electrical connector D922 [23] from the inlet door actuator [28].
- (g) Install a cap chain on the electrical connector D922 [23] and actuator receptacle.
- (h) Remove the nuts [33], washers [32], washers [30], and bolts [29] that attach the pushrod bearings [31] to the actuator arms [27].
- (i) Remove the nuts [21], washers [22], washers [25], and bolts [26] that attach the inlet door actuator [28] to the bracket.
- (j) Remove the inlet door actuator [28] and laminated shim [24], if installed.
- (k) Remove the bolts [18], lockwashers [19], and washers [20] from the actuator arms [27].
- (l) Move the actuator arms [27] on the actuator output shaft to the door closed position.  
NOTE: The door closed position is 40 degrees outboard from the centerline of the inlet door actuator.
- (m) Install the washers [20], lockwashers [19], and bolts [18].  
1) Tighten the bolts [18] to 22 in-lb (2.5 N·m) - 28 in-lb (3.2 N·m).
- (n) Move the pushrod bearings [31] approximately to the door closed position of the actuator arms [27].
- (o) Put the laminated shim [24] and inlet door actuator [28] on the bracket.
- (p) Install the inlet door actuator [28] on the bracket with the bolts [26], washers [25], washers [22], and nuts [21].  
1) Tighten the nuts [21] to 63 in-lb (7.1 N·m) - 67 in-lb (7.6 N·m).
- (q) Put the pushrod bearings [31] in the actuator arms [27].
- (r) Install the bolts [29], washers [30], washers [32], and nuts [33] that attach the pushrod bearings [31] to the actuator arms [27].  
1) Tighten the nuts [33] to 63 in-lb (7.1 N·m) - 67 in-lb (7.6 N·m).
- (s) Measure the position of the air inlet door in the closed position.  
NOTE: The clearance between the center of the air inlet door and inner lip must be 1.30 in. (33.0 mm) - 1.40 in. (35.6 mm).
- (t) If the air inlet door is not in the limits, adjust the air inlet door:  
1) Remove the nuts [33], washers [32], washers [30], and bolts [29] that attach the pushrod bearings [31] to the actuator arms [27].  
2) Loosen one of the locknuts [34] at each end of the pushrods [35].  
3) Turn the ends of the pushrods [35] until the air inlet door aligns in the limits.  
NOTE: The pushrod will move a distance of 0.02 in. (0.5 mm) with one half of a turn in one direction.  
4) Tighten the locknuts [34] on the pushrods [35].  
5) Put the pushrod bearings [31] in the actuator arms [27].  
6) Install the bolts [29], washers [30], washers [32], and nuts [33] that attach the pushrod bearings [31] to the actuator arms [27].  
a) Tighten the nuts [33] to 63 in-lb (7.1 N·m) - 67 in-lb (7.6 N·m).

EFFECTIVITY  
LOM ALL

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- (u) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
311BL	Stabilizer Trim Access Door

———— END OF TASK ————

**TASK 49-00-00-440-805**

**7. MMEL 49-6 (DDPG) Restoration - APU Air Inlet Door Inoperative**  
(Figure 901)

**A. General**

- (1) This task gives the steps to prepare the air inlet door for operation after the deactivation procedure.

**B. Location Zones**

<u>Zone</u>	<u>Area</u>
117	Electrical and Electronics Compartment - Left
211	Flight Compartment - Left
314	Stabilizer Torsion Box Compartment - Right

**C. Access Panels**

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door
311BL	Stabilizer Trim Access Door

**D. APU Air Inlet Door Inoperative Restoration**

SUBTASK 49-00-00-860-016

- (1) Make sure that these circuit breakers are open:

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-00-00-010-002

- (2) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
311BL	Stabilizer Trim Access Door

SUBTASK 49-00-00-020-001

- (3) Remove the cap chain from the electrical connector D922 [23] and actuator receptacle.

SUBTASK 49-00-00-420-001

- (4) Connect the electrical connector D922 [23] to the inlet door actuator [28].

SUBTASK 49-00-00-410-001

- (5) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
311BL	Stabilizer Trim Access Door

EFFECTIVITY  
LOM ALL

**49-00-00**



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SUBTASK 49-00-00-860-042

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-00-00-860-017

- (7) If you see an APU INLET DOOR INOP - DO NOT USE APU tag on the APU master switch [12], do these steps:

- (a) To get access to the P91 panel, open this access panel:

**Number      Name/Location**

117A	Electronic Equipment Access Door
------	----------------------------------



WHEN YOU OPEN THE P91 AND P92 PANELS, MAKE SURE THAT THE OUTER DOOR STAYS AS OPEN AS POSSIBLE. IF THE OUTER DOOR TURNS IN, THE ATTACHED DOOR COMPONENTS COULD TOUCH THE INNER DOOR COMPONENTS. THIS CAN CAUSE AN ARC CONDITION WHEN YOU SUPPLY POWER. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT AND INJURY TO PERSONNEL CAN OCCUR.



DO NOT TOUCH THE CONDUCTORS IN THE P91 AND P92 PANELS. BE CAREFUL WHEN YOU GET ACCESS TO THE CIRCUIT BREAKERS ON THE INNER SIDE OF THE P91 AND P92 PANELS (ROW F). IF IT IS POSSIBLE, REMOVE AIRPLANE ELECTRICAL POWER FIRST. THE P91 AND P92 PANELS HAVE HIGH VOLTAGES AND CURRENTS. ELECTRICAL VOLTAGE AND CURRENT CAN KILL YOU OR CAUSE INJURIES.

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

**Power Distribution Panel Number 1, P91**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01336	APU START CONV

- (c) Close this access panel:

**Number      Name/Location**

117A	Electronic Equipment Access Door
------	----------------------------------

- (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>
B	14	C01424	AUX POWER UNIT SCU FAN POWER

LOM 465-999; LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464 PRE  
SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

EFFECTIVITY  
LOM ALL

**49-00-00**



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**LOM 465-999; LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464 PRE SB 737-49-1150  
REV 0 OR POST SB 737-49-1150 REV 1 (Continued)**

(Continued)

**F/O Electrical System Panel, P6-4**

Row   Col   Number   Name

**LOM ALL**

This circuit breaker is inoperative and should remain open:

**F/O Electrical System Panel, P6-4**

Row   Col   Number   Name

**LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464 POST SB  
737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1**

B      14      C01424      AUX POWER UNIT SCU FAN POWER (INOP)

**LOM ALL**

- (e) Remove the APU INLET DOOR INOP - DO NOT USE APU tag from the APU master switch [12].

SUBTASK 49-00-00-860-043

- (8) If you see an APU INLET DOOR INOP OPEN tag on the APU master switch [12], remove the tag.

SUBTASK 49-00-00-710-004

- (9) Do these steps to do an operational test of the air inlet door:

- (a) Make sure that the BAT switch [1], on the P5 forward overhead panel, is in the ON position.

- (b) Set the APU master switch [12] to the ON position and to the OFF position again and again.

NOTE: The air inlet door opens or closes in approximately 30 seconds. After 30 seconds, you can set the APU master switch to the other position.

- (c) Make sure that the inlet door actuator [28] operates correctly.

- (d) If it is not necessary to do other tasks, set the BAT switch [1] to the OFF position.

- (e) Make sure that the APU master switch [12] is in the OFF position.

———— END OF TASK ————

**TASK 49-00-00-040-806**

**8. MMEL 49-7 (DDPG) Preparation - APU Bleed Air System Inoperative**

(Figure 901)

**A. General**

- (1) This task gives the steps to prepare the airplane for flight with the APU bleed air system inoperative. To prepare the airplane for flight with the APU bleed air system inoperative, you must check that the indication on the Bleed Air Valve shows CLOSED.

**B. Location Zones**

Zone   Area

211	Flight Compartment - Left
316	APU Compartment - Right

EFFECTIVITY  
**LOM ALL**

**49-00-00**



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C. Access Panels

<u>Number</u>	<u>Name/Location</u>
315A	APU Cowl Door

D. Procedure

SUBTASK 49-00-00-860-019

- (1) Make sure the APU BLEED switch [6] on the P5 forward overhead panel is OFF and install an INOP tag.

SUBTASK 49-00-00-010-004

- (2) To open the access panel, do these steps:

Number    Name/Location

315A	APU Cowl Door
------	---------------

- (a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.
- (b) Open the three latches.  
*NOTE:* Use this sequence: forward latch, aft latch, middle latch.
- (c) Open the APU Cowl Door, 315A.
- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

SUBTASK 49-00-00-210-004

- (3) To make sure that the APU bleed air valve is closed, do one of these procedures:

- (a) Look at the two indications on the position switch for the bleed air valve [36].

*NOTE:* There are two indications on the position switch to show the position of the bleed air valve. You can find the OPEN and CLOSED indications on the top and bottom of the bleed air valve.

- 1) If the indication on the bleed air valve [36] shows CLOSED, you can start and operate the APU as an electrical power source only.
- (b) Do the APU BITE TEST through the Input Monitoring Page on the FMC.
  - 1) Make sure that the bleed air valve is closed.

SUBTASK 49-00-00-410-004

- (4) To close the access panel, do these steps:

Number    Name/Location

315A	APU Cowl Door
------	---------------

- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.

EFFECTIVITY  
LOM ALL

**49-00-00**



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- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.

- 1) Make sure that the installation of fire shield has not shifted.
- 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.

- (g) Close the APU Cowl Door, 315A.

- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

**TASK 49-00-00-440-806**

**9. MMEL 49-7 (DDPG) Restoration - APU Bleed Air System Inoperative**

(Figure 901)

**A. General**

- (1) This task gives the steps to prepare the Auxiliary Power Unit (APU) bleed air system for operation after the deactivation procedure.

**B. References**

<b>Reference</b>	<b>Title</b>
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)
49-61-00-700-801	APU BITE Procedure (P/B 201)

**C. Location Zones**

<b>Zone</b>	<b>Area</b>
211	Flight Compartment - Left

**D. APU Bleed Air System Inoperative Restoration**

**SUBTASK 49-00-00-860-021**

- (1) Remove the INOP tag from the APU BLEED switch [6], on the P5 forward overhead panel.

**SUBTASK 49-00-00-710-005**

- (2) Do an operational test of the APU bleed air system:

- (a) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.

- (b) Set these switches, on the P5 forward overhead panel:

- 1) Set the ISOLATION VALVE switch [4] to the OPEN position.

- 2) Make sure that the engine 1 BLEED switch [8] and/or engine 2 BLEED switch [5] are OFF.

- 3) Make sure that the L PACK switch [2] and R PACK switch [3] are OFF.

- 4) Set the APU BLEED switch [6] to the ON position.

- (c) During the APU operation, do this task: APU BITE Procedure, TASK 49-61-00-700-801.

- 1) If maintenance message(s) show for the APU bleed air system, refer to the applicable Maintenance Message Index in the FIM.

- (d) Set these switches, on the P5 forward overhead panel:

- 1) Set the APU BLEED switch [6] to the OFF position.

- 2) Set the ISOLATION VALVE switch [4] to the CLOSE position.

EFFECTIVITY  
LOM ALL

**49-00-00**



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- (e) Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

———— END OF TASK ————

**TASK 49-00-00-040-808**

**10. MMEL 49-15 (DDPG) Preparation - Start Power Unit Inoperative**

(Figure 901)

**A. General**

- (1) This task gives the steps to prepare the airplane for flight with the start power unit inoperative. To prepare the airplane for flight with the start power unit inoperative, you must deactivate the APU master switch if you cannot do an ac and a dc start of the APU. If you can do an ac or a dc start of the APU, you can operate the APU in flight or on the ground. It is necessary that external power or the ac generator drive system is available to do an ac start of the APU.

**B. References**

Reference	Title
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)

**C. Location Zones**

Zone	Area
117	Electrical and Electronics Compartment - Left
211	Flight Compartment - Left

**D. Access Panels**

Number	Name/Location
117A	Electronic Equipment Access Door

**E. Start Power Unit Inoperative Preparation**

**SUBTASK 49-00-00-860-026**

- (1) Do these steps to do an ac start of the APU:
- Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
  - If the APU did not start with ac power, set the APU master switch [12] to the OFF position.
  - If the APU starts with ac power, do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

**SUBTASK 49-00-00-860-027**

- (2) Do these steps to do a dc start of the APU:
- Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
  - If the APU did not start with dc power, set the APU master switch [12] to the OFF position.
  - If the APU starts with dc power, do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

**SUBTASK 49-00-00-860-028**

- (3) If the APU starts with ac power and did not start with dc power, install an APU DC START INOP tag on the APU master switch [12].

**SUBTASK 49-00-00-860-029**

- (4) If the APU starts with dc power and did not start with ac power, install an APU AC START INOP tag on the APU master switch [12].

———— EFFECTIVITY ————  
**LOM ALL**

**49-00-00**



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SUBTASK 49-00-00-860-030

- (5) Do these steps if the APU did not start with ac and dc power:
- Install an APU INOP tag on the APU master switch [12].
  - Open these circuit breakers and install safety tags:

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

LOM 465-999; LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464 PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B 14 C01424 AUX POWER UNIT SCU FAN POWER

**LOM ALL**

This circuit breaker is inoperative and should remain open:

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464 POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)
B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

**LOM ALL**

- (c) To get access to the P91 panel, open this access panel:

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



WHEN YOU OPEN THE P91 AND P92 PANELS, MAKE SURE THAT THE OUTER DOOR STAYS AS OPEN AS POSSIBLE. IF THE OUTER DOOR TURNS IN, THE ATTACHED DOOR COMPONENTS COULD TOUCH THE INNER DOOR COMPONENTS. THIS CAN CAUSE AN ARC CONDITION WHEN YOU SUPPLY POWER. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT AND INJURY TO PERSONNEL CAN OCCUR.



DO NOT TOUCH THE CONDUCTORS IN THE P91 AND P92 PANELS. BE CAREFUL WHEN YOU GET ACCESS TO THE CIRCUIT BREAKERS ON THE INNER SIDE OF THE P91 AND P92 PANELS (ROW F). IF IT IS POSSIBLE, REMOVE AIRPLANE ELECTRICAL POWER FIRST. THE P91 AND P92 PANELS HAVE HIGH VOLTAGES AND CURRENTS. ELECTRICAL VOLTAGE AND CURRENT CAN KILL YOU OR CAUSE INJURIES.

- (d) Open this circuit breaker and install safety tag:

**Power Distribution Panel Number 1, P91**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01336	APU START CONV

EFFECTIVITY  
**LOM ALL**

**49-00-00**



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- (e) Close this access panel:

Number    Name/Location

117A        Electronic Equipment Access Door

- (f) Remove the lockwire from the battery connector D11798 at the start power unit.  
(g) Disconnect the battery connector D11798 from the start power unit.  
(h) Install protection covers on the battery connector D11798 and start power unit receptacle.  
(i) Stow the battery connector D11798.

————— END OF TASK ————

**TASK 49-00-00-440-808**

**11. MMEL 49-15 (DDPG) Restoration - Start Power Unit Inoperative**  
(Figure 901)

**A. General**

- (1) This task gives the steps to prepare the start power unit for operation after the deactivation procedure.

**B. References**

<u>Reference</u>	<u>Title</u>
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)
49-61-00-700-801	APU BITE Procedure (P/B 201)

**C. Consumable Materials**

<u>Reference</u>	<u>Description</u>	<u>Specification</u>
G02166	Lockwire - MS20995NC20, Monel - 0.020 Inch (0.508 mm) Diameter	NASM20995

**D. Location Zones**

<u>Zone</u>	<u>Area</u>
117	Electrical and Electronics Compartment - Left
211	Flight Compartment - Left

**E. Access Panels**

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

**F. Start Power Unit Inoperative Restoration**

SUBTASK 49-00-00-860-031

- (1) If you see an APU INOP tag on the APU master switch [12], do these steps:



REMOVE THE PROTECTION COVERS FROM THE OPENINGS AS NECESSARY. IF YOU DO NOT REMOVE THE PROTECTION COVERS, DAMAGE TO THE APU CAN OCCUR.

- (a) Connect the battery connector D11798 to the start power unit.  
(b) Install the MS20995NC20 lockwire, G02166, on the battery connector D11798.

EFFECTIVITY  
LOM ALL

**49-00-00**



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- (c) To get access to the P91 panel, open this access panel:

**Number      Name/Location**

117A      Electronic Equipment Access Door



WHEN YOU OPEN THE P91 AND P92 PANELS, MAKE SURE THAT THE OUTER DOOR STAYS AS OPEN AS POSSIBLE. IF THE OUTER DOOR TURNS IN, THE ATTACHED DOOR COMPONENTS COULD TOUCH THE INNER DOOR COMPONENTS. THIS CAN CAUSE AN ARC CONDITION WHEN YOU SUPPLY POWER. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT AND INJURY TO PERSONNEL CAN OCCUR.



DO NOT TOUCH THE CONDUCTORS IN THE P91 AND P92 PANELS. BE CAREFUL WHEN YOU GET ACCESS TO THE CIRCUIT BREAKERS ON THE INNER SIDE OF THE P91 AND P92 PANELS (ROW F). IF IT IS POSSIBLE, REMOVE AIRPLANE ELECTRICAL POWER FIRST. THE P91 AND P92 PANELS HAVE HIGH VOLTAGES AND CURRENTS. ELECTRICAL VOLTAGE AND CURRENT CAN KILL YOU OR CAUSE INJURIES.

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

**Power Distribution Panel Number 1, P91**

**Row    Col    Number    Name**

A      11      C01336      APU START CONV

- (e) Close this access panel:

**Number      Name/Location**

117A      Electronic Equipment Access Door

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

**F/O Electrical System Panel, P6-2**

**Row    Col    Number    Name**

B      19      C01344      APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

**Row    Col    Number    Name**

A      14      C00033      AUX POWER UNIT CONT

LOM 465-999; LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464 PRE  
SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B      14      C01424      AUX POWER UNIT SCU FAN POWER

**LOM ALL**

This circuit breaker is inoperative and should remain open:

**F/O Electrical System Panel, P6-4**

**Row    Col    Number    Name**

LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464 POST SB  
737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B      14      C01424      AUX POWER UNIT SCU FAN POWER (INOP)

**LOM ALL**

EFFECTIVITY  
**LOM ALL**

**49-00-00**



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- (g) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.  
NOTE: You must do an ac start of the APU to make sure that the APU starts with ac power. It is necessary that external power or the ac generator drive system is available to do an ac start of the APU.
- (h) During the APU operation, do this task: APU BITE Procedure, TASK 49-61-00-700-801.  
1) If maintenance message(s) show for the APU electrical system, refer to the applicable Maintenance Message Index in the FIM.
- (i) If the APU starts with ac power, do this task: APU Usual Shutdown, TASK 49-11-00-860-802.
- (j) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.  
NOTE: You must do a dc start of the APU to make sure that the APU starts with dc power.
- (k) During the APU operation, do this task: APU BITE Procedure, TASK 49-61-00-700-801.  
1) If maintenance message(s) show for the APU electrical system, refer to the applicable Maintenance Message Index in the FIM.
- (l) If the APU starts with dc power, do this task: APU Usual Shutdown, TASK 49-11-00-860-802.
- (m) Remove the APU INOP tag from the APU master switch [12].

**SUBTASK 49-00-00-860-032**

- (2) If you see an APU DC START INOP tag on the APU master switch [12], you must do a dc start of the APU:  
(a) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.  
NOTE: You must do a dc start of the APU to make sure that the APU starts with dc power.  
(b) During the APU operation, do this task: APU BITE Procedure, TASK 49-61-00-700-801.  
1) If maintenance message(s) show for the APU electrical system, refer to the applicable Maintenance Message Index in the FIM.  
(c) Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.  
(d) Remove the APU DC START INOP tag from the APU master switch [12].

**SUBTASK 49-00-00-860-033**

- (3) If you see an APU AC START INOP tag on the APU master switch [12], you must do an ac start of the APU:  
(a) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.  
NOTE: You must do an ac start of the APU to make sure that the APU starts with ac power. It is necessary that external power or the ac generator drive system is available to do an ac start of the APU.  
(b) During the APU operation, do this task: APU BITE Procedure, TASK 49-61-00-700-801.  
1) If maintenance message(s) show for the APU electrical system, refer to the applicable Maintenance Message Index in the FIM.  
(c) Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.  
(d) Remove the APU AC START INOP tag from the APU master switch [12].

———— END OF TASK ————

EFFECTIVITY  
LOM ALL

**49-00-00**



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TASK 49-00-00-040-809

12. **MMEL 49-16 (DDPG) Preparation - Start Converter Unit Inoperative**

(Figure 901)

**A. General**

- (1) This task gives the steps to prepare the airplane for flight with the start converter unit inoperative.

**B. Location Zones**

<u>Zone</u>	<u>Area</u>
117	Electrical and Electronics Compartment - Left
211	Flight Compartment - Left

**C. Access Panels**

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

**D. Start Converter Unit Inoperative Preparation**

SUBTASK 49-00-00-860-034

- (1) Do the steps that follow:

- (a) Do these steps:

- 1) Make sure that the APU master switch [12], on the P5 forward overhead panel, is in the OFF position and install an APU INOP tag.
- 2) Open these circuit breakers and install safety tags:

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT
LOM 465-999; LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464 PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1			
B	14	C01424	AUX POWER UNIT SCU FAN POWER

**Power Distribution Panel Number 1, P91**

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

A 11 C01336 APU START CONV

This circuit breaker is inoperative and should remain open:

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464 POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1			
B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

**LOM ALL**



**49-00-00**



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- 3) To get access to the P91 panel, open this access panel:

Number    Name/Location

117A        Electronic Equipment Access Door



**WARNING**

WHEN YOU OPEN THE P91 AND P92 PANELS, MAKE SURE THAT THE OUTER DOOR STAYS AS OPEN AS POSSIBLE. IF THE OUTER DOOR TURNS IN, THE ATTACHED DOOR COMPONENTS COULD TOUCH THE INNER DOOR COMPONENTS. THIS CAN CAUSE AN ARC CONDITION WHEN YOU SUPPLY POWER. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT AND INJURY TO PERSONNEL CAN OCCUR.



**WARNING**

DO NOT TOUCH THE CONDUCTORS IN THE P91 AND P92 PANELS. BE CAREFUL WHEN YOU GET ACCESS TO THE CIRCUIT BREAKERS ON THE INNER SIDE OF THE P91 AND P92 PANELS (ROW F). IF IT IS POSSIBLE, REMOVE AIRPLANE ELECTRICAL POWER FIRST. THE P91 AND P92 PANELS HAVE HIGH VOLTAGES AND CURRENTS. ELECTRICAL VOLTAGE AND CURRENT CAN KILL YOU OR CAUSE INJURIES.

- 4) Open this circuit breaker and install safety tag:

**Power Distribution Panel Number 1, P91**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01336	APU START CONV

- 5) Close this access panel:

Number    Name/Location

117A        Electronic Equipment Access Door

- (b) Install an APU GEN INOP tag on the APU GEN switches [7].

———— END OF TASK ————

**TASK 49-00-00-440-809**

**13. MMEL 49-16 (DDPG) Restoration - Start Converter Unit Inoperative**

(Figure 901)

**A. General**

- (1) This task gives the steps to prepare the start converter unit for operation after the deactivation procedure.

**B. References**

<b>Reference</b>	<b>Title</b>
49-11-00-710-801	APU Operational Test (P/B 501)
49-61-00-700-801	APU BITE Procedure (P/B 201)

**C. Location Zones**

<b>Zone</b>	<b>Area</b>
117	Electrical and Electronics Compartment - Left
211	Flight Compartment - Left

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D. Access Panels

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

E. Start Converter Unit Inoperative Restoration

SUBTASK 49-00-00-860-036

- (1) If you see an APU INOP tag on the APU master switch [12], do these steps:

- (a) To get access to the P91 panel, open this access panel:

Number    Name/Location

117A      Electronic Equipment Access Door



WHEN YOU OPEN THE P91 AND P92 PANELS, MAKE SURE THAT THE OUTER DOOR STAYS AS OPEN AS POSSIBLE. IF THE OUTER DOOR TURNS IN, THE ATTACHED DOOR COMPONENTS COULD TOUCH THE INNER DOOR COMPONENTS. THIS CAN CAUSE AN ARC CONDITION WHEN YOU SUPPLY POWER. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT AND INJURY TO PERSONNEL CAN OCCUR.



DO NOT TOUCH THE CONDUCTORS IN THE P91 AND P92 PANELS. BE CAREFUL WHEN YOU GET ACCESS TO THE CIRCUIT BREAKERS ON THE INNER SIDE OF THE P91 AND P92 PANELS (ROW F). IF IT IS POSSIBLE, REMOVE AIRPLANE ELECTRICAL POWER FIRST. THE P91 AND P92 PANELS HAVE HIGH VOLTAGES AND CURRENTS. ELECTRICAL VOLTAGE AND CURRENT CAN KILL YOU OR CAUSE INJURIES.

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

**Power Distribution Panel Number 1, P91**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01336	APU START CONV

- (c) Close this access panel:

Number    Name/Location

117A      Electronic Equipment Access Door

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

LOM 465-999; LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464 PRE  
SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B      14      C01424      AUX POWER UNIT SCU FAN POWER

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**LOM 465-999; LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464 PRE SB 737-49-1150  
REV 0 OR POST SB 737-49-1150 REV 1 (Continued)**

**Power Distribution Panel Number 1, P91**

**Row    Col    Number    Name**

**LOM ALL**

A      11      C01336      APU START CONV

This circuit breaker is inoperative and should remain open:

**F/O Electrical System Panel, P6-4**

**Row    Col    Number    Name**

**LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464 POST SB  
737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1**

B      14      C01424      AUX POWER UNIT SCU FAN POWER (INOP)

**LOM ALL**

- (e) Remove the APU INOP tag from the APU master switch [12].

**SUBTASK 49-00-00-860-037**

- (2) If you see an APU GEN INOP tag on the APU GEN switches [7], remove the tag.

**SUBTASK 49-00-00-710-007**

- (3) Do these steps to do an APU operational test:

- (a) Do this task: APU Operational Test, TASK 49-11-00-710-801.  
(b) During the APU operational test, do this task: APU BITE Procedure, TASK 49-61-00-700-801.  
1) Look for these messages:
  - 49-41244 START CONVERTER SHOWS FAILED GENERATOR DIOD
  - 49-41245 START CONVERTER UNIT SHOWS GEN UNDERTHOLD
  - 49-41246 START CONVERTER UNIT SHOWS BAD INPUT COMMAND
  - 49-41247 START CONVERTER UNIT SHOWS INTERLOCK RLY FAIL
  - 49-41248 START CONVERTER UNIT SHOWS START SYSTEM INOP
  - 49-41249 START CONVERTER UNIT SHOWS LOW BATTERY POWER
  - 49-41250 START CONVERTER UNIT SHOWS START SYSTEM INOP
  - 49-41251 START CONVERTER UNIT SHOWS HIGH TEMPERATURE
  - 49-41252 START CONVERTER SHOWS VOLTAGE REGULATOR FAILED
  - 49-41254 START CONVERTER UNIT SHOWS START SYSTEM INOP
  - 49-41256 START CONVERTER SHOWS NO COOLING FAN POWER
  - 49-41297 START POWER UNIT SHOWS INTERNAL FAILURE
  - 49-41298 START CONVERTER SHOWS GENERATOR PMG FAILURE
  - 49-41305 START CONVERTER UNIT SHOWS BAD INPUT COMMAND
  - 49-41306 START CONVERTER UNIT SHOWS INTERLOCK RLY FAIL.  
2) If maintenance message(s) show for the APU electrical system, refer to the applicable Maintenance Message Index in the FIM.

— END OF TASK —



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APU POWER PLANT - MAINTENANCE PRACTICES

**1. General**

- A. This procedure has these tasks:
  - (1) Auxiliary Power Unit (APU) System - Safety Precaution
  - (2) APU Operation Limits
  - (3) APU System - Deactivation
  - (4) APU System - Activation
  - (5) APU Starting and Operation
  - (6) APU Usual Shutdown
  - (7) APU Emergency Shutdown
  - (8) APU Protective Shutdown
  - (9) Motor the APU
  - (10) APU Preservation - Mild Environment
  - (11) APU Preservation - Severe Environment
  - (12) APU Depreservation
  - (13) APU DMM Re-Initialization.
- B. The APU Preservation Procedures give protection to the APU when it is not used (and stored on the airplane). The preservation can be done for time periods of one month to two years. The APU starting and operation and APU motoring procedures are used in the APU Preservation Procedures.
- C. The Depreservation Procedures put the APU back to a serviceable condition after it has been preserved.

**TASK 49-11-00-750-801**

**2. APU System - Safety Precaution**

**A. General**

- (1) This procedure contains the steps for the general safety precautions of the Auxiliary Power Unit (APU) system.

**B. General Safety Precautions for Maintenance Tasks**



**WARNING**

MAKE SURE THAT YOU USE THE APPLICABLE PERSONNEL PROTECTIVE EQUIPMENT (PPE) WHILE YOU WORK ON THE APU. HEAVY METALS, SUCH AS HEXAVALENT CHROMIUM, CAN EXIST IN THE APU COMPONENTS. PERSONNEL MUST EXAMINE APPLICABLE MATERIAL SAFETY DATA SHEETS AND USE GOOD PERSONAL HYGIENE. CLEAN HANDS FULLY AFTER YOU WORK ON MAINTENANCE PROCEDURES BEFORE YOU EAT, DRINK, OR SMOKE. HEXAVALENT CHROMIUM IS DANGEROUS AND CAN CAUSE INJURY TO PERSONNEL.

SUBTASK 49-11-00-750-002

- (1) The APU and its attaching parts may have visible residue on their surfaces that may contain hexavalent chromium. It may range in color from pale white-beige to yellow, orange, light brown and/or dark brown.

**NOTE:** Even if the residue is not visible, hexavalent chromium residue may be present on the surface of hot section components after operation.

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ECCN 9E991 BOEING PROPRIETARY - See title page for details

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SUBTASK 49-11-00-750-003

- (2) When performing maintenance operations on the APU, you must obey the following precautions:
- Obey all applicable environmental, health and safety precautions before you move, touch, replace or discard hardware that contains hexavalent chromium.
  - Avoid creating airborne dust.
  - Do not use compressed air to blow off parts.

NOTE: Operations such as grinding, buffing or media blasting should be conducted after part cleaning and removal of residue, and only with the appropriate controls in place to limit potential exposure to hexavalent chromium.

———— END OF TASK ————

**TASK 49-11-00-710-802**

**3. APU Operation Limits**

**A. General**

- The APU operation limits (guidelines) are used when you operate, motor or troubleshoot the APU. The APU parameter indications for the APU operation with no load, with 100-ampere electrical load and with two-pack high ECS (no electrical load) are shown in (Table 202, Table 203, Table 201). These indications can help identify and isolate a problem to the fuel system, ignition system or bleed air system if there are more than one component or system to be replaced or repaired. If there are no evidence of an APU problem, operation outside these limits should not require an APU maintenance action.
- The switch positions and command signals for the applicable APU parameters are shown in (Table 204) for a serviceable APU. Use the four tables together to make sure the APU and airplane systems operate correctly.
- You can gain access to this APU engine data through the INPUT MONITORING page on the APU BITE procedure for the control display unit.
- The oil consumption limit is shown in (Figure 201). You can monitor the APU oil consumption for installed APUs.

**B. References**

Reference	Title
49-61-00-700-801	APU BITE Procedure (P/B 201)

**C. Location Zones**

Zone	Area
211	Flight Compartment - Left

**D. APU Operation Limits**

SUBTASK 49-11-00-710-003

- (1) Do this task: APU BITE Procedure, TASK 49-61-00-700-801.

NOTE: It is necessary to do the APU BITE procedure to see the APU parameters during an APU operation or when the APU master switch is set to the ON position only. You make the selection for the INPUT MONITORING data on the MAIN MENU page for the APU BITE TEST. The INPUT MONITORING data changes continuously during an APU operation.

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**Table 201/49-11-00-993-809 APU Operation Guidelines with No Load - Indications**

Outside Air Temperature °F (°C)	0 (-17)	59 (15)	103 (39)	0 (-17)	59 (15)	103 (39)
Altitude ft (m)	Sea Level	Sea Level	Sea Level	5000 (1524)	5000 (1524)	5000 (1524)
Speed (%)	99-101	99-101	99-101	99-101	99-101	99-101
EGT (°C)	329-454	374-499	418-543	329-454	374-499	418-543
IGV Position (°)	20-24	20-24	20-24	20-24	20-24	20-24
SCV Position (°)	5-20	5-20	5-20	5-20	5-20	5-20
Delta Pressure (DP) (psid)	2-13	2-13	2-13	2-12	2-12	2-12
Total Pressure (PT) (psia)	16-26	16-26	16-26	12-23	12-23	12-23
Inlet Pressure (P2) (psia)	13.9-15	13.9-15	13.9-15	11.5-12.5	11.5-12.5	11.5-12.5
Inlet Temperature (T2) (°C)	-23 to -12	9-20	34-45	-23 to -12	9-20	34-45
Fuel TMC (milli-amperes)	120-153	110-148	110-148	105-137	100-133	100-133
Fuel Flow (pounds per hour)	181-240	173-231	168-230	151-210	144-202	140-202
Generator Load (kilowatt)	---	---	---	---	---	---

**Table 202/49-11-00-993-810 APU Operation Guidelines with 100-ampere Electrical Load (maximum) - Indications**

Outside Air Temperature °F (°C)	0 (-17)	59 (15)	103 (39)	0 (-17)	59 (15)	103 (39)
Altitude ft (m)	Sea Level	Sea Level	Sea Level	5000 (1524)	5000 (1524)	5000 (1524)
Speed (%)	99-101	99-101	99-101	99-101	99-101	99-101
EGT (°C)	352-474	400-524	447-573	356-482	405-532	453-582
IGV Position (°)	20-24	20-24	20-24	20-24	20-24	20-24

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**Table 202/49-11-00-993-810 APU Operation Guidelines with 100-ampere Electrical Load (maximum) - Indications (Continued)**

Outside Air Temperature °F (°C)	0 (-17)	59 (15)	103 (39)	0 (-17)	59 (15)	103 (39)
Altitude ft (m)	Sea Level	Sea Level	Sea Level	5000 (1524)	5000 (1524)	5000 (1524)
SCV Position (°)	5-20	5-20	5-20	5-20	5-20	5-20
Delta Pressure (DP) (psid)	2-13	2-13	2-13	2-12	2-12	2-12
Total Pressure (PT) (psia)	16-26	16-26	16-26	12-23	12-23	12-23
Inlet Pressure (P2) (psia)	13.9-15	13.9-15	13.9-15	11.5-12.5	11.5-12.5	11.5-12.5
Inlet Temperature (T2) (°C)	-23 to -12	9-20	34-45	-23 to -12	9-20	34-45
Fuel TMC (milliamperes)	130-164	125-159	130-158	110-148	110-145	105-143
Fuel Flow (pounds per hour)	200-260	195-252	190-250	170-231	165-225	160-220
Generator Load (kilowatt)	28-35	28-35	28-35	28-35	28-35	28-35

**Table 203/49-11-00-993-811 APU Operation Guidelines with Two-Pack High ECS (No Electrical Load) - Indications**

Outside Air Temperature °F (°C)	0 (-17)	59 (15)	103 (39)	0 (-17)	59 (15)	103 (39)
Altitude ft (m)	Sea Level	Sea Level	Sea Level	5000 (1524)	5000 (1524)	5000 (1524)
Speed (%)	99-101	99-101	99-101	99-101	99-101	99-101
EGT (°C)	365-632	418-649	520-655	380-632	435-649	519-665
IGV Position (°)	35-48	39-52	84-97	45-58	51-64	83-97
SCV Position (°)	85-95	85-95	85-95	85-95	85-95	85-95
Delta Pressure (DP) (psid)	3-9	3-9	4-11	3-9	3-9	3-10
Total Pressure (PT) (psia)	34-45	35-45	47-57	32-42	33-43	38-48

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**Table 203/49-11-00-993-811 APU Operation Guidelines with Two-Pack High ECS (No Electrical Load) - Indications (Continued)**

Outside Air Temperature °F (°C)	0 (-17)	59 (15)	103 (39)	0 (-17)	59 (15)	103 (39)
Altitude ft (m)	Sea Level	Sea Level	Sea Level	5000 (1524)	5000 (1524)	5000 (1524)
Inlet Pressure (P2) (psia)	13.9-15	13.9-15	13.9-15	11.5-12.5	11.5-12.5	11.5-12.5
Inlet Temperature (T2) (°C)	-23 to -12	9-20	34-45	-23 to -12	9-20	34-45
Fuel TMC (milliamperes)	130-256	130-224	150-200	120-222	120-193	125-172
Fuel Flow (pounds per hour)	210-435	205-375	240-330	185-370	182-315	198-275
Generator Load (kilowatt)	---	---	---	---	---	---

**Table 204/49-11-00-993-807 APU Operation Limits - Switch/Component Positions and Command Signals**

APU PARAMETER	APU MASTER SWITCH ON - NO START	APU OPERATION - NO BLEED AIR	APU OPERATION - DUCT PRESSURE MODE	APU OPERATION - MAIN ENGINE START MODE
Start Switch	NO	YES	YES	YES
APU ON Switch	YES	YES	YES	YES
APU OFF Switch	NO	NO	NO	NO
MES Switch(es) (ENGINE START 1 and 2 Position)	OFF, 1, 2 or Both 1 and 2	OFF, 1, 2 or Both 1 and 2	OFF	1, 2 or Both 1 and 2
Air/Ground	GRD	GRD	GRD	GRD
Left Pack (Switch Position)	OFF, AUTO or HIGH	OFF, AUTO or HIGH	OFF	OFF, AUTO or HIGH
Right Pack (Switch Position)	OFF, AUTO or HIGH	OFF, AUTO or HIGH	OFF	OFF, AUTO or HIGH
Bleed Command Switch (APU Bleed Switch Position)	OFF or ON	OFF	ON	ON
Inlet Door Open	NO/YES	YES	YES	YES
Door Not Full Open	YES/NO	NO	NO	NO
Fire Cockpit	NO	NO	NO	NO
Fire Remote Handle	NO	NO	NO	NO
Fire Detection	NO	NO	NO	NO

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Table 204/49-11-00-993-807 APU Operation Limits - Switch/Component Positions and Command Signals (Continued)

APU PARAMETER	APU MASTER SWITCH ON - NO START	APU OPERATION - NO BLEED AIR	APU OPERATION - DUCT PRESSURE MODE	APU OPERATION - MAIN ENGINE START MODE
Airplane Model	600/700/800 [900 Airplane Model Shows as 800]			
Bleed Air Valve Position	Close	Close	Open	Open
Fuel Valve Closed Position	No	No	No	No
Fuel Valve Open Position	Yes	Yes	Yes	Yes
Ready to Load (Received Signal)	No	Yes	Yes	Yes
Start Command (Received Signal)	No	No	No	No
Load Shed Command (Received Signal)	No	No	No	No
Ignition Command (Received Signal)	No	No	No	No
Fuel Solenoid Command (Received Signal)	No	Yes	Yes	Yes
Bleed Solenoid Command (Received Signal)	No	No	Yes	Yes
OVER SPEED Indicator Light	Off	Off	Off	Off
FAULT Indicator Light	Off	Off	Off	Off
LOW OIL PRESSURE Indicator Light	On	Off	Off	Off
MAINT Indicator Light	Off	Off	Off	Off

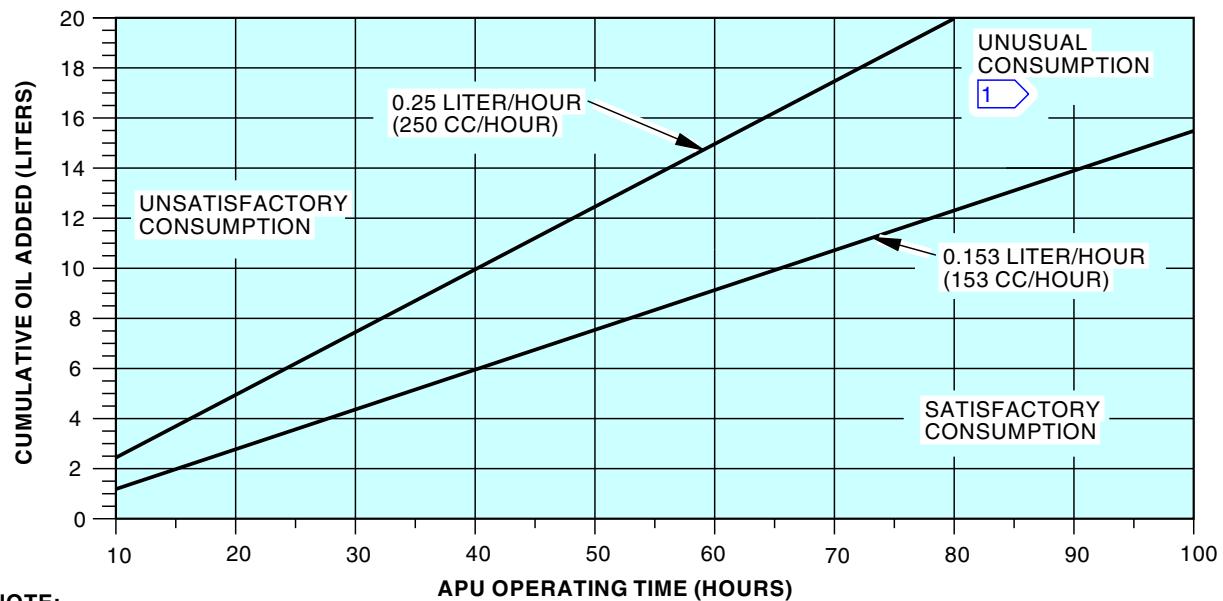
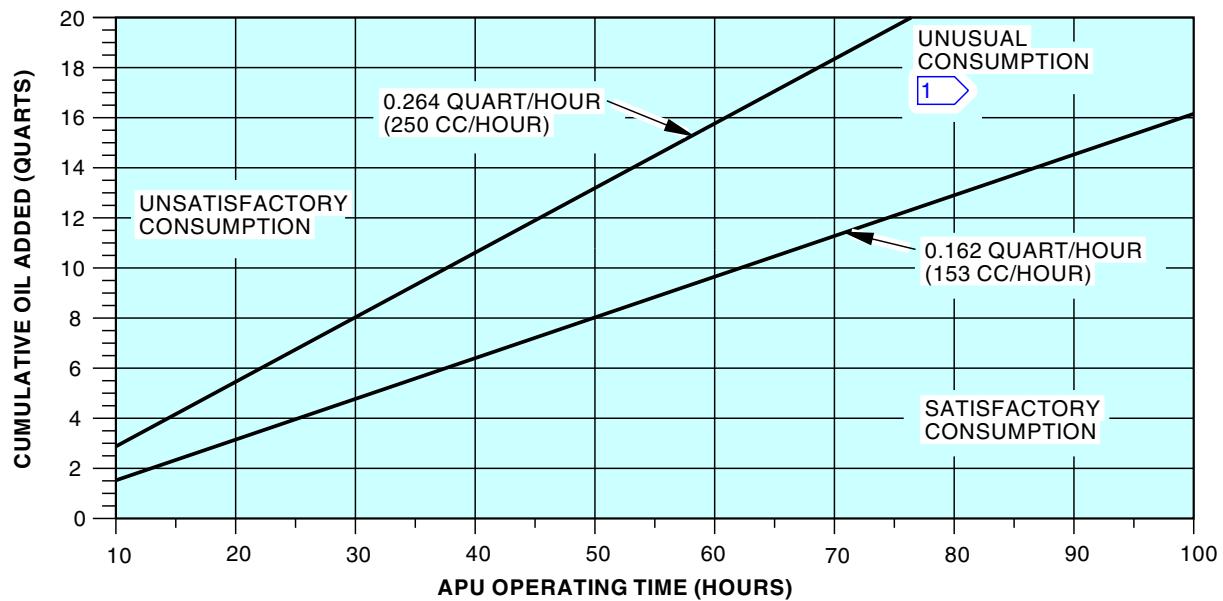
— END OF TASK —

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NOTE:

THESE GRAPHS ARE USED TO MONITOR THE APU OIL CONSUMPTION FOR INSTALLED APU'S. THE OIL CONSUMPTION FOR A NEW OR NEWLY OVERHAULED APU IS 0.008 QT/HOUR (8 CC/HOUR).

TOTAL OIL CAPACITY IN APU GEARBOX = 5.7 QUARTS (5.4 LITERS)  
OIL QUANTITY WITH MAINT INDICATION = 3.8 QUARTS (3.6 LITERS)

USE APU ONLY WHEN THE APU GEARBOX IS FILLED BEFORE EACH FLIGHT.

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Oil Consumption Limit  
Figure 201/49-11-00-990-804

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ECCN 9E991 BOEING PROPRIETARY - See title page for details



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**TASK 49-11-00-040-801**

**4. APU System - Deactivation**

(Figure 202)

**A. General**

- (1) This task will deactivate the following components of the Auxiliary Power Unit (APU) system:
- APU Harness
  - APU System
  - APU Mounts
  - APU Air Inlet
  - APU Drains
  - APU Firewall
  - APU Engine
  - APU Fuel System
  - APU Ignition and Start System
  - APU Bleed Air System
  - APU Controls
  - Exhaust Gas Temperature (EGT) Indicating System
  - APU Lubrication System
  - APU Exhaust System
  - APU Lubrication System
  - APU Oil Indicating System.

**B. Tools/Equipment**

Reference	Description
STD-858	Tag - DO NOT OPERATE

**C. Location Zones**

Zone	Area
117	Electrical and Electronics Compartment - Left
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**D. Access Panels**

Number	Name/Location
117A	Electronic Equipment Access Door

**E. APU System Deactivation**

SUBTASK 49-11-00-020-032

- (1) Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

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SUBTASK 49-11-00-420-027

- (2) Put the APU master switch, on the P5 forward overhead panel, to the OFF position.

NOTE: After the APU, master switch is set to the OFF position, the APU continues to operate for approximately 60 seconds during its cool-down cycle. The BAT switch must not be set to the OFF position until the APU completes cool-down cycle and APU engine stops its operations.

SUBTASK 49-11-00-420-028

- (3) Put the BAT switch, on the P5 forward overhead panel, to the OFF position.

SUBTASK 49-11-00-860-321

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

## F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

## F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

LOM 465-999; LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464 PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER
---	----	--------	------------------------------

### LOM ALL

This circuit breaker is inoperative and should remain open:

## F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464 POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1			
B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

### LOM ALL

SUBTASK 49-11-00-010-025

- (5) To get access to the P91 panel, open this access panel:

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

SUBTASK 49-11-00-020-029



### WARNING

WHEN YOU OPEN THE P91 AND P92 PANELS, MAKE SURE THAT THE OUTER DOOR STAYS AS OPEN AS POSSIBLE. IF THE OUTER DOOR TURNS IN, THE ATTACHED DOOR COMPONENTS COULD TOUCH THE INNER DOOR COMPONENTS. THIS CAN CAUSE AN ARC CONDITION WHEN YOU SUPPLY POWER. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT AND INJURY TO PERSONNEL CAN OCCUR.

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(WARNING PRECEDES)



**WARNING**

DO NOT TOUCH THE CONDUCTORS IN THE P91 AND P92 PANELS. BE CAREFUL WHEN YOU GET ACCESS TO THE CIRCUIT BREAKERS ON THE INNER SIDE OF THE P91 AND P92 PANELS (ROW F). IF IT IS POSSIBLE, REMOVE AIRPLANE ELECTRICAL POWER FIRST. THE P91 AND P92 PANELS HAVE HIGH VOLTAGES AND CURRENTS. ELECTRICAL VOLTAGE AND CURRENT CAN KILL YOU OR CAUSE INJURIES.

- (6) Open this circuit breaker and install safety tag:

**Power Distribution Panel Number 1, P91**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01336	APU START CONV

SUBTASK 49-11-00-410-024

- (7) Close this access panel:

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

**F. APU Harness - Tryout**

NOTE: This tryout is to make sure that the APU harness is in a zero energy state.

SUBTASK 49-11-00-420-032

- (1) Put the BAT switch, on the P5 forward overhead panel, to the ON position.

SUBTASK 49-11-00-420-033

- (2) Put the APU master switch, on the P5 forward overhead panel, to the ON position.

SUBTASK 49-11-00-210-031

- (3) Make sure that the air inlet door remains in the closed position.

NOTE: There is a space of 1.35 in. (3.43 cm) with the door in the closed position.

SUBTASK 49-11-00-210-032

- (4) Make sure that the APU fuel shutoff valve is fully closed.

NOTE: The manual override handle on the APU fuel shutoff valve gives an OPEN or CLOSED indication of the shutoff valve position.

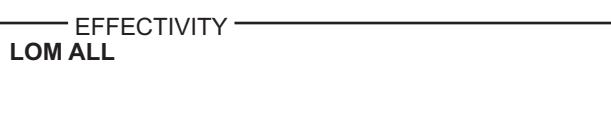
SUBTASK 49-11-00-020-033

- (5) Put the APU master switch to the OFF position and install a DO NOT OPERATE tag, STD-858.

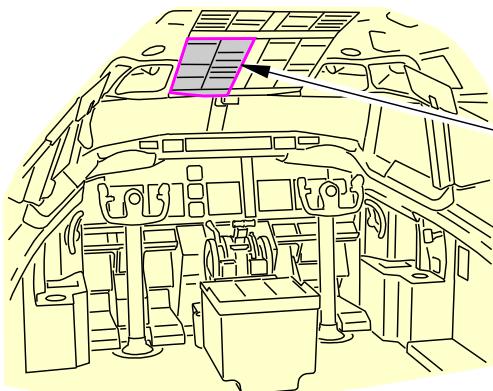
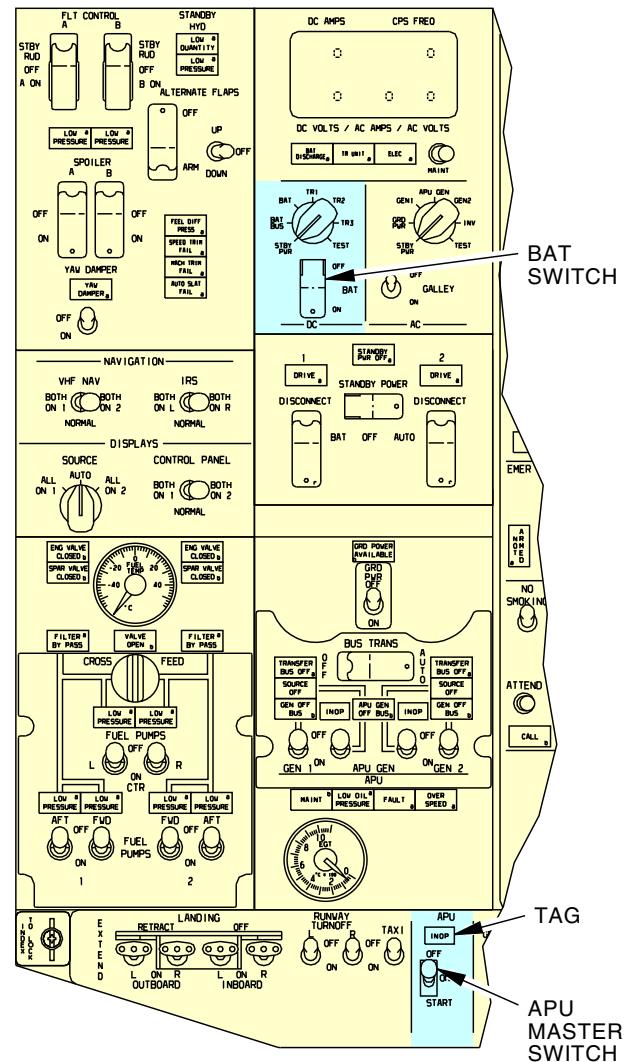
SUBTASK 49-11-00-020-034

- (6) Put the BAT switch to the OFF position and install a DO NOT OPERATE tag, STD-858.

———— END OF TASK ————



**49-11-00**


**FLIGHT COMPARTMENT**

**FORWARD OVERHEAD PANEL, P5**
**A**

2378305 S0000544731\_V1

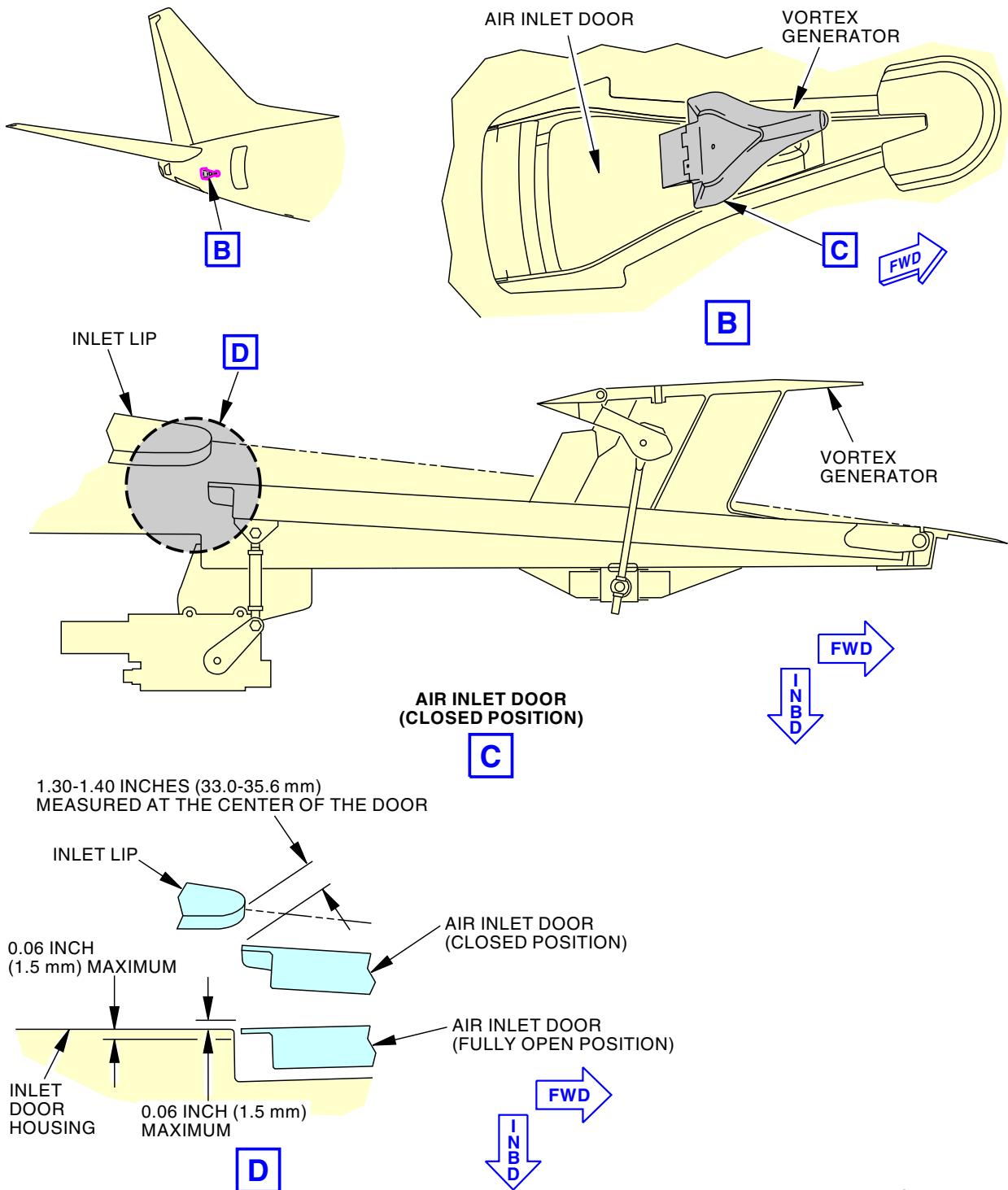
**APU System**  
**Figure 202/49-11-00-990-812 (Sheet 1 of 3)**

 EFFECTIVITY  
 LOM ALL

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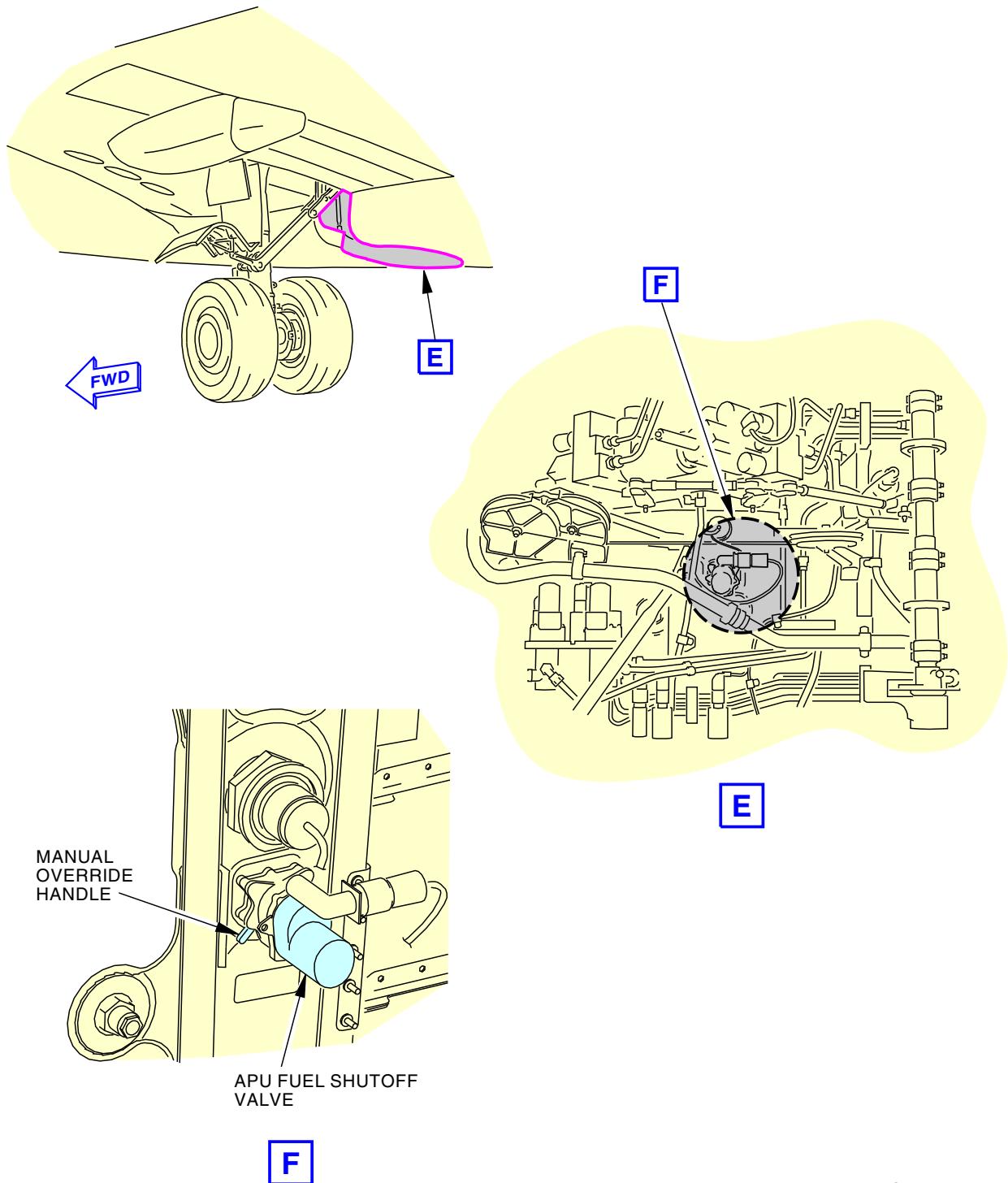


2383721 S0000546769\_V1

APU System  
Figure 202/49-11-00-990-812 (Sheet 2 of 3)

EFFECTIVITY  
LOM ALL

**49-11-00**



2383738 S0000546771\_V1

**APU System**  
Figure 202/49-11-00-990-812 (Sheet 3 of 3)

EFFECTIVITY  
LOM ALL

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**TASK 49-11-00-440-801**

**5. APU System - Activation**

(Figure 202)

**A. General**

- (1) This task will activate the following components of the Auxiliary Power Unit (APU) system:
- APU Harness
  - APU System
  - APU Mounts
  - APU Air Inlet
  - APU Drains
  - APU Firewall
  - APU Engine
  - APU Fuel System
  - APU Ignition and Start System
  - APU Bleed Air System
  - APU Controls
  - Exhaust Gas Temperature (EGT) Indicating System
  - APU Lubrication System
  - APU Exhaust System
  - APU Lubrication System
  - APU Oil Indicating System.

**B. Tools/Equipment**

<b>Reference</b>	<b>Description</b>
STD-858	Tag - DO NOT OPERATE

**C. Location Zones**

<b>Zone</b>	<b>Area</b>
117	Electrical and Electronics Compartment - Left
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**D. Access Panels**

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

**E. APU System Activation**

SUBTASK 49-11-00-860-322

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

**F/O Electrical System Panel, P6-2**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
B	19	C01344	APU FIRE SW POWER

EFFECTIVITY  
LOM ALL

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**F/O Electrical System Panel, P6-4**

Row    Col    Number    Name

A      14      C00033      AUX POWER UNIT CONT

LOM 465-999; LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464 PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B      14      C01424      AUX POWER UNIT SCU FAN POWER

**LOM ALL**

This circuit breaker is inoperative and should remain open:

**F/O Electrical System Panel, P6-4**

Row    Col    Number    Name

LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464 POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B      14      C01424      AUX POWER UNIT SCU FAN POWER (INOP)

**LOM ALL**

SUBTASK 49-11-00-010-024

- (2) To get access to the P91 panel, open this access panel:

**Number    Name/Location**

117A      Electronic Equipment Access Door

SUBTASK 49-11-00-420-029



**WARNING**

WHEN YOU OPEN THE P91 AND P92 PANELS, MAKE SURE THAT THE OUTER DOOR STAYS AS OPEN AS POSSIBLE. IF THE OUTER DOOR TURNS IN, THE ATTACHED DOOR COMPONENTS COULD TOUCH THE INNER DOOR COMPONENTS. THIS CAN CAUSE AN ARC CONDITION WHEN YOU SUPPLY POWER. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT AND INJURY TO PERSONNEL CAN OCCUR.



**WARNING**

DO NOT TOUCH THE CONDUCTORS IN THE P91 AND P92 PANELS. BE CAREFUL WHEN YOU GET ACCESS TO THE CIRCUIT BREAKERS ON THE INNER SIDE OF THE P91 AND P92 PANELS (ROW F). IF IT IS POSSIBLE, REMOVE AIRPLANE ELECTRICAL POWER FIRST. THE P91 AND P92 PANELS HAVE HIGH VOLTAGES AND CURRENTS. ELECTRICAL VOLTAGE AND CURRENT CAN KILL YOU OR CAUSE INJURIES.

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

**Power Distribution Panel Number 1, P91**

Row    Col    Number    Name

A      11      C01336      APU START CONV

SUBTASK 49-11-00-410-025

- (4) Close this access panel:

**Number    Name/Location**

117A      Electronic Equipment Access Door

SUBTASK 49-11-00-020-036

- (5) Remove the DO NOT OPERATE tag, STD-858, from the BAT switch, on the P5 forward overhead panel.

EFFECTIVITY  
**LOM ALL**

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SUBTASK 49-11-00-420-036

- (6) Put the BAT switch to the ON position.

SUBTASK 49-11-00-020-030

- (7) Remove the DO NOT OPERATE tag, STD-858, from the APU master switch, on the P5 forward overhead panel.

SUBTASK 49-11-00-420-030

- (8) Put the APU master switch to the ON position.

SUBTASK 49-11-00-860-312

- (9) Make sure that the air inlet door opens.

———— END OF TASK ————

**TASK 49-11-00-860-801**

**6. APU Starting and Operation**

(Figure 203)

**A. General**

- (1) It is recommended that you do an Auxiliary Power Unit (APU) starting and operation procedure a minimum of once every 7 days if the airplane has not operated and you did not do the APU preservation procedure during this time. You must operate the APU for a minimum of five minutes under a "no-load" condition and then do the APU shutdown procedure. In most conditions, the operation of the APU during this monthly interval will prevent internal/external corrosion and damage to the fuel and oil seals/components.
- (2) If the APU is in a severe environment of high moisture and salt air, it is recommended that you start the APU once every 3 days to prevent corrosion. Corrosion can lead to an APU no-start condition, due to seizure of the rotating group.

NOTE: It is recommended to run the APU every 3 days in cold weather below 32°F (0°C) or in humidity above 40%.

- (a) If the APU cannot be motored or operated normally, do this task: Manually Turn the APU Engine, TASK 49-21-00-980-801.
- (3) For extended APU service life, it is recommended that you operate the APU for two minutes before you apply a pneumatic load. You can apply an electrical load when the APU GEN OFF BUS light comes on.

NOTE: 22 VDC is the minimum voltage required for APU starting and operation.

**B. References**

Reference	Title
12-11-00-650-802	Pressure Refuel Procedure (P/B 301)
12-33-01-600-802	Cold Weather Maintenance Procedure (P/B 301)
24-41-00-440-801	AC External Power - Activation (P/B 201)
49-21-00-980-801	Manually Turn the APU Engine (P/B 201)

**C. Location Zones**

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

EFFECTIVITY
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**Zone      Area**

- |     |                            |
|-----|----------------------------|
| 211 | Flight Compartment - Left  |
| 212 | Flight Compartment - Right |

**D. Access Panels**

**Number      Name/Location**

- |      |                                  |
|------|----------------------------------|
| 117A | Electronic Equipment Access Door |
|------|----------------------------------|

**E. APU Starting and Operation**

SUBTASK 49-11-00-860-224



**WARNING**

IF A REFUELING OPERATION IS IN THE AREA, OBEY THE WARNINGS AND CAUTIONS IN THE PRESSURE REFUEL PROCEDURE BEFORE YOU DO THE APU STARTING AND OPERATION PROCEDURE. IF YOU DO NOT OBEY THE WARNINGS AND CAUTIONS, INJURY TO PERSONS CAN OCCUR.

- (1) If there is a refueling operation in the area, make sure that you obey the WARNINGS and CAUTIONs in the pressure refuel procedure (TASK 12-11-00-650-802).

SUBTASK 49-11-00-210-013



**CAUTION**

DO NOT TRY AN APU START IF THERE IS ICE AROUND THE HINGE ON FLAP OF THE VORTEX GENERATOR. IF THERE IS ICE, DAMAGE CAN OCCUR ON THE MOTOR FOR THE INLET DOOR ACTUATOR.

- (2) Make sure that there is no ice around the hinged flap of the vortex generator for the air inlet door.
  - (a) If you find ice, do this task: Cold Weather Maintenance Procedure, TASK 12-33-01-600-802.

SUBTASK 49-11-00-210-014



**CAUTION**

THE LOOSE OBJECTS CAN GO INTO THE AIR INLET PLENUM AND COMPRESSOR INLET PLENUM OF THE APU DURING APU OPERATION. THIS CAN CAUSE DAMAGE TO THE APU.

- (3) Make sure that there are no loose objects near the air inlet door.

SUBTASK 49-11-00-860-062

- (4) Make sure that the BAT switch [1], on the P5 forward overhead panel, is set to the ON position.

SUBTASK 49-11-00-210-015



**WARNING**

MAKE SURE THAT THERE IS SUFFICIENT FUEL IN THE NO. 1 FUEL-TANK TO COVER THE BOOST-PUMP-INLETS DURING THE SCHEDULED APU-OPERATION. DO NOT OPERATE BOOST PUMPS IN A DRY CONDITION WITH FLAMMABLE FUMES IN THE TANK. FUEL FUMES IN THE TANK CAN IGNITE AND CAUSE A FIRE OR EXPLOSION.

- (5) Look at the fuel quantity display on the Common Display System (CDS) for the No. 1 fuel tank.

NOTE: The CDS is located on the P2 center instrument panel.

NOTE: A minimum of 500 lb (227 kg) of fuel must be in the No. 1 fuel tank.

EFFECTIVITY  
LOM ALL

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SUBTASK 49-11-00-860-018

- (6) Make sure that these circuit breakers are closed:

**Battery Shield, J9**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C01340	BATTERY BUS

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	21	C00396	FIRE PROT DETECTION MA WRN & CONT
A	22	C00407	FIRE PROTECTION DETECTION ENG 2
A	23	C00403	FIRE PROTECTION DETECTION APU
A	24	C00405	FIRE PROTECTION DETECTION ENG 1
B	19	C01344	APU FIRE SW POWER
B	20	C00297	FIRE PROTECTION EXTINGUISHERS RIGHT
B	21	C00452	FIRE PROTECTION EXTINGUISHERS APU
B	22	C00296	FIRE PROTECTION EXTINGUISHERS LEFT
B	23	C01022	FIRE PROTECTION EXTINGUISHERS ALTN R
B	24	C01021	FIRE PROTECTION EXTINGUISHERS ALTN L

**F/O Electrical System Panel, P6-3**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	12	C00132	MASTER CAUTION ANNUNCIATOR BUS 1
B	13	C00131	MASTER CAUTION ANNUNCIATOR BAT
C	15	C01355	LANDING GEAR AIR/GND SYS 2
C	16	C01356	LANDING GEAR AIR/GND SYS 1
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
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	13	C01179	INDICATOR MASTER DIM SECT 7
F	14	C01180	INDICATOR MASTER DIM SECT 8

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT
<b>LOM 465-999; LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464 PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1</b>			
B	14	C01424	AUX POWER UNIT SCU FAN POWER
<b>LOM ALL</b>			
D	13	C01467	AC BUS XFR BUS 2 115V AC IND
D	14	C02043	AC BUS 28V AC XFR BUS 2 SECT 2

EFFECTIVITY  
**LOM ALL**

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**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	15	C02047	AC BUS STBY BUS 28V AC DISTR
D	16	C00072	AC BUS STBY BUS 115V AC IND
D	18	C02029	AC BUS AC STBY BUS PWR
E	15	C00134	DC BUS INDICATION HOT BAT
E	16	C01466	DC BUS INDICATION SW HOT BAT
E	18	C00136	DC BUS INDICATION STBY
F	8	C01286	GENERATOR DISC 1
F	9	C01287	GENERATOR DISC 2
F	10	C01283	GENERATOR CONT UNIT 1
F	11	C01284	GENERATOR CONT UNIT 2
F	12	C01285	GENERATOR APU GEN CONT UNIT
F	13	C01290	GENERATOR BUS PWR CONT UNIT
F	14	C00026	DC BUS INDICATION BAT
F	16	C00023	DC BUS INDICATION BUS 1
F	18	C01338	DC BUS INDICATION BUS 2

**Standby Power Control Unit, M01720**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00169	SW HOT BAT BUS

This circuit breaker is inoperative and should remain open:

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
<b>LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464 POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1</b>			
B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

**LOM 412, 415, 423, 424, 450-452**

SUBTASK 49-11-00-860-139

- (7) 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>
A	12	C00633	AUX POWER UNIT FUEL BOOST PUMP

**LOM ALL**

SUBTASK 49-11-00-010-027

- (8) To get access to the P91 and P92 panel, open this access panel:

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

EFFECTIVITY  
**LOM ALL**

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SUBTASK 49-11-00-860-323



**WARNING**

WHEN YOU OPEN THE P91 AND P92 PANELS, MAKE SURE THAT THE OUTER DOOR STAYS AS OPEN AS POSSIBLE. IF THE OUTER DOOR TURNS IN, THE ATTACHED DOOR COMPONENTS COULD TOUCH THE INNER DOOR COMPONENTS. THIS CAN CAUSE AN ARC CONDITION WHEN YOU SUPPLY POWER. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT AND INJURY TO PERSONNEL CAN OCCUR.



**WARNING**

DO NOT TOUCH THE CONDUCTORS IN THE P91 AND P92 PANELS. BE CAREFUL WHEN YOU GET ACCESS TO THE CIRCUIT BREAKERS ON THE INNER SIDE OF THE P91 AND P92 PANELS (ROW F). IF IT IS POSSIBLE, REMOVE AIRPLANE ELECTRICAL POWER FIRST. THE P91 AND P92 PANELS HAVE HIGH VOLTAGES AND CURRENTS. ELECTRICAL VOLTAGE AND CURRENT CAN KILL YOU OR CAUSE INJURIES.

- (9) Make sure that these circuit breakers are closed:

**Power Distribution Panel Number 2, P92**

Row   Col   Number   Name

<b>LOM 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-999</b>			
D	1	C00826	FUEL BOOST PUMP TANK 1 AFT
<b>LOM 402, 404, 406</b>			
D	2	C00826	FUEL BOOST PUMP TANK 1 AFT

**LOM ALL**

SUBTASK 49-11-00-860-021



**WARNING**

DO NOT START THE APU IN THE BUILDING WITHOUT GOOD AIRFLOW AND EAR PROTECTION. IF YOU DO NOT OBEY, INJURY TO PERSONNEL CAN OCCUR.

- (10) APU Start Power Source:

NOTE: Unless specifically required by another Aircraft Maintenance Manual (AMM) task, do a standard APU start.

- (a) For a standard operation (AC power) start of the APU, do these steps:

NOTE: A DC start of the APU will occur automatically if there is a problem with an AC start regardless of the position of the circuit breaker APU START CONV.



**WARNING**

WHEN YOU OPEN THE P91 AND P92 PANELS, MAKE SURE THAT THE OUTER DOOR STAYS AS OPEN AS POSSIBLE. IF THE OUTER DOOR TURNS IN, THE ATTACHED DOOR COMPONENTS COULD TOUCH THE INNER DOOR COMPONENTS. THIS CAN CAUSE AN ARC CONDITION WHEN YOU SUPPLY POWER. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT AND INJURY TO PERSONNEL CAN OCCUR.

EFFECTIVITY  
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(WARNING PRECEDES)



**WARNING**

DO NOT TOUCH THE CONDUCTORS IN THE P91 AND P92 PANELS. BE CAREFUL WHEN YOU GET ACCESS TO THE CIRCUIT BREAKERS ON THE INNER SIDE OF THE P91 AND P92 PANELS (ROW F). IF IT IS POSSIBLE, REMOVE AIRPLANE ELECTRICAL POWER FIRST. THE P91 AND P92 PANELS HAVE HIGH VOLTAGES AND CURRENTS. ELECTRICAL VOLTAGE AND CURRENT CAN KILL YOU OR CAUSE INJURIES.

- 1) Make sure that this circuit breaker is closed:

**Power Distribution Panel Number 1, P91**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01336	APU START CONV

- 2) Apply AC power to the 115V AC TRANS BUS 1, do this task: AC External Power - Activation, TASK 24-41-00-440-801.

- (b) For a DC power start of the APU:

NOTE: A DC start of the APU is accomplished when either there is no AC power source on the aircraft during start or by opening the C01336 circuit breaker.



**WARNING**

WHEN YOU OPEN THE P91 AND P92 PANELS, MAKE SURE THAT THE OUTER DOOR STAYS AS OPEN AS POSSIBLE. IF THE OUTER DOOR TURNS IN, THE ATTACHED DOOR COMPONENTS COULD TOUCH THE INNER DOOR COMPONENTS. THIS CAN CAUSE AN ARC CONDITION WHEN YOU SUPPLY POWER. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT AND INJURY TO PERSONNEL CAN OCCUR.



**WARNING**

DO NOT TOUCH THE CONDUCTORS IN THE P91 AND P92 PANELS. BE CAREFUL WHEN YOU GET ACCESS TO THE CIRCUIT BREAKERS ON THE INNER SIDE OF THE P91 AND P92 PANELS (ROW F). IF IT IS POSSIBLE, REMOVE AIRPLANE ELECTRICAL POWER FIRST. THE P91 AND P92 PANELS HAVE HIGH VOLTAGES AND CURRENTS. ELECTRICAL VOLTAGE AND CURRENT CAN KILL YOU OR CAUSE INJURIES.

- 1) Open this circuit breaker:

**Power Distribution Panel Number 1, P91**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01336	APU START CONV

SUBTASK 49-11-00-410-028

- (11) Close this access panel:

Number    Name/Location

117A        Electronic Equipment Access Door

SUBTASK 49-11-00-860-022

- (12) Make sure that these switches, on the P5 forward overhead panel, are set correctly:

- (a) Set the APU master switch [16] to the OFF position.
- (b) Set the APU BLEED switch [8] to the OFF position.

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- (c) Set the L PACK switch [4] and R PACK switch [5] to the OFF position.
- (d) Set the ISOLATION VALVE switch [6] to the CLOSE position.
- (e) Make sure that the STANDBY POWER switch [10] is in the AUTO position.
- (f) Make sure that the BUS TRANS switch [11] is in the AUTO position.
- (g) Momentarily set one of the two APU GEN switches [13] to the ON position and release.  
**NOTE:** It is necessary to set one of the two APU GEN switches to the ON position before an APU start. This step will make sure that the AC indications, on the P5-13 panel, for voltage and frequency are available before you set the APU generator on line.
- (h) Obey these fuel pump limitations during the pump operation:
  - 1) The fuel boost pumps in the No. 1 or No. 2 fuel tanks should only be operated if there is a person in the flight compartment to continuously monitor the fuel quantity and LOW PRESSURE indication of the No. 1 and No. 2 fuel pumps when the quantity of fuel is less than 250 lb (113 kg).
  - 2) The center tank fuel pump switches should only be turned to the ON position if there is a person in the flight compartment to continuously monitor the fuel quantity and LOW PRESSURE indication of the center tank fuel pump.
  - 3) Immediately set the applicable FUEL PUMP switch [17] to the OFF position if the LOW PRESSURE light comes on and stays on.



**WARNING**

DO NOT OPERATE A FUEL PUMP IF THE LOW PRESSURE LIGHT COMES ON AND STAYS ON. THIS CONDITION CAN CAUSE THE IGNITION OF THE FUEL FUMES IN THE FUEL TANK. A FIRE OR AN EXPLOSION CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (i) Set the No. 1 AFT FUEL PUMP switch [17] or No. 1 FWD FUEL PUMP switch [17] to the ON position.
  - 1) Look at the fuel quantity display on the CDS for the No. 1, No. 2 or center fuel tank.
  - 2) Make sure that there is sufficient fuel in the No. 1 or No. 2 or center fuel tank for continuous APU operation.
  - 3) If you operate the center fuel tank pump, you must have a person in the flight compartment to continuously monitor the fuel quantity and LOW PRESSURE indication of the center fuel tank pump.  
**NOTE:** A minimum of 500 lb (227 kg) of fuel is necessary to operate the APU for one hour. If continuous APU operation is more than one hour, calculate the quantity of fuel necessary to operate the APU as follows: multiply the number of hours by 500 lb (227 kg) of fuel.
- 4) If the quantity of fuel in the No. 1 or No. 2 fuel tank is more than 250 lb (113 kg), or center tank is more than 1000 lb (454 kg), do one of these two alternatives:
  - a) An observer is not required in the flight compartment if you do not operate the center fuel tank pump and you calculate the time that you must go back to the flight compartment when the quantity of fuel for the No.1 or No.2 fuel tank is less than these limits.
  - b) An observer is in the flight compartment to continuously monitor the fuel quantity and LOW PRESSURE lights.

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- 5) If the quantity of fuel in the No. 1 or No. 2 fuel tank is less than 250 lb (113 kg) or center tank is less than 1000 lb (454 kg), do these steps:
  - a) To operate any of the fuel pumps, you must have an observer in the flight compartment to continuously monitor the fuel quantity and LOW PRESSURE lights.
  - b) Immediately set the applicable FUEL PUMP switch [17] to the OFF position if the LOW PRESSURE light comes on and stays on.
- (j) Set the AC selector switch [3] to the APU GEN position.

SUBTASK 49-11-00-710-004

- (13) Do a check of the fire detection system for the APU:
  - (a) Move and hold the TEST switch [21], on the P8 aft electronic panel, to the OVHT/FIRE position.
    - 1) Make sure that these lights come on:
      - a) The APU fire switch [19] (red), on the P8 aft electronic panel.
      - b) The L MASTER CAUTION light [27] (amber) and R MASTER CAUTION light [24] (amber), on the P7 glareshield panel.
      - c) The L FIRE WARN light [22] (red) and R FIRE WARN light [23] (red), on the P7 glareshield panel.
      - d) The OVHT/DET annunciator light [25] (amber), on the P7 glareshield panel.
    - 2) Make sure that the fire alarm bell in the aural warning module, M315, comes on.  
NOTE: The aural warning module, M315, is in the flight compartment.
    - 3) Make sure that the APU remote fire light [29] (red), in the right main wheel well, flashes on and off continuously.
    - 4) Make sure that the APU remote warning horn [28], in the right main wheel well, comes on.
  - (b) Release the TEST switch [21].
    - 1) Make sure that these lights go off:
      - a) The APU fire switch [19] (red), on the P8 aft electronic panel.
      - b) The L MASTER CAUTION light [27] (amber) and R MASTER CAUTION light [24] (amber), on the P7 glareshield panel.
      - c) The L FIRE WARN light [22] (red) and R FIRE WARN light [23] (red), on the P7 glareshield panel.
      - d) The OVHT/DET annunciator light [25] (amber), on the P7 glareshield panel.
    - 2) Make sure that the fire alarm bell in the aural warning module, M315, stops (no sound).
    - 3) Make sure that the APU remote fire light [29] (red), in the right main wheel well, goes off.
    - 4) Make sure that the APU remote warning horn [28], in the right main wheel well, stops (no sound).
  - (c) Move and hold the TEST switch [21] to the FAULT/INOP position.
    - 1) Make sure that these lights come on:
      - a) The FAULT light [34] (amber), on the P8 aft electronic panel.
      - b) The APU DET INOP light [18] (amber), on the P8 aft electronic panel.

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- c) The L MASTER CAUTION light [27] (amber) and R MASTER CAUTION light [24] (amber), on the P7 glareshield panel.
- d) The OVHT/DET annunciator light [25] (amber), on the P7 glareshield panel.
- (d) Release the TEST switch [21].
  - 1) Make sure that these lights go off:
    - a) The FAULT light [34] (amber), on the P8 aft electronic panel.
    - b) The APU DET INOP light [18] (amber), on the P8 aft electronic panel.
    - c) The L MASTER CAUTION light [27] (amber) and R MASTER CAUTION light [24] (amber), on the P7 glareshield panel.
    - d) The OVHT/DET annunciator light [25] (amber), on the P7 glareshield panel.
- (e) Move and hold the EXT TEST switch [20], on the P8 aft electronic panel, to the 1 position.
  - 1) Make sure that the APU, L, and R lights come on.
- (f) Move and hold the EXT TEST switch [20] to the 2 position.
  - 1) Make sure that the APU, L, and R lights come on.
- (g) Release the EXT TEST switch [20].
  - 1) Make sure that the APU, L, and R lights go off.

SUBTASK 49-11-00-280-002



AN UNDETECTED FIRE COULD OCCUR IN THE APU COMPARTMENT WITH THE APU COWL DOOR OPEN. THE APU FIRE DETECTION SYSTEM CAN NOT SENSE A SMALL FIRE AND MOST OF THE FIRE EXTINGUISHING AGENT WILL GO OUT FROM THE OPEN APU COWL DOOR. DAMAGE TO THE APU AND THE AIRPLANE CAN OCCUR.

- (14) Make sure that there is an observer near the APU compartment to watch for a fire if the APU cowl door is open during the APU operation.

NOTE: The observer should be in voice contact with aircraft personnel to report if a fire condition occurs. Aircraft personnel can do the APU emergency shutdown task and other corrective actions (include the use of fire extinguishers).

SUBTASK 49-11-00-860-023

- (15) Set the APU master switch [16] to the START position and release it to the ON position.

NOTE: It is recommended that you obey the start duty cycle when you try to start the APU. The start duty cycle for the APU is three times in a 15 minute interval. If you do three successful or unsuccessful start cycles in a 15 minute interval, it is recommended that you wait 15 minutes after the third start cycle for the power electronics to cool. This 15 minute interval is necessary to cool the temperature of the power electronics in the start power unit and/or start converter unit. If the duty cycle is exceeded and temperature limit is reached, the APU will not start.

SUBTASK 49-11-00-860-024

- (16) Make sure that the LOW OIL PRESSURE light [15] comes on.

SUBTASK 49-11-00-860-026

- (17) Make sure that the air inlet door opens.

SUBTASK 49-11-00-860-027

- (18) Monitor these indications, on the P5 forward overhead panel:

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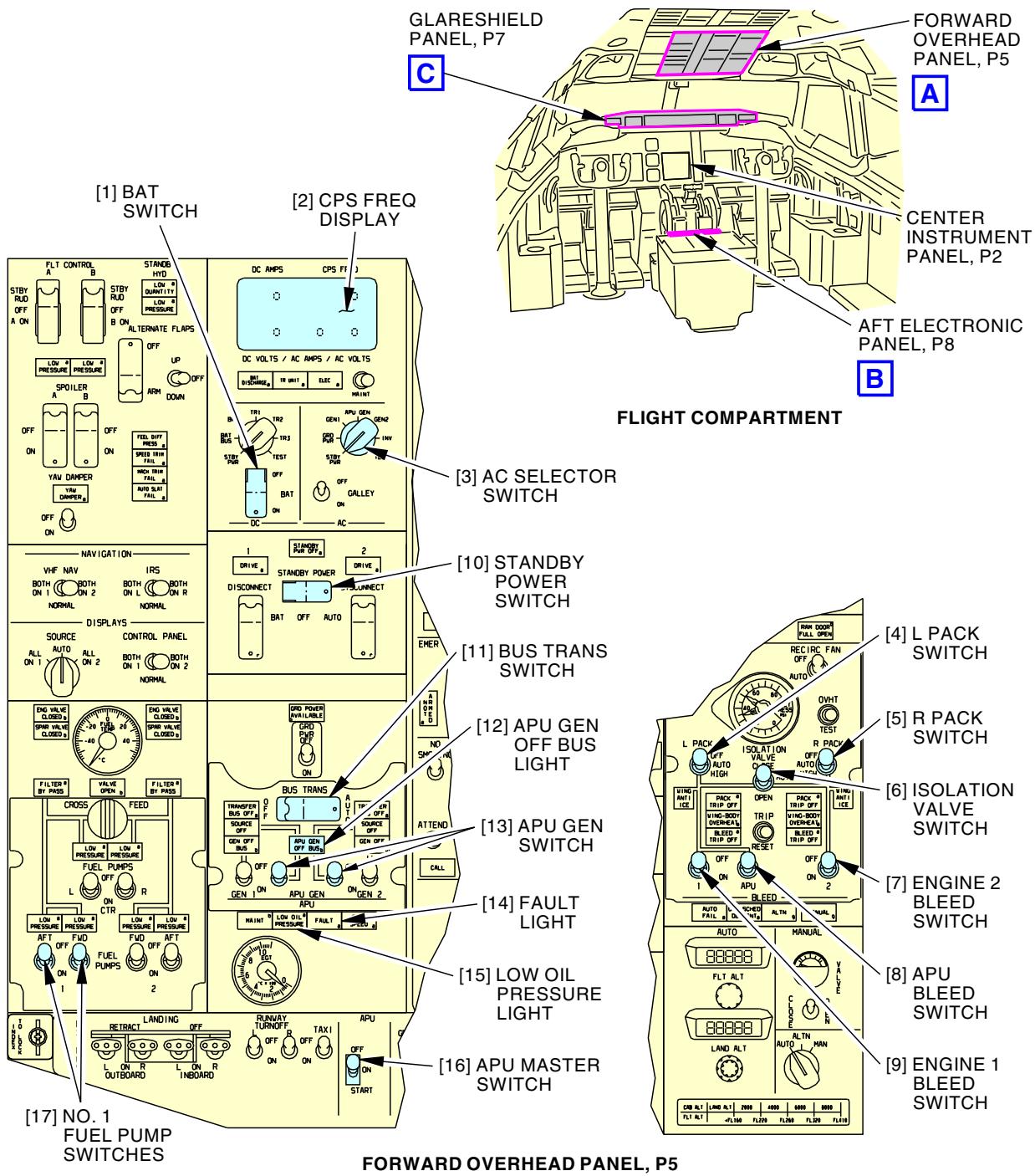
- (a) Make sure that the LOW OIL PRESSURE light [15] goes off before the APU engine speed is 95%.
- (b) Look at the CPS FREQ display [2].  
NOTE: Without load applied to the APU, CPS FREQ display must become stable at 395-405 CPS when the APU engine speed is 100%.  
NOTE: The time necessary for an APU start must be less than 90 seconds.
- (c) Make sure that the APU GEN OFF BUS light [12] comes on when the APU engine speed is 100%.  
NOTE: When the APU GEN OFF BUS light comes on or CPS FREQ display is stable at 395-405 CPS, the APU is prepared for pneumatic and/or electrical loads.

———— END OF TASK ——

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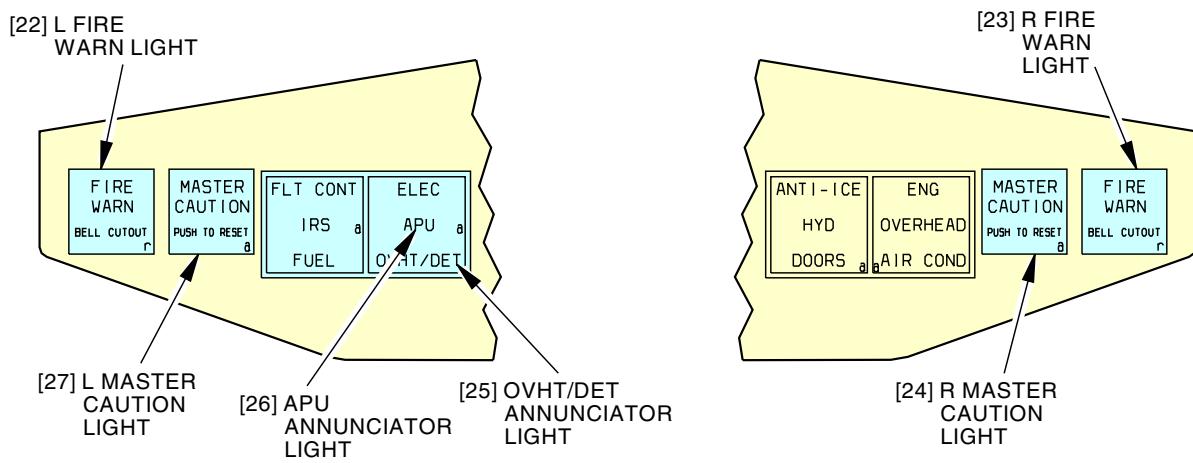
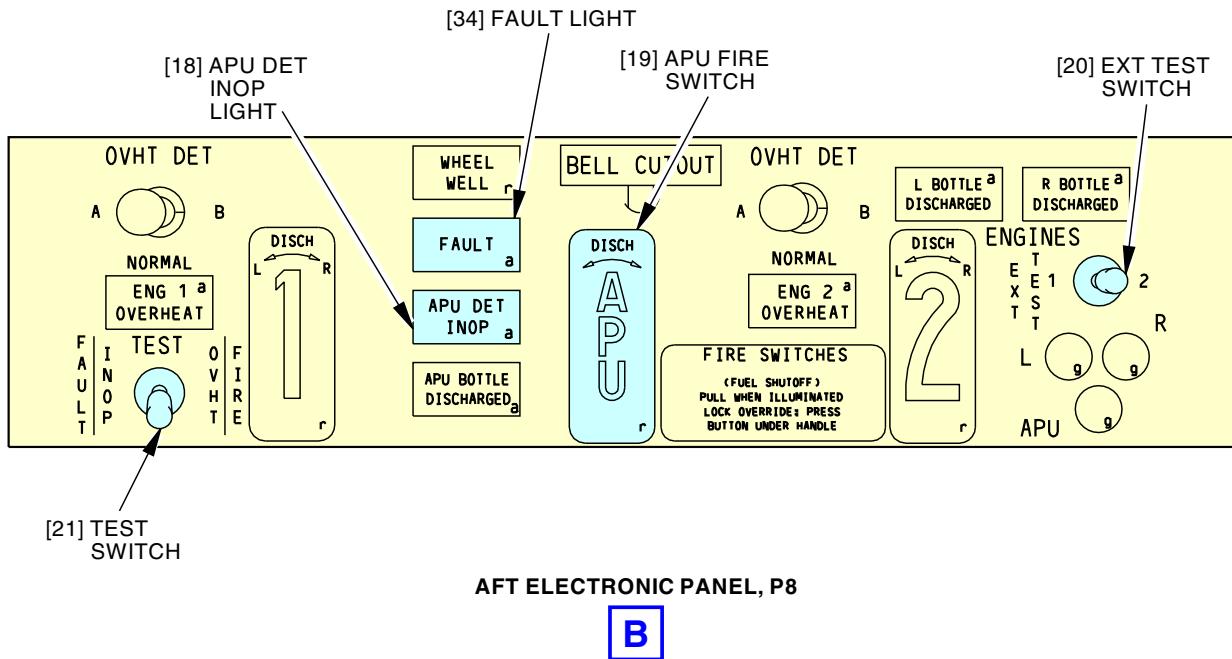


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**APU Start and Operation**  
**Figure 203/49-11-00-990-805 (Sheet 1 of 5)**

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LOM ALL

**49-11-00**

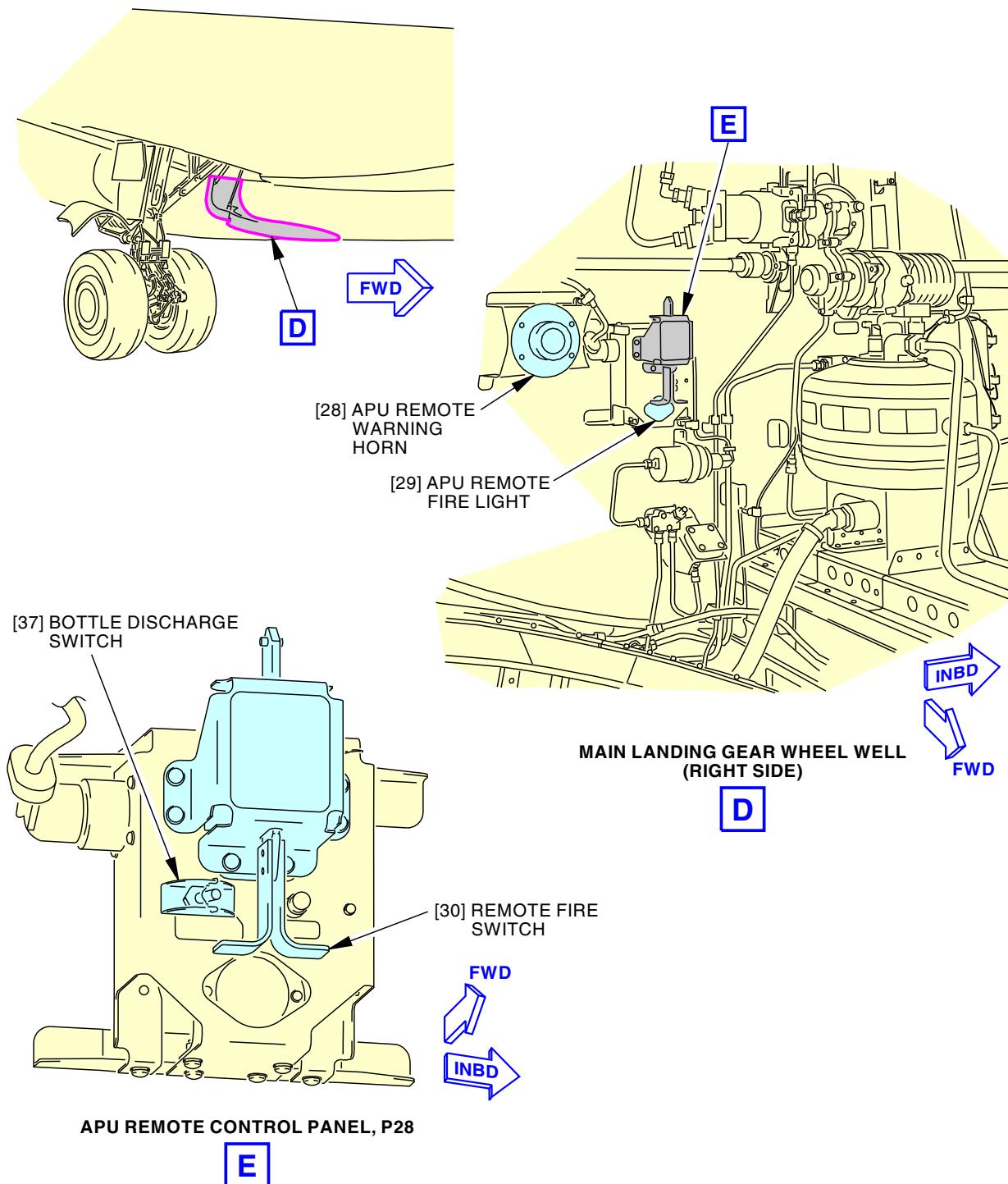
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**GLARESHIELD PANEL, P7**
**C**

G38214 S0006578941\_V2

**APU Start and Operation  
Figure 203/49-11-00-990-805 (Sheet 2 of 5)**

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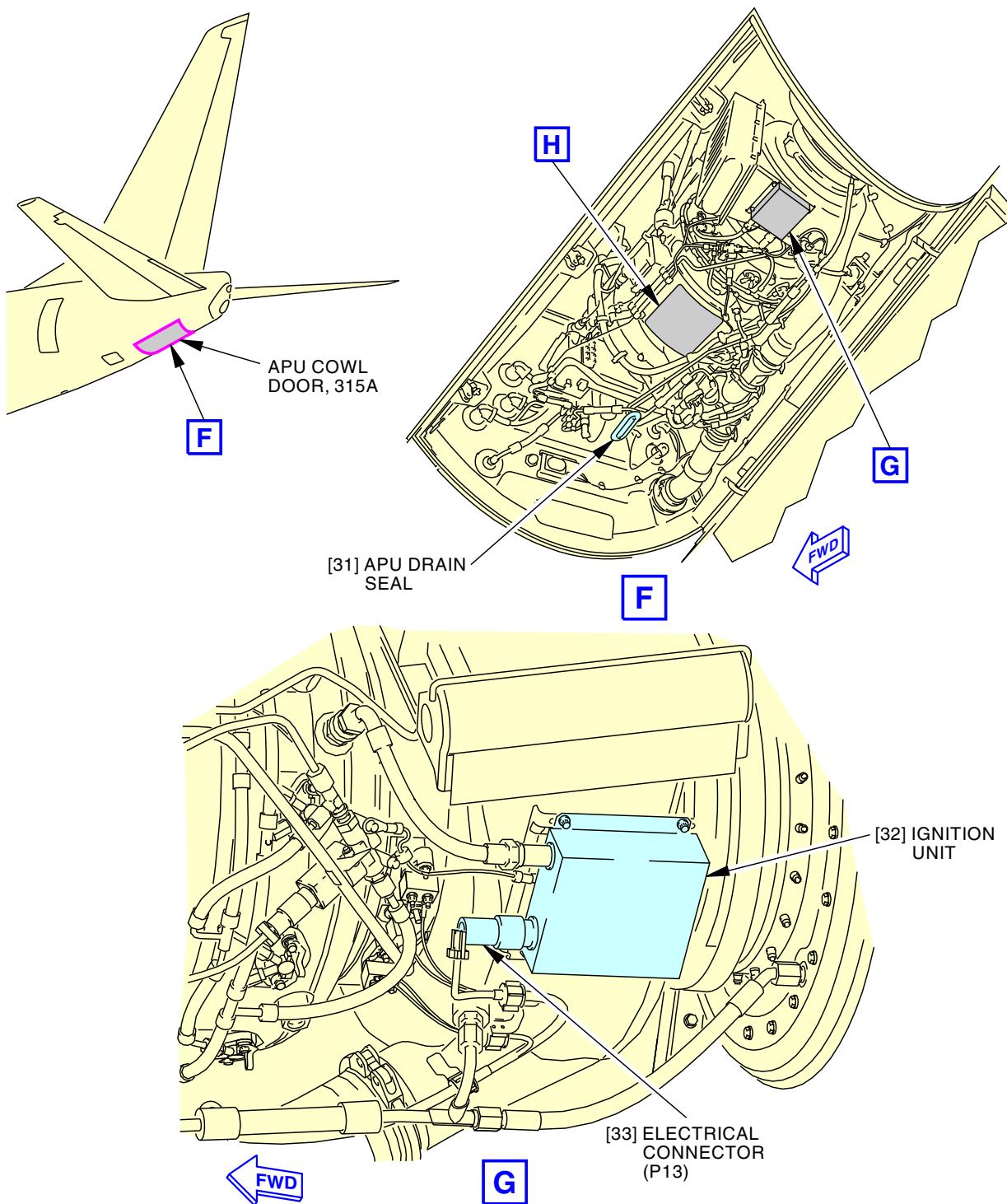


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**APU Start and Operation  
Figure 203/49-11-00-990-805 (Sheet 3 of 5)**

 EFFECTIVITY  
LOM ALL

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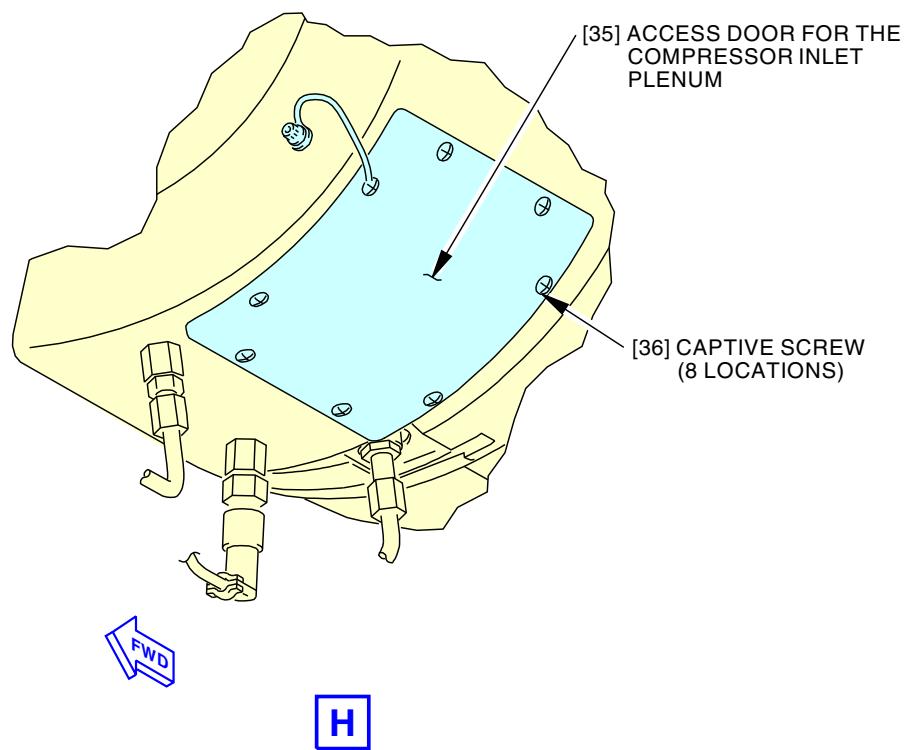
**APU Start and Operation**  
**Figure 203/49-11-00-990-805 (Sheet 4 of 5)**

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APU Start and Operation  
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**TASK 49-11-00-860-802**

**7. APU Usual Shutdown**

(Figure 203)

**A. Location Zones**

<b>Zone</b>	<b>Area</b>
117	Electrical and Electronics Compartment - Left
211	Flight Compartment - Left
212	Flight Compartment - Right

**B. Access Panels**

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

**C. APU Usual Shutdown**

SUBTASK 49-11-00-860-003

- (1) Remove all the pneumatic and/or electrical loads from the Auxiliary Power Unit (APU) starter-generator.

SUBTASK 49-11-00-860-029

- (2) Make sure that the BUS TRANS switch [11] is in the AUTO position.

SUBTASK 49-11-00-860-030

- (3) Set the APU master switch [16] to the OFF position.

NOTE: After the APU master switch is set to the OFF position, the APU continues to operate for approximately 60 seconds during its cool-down cycle. After the APU cool-down cycle stops, the APU air inlet door and APU fuel shutoff valve could take approximately 30 seconds to close. The BAT switch must not be set to the OFF position until APU completes cool-down cycle, APU engine stops its operations, and APU inlet door is closed.

SUBTASK 49-11-00-860-031

- (4) Set the No. 1 AFT FUEL PUMP switch [17] or No. 1 FWD FUEL PUMP switch [17] to the OFF position.

SUBTASK 49-11-00-860-075

- (5) If it is not necessary to do other tasks, set the BAT switch [1], on the P5 forward overhead panel, to the OFF position.

NOTE: After the APU master switch is set to the OFF position, the APU continues to operate for approximately 60 seconds during its cool-down cycle. The BAT switch must not be set to the OFF position until the APU completes cool-down cycle and APU engine stops its operations.

SUBTASK 49-11-00-860-320

- (6) If the APU was started using a DC power and circuit breaker is not required to be opened, do these steps:

- (a) To get access to the P91 panel, open this access panel:

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

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**WARNING**

WHEN YOU OPEN THE P91 AND P92 PANELS, MAKE SURE THAT THE OUTER DOOR STAYS AS OPEN AS POSSIBLE. IF THE OUTER DOOR TURNS IN, THE ATTACHED DOOR COMPONENTS COULD TOUCH THE INNER DOOR COMPONENTS. THIS CAN CAUSE AN ARC CONDITION WHEN YOU SUPPLY POWER. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT AND INJURY TO PERSONNEL CAN OCCUR.



**WARNING**

DO NOT TOUCH THE CONDUCTORS IN THE P91 AND P92 PANELS. BE CAREFUL WHEN YOU GET ACCESS TO THE CIRCUIT BREAKERS ON THE INNER SIDE OF THE P91 AND P92 PANELS (ROW F). IF IT IS POSSIBLE, REMOVE AIRPLANE ELECTRICAL POWER FIRST. THE P91 AND P92 PANELS HAVE HIGH VOLTAGES AND CURRENTS. ELECTRICAL VOLTAGE AND CURRENT CAN KILL YOU OR CAUSE INJURIES.

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

**Power Distribution Panel Number 1, P91**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01336	APU START CONV

- (c) Close this access panel:

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

———— END OF TASK ————

**TASK 49-11-00-860-803**

**8. APU Emergency Shutdown**

(Figure 203)

**A. References**

<u>Reference</u>	<u>Title</u>
49-11-00-200-802	Inspection After an APU Power Plant Fire (P/B 601)

**B. Location Zones**

<u>Zone</u>	<u>Area</u>
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

**C. APU Emergency Shutdown**

SUBTASK 49-11-00-860-067

- (1) Do these steps for the Auxiliary Power Unit (APU) emergency shutdown:



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**CAUTION**

WHEN YOU USE THE FIRE SWITCH TO STOP THE APU, YOU ARM THE FIRE EXTINGUISHING BOTTLE FOR THE APU. DO NOT TURN THE FIRE SWITCH BEFORE YOU MAKE SURE THAT THERE IS A FIRE IN THE APU COMPARTMENT. WHEN YOU TURN THE FIRE SWITCH, THE FIRE EXTINGUISHING BOTTLE RELEASES ITS CONTENTS INTO THE APU COMPARTMENT.

- (a) If you are in the airplane, push the manual override button and pull the APU fire switch [19], on the P8 aft electronic panel.  
NOTE: The APU fire switch, on the P8 aft electronic panel, is also referred to as the fire handle.
- (b) If you are not in the airplane, pull the remote fire switch [30], on the P28 APU remote control panel.  
NOTE: The APU fire switch, on the P28 APU remote control panel, is also referred to as the fire handle.
- (c) If there is a fire in the APU compartment, do one of the following steps:  
NOTE: The fire extinguishing bottle will release its contents.
  - 1) Turn on the APU fire switch [19].
  - 2) Use the bottle discharge switch [37].
- (d) Make sure that the APU immediately stops its operation.  
NOTE: The APU will do an emergency shutdown. When the APU does an emergency shutdown, it will not do the cool-down cycle.
- (e) Make sure that the APU FAULT light [14], on the P5 forward overhead panel, comes on.
- (f) Make sure that the L MASTER CAUTION light [27] and R MASTER CAUTION light [24], on the P7 glareshield panel, come on.
- (g) Make sure that the APU annunciator light [26], on the P7 glareshield panel, comes on.
- (h) Set the APU master switch [16] to the OFF position.
- (i) Set the No. 1 AFT FUEL PUMP switch [17] and No. 1 FWD FUEL PUMP switch [17] to the OFF position.
- (j) Set the applicable APU fire switch [19] or remote fire switch [30] back to its initial position.
- (k) Set the APU master switch [16] to the ON position.
- (l) After 30 seconds, make sure the APU FAULT light [14] goes off.
- (m) Make sure that the APU annunciator light [26] goes off.
- (n) Push and release the APU annunciator light [26].
- (o) Make sure that the L MASTER CAUTION light [27] and R MASTER CAUTION light [24] go off.  
NOTE: The L and R MASTER CAUTION lights stay on if the airplane finds other system faults.
- (p) Set the APU master switch [16] to the OFF position.

SUBTASK 49-11-00-200-001

- (2) Do the inspection after an APU power plant fire. Do this task: Inspection After an APU Power Plant Fire, TASK 49-11-00-200-802.

— END OF TASK —

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**TASK 49-11-00-860-805**

**9. APU Protective Shutdown**

(Figure 203)

**A. General**

- (1) The APU FAULT light, on the P5 forward overhead panel, comes on when an Auxiliary Power Unit (APU) protective shutdown has occurred.

NOTE: Refer to SDS 49-00-00 (Auxiliary Airborne - Protective Shutdown) for additional fault light that may turn on.

**B. Location Zones**

Zone	Area
211	Flight Compartment - Left

**C. APU Protective Shutdown**

SUBTASK 49-11-00-860-032

- (1) Set the APU master switch [16] to the OFF position.

SUBTASK 49-11-00-860-033

- (2) Set the No. 1 AFT FUEL PUMP switch [17] or No. 1 FWD FUEL PUMP switch [17] to the OFF position.

SUBTASK 49-11-00-810-001

- (3) Refer to the FIM to correct the cause of the APU shutdown.

NOTE: The STARTOK is entered into the scratchpad for certain faults before start the APU.  
Refer to the FIM for details.

———— END OF TASK ————

**TASK 49-11-00-860-804**

**10. Motor the APU**

(Figure 203)

**A. References**

Reference	Title
24-22-00-860-813	Supply External Power (P/B 201)
24-22-00-860-814	Remove External Power (P/B 201)

**B. Tools/Equipment**

Reference	Description
STD-4049	Container - Fuel Resistant, 1 Gallon (4 Liter)

**C. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left

**D. Access Panels**

Number	Name/Location
315A	APU Cowl Door



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**E. Procedure**

SUBTASK 49-11-00-860-005

- (1) Make sure the APU master switch [16] on the P5 forward overhead panel is OFF and install a DO-NOT-OPERATE tag.

SUBTASK 49-11-00-860-035

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-11-00-010-017

- (3) To open the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.
- (b) Open the three latches.  
*NOTE:* Use this sequence: forward latch, aft latch, middle latch.
- (c) Open the APU Cowl Door, 315A.
- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

SUBTASK 49-11-00-940-001

- (4) Put the 1 gallon (4 l) fuel resistant container, STD-4049 under the APU drain seal [31].

SUBTASK 49-11-00-020-022



**WARNING**

DO NOT TOUCH THE IGNITION COMPONENTS UNTIL YOU DO THESE STEPS. THESE STEPS WILL RELEASE HIGH VOLTAGE FROM THE IGNITION UNIT. IF YOU DO NOT OBEY THIS PROCEDURE, INJURY TO PERSONS CAN OCCUR.

- (5) Do these steps to release the high voltage from the ignition unit [32]:

- (a) Make sure five minutes have gone by since the last APU start.
- (b) Disconnect the electrical connector (P13) [33] from the ignition unit [32].
- (c) Make sure you install all necessary protection covers.

SUBTASK 49-11-00-910-001

- (6) Do this task: Supply External Power, TASK 24-22-00-860-813.

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SUBTASK 49-11-00-860-036

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

**LOM 412, 415, 423, 424, 450-452**

SUBTASK 49-11-00-860-176

- (8) 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>
A	12	C00633	AUX POWER UNIT FUEL BOOST PUMP

**LOM ALL**

SUBTASK 49-11-00-860-037

- (9) Remove the DO-NOT-OPERATE tag from the APU master switch [16].

SUBTASK 49-11-00-860-038

- (10) Make sure the BAT switch [1] is ON.

SUBTASK 49-11-00-860-039

- (11) Set the No. 1 AFT FUEL PUMP switch [17] or No. 1 FWD FUEL PUMP switch [17] to the ON position.

NOTE: If you must use the fuel boost pumps in the center tank, you must have a maintenance person or observer in the flight compartment to continuously monitor the LOW PRESSURE lights. Turn the applicable fuel boost pump to the OFF position if the LOW PRESSURE light for the center tank stays on.

SUBTASK 49-11-00-860-060

- (12) Set the APU master switch [16] to the START position and release it to the ON position.

SUBTASK 49-11-00-860-061

- (13) Make sure a fuel fog comes out of the exhaust duct muffler during the APU motor operation.

SUBTASK 49-11-00-860-041

- (14) Motor the APU engine until the APU has a protective shutdown.

SUBTASK 49-11-00-860-042

- (15) Make sure the APU FAULT light [14] comes on.

SUBTASK 49-11-00-860-043

- (16) Set the APU master switch [16] to the OFF position and install a DO-NOT-OPERATE tag.

SUBTASK 49-11-00-860-044

- (17) Set the No. 1 AFT FUEL PUMP switch [17] or No. 1 FWD FUEL PUMP switch [17] to the OFF position.



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SUBTASK 49-11-00-860-045

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-11-00-940-002

- (19) Remove the 1 gallon (4 l) fuel resistant container, STD-4049.

SUBTASK 49-11-00-420-022

- (20) Remove the protection covers and connect the electrical connector (P13) [33] to the ignition unit [32].

SUBTASK 49-11-00-910-002

- (21) Do this task: Remove External Power, TASK 24-22-00-860-814.

SUBTASK 49-11-00-860-046

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-11-00-860-047

- (23) Remove the DO-NOT-OPERATE tag from the APU master switch.

SUBTASK 49-11-00-410-012

- (24) To close the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.



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- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

**TASK 49-11-00-600-802**

**11. APU Preservation - Mild Environment**

**A. General**

- (1) In a mild environment, do this preservation task within two months of the last APU operation when the APU will not be used. If the APU is sent to engine shop, continue the preservation until it goes to the shop.
- (2) This task contains the steps that are necessary for the APU preservation in a mild environment.
  - (a) A mild environment is where the ambient temperature is between 30°F (-1°C) to 125°F (52°C), the humidity is below 40%, and there is no salt air present.
  - (b) If the environment does not meet the mild definition, use this task: APU Preservation - Severe Environment, TASK 49-11-00-600-803.
- (3) The factors that control the APU preservation and storage are:
  - (a) Where the aircraft or vehicle will be parked or stored.
  - (b) How long the aircraft or vehicle will be parked or stored.
  - (c) If the APU can be periodically motored.
  - (d) If the APU can be periodically operated.
  - (e) If the aircraft or vehicle fuel system have been preserved.
- (4) Desiccant in the APU inlet and exhaust can help reduce corrosion, fungus and humidity in the sealed APU area. Desiccant can be put in the APU air inlet and/or exhaust. If space is limited, the desiccant can be distributed between the air inlet and the exhaust. DO NOT put the desiccant in the bleed air ducts.
- (5) The best general practices are to:
  - (a) Operate the APU a minimum of five minutes before the preservation procedure to dry out the APU and APU compartment.

NOTE: It is recommended to use the APU supply bleed to operate both packs during the APU operation. Pack operation will raise the temperature of the load compressor and provide better dry out conditions.

NOTE: In high humidity environments, it is recommended to operate the APU for 20 to 30 minutes (APU Preservation - Severe Environment, TASK 49-11-00-600-803).
  - (b) Operate the APU periodically, the interval will depend on the storage environment.
  - (c) If the APU is not operable during storage, motor the APU periodically. The interval will depend on the storage environment.
  - (d) If the APU cannot be motored or started, put desiccant in the gas path and seal the fuselage openings. Periodically check the desiccant and the seal on the fuselage openings.
- (6) The storage guidelines below are shown in terms of maximum desired storage periods without APU operation. Periodic no-load operation of the APU approximately every 2 months can avoid preservation requirements indefinitely. Periodic motoring of the APU every month can avoid preservation requirements for up to two years.

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- (7) The preservation of the APU fuel control unit with preservation oil is not necessary, if the APU stays in the airplane and the APU fuel control unit is not removed or replaced. The low pressure fuel filter replacement is permitted. If the fuel control unit is replaced, the fuel system can be preserved by motoring or operating the APU at no load for one minute.

**B. References**

<b>Reference</b>	<b>Title</b>
12-13-31-610-801	Drain the APU Oil (P/B 301)
49-11-00-000-802	APU Power Plant Removal (Fishpole Hoist Procedure) (P/B 401)
49-11-00-400-802	APU Power Plant Installation (Fishpole Hoist Procedure) (P/B 401)
49-31-15-000-801	Fuel Flow Divider Removal (P/B 401)
49-31-15-400-801	Fuel Flow Divider Installation (P/B 401)
49-41-31-000-801	Ignition Unit - Removal (P/B 401)
49-41-31-400-801	Ignition Unit - 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.

<b>Reference</b>	<b>Description</b>
COM-1537	Dispenser - Servicing, Engine Oil Part #: 7011 Supplier: K6057 Part #: 7036 Supplier: K6057 Part #: BOB02 Supplier: D2029 Part #: BOB05 Supplier: D2029 Part #: BOB20 Supplier: D2029 Part #: MODEL 150 Supplier: 94861 Part #: Model 250 Supplier: 94861 Part #: PF53481-3P Supplier: 94861 Part #: PF53481-5PWS Supplier: 94861 Part #: PF53481-8PWS Supplier: 94861 Part #: PF55451-2WS Supplier: 94861 Part #: PF55451-7WS Supplier: 94861 Opt Part #: 150-3 Supplier: 94861 Opt Part #: PF53361-2PWS Supplier: 94861 Opt Part #: PF53361-8PWS Supplier: 94861 Opt Part #: UZ/7/1826 Supplier: K6057 Opt Part #: WF150-1 Supplier: 94861 Opt Part #: WF174410 Supplier: 94861
SPL-1518	Plug - Auxiliary Power Unit (APU) Part #: AVTB73NAPU Supplier: 018PR Part #: B737-270 Supplier: 1LE67 Part #: BBJ-APU-K Supplier: 4VVY1 Part #: RSABG0003 Supplier: 2R201
STD-201	Container - Fuel Resistant, 5 U.S.-Gal (19 l)
STD-4049	Container - Fuel Resistant, 1 Gallon (4 Liter)



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**D. Consumable Materials**

<b>Reference</b>	<b>Description</b>	<b>Specification</b>
D00124	Oil - Jet Engine, Lubricating	MIL-PRF-6081 Grade 1010 (NATO O-133)
G00252	Film - Polyethylene Film And Sheeting	ASTM D2103 (Supersedes L-P-512)
G00253	Material - Barrier Materials, Greaseproofed, Waterproof, Flexible, Heat-Sealable	MIL-PRF-121 (Supersedes MIL-B-121)
G00626	Desiccant - Activated, Bagged, Packaging Use And Static Dehumidification	MIL-D-3464
G00920	Tape - Waterproof, Packaging	ASTM D5486
G50463	Pad - Fluid Absorbent (Anti-static)	
G51576	Tape - Pressure Sensitive Adhesive - BA6866	BAC5034-4
G51624	Card - Humidity Indicator, 10-100% Moisture Detection Reversible	

**E. Location Zones**

<b>Zone</b>	<b>Area</b>
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**F. Access Panels**

<b>Number</b>	<b>Name/Location</b>
315A	APU Cowl Door

**G. Prepare for the Preservation**

SUBTASK 49-11-00-860-310

- (1) Operate the APU for a minimum of five minutes to dry out the APU and APU compartment (TASK 49-11-00-860-801).

NOTE: It is recommended to use the APU supply bleed to operate both packs during the APU operation. Pack operation will raise the temperature of the load compressor and provide better dry out conditions.

NOTE: In high humidity environments, it is recommended to operate the APU for 20 to 30 minutes (APU Preservation - Severe Environment, TASK 49-11-00-600-803).

- (a) Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

SUBTASK 49-11-00-860-324

- (2) If preservation of the APU fuel system is required, do these steps:

- (a) Preparation for APU Fuel Control Unit (FCU) preservation.
    - 1) Prepare the APU for maintenance (TASK 49-11-00-000-802).
    - 2) Put the 5 U.S.-gal (19 l) fuel resistant container, STD-201, to the maintenance area.
    - 3) Disconnect the fuel supply tube from the FCU (TASK 49-11-00-000-802).
      - a) Let the fuel drain into the container.
    - 4) Disconnect the fuel supply tube from the fuel flow divider (TASK 49-31-15-000-801).
      - a) Let the fuel drain into the container.
    - 5) Disconnect the ignition lead from the ignition unit (TASK 49-41-31-000-801).

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**CAUTION**

DO NOT LET UNWANTED MATERIAL INTO THE APU FUEL SYSTEM.  
THE EQUIPMENT MUST HAVE THE CORRECT FILTERS NO  
ROUGHER THAN 10-MICRONS. IF YOU DO NOT OBEY, DAMAGE  
TO THE EQUIPMENT CAN OCCUR.

- 6) Connect the engine oil servicing dispenser, COM-1537, to fuel inlet port of the FCU.
  - a) Use oil, D00124.
  - b) Apply oil at a light pressure 10 psig (68.9 kPa) - 25 psig (172.4 kPa) and a minimum temperature of 60°F (16°C).
- (b) Preservation for APU FCU.
  - 1) Do this task: Motor the APU, TASK 49-11-00-860-804.
    - a) Supply the preservation oil to the APU.
    - b) Let the fuel and preservation oil drain into the container.
    - c) Motor the APU engine until the APU has a protective shutdown.
  - 2) Disconnect the engine oil servicing dispenser, COM-1537, from the FCU.
  - 3) Connect the ignition lead to the ignition unit (TASK 49-41-31-400-801).
  - 4) Connect the fuel supply tube to the FCU and fuel flow divider (TASK 49-11-00-400-802, TASK 49-31-15-400-801).
  - 5) Do this task: Drain the APU Oil, TASK 12-13-31-610-801.
  - 6) Attach a warning tag to the APU to show that you did the APU FCU preservation.

**H. Preservation Guidelines - less than two months:**

SUBTASK 49-11-00-620-006

- (1) No preservation steps are necessary.

**I. Preservation Guidelines - more than two months, less than three months:**

SUBTASK 49-11-00-680-001

- (1) Do this task: Drain the APU Oil, TASK 12-13-31-610-801.

**J. Preservation Guidelines - more than three months, less than one year:**

SUBTASK 49-11-00-680-002

- (1) Do this task: Drain the APU Oil, TASK 12-13-31-610-801.

SUBTASK 49-11-00-620-007

- (2) Add a minimum of 2.00 lb (0.91 kg) of desiccant, G00626, to the gas path.
  - (a) Add a minimum of 1.00 lb (0.45 kg) each of desiccant, G00626, at the inlet and the exhaust.
  - (b) DO NOT put the desiccant, G00626, in the bleed air ducts or directly on metal surfaces.
  - (c) Put the desiccant, G00626, on fluid absorbent pads, G50463.
  - (d) Add a humidity indicator card, G51624, in a location that you can easily monitor.
    - 1) Do a check of the humidity indicator card, G51624, initially after 7 days and then every 30 days.
      - a) Make sure that the humidity shown on the humidity indicator is less than 40%.
      - b) If the humidity shown on the humidity indicator is greater than 40%, do the following steps:

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- <1> Make sure that there is no corrosion on the external surfaces of the APU.
- <a> If there is corrosion on the external surfaces of the APU, contact Boeing for further evaluation.
- <2> Replace any desiccant that is saturated or hardened.
- <3> Add additional desiccant as necessary.

SUBTASK 49-11-00-620-035

- (3) Replace the DO-NOT-OPERATE tag on the APU control switch on the P5 panel with an APU PRESERVATION tag.
  - (a) Add a note on the APU PRESERVATION tag that says where the desiccant was added.

SUBTASK 49-11-00-620-036

- (4) Cover the APU oil cooler as follows:



**DO NOT APPLY THE G00920 TAPE TO THE PAINTED SURFACES. THE TAPE IS HARD TO REMOVE. IT CAN CAUSE DAMAGE TO THESE SURFACES.**

- (a) Install barrier material, G00253, polyethylene film, G00252, or equivalent 6 MIL or greater thickness material, and tape, G51576, or tape, G00920.

SUBTASK 49-11-00-410-017

- (5) To close the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the Auxiliary Power Unit (APU) compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

**NOTE:** Use this sequence: middle latch, aft latch, forward latch.

SUBTASK 49-11-00-620-031

- (6) Seal the APU openings at the fuselage as follows:
  - (a) Make sure that the APU is at ambient temperature.
  - (b) Install the APU exhaust plug, SPL-1518.

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**CAUTION**

DO NOT APPLY THE G00920 TAPE TO THE PAINTED SURFACES.  
THE TAPE IS HARD TO REMOVE. IT CAN CAUSE DAMAGE TO  
THESE SURFACES.

- 1) If the APU exhaust cover is not available, use barrier material, G00253, polyethylene film, G00252, or equivalent 6 MIL or greater thickness material, and tape, G51576, or tape, G00920.
- (c) Install barrier material, G00253, polyethylene film, G00252, or equivalent 6 MIL or greater thickness material, and tape, G51576, or tape, G00920, on the following areas:
  - 1) APU inlet door
  - 2) Aft fairing - eductor air inlet
  - 3) Drain mast on the APU cowl door
  - 4) Cowl door latches
  - 5) Split lines.

**K. Preservation Guidelines - more than one year, less than two years:**

SUBTASK 49-11-00-680-004

- (1) Do this task: Drain the APU Oil, TASK 12-13-31-610-801.

SUBTASK 49-11-00-020-028

- (2) Do these steps to disconnect and cap the fuel supply tube to the Fuel Control Unit (Figure 204):



**WARNING**

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

- (a) Put the 1 gallon (4 l) fuel resistant container, STD-4049, under the fuel supply tube.
- (b) Disconnect the fuel supply tube from the fitting on the 1088 bulkhead.
- (c) Drain the fuel from the fuel supply tube into the 1 gallon (4 l) fuel resistant container, STD-4049.
- (d) Install the plugs on the fuel supply tube and the fitting on the 1088 bulkhead.

SUBTASK 49-11-00-620-009

- (3) Add a minimum of 2.00 lb (0.91 kg) of desiccant, G00626, to the gas path.
  - (a) Add a minimum of 1.00 lb (0.45 kg) each of desiccant, G00626, at the inlet and the exhaust.
  - (b) DO NOT put the desiccant, G00626, in the bleed air ducts or directly on metal surfaces.
  - (c) Put the desiccant, G00626, on fluid absorbent pads, G50463.
  - (d) Add a humidity indicator card, G51624, in a location that you can easily monitor.
    - 1) Do a check of the humidity indicator card, G51624, initially after 7 days and then every 30 days.
      - a) Make sure that the humidity shown on the humidity indicator is less than 40%.
      - b) If the humidity shown on the humidity indicator is greater than 40%, do the following steps:

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- <1> Make sure that there is no corrosion on the external surfaces of the APU.
  - <a> If there is corrosion on the external surfaces of the APU, contact Boeing for further evaluation.
- <2> Replace any desiccant that is saturated or hardened.
- <3> Add additional desiccant as necessary.

SUBTASK 49-11-00-860-300

- (4) Replace the DO-NOT-OPERATE tag on the APU control switch on the P5 panel with an APU PRESERVATION tag.
  - (a) Add a note on the APU PRESERVATION tag that says where the desiccant was added.

SUBTASK 49-11-00-620-029

- (5) Cover the APU oil cooler as follows:



**DO NOT APPLY THE G00920 TAPE TO THE PAINTED SURFACES. THE TAPE IS HARD TO REMOVE. IT CAN CAUSE DAMAGE TO THESE SURFACES.**

- (a) Install barrier material, G00253, polyethylene film, G00252, or equivalent 6 MIL or greater thickness material, and tape, G51576, or tape, G00920.

SUBTASK 49-11-00-410-018

- (6) To close the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

**NOTE:** Use this sequence: middle latch, aft latch, forward latch.

SUBTASK 49-11-00-620-030

- (7) Seal the APU openings at the fuselage as follows:
  - (a) Make sure that the APU is at ambient temperature.
  - (b) Install the APU exhaust plug, SPL-1518.

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**CAUTION**

DO NOT APPLY THE G00920 TAPE TO THE PAINTED SURFACES.  
THE TAPE IS HARD TO REMOVE. IT CAN CAUSE DAMAGE TO  
THESE SURFACES.

- 1) If the APU exhaust cover is not available, use barrier material, G00253, polyethylene film, G00252, or equivalent 6 MIL or greater thickness material, and tape, G51576, or tape, G00920.
- (c) Install barrier material, G00253, polyethylene film, G00252, or equivalent 6 MIL or greater thickness material, and tape, G51576, or tape, G00920, on the following areas:
  - 1) APU inlet door
  - 2) Aft fairing - eductor air inlet
  - 3) Drain mast on the APU cowl door
  - 4) Cowl door latches
  - 5) Split lines.

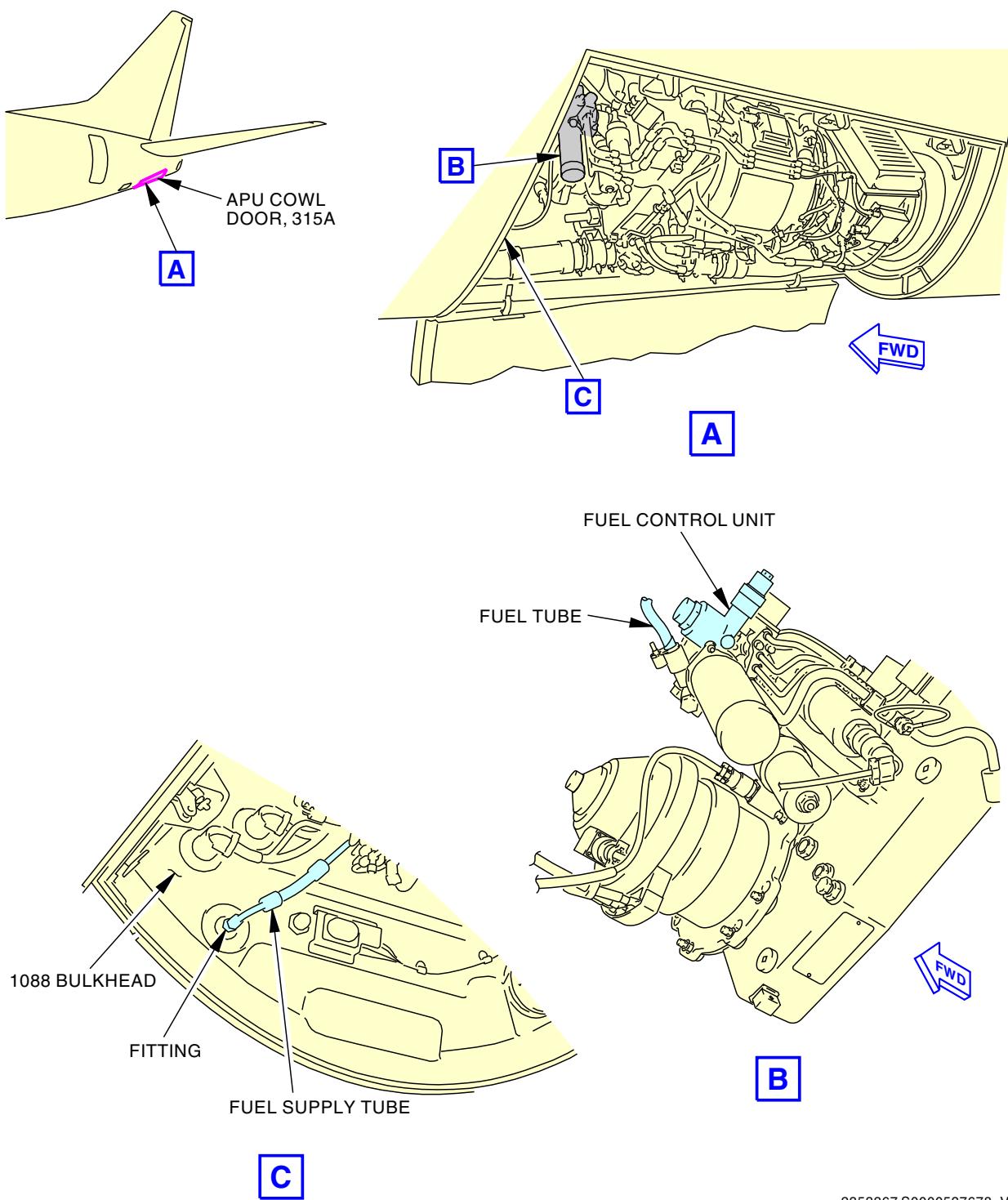
———— END OF TASK ————

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**APU Preservation - Fuel Supply Tube**  
Figure 204/49-11-00-990-811

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TASK 49-11-00-600-803

12. APU Preservation - Severe Environment

A. General

- (1) In a severe environment, do this preservation task within three days of the last APU operation when the APU will not be used. If the APU is sent to engine shop, continue the preservation until it goes to the shop.
- (2) This task contains the steps that are necessary for the APU preservation in a severe environment.
  - (a) A severe environment is where the ambient temperature is not between 30°F (-1°C) to 125°F (52°C), or the humidity is above 40%, or there is salt air present.
- (3) The factors that control the APU preservation and storage are:
  - (a) Where the aircraft or vehicle will be parked or stored.
  - (b) How long the aircraft or vehicle will be parked or stored.
  - (c) If the APU can be periodically motored.
  - (d) If the APU can be periodically operated.
  - (e) If the aircraft or vehicle fuel system have been preserved.
- (4) Desiccant in the APU inlet and exhaust can help reduce corrosion, fungus and humidity in the sealed APU area. Desiccant can be put in the APU air inlet and/or exhaust. If space is limited, the desiccant can be distributed between the air inlet and the exhaust. DO NOT put the desiccant in the bleed air ducts.
- (5) The best general practices are to:
  - (a) Operate the APU a minimum of five minutes before the preservation procedure to dry out the APU and APU compartment.

NOTE: It is recommended to use the APU supply bleed to operate both packs during the APU operation. Pack operation will raise the temperature of the load compressor and provide better dry out conditions.

NOTE: In high humidity environments, it is recommended to operate the APU for 20 to 30 minutes.
  - (b) Operate the APU periodically, the interval will depend on the storage environment.
    - 1) For severe environments, it is recommended to operate the APU every three days for a minimum of five minutes, and up to 30 minutes to make sure that the APU and APU compartment are dried out.
  - (c) If the APU is not operable during storage, motor the APU periodically. The interval will depend on the storage environment.
  - (d) If the APU cannot be motored or started, put desiccant in the gas path and seal the fuselage openings. Periodically check the desiccant and the seal on the fuselage openings.
- (6) The storage guidelines below are shown in terms of maximum desired storage periods without APU operation.
- (7) The preservation of the APU fuel control unit with preservation oil is not necessary, if the APU stays in the airplane and the APU fuel control unit is not removed or replaced. The low pressure fuel filter replacement is permitted. If the fuel control unit is replaced, the fuel system can be preserved by motoring or operating the APU at no load for one minute.

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**B. References**

<b>Reference</b>	<b>Title</b>
12-13-31-610-801	Drain the APU Oil (P/B 301)

**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.

<b>Reference</b>	<b>Description</b>
SPL-1518	Plug - Auxiliary Power Unit (APU) Part #: AVTB73NAPU Supplier: 018PR Part #: B737-270 Supplier: 1LE67 Part #: BBJ-APU-K Supplier: 4VVY1 Part #: RSABG0003 Supplier: 2R201
STD-4049	Container - Fuel Resistant, 1 Gallon (4 Liter)

**D. Consumable Materials**

<b>Reference</b>	<b>Description</b>	<b>Specification</b>
G00252	Film - Polyethylene Film And Sheeting	ASTM D2103 (Supersedes L-P-512)
G00253	Material - Barrier Materials, Greaseproofed, Waterproof, Flexible, Heat-Sealable	MIL-PRF-121 (Supersedes MIL-B-121)
G00626	Desiccant - Activated, Bagged, Packaging Use And Static Dehumidification	MIL-D-3464
G00920	Tape - Waterproof, Packaging	ASTM D5486
G50463	Pad - Fluid Absorbent (Anti-static)	
G51576	Tape - Pressure Sensitive Adhesive - BA6866	BAC5034-4
G51624	Card - Humidity Indicator, 10-100% Moisture Detection Reversible	

**E. Location Zones**

<b>Zone</b>	<b>Area</b>
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**F. Access Panels**

<b>Number</b>	<b>Name/Location</b>
315A	APU Cowl Door

**G. Prepare for the Preservation**

SUBTASK 49-11-00-860-311

- (1) Operate the APU for a minimum of five minutes to dry out the APU and APU compartment (TASK 49-11-00-860-801).

NOTE: It is recommended to use the APU supply bleed to operate both packs during the APU operation. Pack operation will raise the temperature of the load compressor and provide better dry out conditions.

NOTE: In high humidity environments, it is recommended to operate the APU for 20 to 30 minutes.

- (a) Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

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H. Preservation Guidelines - less than two weeks:

SUBTASK 49-11-00-680-006

(1) Do one of the following steps:

- (a) Operate the APU every three days for a minimum of five minutes to dry out the APU and APU compartment.

NOTE: It is recommended to use the APU supply bleed to operate both packs during the APU operation. Pack operation will raise the temperature of the load compressor and provide better dry out conditions.

NOTE: In high humidity environments, it is recommended to operate the APU for 20 to 30 minutes.

- (b) If it is not possible to operate the APU every three days, add desiccant and seal the APU inlet and exhaust openings at the fuselage as follows:

- 1) Add a minimum of 2.00 lb (0.91 kg) of desiccant, G00626, to the gas path.

NOTE: In high humidity environments, it is recommended to add more desiccant as necessary to keep the humidity low in the gas path.

NOTE: In high humidity environments, it is recommended to add desiccant to the APU compartment as necessary to keep the humidity low in the APU compartment.

- a) Add a minimum of 1.00 lb (0.45 kg) each of desiccant, G00626, at the inlet and the exhaust.

- b) DO NOT put the desiccant, G00626, in the bleed air ducts or directly on metal surfaces.

- c) Put the desiccant, G00626, on fluid absorbent pads, G50463.

- 2) Seal the APU openings at the fuselage as follows:

- a) Make sure that the APU is at ambient temperature.

- b) Install the APU exhaust plug, SPL-1518.



DO NOT APPLY THE G00920 TAPE TO THE PAINTED SURFACES. THE TAPE IS HARD TO REMOVE. IT CAN CAUSE DAMAGE TO THESE SURFACES.

- <1> If the APU exhaust cover is not available, use barrier material, G00253, polyethylene film, G00252, or equivalent 6 MIL or greater thickness material, and tape, G51576, or tape, G00920.

- c) Install barrier material, G00253, polyethylene film, G00252, or equivalent 6 MIL or greater thickness material, and tape, G51576, or tape, G00920, on the following areas.:

<1> APU inlet door

<2> APU oil cooler

<3> Aft fairing - eductor air inlet

<4> Drain mast on the APU cowl door

<5> Cowl door latches

<6> Split lines.

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I. Preservation Guidelines - more than two weeks, less than two years:

SUBTASK 49-11-00-620-013

- (1) Do this task: Drain the APU Oil, TASK 12-13-31-610-801.

SUBTASK 49-11-00-620-026

- (2) Do these steps to disconnect and cap the fuel supply tube to the Fuel Control Unit (Figure 204):



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

- (a) Put the 1 gallon (4 l) fuel resistant container, STD-4049, under the fuel supply tube.
- (b) Disconnect the fuel supply tube from the fitting on the 1088 bulkhead.
- (c) Drain the fuel from the fuel supply tube into the 1 gallon (4 l) fuel resistant container, STD-4049.
- (d) Install the plugs on the fuel supply tube and the fitting on the 1088 bulkhead.

SUBTASK 49-11-00-620-027

- (3) Add a minimum of 2.00 lb (0.91 kg) of desiccant, G00626, to the gas path.

NOTE: In high humidity environments, it is recommended to add more desiccant as necessary to keep the humidity low in the gas path.

NOTE: In high humidity environments, it is recommended to add desiccant to the APU compartment as necessary to keep the humidity low in the APU compartment.

- (a) Add a minimum of 1.00 lb (0.45 kg) each of desiccant, G00626, at the inlet and the exhaust.
- (b) DO NOT put the desiccant, G00626, in the bleed air ducts or directly on metal surfaces.
- (c) Put the desiccant, G00626, on fluid absorbent pads, G50463.
- (d) Add a humidity indicator card, G51624, in a location that you can easily monitor.
  - 1) Do a check of the humidity indicator card, G51624, initially after 7 days and then every 30 days.

NOTE: It is recommended to do a check of the humidity indicator more frequently in high humidity environments.

- a) Make sure that the humidity shown on the humidity indicator is less than 40%.
- b) If the humidity shown on the humidity indicator is greater than 40%, do the following steps:
  - <1> Make sure that there is no corrosion on the external surfaces of the APU.
  - <a> If there is corrosion on the external surfaces of the APU, contact Boeing for further evaluation.
  - <2> Replace any desiccant that is saturated or hardened.
  - <3> Add additional desiccant as necessary.

SUBTASK 49-11-00-860-301

- (4) Replace the DO-NOT-OPERATE tag on the APU control switch on the P5 panel with an APU PRESERVATION tag.

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- (a) Add a note on the APU PRESERVATION tag that says where the desiccant was added.

SUBTASK 49-11-00-620-032

- (5) Cover the APU oil cooler as follows:



**CAUTION**  
DO NOT APPLY THE G00920 TAPE TO THE PAINTED SURFACES. THE TAPE IS HARD TO REMOVE. IT CAN CAUSE DAMAGE TO THESE SURFACES.

- (a) Install barrier material, G00253, polyethylene film, G00252, or equivalent 6 MIL or greater thickness material, and tape, G51576, or tape, G00920.

SUBTASK 49-11-00-410-019

- (6) To close the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the Auxiliary Power Unit (APU) compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
- 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

SUBTASK 49-11-00-620-014

- (7) Seal the APU openings at the fuselage as follows:

- (a) Make sure that the APU is at ambient temperature.
- (b) Install the APU exhaust plug, SPL-1518.



**CAUTION**  
DO NOT APPLY THE G00920 TAPE TO THE PAINTED SURFACES. THE TAPE IS HARD TO REMOVE. IT CAN CAUSE DAMAGE TO THESE SURFACES.

- 1) If the APU exhaust cover is not available, use barrier material, G00253, polyethylene film, G00252, or equivalent 6 MIL or greater thickness material, and tape, G51576, or tape, G00920.
- (c) Install barrier material, G00253, polyethylene film, G00252, or equivalent 6 MIL or greater thickness material, and tape, G51576, or tape, G00920, on the following areas:
  - 1) APU inlet door
  - 2) Aft fairing - eductor air inlet
  - 3) Drain mast on the APU cowl door

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- 4) Cowl door latches
- 5) Split lines.

———— END OF TASK ————

**TASK 49-11-00-600-804**

**13. APU Depreservation**

**A. General**

- (1) This task contains the steps to do the depreservation of an Auxiliary Power Unit (APU). These steps apply for an APU preservation for all lengths of time.

**B. References**

Reference	Title
12-13-31-610-803	Fill the APU Gearbox (P/B 301)
49-91-12-000-802	Lube Filter Element Removal (P/B 401)
49-91-12-000-803	Starter-Generator Filter Element Removal (P/B 401)
49-91-12-400-802	Lube Filter Element Installation (P/B 401)
49-91-12-400-803	Starter-Generator Filter Element Installation (P/B 401)
49-91-81-200-801	Magnetic Drain Plug Inspection (P/B 601)

**C. Tools/Equipment**

Reference	Description
STD-858	Tag - DO NOT OPERATE

**D. Consumable Materials**

Reference	Description	Specification
D50011	Grease - Perfluoropolyether - Christo-lube MCG111	
D50055	Oil - Aircraft Turbine Engine Oil for AE 131-9[B] APU (AMM 12-13-31/301)	
G00626	Desiccant - Activated, Bagged, Packaging Use MIL-D-3464 And Static Dehumidification	
G50463	Pad - Fluid Absorbent (Anti-static)	
G51624	Card - Humidity Indicator, 10-100% Moisture Detection Reversible	

**E. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**F. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**G. APU Depreservation**

**SUBTASK 49-11-00-860-059**

- (1) Make sure that the APU switch, on the P5 forward overhead panel, is set to the OFF position.
  - (a) Replace the APU PRESERVATION tag with a DO NOT OPERATE tag, STD-858.

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SUBTASK 49-11-00-420-035

- (2) If installed, remove the covers and plugs from these APU openings:
  - (a) APU inlet door
  - (b) Aft fairing - eductor air inlet
  - (c) APU exhaust
  - (d) Drain mast on the APU cowl door
  - (e) Cowl door latches
  - (f) Split lines.

SUBTASK 49-11-00-010-022

- (3) To open the access panel, do these steps:

**Number**      **Name/Location**

315A            APU Cowl Door

- (a) Support the APU panel (cowl door) under the center latch.
- (b) Open the three latches.

NOTE: Use this sequence: forward latch, aft latch, middle latch.

- (c) Open the APU Cowl Door, 315A.
- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

SUBTASK 49-11-00-420-026

- (4) If necessary, do these steps to connect the fuel supply tube from the fuel control unit to the fitting on the 1088 bulkhead:
  - (a) Remove the caps or plugs from the fuel supply tube and the fitting on the 1088 bulkhead.
  - (b) If Christo-lube MCG111 grease, D50011, is not used on the fitting on the 1088 bulkhead, do these steps:
    - 1) Apply a thin layer of aircraft turbine engine oil, D50055, on the threads of the fitting.
    - 2) Connect the fuel supply tube to the fitting on the 1088 bulkhead.
      - a) Tighten to 470 in-lb (53.1 N·m)-510 in-lb (57.6 N·m).
  - (c) If Christo-lube MCG111 grease, D50011, is used on the fitting on the 1088 bulkhead, do these steps:
    - 1) Lubricate the external threads of the fitting with Christo-lube MCG111 grease, D50011.  
NOTE: The grease should be applied to the external threads only. The grease should not be applied to the internal threads or sealing surface of the fitting.
    - 2) Connect the fuel supply tube to the fitting on the 1088 bulkhead.
      - a) Tighten to 266 in-lb (30.1 N·m)-294 in-lb (33.2 N·m).

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SUBTASK 49-11-00-630-004

- (5) Do these steps:

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (b) If installed, remove the cover from the APU oil cooler.  
(c) If installed, remove the desiccant, G00626, humidity indicator cards, G51624, and fluid absorbent pads, G50463, from the APU and APU compartment.  
(d) Do a visual inspection of the APU inlet, exhaust, and APU compartment to check for any unwanted objects.  
(e) Do this task: Fill the APU Gearbox, TASK 12-13-31-610-803.  
(f) Remove the safety tags and close these circuit breakers:

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (g) Remove the DO-NOT-OPERATE tag from the APU control switch.  
(h) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.  
NOTE: It may be necessary to start the APU more than one time.  
1) Let the APU operate for a minimum of 5 minutes.  
(i) Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.  
(j) Do this task: Magnetic Drain Plug Inspection, TASK 49-91-81-200-801.  
(k) Do an inspection of the lube filter element.  
NOTE: It is not necessary to install a new lube filter element for this inspection.  
1) Remove the lube filter element (TASK 49-91-12-000-802).  
2) Examine the lube filter element for metal particles and other unwanted materials.  
a) If there are metal particles or other unwanted materials on the lube filter element, contact Boeing for evaluation.  
3) Install the lube filter element (TASK 49-91-12-400-802).  
a) Install the new packing (for the filter housing) during the installation of the lube filter element.  
(l) Do an inspection of the starter-generator filter element.  
NOTE: It is not necessary to install a new starter-generator filter element for this inspection.

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- 1) Remove the starter-generator filter element (TASK 49-91-12-000-803).
- 2) Examine the starter-generator filter element for metal particles and other unwanted materials.
  - a) If there are metal particles or other unwanted materials on the starter-generator filter element, contact Boeing for evaluation.
- 3) Install the starter-generator filter element (TASK 49-91-12-400-803).
  - a) Install the new packing (for the filter housing) during the installation of the starter-generator filter element.

SUBTASK 49-11-00-410-022

- (6) To close the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

**TASK 49-11-00-470-801**

**14. APU DMM Re-Initialization**

**A. General**

- (1) This task is for the re-initialization of the Auxiliary Power Unit (APU) Data Memory Module (DMM).

**B. References**

<b>Reference</b>	<b>Title</b>
49-61-00-700-801	APU BITE Procedure (P/B 201)
49-72-11-000-801	Data Memory Module Removal (P/B 401)
49-72-11-400-801	Data Memory Module Installation (P/B 401)

**C. Tools/Equipment**

<b>Reference</b>	<b>Description</b>
STD-858	Tag - DO NOT OPERATE

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**D. Prepare for the Re-Initialization**

SUBTASK 49-11-00-210-033

- (1) Determine the correct data to be installed in the DMM.

NOTE: The ECS\_OFFSET is on the APU ATP data sheet in the APU log book.

NOTE: The DMM data will be transmitted to the FMCs via the ECU.

- (a) Make sure to download the latest DMM Reader software version to the computer.

NOTE: Contact the Honeywell Representative for the software and download instructions.

- (b) Determine the APU hours since the last shop visit (if any) and if not available, use "0" hours.

NOTE: These hours will be entered for DMM entry (OVRHAUL\_HR) in the procedure.

- (c) Determine the APU cycles since the last shop visit (if any) and if not available, use "0" cycles.

NOTE: This cycle count will be entered for three DMM entries (TURB\_CYCLES, LC\_CYCLES, and EC\_CYCLES) in the procedure that follows.

- (d) Determine if a high efficiency diffuser is installed in the APU.

NOTE: If SB 8324 (Change number 62) has been incorporated or the APU is Series 49 or greater the answer is "Yes". If not the answer is "No".

- (e) Refer to the example data in the Table 205.

**Table 205/49-11-00-993-816 Example Data**

APU SN	HOURS	MINUTES	CYCLES	ECS OFFSET
P6021	5000	35	4802	-8.0
APU Hours Since Last Shop Visit			APU Cycles Since Last Shop Visit	
1500			1802	
High Efficiency Diffuser Installed (Change Number 62 or APU Series >= 49)			Yes or No	
SB131-49-8325 Installed			Yes or No	
SB131-49-8330 Installed			Yes or No	

NOTE: Use the actual APU data similar to the example data for the initialization of the DMM.

- (f) Initialize the DMM with the actual APU serial number, corrected APU hours, corrected APU cycles, and ECS\_OFFSET.

SUBTASK 49-11-00-860-313

- (2) Make sure that the APU master switch is in the OFF position.

SUBTASK 49-11-00-480-011

- (3) Attach a DO NOT OPERATE tag, STD-858, to the APU master switch, on the P5 forward overhead panel.

SUBTASK 49-11-00-860-314

- (4) Make sure that the ECU is powered down as follows:

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Open these circuit breakers and install safety tags:

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-11-00-020-035

- (5) Disconnect the harness from the DMM (TASK 49-72-11-000-801).

SUBTASK 49-11-00-480-012

- (6) Connect the DMM Reader with the PC and DMM.

NOTE: Contact the Honeywell Service Representative for the DMM Reader.

SUBTASK 49-11-00-210-034

- (7) Make sure that the DMM Reader has power.

**E. APU DMM Re-Initialization**

SUBTASK 49-11-00-440-001

- (1) Double click on the Windmm Icon to activate the PC program.

SUBTASK 49-11-00-750-001

- (2) Do a wrap and port test to make sure of proper DMM Reader installation.

SUBTASK 49-11-00-480-013

- (3) After the test, look for the SELECT AN ENGINE APPLICATION menu and do these steps (Figure 205).

NOTE: The buttons may show in a different order than the one in the figure.

- (a) Click the 131-9B Button and look for the Main DMM Menu that will show after a brief message window (Figure 206).

- (b) Select the menu item "About" to verify the proper software version (Figure 207).

NOTE: The Data Memory Module Communication Build Version must be Version 220715 or higher. If the version is not correct, abort the procedure and contact the Honeywell Service Representative.

- (c) Select the option "CHANGE SPECIFIC DMM ENTRY CONTENTS" button from the main DMM menu screen (Figure 206)

- (d) Make sure that the DMM "Change DMM entry" screen shows (Figure 208).

- (e) Click "SB 8260" to continue and a warning will appear (Figure 209).

- (f) Click "OK" to acknowledge the warning and continue to the next screen (Figure 210).

- (g) Type in the numeric portion of the APU Serial Number in the engine serial number box.

- (h) Click "OK" to continue to the next screen (Figure 211).

- (i) Click "Yes" to check the Engine Serial Number is correct and continue to the next screen or "No" if it is not correct.

- (j) Enter in the predetermined value for APU hours since new (Figure 212).

- (k) Click "OK" to continue to the next screen (Figure 213).

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- (l) Click "Yes" to check the APU hours is correct and continue to the next screen or "No" if it is not correct.
- (m) Enter the predetermined value for APU minutes since new (Figure 214).
- (n) Click "OK" to continue to the next screen (Figure 215).
- (o) Click "Yes" to check the APU minutes is correct and continue to the next screen or "No" if it is not correct.
- (p) Enter the predetermined value for APU cycles since new (Figure 216).
- (q) Click "OK" to continue to the next screen (Figure 217).
- (r) Click "Yes" to check the APU cycles is correct and continue to the next screen or "No" if it is not correct.
- (s) Enter the TURB\_CYCLE to APU cycles since the last shop visit or zero (Figure 218).
- (t) Click "OK" to continue to the next screen (Figure 219).
- (u) Click "YES" to check the TURB\_CYCLE is correct and continue to the next screen or "NO" if it is not correct.
- (v) Enter the LC\_CYCLE since the last shop visit or zero (Figure 220).
- (w) Click "OK" to continue to the next screen (Figure 221).
- (x) Click "YES" to check the LC\_CYCLE is correct and continue to the next screen or "NO" if it is not correct.
- (y) Enter the EC\_CYCLE since the last shop visit or zero (Figure 222).
- (z) Click "OK" to continue to the next screen (Figure 223).
- (aa) Click "YES" to check the EC\_CYCLE is correct and continue to the next screen or "NO" if it is not correct.
- (ab) Enter the OVRHAUL\_HR since the last shop visit or zero (Figure 224).
- (ac) Click "OK" to continue to the next screen (Figure 225).
- (ad) Click "YES" to check the OVRHAUL\_HR is correct and continue to the next screen or "NO" if it is not correct.
- (ae) Enter in the ECS\_OFFSET value from the APU ATP data sheet in the APU log book for the APU serial number (Figure 226).  
NOTE: All ECS\_OFFSET values are negative or zero.
- (af) Click "OK" to continue to the next screen (Figure 227).
- (ag) Click "YES" to check the ECS\_OFFSET is correct and continue to the next screen or "NO" if it is not correct.
- (ah) If the High Efficiency Diffuser is installed as determined, click on "SB8324 - Change Number 62 or APU Series >= 49" (Figure 228).
- (ai) If the High Efficiency Diffuser is not installed, click on "LEGACY DIFFUSER INSTALLED" (Figure 228).
- (aj) If the APU PN Dash Number is 2 then select the first button "SB 8330 DASH 2 APU" (Figure 229).
- (ak) If the APU PN Dash Number is 1 then select the second button "DASH 1 APU" (Figure 229).

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SUBTASK 49-11-00-470-024

- (4) Look for the DMM to now initialize and automatically download the contents to a file with the name of the APU and extension '.DAT'.

NOTE: This file will be located in the C:\Honeywell\WinDMM\131-9B directory of the PC.

- (a) Look for this message screen (Figure 230).
- (b) Click "OK" to return to the main DMM menu screen (Figure 206).
- (c) If SB 131-49-8325 was previously installed on the APU, select "CHANGE SPECIFIC DMM ENTRY CONTENTS" to enter the associated data into the DMM.
- (d) Select "RETURN TO ENGINE SELECTION" to return to the Engine Selection Page (Figure 206).
- (e) At the SELECT AN ENGINE APPLICATION menu, select "Close" to exit the program (Figure 205).

SUBTASK 49-11-00-080-009

- (5) Disconnect the DMM Reader.

SUBTASK 49-11-00-420-034

- (6) Reconnect the APU harness to the DMM (TASK 49-72-11-400-801).

SUBTASK 49-11-00-860-319

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-11-00-860-316

- (8) Select APU master switch to the ON position for 30 seconds.

NOTE: Do not start the APU.

SUBTASK 49-11-00-860-317

- (9) After 30 seconds, put the APU master switch to the OFF position.

SUBTASK 49-11-00-210-035

- (10) After 120 seconds, make sure that the APU hours, cycles, and serial number that are on the APU SERVICE DATA page are equal to the values during the DMM re-initialization (TASK 49-61-00-700-801):

NOTE: APU Hours and APU Cycles have a maximum value of 65,535. Values above 65,535 that are input will show zero or 65,535.

- (a) If you get access to the CDU for the first time or were in an airplane system other than the APU, push the INIT REF function key until the PERF INT page shows on the CDU display.
- (b) If there is the PERF INT or INDENT page, push the line select key adjacent to <INDEX>.
- (c) If there is the INIT/REF INDEX page, push the line select key adjacent to MAINT>.
- (d) If there is the MAINT BITE INDEX page, push the line select key adjacent to APU>.

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- (e) From the MAIN MENU page, push the line select key adjacent to <IDENT/CONFIG to see the IDENT/CONFIG page containing the APU S/N, APU hours of operation and APU cycles.
- (f) To see the program data for the DMM, push the line select adjacent to DATA MEMORY MODULE>.
- (g) Check S/N, TSN and CSN match imported information.

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

SUBTASK 49-11-00-080-010

- (1) Remove the DO NOT OPERATE tag, STD-858, from the APU master switch, on the P5 forward overhead panel.

SUBTASK 49-11-00-970-001

- (2) Make a record of the service bulletin number and/or revision number in the APU log book.

NOTE: Service bulletin 131-49-8260 revision 2.

———— END OF TASK ————

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DMM Communication Honeywell Aerospace -

Port Assignment

SELECT AN ENGINE APPLICATION

131-9A	131-9B	131-9BMX	131-9C
131-9D	131-9J	131-9JC	331-350C
331-350J	331-400B	331-400C	331-400P
331-500B	331-500B2	331-600A	36-170
36-280B	36-280D	HGT-1700A	HGT-750C
HGT-750M			

2841612 S0000663305\_V2

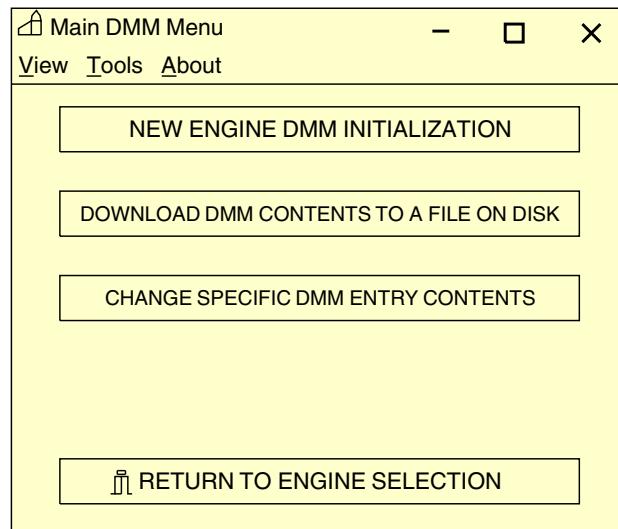
Select An Engine Application  
Figure 205/49-11-00-990-813

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2841613 S0000663308\_V2

Main DMM Menu  
Figure 206/49-11-00-990-814

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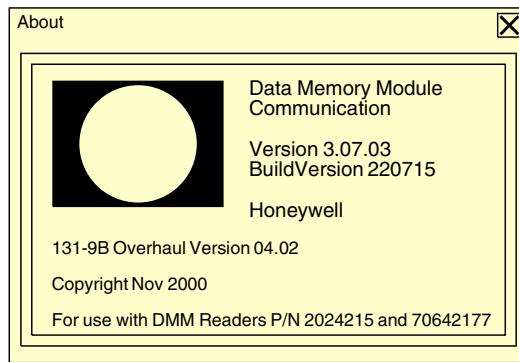
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2841614 S0000663309\_V2

DMM "About" Screen  
Figure 207/49-11-00-990-815

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Select A Button to Change Contents of Data Memory Module X

ShopVisitReset	APU_OPTIONS	SB 8260	SB 8324
SB 8325	SB 8330		

Close

2841616 S0000663311\_V2

DMM "Change DMM Entry" Screen  
Figure 208/49-11-00-990-816

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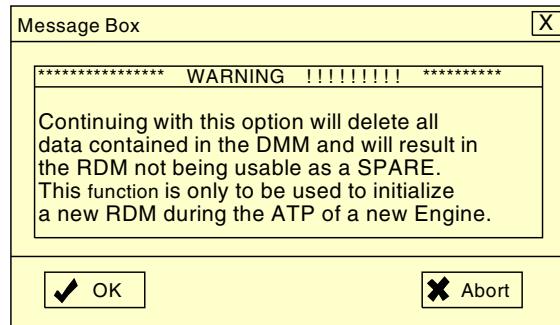
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2841621 S0000663317\_V1

Delete Warning Message  
Figure 209/49-11-00-990-817

EFFECTIVITY  
LOM ALL

**49-11-00**



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DMM Initialization X

Engine Prefix	P
Engine Serial Number	6021
Engine Suffix	

OK       Cancel

2841627 S0000663319\_V1

**Enter Engine Serial Number**  
**Figure 210/49-11-00-990-818**

EFFECTIVITY  
LOM ALL

**49-11-00**

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Confirmation	
IS THE CORRECT ENGINE SERIAL NUMBER P6021 ?	
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No

2841632 S0000663321\_V1

Verify Serial Number  
Figure 211/49-11-00-990-819

EFFECTIVITY  
LOM ALL

**49-11-00**

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DMM Initialization X

ENTER VALUE IN ENGINEERING UNITS FOR:

APUhours :  HOURS

OK  Cancel

2841633 S0000663330\_V1

Enter Pre-Determined APU Hours  
Figure 212/49-11-00-990-820

EFFECTIVITY  
LOM ALL

**49-11-00**

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Confirmation

IS THE CORRECT VALUE FOR APUhours = 5000 ?

Yes       No

2841634 S0000663332\_V1

Verify Pre-Determined APU Hours  
Figure 213/49-11-00-990-821

EFFECTIVITY  
LOM ALL

**49-11-00**

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DMM Initialization X

ENTER VALUE IN ENGINEERING UNITS FOR:

APUminutes :  MINUTES

Ok  Cancel

2841635 S0000663333\_V1

Enter Pre-Determined APU Minutes  
Figure 214/49-11-00-990-822

EFFECTIVITY  
LOM ALL

**49-11-00**

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Confirmation

IS THE CORRECT VALUE FOR APUMinutes = 35 ?

Yes       No

2841637 S0000663334\_V1

Verify Pre-Determined APU Minutes  
Figure 215/49-11-00-990-823

EFFECTIVITY  
LOM ALL

**49-11-00**

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DMM Initialization X

ENTER VALUE IN ENGINEERING UNITS FOR:

APUcycles :

CYCLES LOW (ADD TO CYCLES HIGH ENTRY 23)

OK       Cancel

2841638 S0000663338\_V2

Enter Pre-Determined APU Cycles  
Figure 216/49-11-00-990-824

EFFECTIVITY  
LOM ALL

**49-11-00**

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Confirmation [X]

IS THE CORRECT VALUE FOR APUCycles = 4802 ?

Yes       No

2841639 S0000663339\_V1

Verify Pre-Determined APU Cycles  
Figure 217/49-11-00-990-825

EFFECTIVITY  
LOM ALL

**49-11-00**

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DMM Initialization X

ENTER VALUE IN ENGINEERING UNITS FOR:

TURB\_CYCLES :

CYCLES SINCE TURBINE REPAIR

OK       Cancel

2841646 S0000663342\_V1

Enter TURB\_CYCLES  
Figure 218/49-11-00-990-828

EFFECTIVITY  
LOM ALL

**49-11-00**

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Confirmation [X]

IS THE CORRECT VALUE FOR TURB\_CYCLES = 1802 ?

Yes       No

2841645 S0000663343\_V1

Verify TURB\_CYCLES  
Figure 219/49-11-00-990-829

EFFECTIVITY  
LOM ALL

**49-11-00**

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DMM Initialization X

ENTER VALUE IN ENGINEERING UNITS FOR:

LC\_CYCLES :

CYCLES SINCE LOAD COMP REPAIR

OK       Cancel

2841647 S0000663344\_V1

Enter LC\_CYCLES  
Figure 220/49-11-00-990-830

EFFECTIVITY  
LOM ALL

**49-11-00**



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Confirmation X

IS THE CORRECT VALUE FOR LC\_CYCLES = 1802 ?

Yes       No

2841653 S0000663345\_V1

Verify LC\_CYCLES  
Figure 221/49-11-00-990-831

EFFECTIVITY  
LOM ALL

**49-11-00**



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DMM Initialization

ENTER VALUE IN ENGINEERING UNITS FOR:

EC\_CYCLES :

CYCLES SINCE ENGINE COMP REPAIR

OK  Cancel

2841654 S0000663346\_V1

Enter EC\_CYCLES  
Figure 222/49-11-00-990-832

EFFECTIVITY  
LOM ALL

**49-11-00**

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Confirmation X

IS THE CORRECT VALUE FOR EC\_CYCLES = 1802 ?

Yes       No

2841656 S0000663347\_V1

Verify EC\_CYCLES  
Figure 223/49-11-00-990-833

EFFECTIVITY  
LOM ALL

**49-11-00**

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DMM Initialization

ENTER VALUE IN ENGINEERING UNITS FOR:

OVRHAUL\_HR :

HOURS SINCE LAST SHOP VISIT

OK  Cancel

2841657 S0000663348\_V1

Enter OVRHAUL\_HR  
Figure 224/49-11-00-990-834

EFFECTIVITY  
LOM ALL

**49-11-00**

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Confirmation X

IS THE CORRECT VALUE FOR OVRHAUL\_HR = 1500 ?

Yes       No

2841662 S0000663349\_V1

Verify OVRHAUL\_HR  
Figure 225/49-11-00-990-835

EFFECTIVITY  
LOM ALL

**49-11-00**

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DMM Initialization X

ENTER VALUE IN ENGINEERING UNITS FOR:

ECS\_OFFSET : -8

ECS OFFSET DEGREES (ATP entry)

OK       Cancel

2841640 S0000663340\_V2

Enter ECS\_OFFSET  
Figure 226/49-11-00-990-838

EFFECTIVITY  
LOM ALL

**49-11-00**

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Confirmation X

IS THE CORRECT VALUE FOR ECS\_OFFSET = -8 ?

Yes       No

2841644 S0000663341\_V1

Verify ECS\_OFFSET  
Figure 227/49-11-00-990-839

EFFECTIVITY  
LOM ALL

**49-11-00**

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DMM Special Function

SB 8324 HIGH EFFICIENCY DIFFUSER

1:	SB8324 - ChangeNumber 62 or APU Series >= 49
2:	LEGACY DIFFUSER INSTALLED
3:	Undefined
4:	Undefined
5:	Undefined
6:	Undefined
7:	Undefined
8:	Undefined
9:	Undefined

3075390 S0000833980\_V1

Enter APU Diffuser Type  
Figure 228/49-11-00-990-840

EFFECTIVITY  
LOM ALL

**49-11-00**

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DMM Special Function

SB 8330 APU DASH NUMBER	
1:	SB 8330 Dash 2 APU
2:	Dash 1 APU
3:	Undefined
4:	Undefined
5:	Undefined
6:	Undefined
7:	Undefined
8:	Undefined
9:	Undefined

3075391 S0000833981\_V1

Enter APU Dash Number  
Figure 229/49-11-00-990-841

EFFECTIVITY  
LOM ALL

**49-11-00**

D633A101-LOM



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2841663 S0000663350\_V1

**P6021.DAT Message**  
**Figure 230/49-11-00-990-836**

EFFECTIVITY  
LOM ALL

**49-11-00**

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**APU POWER PLANT - REMOVAL/INSTALLATION**

**1. General**

- A. This procedure contains scheduled maintenance task data.
- B. This procedure has these tasks:
  - (1) A removal of the APU power plant (fishpole hoist procedure)
  - (2) An installation of the APU (fishpole hoist procedure)
  - (3) A removal of the APU (hydraulic jack procedure)
  - (4) An installation of the APU (hydraulic jack procedure).
- C. There are two procedures available for the removal and installation of the APU. Each procedure is optional to the other. The procedure that is used is given by the ground equipment that is available.
  - (1) Fishpole Hoist Procedure:
    - (a) This procedure uses two fishpole hoists and APU hoist equipment to lift and lower the APU. The APU hoist equipment has three parts - a forward arm assembly, a center beam assembly and an aft arm assembly. The APU hoist equipment is attached to the two APU lift fittings in the APU compartment. The two fishpole hoists are attached to the APU hoist equipment and the APU. The two fishpole hoists are used to move the APU up and down in the APU compartment.
  - (2) Hydraulic Jack Procedure:
    - (a) This procedure uses a hydraulic jack assembly, an adapter and a maintenance stand to lift and lower the APU. The adapter is attached to the hydraulic jack assembly. The maintenance stand is used to lift the APU, adapter and hydraulic jack assembly to the APU compartment. The hydraulic jack assembly then moves the APU up and down in the APU compartment.

**TASK 49-11-00-000-801**

**2. APU Power Plant Removal**

NOTE: This procedure is a scheduled maintenance task.

**A. APU Power Plant Removal**

SUBTASK 49-11-00-020-001

- (1) Do one of these tasks to remove the APU:
  - (a) Do this task: APU Power Plant Removal (Fishpole Hoist Procedure),  
TASK 49-11-00-000-802.
  - (b) Do this task: APU Power Plant Removal (Hydraulic Jack Procedure),  
TASK 49-11-00-000-803.

———— END OF TASK ————

**TASK 49-11-00-400-801**

**3. APU Power Plant Installation**

NOTE: This procedure is a scheduled maintenance task.

**A. APU Power Plant Installation**

SUBTASK 49-11-00-420-001

- (1) Do one of these tasks to install the APU:

EFFECTIVITY LOM ALL
------------------------

**49-11-00**



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- (a) Do this task: APU Power Plant Installation (Fishpole Hoist Procedure),  
TASK 49-11-00-400-802.
- (b) Do this task: APU Power Plant Installation (Hydraulic Jack Procedure),  
TASK 49-11-00-400-803.

———— END OF TASK ————

**TASK 49-11-00-000-802**

**4. APU Power Plant Removal (Fishpole Hoist Procedure)**

(Figure 401)

**A. General**

- (1) Cable hoist equipment, C49007-35 can only be operated by fishpole hoists with the furnished cable. The Didsbury brand hoists cannot be used.
- (2) Chain hoist equipment, C49007-36 can only be operated by fishpole hoists with the customer furnished 1/4" chain.
- (3) Cable hoist equipment, C49007-42 can only be operated by fishpole hoists with the furnished cable. The Didsbury brand MINILIFT P/N 10/3641 can also be used.

**B. References**

Reference	Title
21-00-01-100-801	Oil Contamination Removal from Air Conditioning and Pneumatic Systems (P/B 201)
36-13-01-100-801	Pneumatic Duct Cleaning (P/B 701)
49-15-11-200-801	Air Inlet Seal Inspection (P/B 601)
49-15-15 P/B 401	APU AIR INLET PLENUM - REMOVAL/INSTALLATION
49-17-11-200-801	Insulation Panel Inspection (P/B 601)
49-81-11-200-801	Exhaust Duct Muffler Inspection (P/B 601)
49-81-12-100-801	Exhaust Duct Muffler Drain Fitting Cleaning (P/B 701)
49-91-71-200-801	Eductor Inlet Duct Inspection (P/B 601)
52-48-21-000-801	Auxiliary Power Unit (APU) Cowl Door - Removal (P/B 401)

**C. Tools/Equipment**

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

Reference	Description
COM-1563	Hoist - Fishpole, 500 lb Safe Working Limit (SWL) Part #: 10/4180 Supplier: K1425 Part #: IA5101-1 Supplier: 053H3 Part #: IA5101-501 Supplier: 053H3 Part #: IA5119-1 Supplier: 053H3 Part #: IA5119-501 Supplier: 053H3 Part #: PF51-003-1 Supplier: 1YRX6 Part #: PF51-009-1 Supplier: 1YRX6 Opt Part #: 10/3641 Supplier: K1425 Opt Part #: 10/3641C1 Supplier: K1425 Opt Part #: MINILIFT Supplier: K1425
COM-1592	Hoist - Fishpole, Chain, 1,000 lb Safe Working Limit (SWL) Part #: AP6108 Supplier: 4Y309

— EFFECTIVITY —  
**LOM ALL**

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(Continued)

<b>Reference</b>	<b>Description</b>
SPL-1957	Base - Transportation, APU Part #: F72950-158 Supplier: 81205
SPL-1968	Equipment - Hoist, Auxiliary Power Unit (AE131-9 APU) Part #: C49007-36 Supplier: 81205 Part #: C49007-42 Supplier: 81205 Opt Part #: C49007-35 Supplier: 81205
SPL-1970	Assembly - Cradle, APU (AE131-9) Part #: C49010-50 Supplier: 81205
SPL-1971	Protector - Thread, APU Mount Bolt Part #: C49006-1 Supplier: 81205
STD-858	Tag - DO NOT OPERATE
STD-4049	Container - Fuel Resistant, 1 Gallon (4 Liter)

**D. Location Zones**

<b>Zone</b>	<b>Area</b>
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**E. Access Panels**

<b>Number</b>	<b>Name/Location</b>
315A	APU Cowl Door

**F. Prepare for the Removal**

SUBTASK 49-11-00-860-006

- (1) Make sure that the Auxiliary Power Unit (APU) master switch on the P5 forward overhead panel is OFF and attach a DO NOT OPERATE tag, STD-858.

SUBTASK 49-11-00-860-007

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

**F/O Electrical System Panel, P6-2**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
B	19	C01344	APU FIRE SW POWER
B	21	C00452	FIRE PROTECTION EXTINGUISHERS APU

**F/O Electrical System Panel, P6-4**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-11-00-010-001

- (3) If it is necessary to remove the APU cowl door, do this task: Auxiliary Power Unit (APU) Cowl Door - Removal, TASK 52-48-21-000-801.

SUBTASK 49-11-00-010-002

- (4) If it is not necessary to remove this APU cowl door, open this APU cowl door. To open this APU cowl door, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

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- (a) Support the APU panel under the center latch.
- (b) Open the three latches.  
NOTE: Use this sequence: forward latch, aft latch, middle latch.
- (c) Open the APU cowl door.
- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU cowl door.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

#### **G. Disconnect the APU Power Plant**

SUBTASK 49-11-00-020-002

- (1) Do these steps to disconnect the electrical connector D10436 (P2) [1], electrical connector D10912 (P1) [2], electrical connector D10434 (P3) [3] and electrical connector D11118 (P4) [4] from the APU firewall receptacles on the 1088 bulkhead:
  - (a) Disconnect the electrical connector D10436 (P2) [1].  
NOTE: Be aware of the clamp that is attached onto the harness when disconnecting the electrical connector D10436 (P2).
  - (b) Disconnect the electrical connector D10912 (P1) [2].  
NOTE: Be aware of the clamp that is attached onto the harness when disconnecting the electrical connector D10912 (P1).
  - (c) Disconnect the electrical connector D10434 (P3) [3].
  - (d) Disconnect the electrical connector D11118 (P4) [4].
  - (e) Install the caps on the electrical connectors to prevent contamination.

SUBTASK 49-11-00-020-003



**WARNING**

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

- (2) Do these steps to remove the fuel supply tube [5]:
  - (a) Put the 1 gallon (4 l) fuel resistant container, STD-4049, under the fuel supply tube [5].
  - (b) Disconnect the fuel supply tube [5] from the fitting [6] on the 1088 bulkhead.
  - (c) Drain the fuel from the fuel supply tube [5] into the 1 gallon (4 l) fuel resistant container, STD-4049.
  - (d) Put the 1 gallon (4 l) fuel resistant container, STD-4049, below the fuel control unit.
  - (e) Loosen the nut [8] that attaches the fuel supply tube [5] to the fuel control unit.
  - (f) Turn the tube retainer on the fuel supply tube [5] counterclockwise until the flange disengages from the stud.
  - (g) Disconnect the fuel supply tube [5] from the fuel control unit.

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- (h) Drain the fuel from the fuel supply tube [5] into the 1 gallon (4 l) fuel resistant container, STD-4049.
- (i) Remove the fuel supply tube [5].
- (j) Remove the two packings [7] from the fuel supply tube [5].
  - 1) Discard the two packings [7].
- (k) Install the caps or plugs on the fuel supply tube [5], fitting [6] and fuel control unit.
- (l) Install a protection cover on the fuel supply tube [5] to prevent contamination.
- (m) Remove the 1 gallon (4 l) fuel resistant container, STD-4049.

**SUBTASK 49-11-00-020-004**

- (3) Do these steps to remove the bleed air duct [11]:
  - (a) Remove the two coupling clamps [9] that hold the bleed air duct [11] to the bleed air valve and bleed duct assembly.  
NOTE: The bleed duct assembly extends through the 1088 bulkhead.
  - (b) Remove the bleed air duct [11].



**BE CAREFUL WHEN YOU REMOVE THE TWO SEALS FROM THE BLEED AIR DUCT. DAMAGE TO THE SEALS CAN OCCUR.**

- (c) Carefully remove the two seals [10] from the bleed air duct [11].
- (d) Install the protection covers on the bleed duct assembly, bleed air duct [11], two seals [10] and bleed air valve to prevent contamination.

**SUBTASK 49-11-00-020-005**

- (4) Do these steps to disconnect the terminal lug (T4) [14], terminal lug (T3) [16], terminal lug (T2) [17] and terminal lug (T1) [18]:
  - (a) Disengage the terminal block cover [19] from the four pins on the starter-generator.
  - (b) Remove the terminal block cover [19].
  - (c) Remove the four nuts [12] from the four terminal studs.
  - (d) Disconnect the terminal lug (T1) [18], terminal lug (T2) [17], terminal lug (T3) [16] and terminal lug (T4) [14] from the four terminal studs.  
NOTE: The terminal strip and the fanning strip [15] show the identification of the terminal studs for each of the terminal lugs (T1), (T2), (T3) and (T4).
  - (e) Install the four nuts [12] on the four terminal studs.
  - (f) Install the terminal block cover [19] on the starter-generator:
    - 1) Put the terminal block cover [19] on the starter-generator.
    - 2) Engage the terminal block cover [19] to the four pins on the starter-generator.

**SUBTASK 49-11-00-020-006**

- (5) Do these steps to disconnect the bonding jumper [20]:
  - (a) Remove the two nuts [21] and two washers [22] that attach the bonding jumper [20] to the APU.
  - (b) Disconnect the bonding jumper [20] from the two studs.
  - (c) Keep the two nuts [21] and two washers [22] for the replacement APU.

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SUBTASK 49-11-00-020-007

- (6) Do these steps to remove the drain tube [29] for the exhaust duct muffler:
  - (a) Disconnect the drain tube [29] from the fitting [30] on the exhaust duct muffler [23].
  - (b) Disconnect the drain tube [29] from the fitting [80] on the aft drain tube of the APU.
  - (c) Remove the drain tube [29].
  - (d) Install the caps or plugs on the drain tube [29], fitting [30] and fitting [80].
  - (e) Install a protection cover on the drain tube [29] to prevent contamination.

SUBTASK 49-11-00-020-008

- (7) Do these steps to disconnect the exhaust duct muffler [23]:
  - (a) Remove the V-band clamp [27] from the exhaust duct muffler [23].
  - (b) Disconnect and move the exhaust duct muffler [23] aft about 0.25 in. (6.4 mm) from the APU.

## H. Fishpole Hoist Equipment Installation

SUBTASK 49-11-00-800-001

- (1) Make sure that the APU hoist equipment, SPL-1968, has these parts:
  - (a) Forward arm assembly
  - (b) Aft arm assembly
  - (c) Center beam assembly.

SUBTASK 49-11-00-210-001



**MAKE SURE THAT YOU DO THE INSPECTION OF THE TWO APU LIFT FITTINGS. A DAMAGED LIFT FITTING CAN CAUSE INCORRECT SUPPORT OF THE APU. THIS CAN CAUSE DAMAGE TO THE APU.**

- (2) Visually examine the APU lift fitting [32] and APU lift fitting [34] with a flashlight to make sure that there are no signs of cracks or elongations.

SUBTASK 49-11-00-480-007

- (3) Do these steps to install the center beam assembly [33] to the APU lift fitting [32] and APU lift fitting [34]:
  - (a) Remove the two lanyard pins [35] from the center beam assembly [33].



**BE CAREFUL WHEN YOU MOVE THE CENTER BEAM ASSEMBLY TO THE CORRECT POSITION. YOU CAN TILT THE CENTER BEAM ASSEMBLY TO PREVENT CONTACT TO THE FIRE DETECTOR ASSEMBLY. DAMAGE TO THE FIRE DETECTOR ASSEMBLY AND WIRE BUNDLE CAN OCCUR.**

- (b) Put the center beam assembly [33] below the APU lift fitting [32] and APU lift fitting [34].  
NOTE: To install the center beam assembly, make sure that the directional FWD arrow points to the front of the APU.  
NOTE: You can install the center beam assembly from the rear side or front side of the APU.
- (c) Align the holes of the center beam assembly [33] to the APU lift fitting [32] and APU lift fitting [34].

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- (d) Install the two lanyard pins [35] that attach the center beam assembly [33] to the APU lift fitting [32] and APU lift fitting [34].

SUBTASK 49-11-00-480-008



**WARNING**

MAKE SURE THAT THE TWO FISHPOLE HOISTS ARE IN A SERVICEABLE CONDITION. MAKE SURE THAT THERE ARE NO SIGNS OF DAMAGE ON THE CABLES OR CHAINS. IF THERE IS DAMAGE, INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT CAN OCCUR.



**WARNING**

MAKE SURE THAT WHEN YOU USE THE CABLE OR CHAIN HOIST EQUIPMENT, THAT YOU OPERATE THE FISHPOLE HOIST WITH SUPPLIED EQUIPMENT. IF YOU DO NOT OBEY INSTRUCTIONS, DAMAGE TO EQUIPMENT AND INJURY TO PERSONNEL CAN OCCUR.



**WARNING**

MAKE SURE THAT THE CABLE IS ON THE PULLEYS FOR THE FORWARD/AFT ARM ASSEMBLY. MAKE SURE THAT THEY ARE ON THE SAME VERTICAL PLANE WITH THE RELATED FISHPOLE HOIST PULLEY. IF YOU DO NOT OBEY INSTRUCTIONS, DAMAGE TO EQUIPMENT AND INJURY TO PERSONNEL CAN OCCUR.



**CAUTION**

MAKE SURE TO WIND THE TWO CABLES OF THE TWO FISHPOLE HOISTS EQUALLY AROUND THE DRUMS. THEN YOU CAN USE THE FISHPOLE HOISTS TO HOLD THE APU. IF YOU DO NOT OBEY, THE APU CAN FALL SUDDENLY AND DAMAGE TO THE APU CAN OCCUR.

- (4) Do these steps to install the two fishpole hoists [40], (fishpole hoist, COM-1563 or chain fishpole hoist, COM-1592) to the forward arm assembly [31] and aft arm assembly [37]:
- Install the two fishpole hoists [40] to the forward arm assembly [31] and aft arm assembly [37].
    - Make sure that the two pins on the two fishpole hoists are engaged in the forward and aft arm assemblies.
  - Extend the two fishpole hoists [40] to a length that is easy to use.
  - Remove the two detent pins [39] from the forward arm assembly [31] and aft arm assembly [37].
  - While you unwind the two cables or chains of the two fishpole hoists, pull the cables or chains below the bottom pulley [38] and above the top pulley [38] until the two clevis fittings [44] are below the top pulley.
  - Install the two detent pins [39] in the forward arm assembly [31] and aft arm assembly [37].

SUBTASK 49-11-00-480-009

- (5) Do these steps to install the forward arm assembly [31] and aft arm assembly [37] to the center beam assembly [33]:
- Remove the two lanyard pins [36] from the forward arm assembly [31] and aft arm assembly [37].
  - Put the forward arm assembly [31] and fishpole hoist [40] below the center beam assembly [33].

NOTE: You can see the FWD stencil on the forward arm assembly.
  - Align the holes of the center beam assembly [33] to the forward arm assembly [31].

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- (d) Install the lanyard pin [36] that attaches the forward arm assembly [31] to the center beam assembly [33].
- (e) Put the aft arm assembly [37] and fishpole hoist [40] below the center beam assembly [33].  
NOTE: You can see the AFT stencil on the aft arm assembly.
- (f) Align the holes of the center beam assembly [33] to the aft arm assembly [37].
- (g) Install the lanyard pin [36] that attaches the aft arm assembly [37] to the center beam assembly [33].

SUBTASK 49-11-00-480-010

- (6) Do these steps to install the two fishpole hoists [40] to the forward hoist bracket [42] and aft hoist bracket [41] on the APU:
  - (a) Make sure that the two cables or chains of the two fishpole hoists are wound around the four pulleys [38].
  - (b) While you unwind the two cables or chains of the two fishpole hoists, pull the cables or chains until the two clevis fittings [44] align with the forward hoist bracket [42] and aft hoist bracket [41] on the APU.
  - (c) Install the two pins [43] that attach the two clevis fittings [44] to the forward hoist bracket [42] and aft hoist bracket [41].  
NOTE: You install the pin into the aft hoist bracket and clevis fitting from the forward side of the APU.
  - (d) Wind and tighten the two cables or chains of the two fishpole hoists a sufficient amount to take the weight off of the four APU mounts.  
NOTE: The weight of an APU is approximately 410 lb (186 kg).

## I. APU Power Plant Removal

SUBTASK 49-11-00-020-009

- (1) Do these steps to disconnect the APU from the left forward mount for the APU [48], left aft mount for the APU [52], right aft mount for the APU [59] and right forward mount for the APU [63]:
  - (a) Disconnect the left forward mount for the APU [48]:
    - 1) Remove the nut [46], washer [92], washer [50], bolt [51] and bushing [57] from the left forward bracket [45].
    - 2) Disconnect the left forward mount for the APU [48] from the left forward bracket [45].
    - 3) Let the left forward mount for the APU [48] hang vertically.
    - 4) Install the bushing [57], bolt [51], washer [50], washer [92] and nut [46] on the left forward mount for the APU [48].
  - (b) Disconnect the left aft mount for the APU [52], right aft mount for the APU [59], and right forward mount for the APU [63]:
    - 1) Loosen the nut [56], nut [62] and nut [66] about four or five full turns.
    - 2) Examine the washer [55], washer [61], washer [65] and the bottom of the left aft bracket [54], right aft bracket [60] and right forward bracket [64] for a clearance.  
NOTE: The clearance between the three washers and the bottom of the three brackets must be 0.20 in. (5 mm)-0.25 in. (6 mm).

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- a) If there is no clearance between the washer(s) and the bottom of the bracket(s), wind and tighten the two cables or chains of the two fishpole hoists, as necessary, to get the correct clearance and to take the weight off of the three APU mounts.
- 3) Remove the nut [56] and washer [55] from the cone bolt [53] on the left aft mount for the APU [52].
- 4) Remove the nut [62] and washer [61] from the cone bolt [53] on the right aft mount for the APU [59].
- 5) Remove the nut [66] and washer [65] from the cone bolt [53] on the right forward mount for the APU [63].

**WARNING**   
MAKE SURE THAT YOU ENGAGE THE THREAD PROTECTORS FULLY ON THE CONE BOLTS. IF YOU DO NOT OBEY, YOU CAN GET THE APU BRACKETS HELD UP ON THE THREAD PROTECTOR. THIS CAN CAUSE THE APU TO MOVE SUDDENLY. A SUDDEN MOVEMENT OF THE APU CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- 6) Install the thread protector [58], (thread protector, SPL-1971) on the three cone bolts [53].

NOTE: The cone bolt is a part of the vibration isolator for the APU mount.

SUBTASK 49-11-00-020-010

- (2) Do these steps to remove the APU [71]:

**CAUTION**   
BE CAREFUL WHEN YOU MOVE THE APU IN THE APU COMPARTMENT. YOU MUST TILT THE APU APPROXIMATELY 10-15 DEGREES IN THE FORWARD-END-DOWN POSITION WHILE THE APU IS IN THE APU COMPARTMENT. IF YOU DO NOT TILT THE APU CORRECTLY, DAMAGE TO THE FUEL SUPPLY LINE, STARTER-GENERATOR WIRE HARNESS AND ENGINE WIRE HARNESS CAN OCCUR.

- (a) Tilt the APU so that the forward end of the APU is lower than the aft end.  
NOTE: When the APU is installed, it is in the 11° forward-end-down position.
- (b) Slowly unwind the two cables or chains of the two fishpole hoists to lower the APU out of the APU compartment.
- (c) Install the forward attach assembly [76] on the right forward bracket [64] with the washer [78] and nut [79].  
NOTE: The cradle assembly [69], (cradle assembly, SPL-1970) has these three components - a forward attach assembly and two aft attach assemblies. These components attach the three APU brackets to the cradle assembly.
- (d) Install the two aft attach assemblies [77] on the left aft bracket [54] and right aft bracket [60] with the two washers [78] and two nuts [79].
- (e) Loosen the three jammuts [72] from the three knobs [73] on the cradle assembly [69].
- (f) Loosen the three knobs [73] until the three top clamp blocks [74] disengage from the three bottom clamp blocks [75].
- (g) Open the three top clamp blocks [74].

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IT IS IMPORTANT TO LOWER THE APU EVENLY FROM ALL HOIST POINTS. AN UNEVEN APU DURING REMOVAL COULD DAMAGE THE CONE BOLTS AND POSSIBLY THE FLANGE.

- (h) Slowly lower the APU [71] on the cradle assembly [69] and transportation base [70], (transportation base, SPL-1957) until the forward attach assembly [76] and two aft attach assemblies [77] engage the three bottom clamp blocks [75].
- (i) Close the three top clamp blocks [74].
- (j) Tighten the three knobs [73].
- (k) Tighten the three jammuts [72] on the three knobs [73].
- (l) Remove the two fishpole hoists [40] from the APU:
  - 1) Remove the two pins [43] from the two clevis fittings [44].
  - 2) Wind the two cables or chains of the two fishpole hoists until the two clevis fittings [44] touch the forward arm assembly [31] and aft arm assembly [37].

SUBTASK 49-11-00-020-027

- (3) Remove the APU [71], cradle assembly [69], (cradle assembly, SPL-1970) and transportation base [70], (transportation base, SPL-1957) from the area.

SUBTASK 49-11-00-210-002

- (4) Do a general visual inspection of the APU compartment:
  - (a) Do this task: Insulation Panel Inspection, TASK 49-17-11-200-801.
  - (b) Do this task: Air Inlet Seal Inspection, TASK 49-15-11-200-801.
  - (c) Visually examine the front area and inner surfaces of the exhaust duct muffler that you can get access from the APU compartment for cracks and damage.
    - 1) If you find cracks or damage on the exhaust duct muffler, do this task: Exhaust Duct Muffler Inspection, TASK 49-81-11-200-801.
  - (d) Visually examine the APU muffler drain tube fitting to make sure that there is no blockage of unwanted materials.
    - 1) If you find blockage of unwanted materials, do this task: Exhaust Duct Muffler Drain Fitting Cleaning, TASK 49-81-12-100-801.
  - (e) Visually examine the inner surfaces of the APU air inlet plenum that you can get access to from the APU compartment for cracks and damage.
    - 1) If you find cracks or damage on the APU air inlet plenum, do this task: APU AIR INLET PLENUM - REMOVAL/INSTALLATION, PAGEBLOCK 49-15-15/401.
  - (f) Do this task: Eductor Inlet Duct Inspection, TASK 49-91-71-200-801.
  - (g) Visually examine the bleed air duct for signs of oil and other contamination.
    - 1) If you find signs of oil and other contamination, then do these tasks:
      - a) Clean the bleed air duct. Do this task: Pneumatic Duct Cleaning, TASK 36-13-01-100-801.
      - b) Remove the oil contamination from the air conditioning and pneumatic systems. Do this task: Oil Contamination Removal from Air Conditioning and Pneumatic Systems, TASK 21-00-01-100-801.

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SUBTASK 49-11-00-020-011

- (5) Make sure that you install all necessary protection covers.

———— END OF TASK ————

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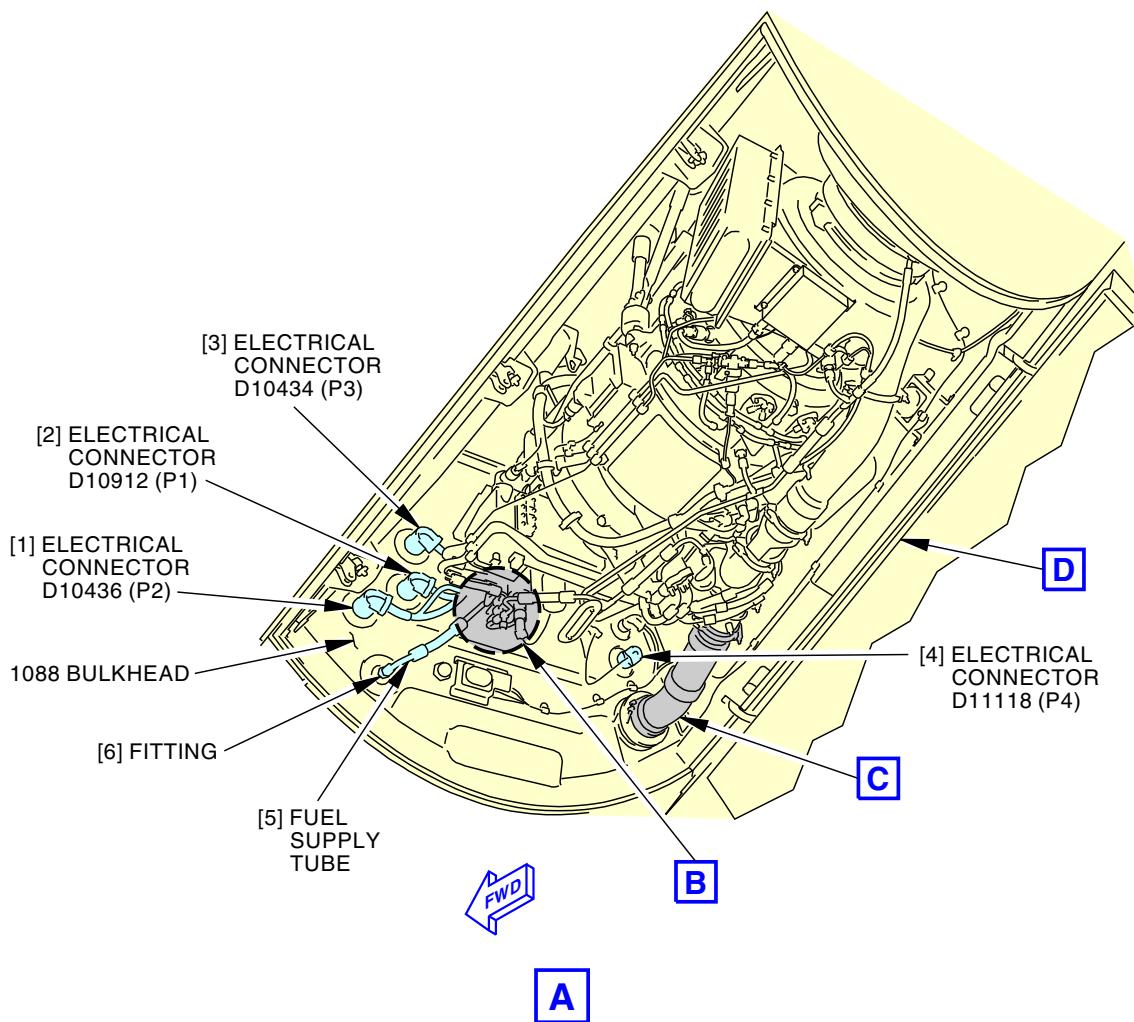
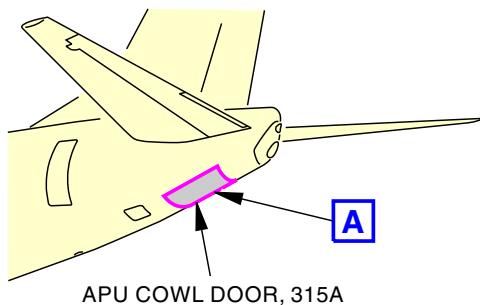
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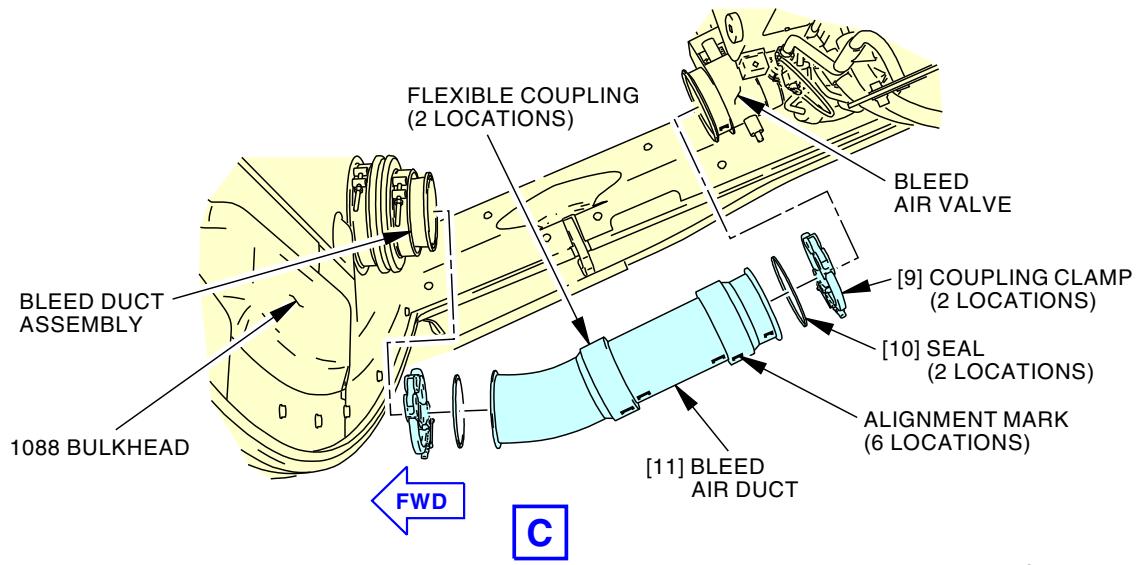
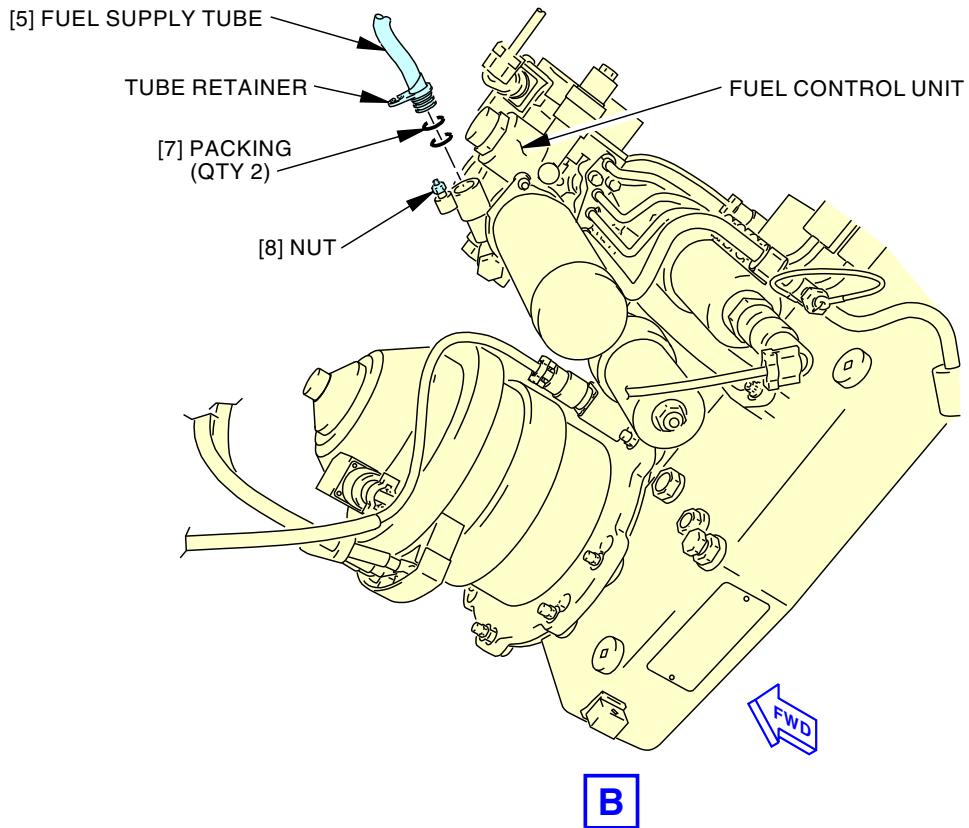
**Auxiliary Power Unit (APU) Installation (Fishpole Hoist Procedure)**  
**Figure 401/49-11-00-990-801 (Sheet 1 of 12)**

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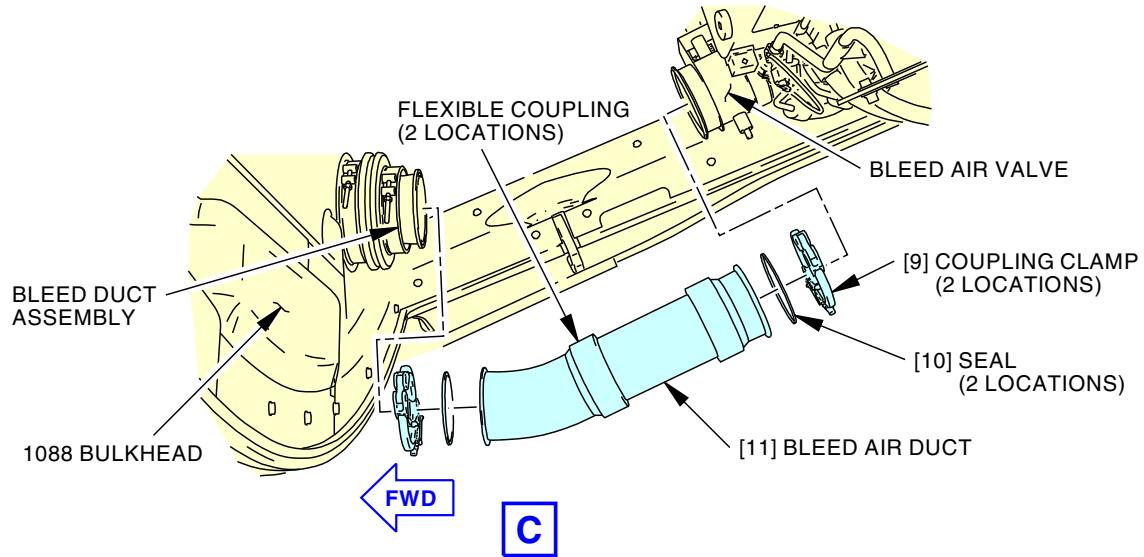
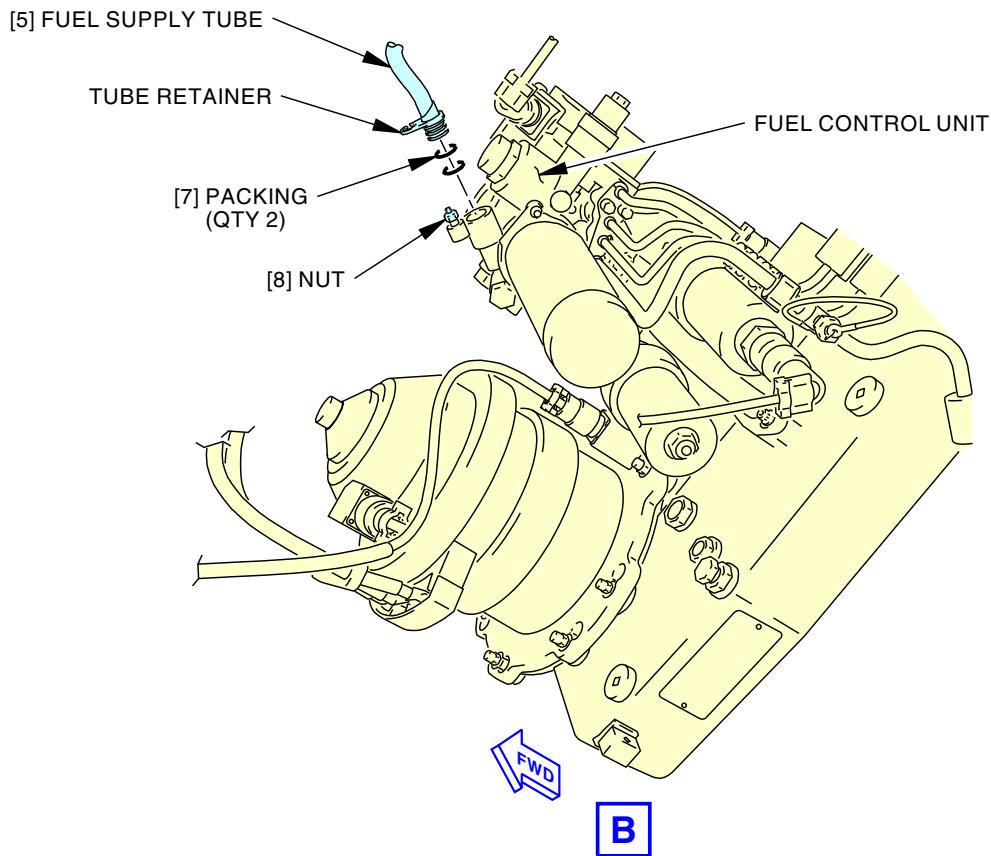
**Auxiliary Power Unit (APU) Installation (Fishpole Hoist Procedure)**  
**Figure 401/49-11-00-990-801 (Sheet 2 of 12)**

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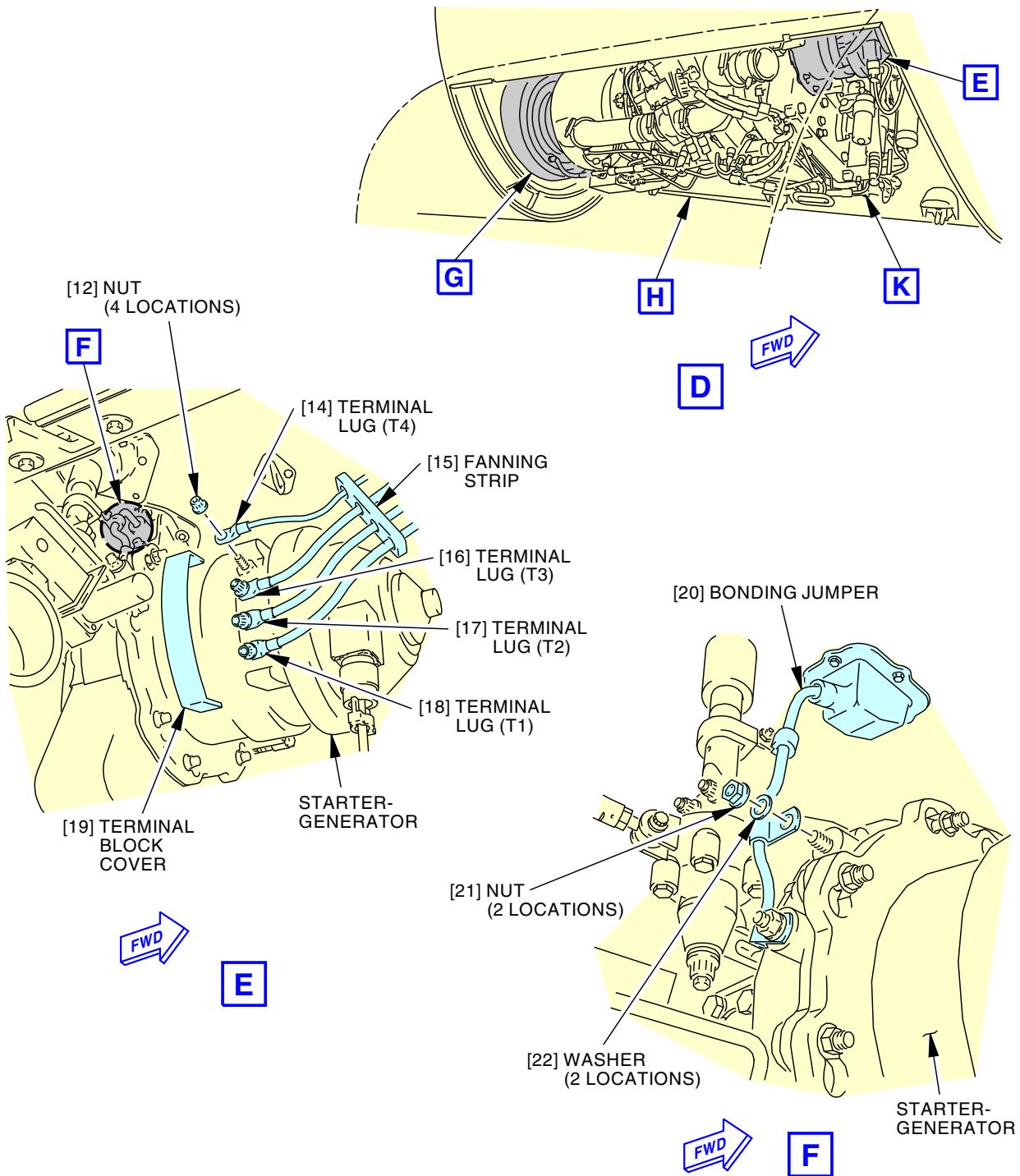


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Auxiliary Power Unit (APU) Installation (Fishpole Hoist Procedure)  
Figure 401/49-11-00-990-801 (Sheet 3 of 12)

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**Auxiliary Power Unit (APU) Installation (Fishpole Hoist Procedure)**  
**Figure 401/49-11-00-990-801 (Sheet 4 of 12)**

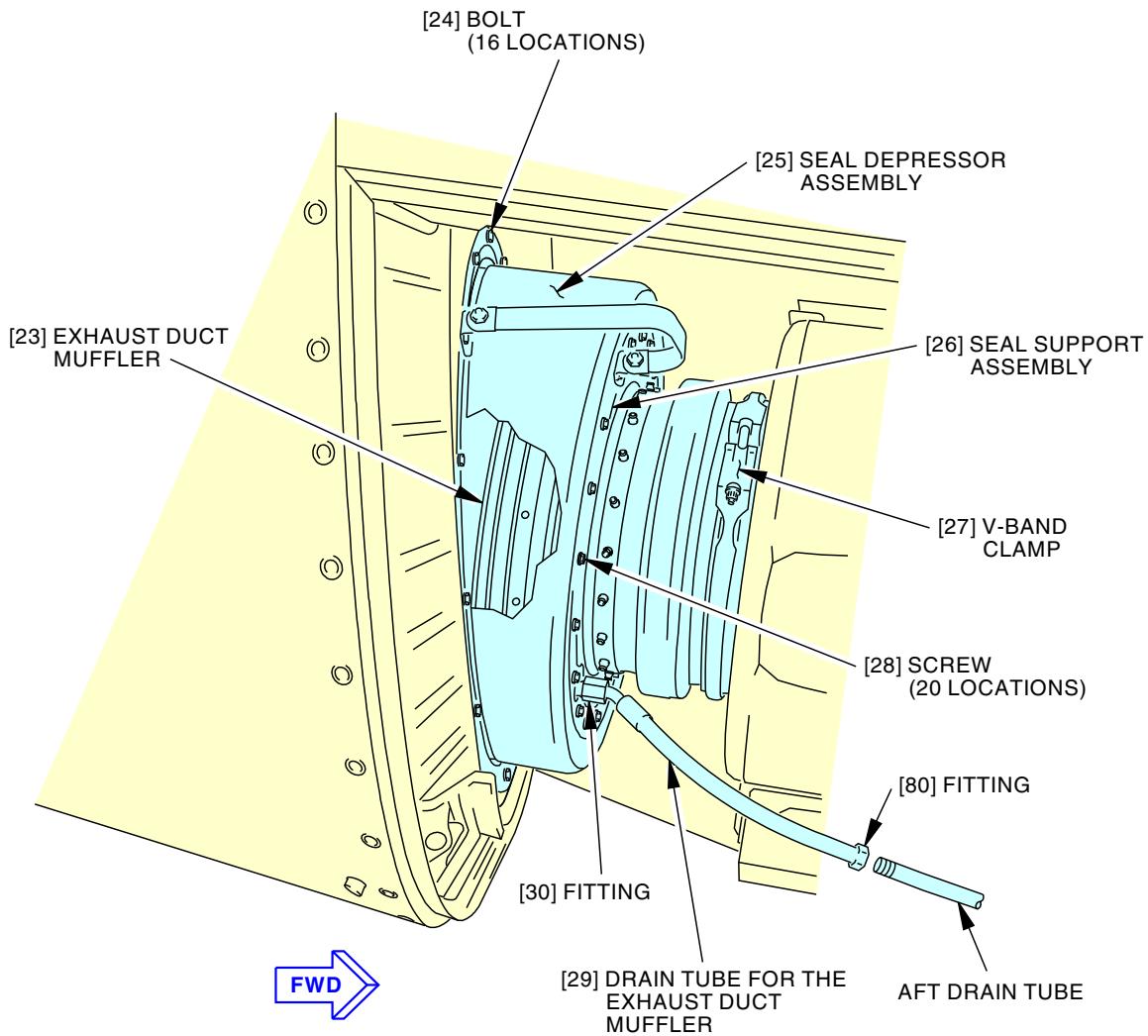
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Auxiliary Power Unit (APU) Installation (Fishpole Hoist Procedure)  
Figure 401/49-11-00-990-801 (Sheet 5 of 12)

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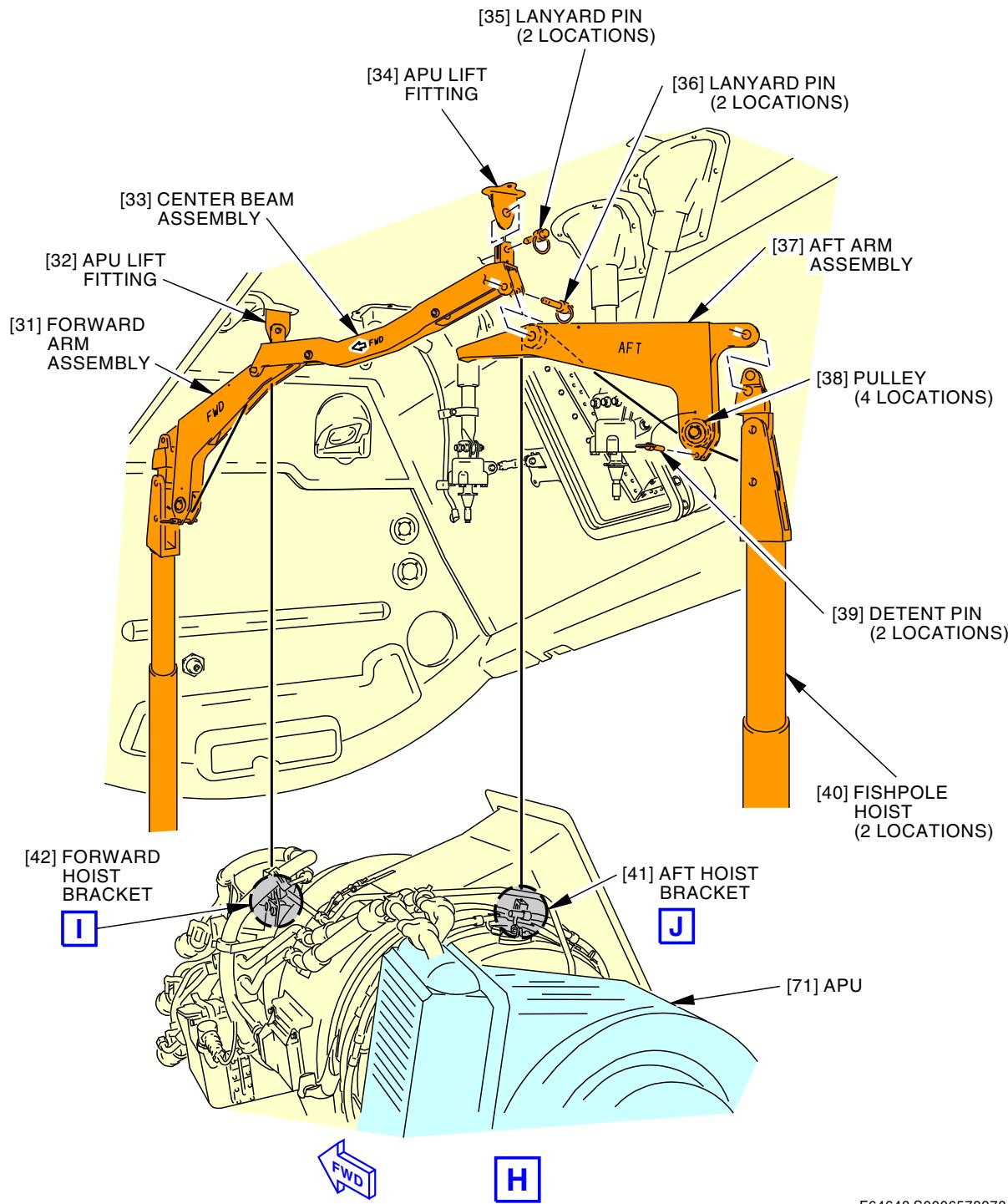
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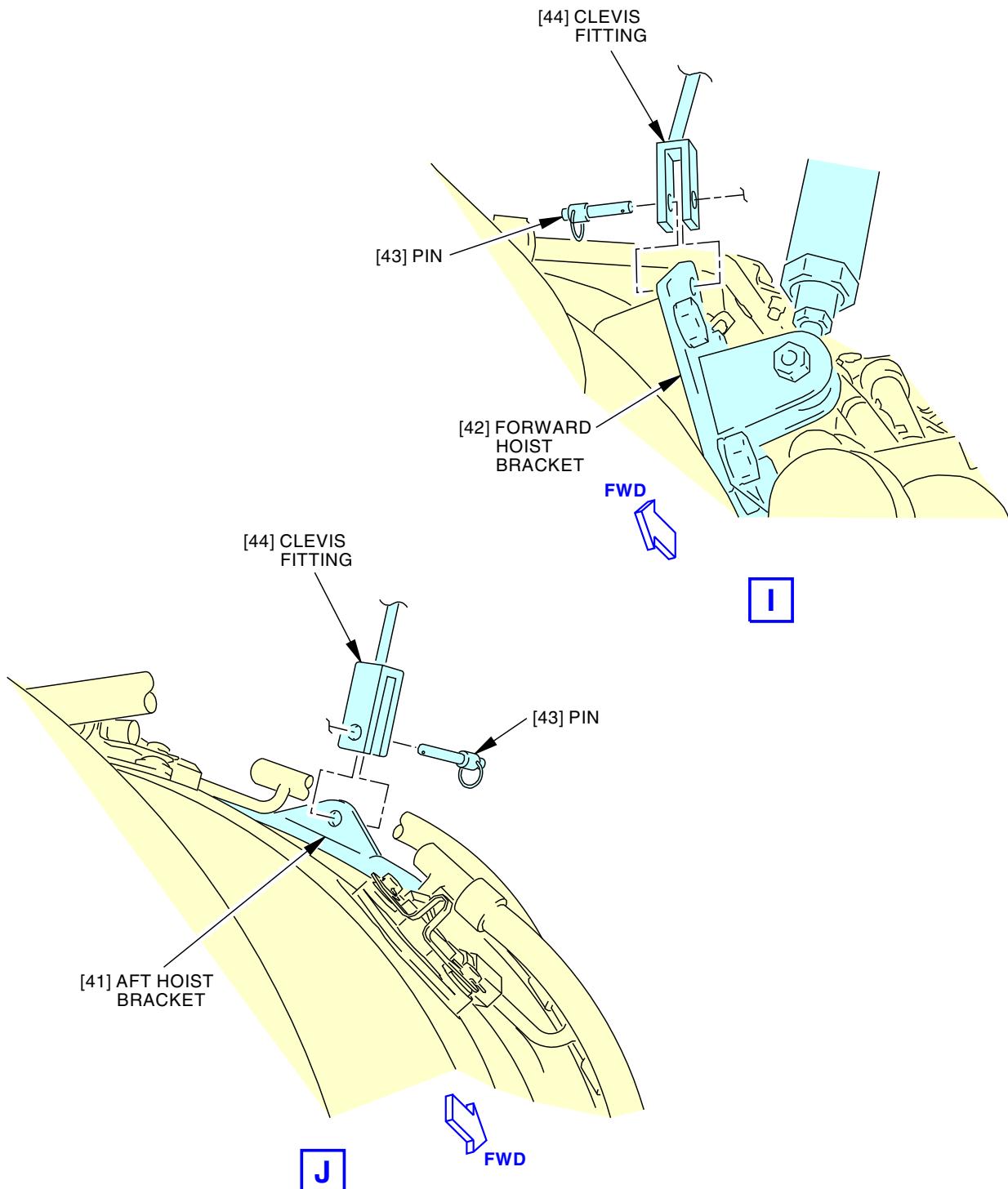
**Auxiliary Power Unit (APU) Installation (Fishpole Hoist Procedure)**  
**Figure 401/49-11-00-990-801 (Sheet 6 of 12)**

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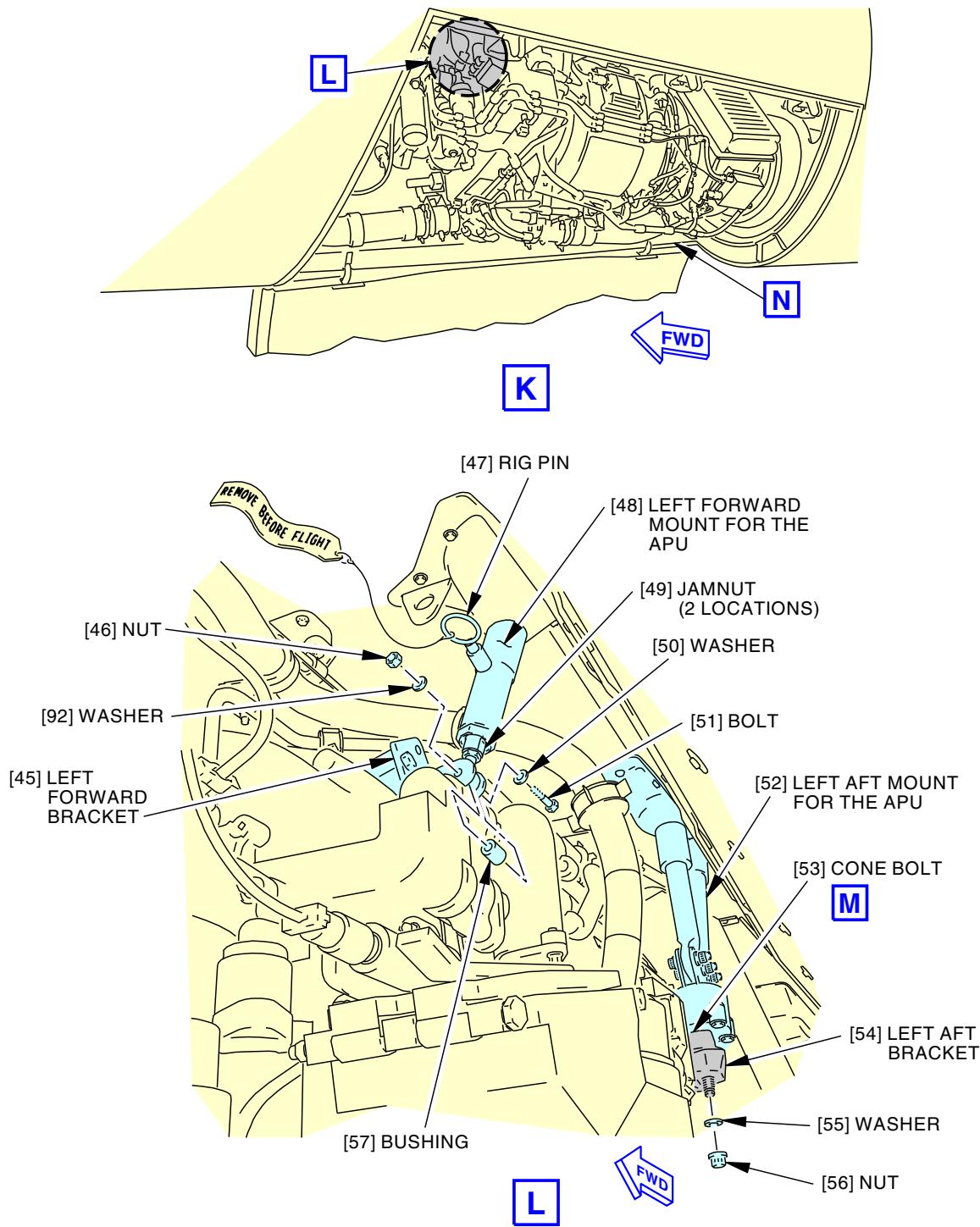
Auxiliary Power Unit (APU) Installation (Fishpole Hoist Procedure)  
Figure 401/49-11-00-990-801 (Sheet 7 of 12)

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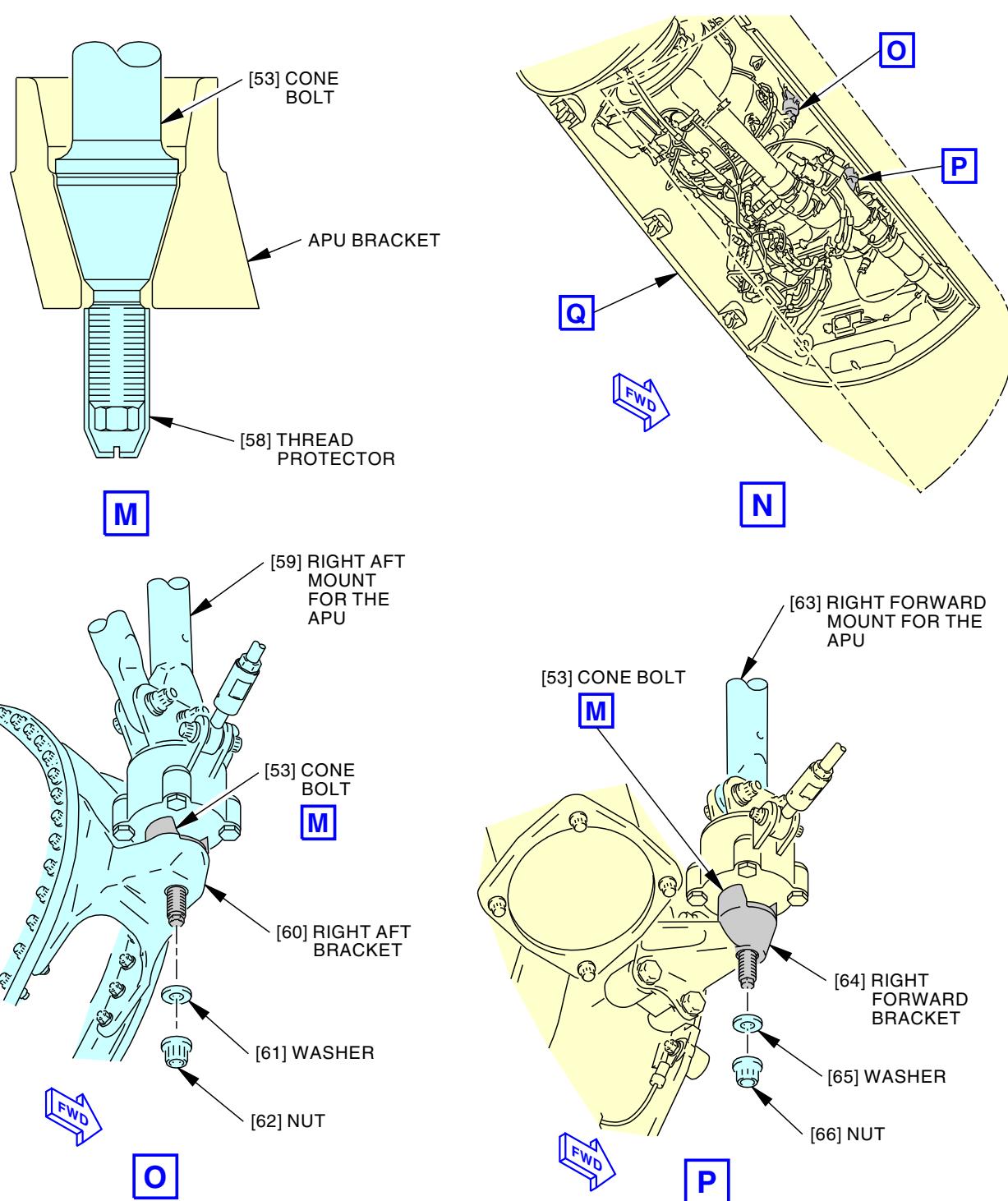


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**Auxiliary Power Unit (APU) Installation (Fishpole Hoist Procedure)**  
**Figure 401/49-11-00-990-801 (Sheet 8 of 12)**

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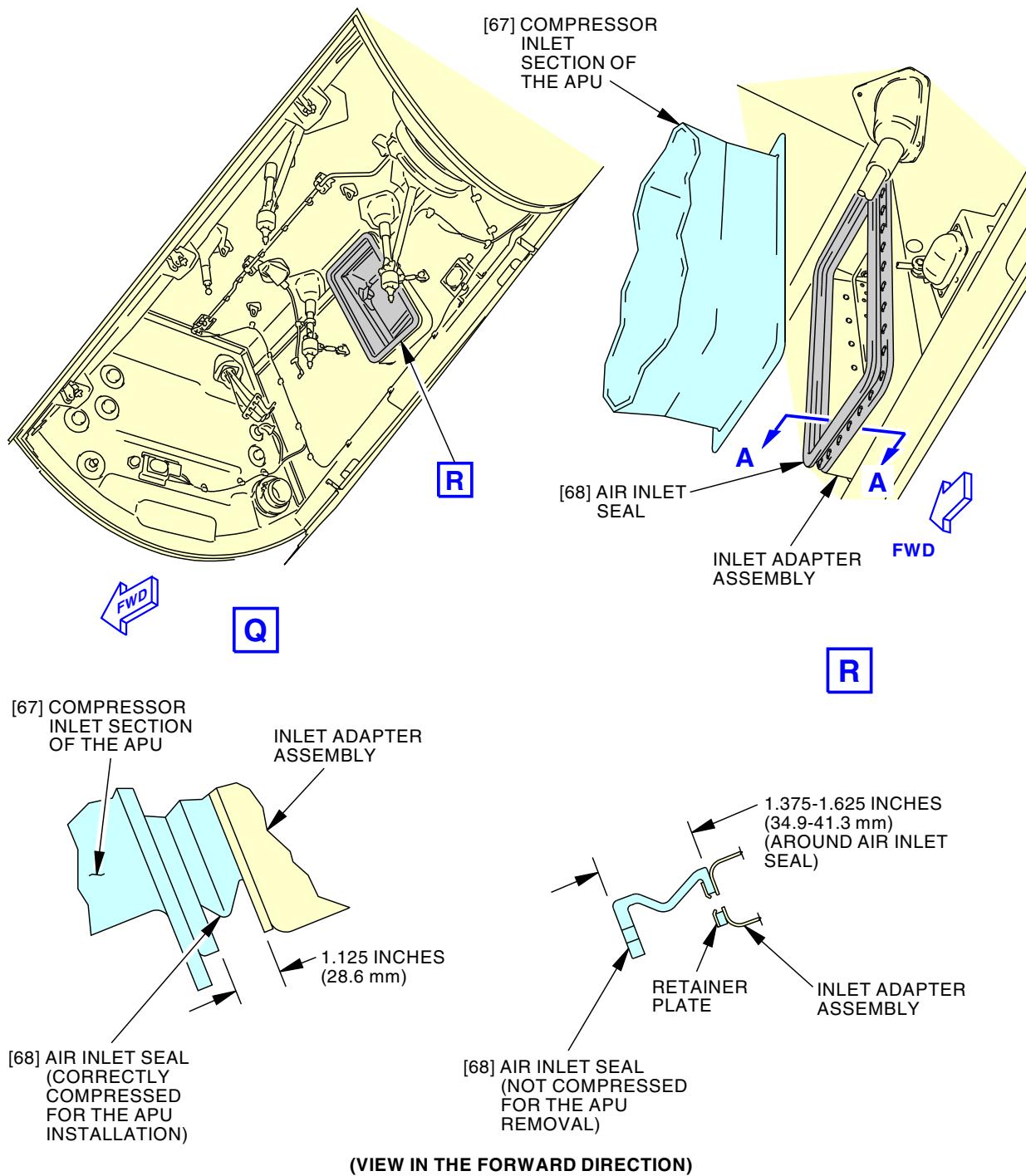
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**Auxiliary Power Unit (APU) Installation (Fishpole Hoist Procedure)**  
**Figure 401/49-11-00-990-801 (Sheet 9 of 12)**

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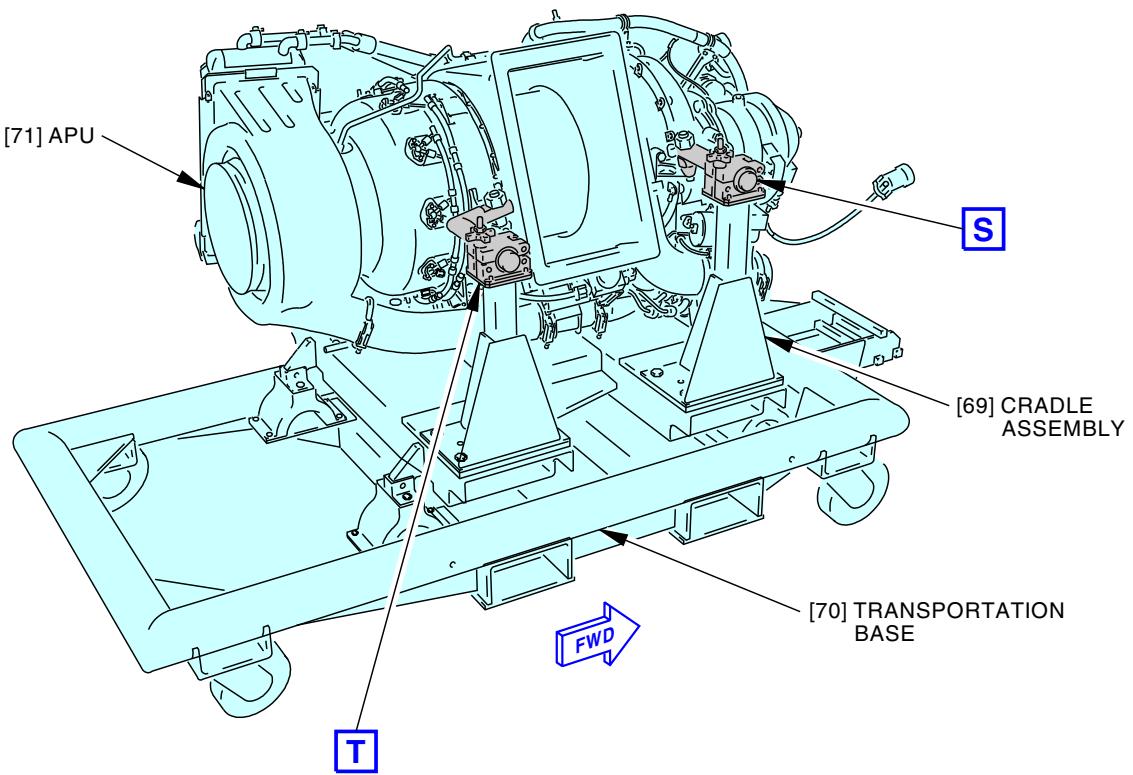
**Auxiliary Power Unit (APU) Installation (Fishpole Hoist Procedure)  
Figure 401/49-11-00-990-801 (Sheet 10 of 12)**

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Auxiliary Power Unit (APU) Installation (Fishpole Hoist Procedure)  
Figure 401/49-11-00-990-801 (Sheet 11 of 12)

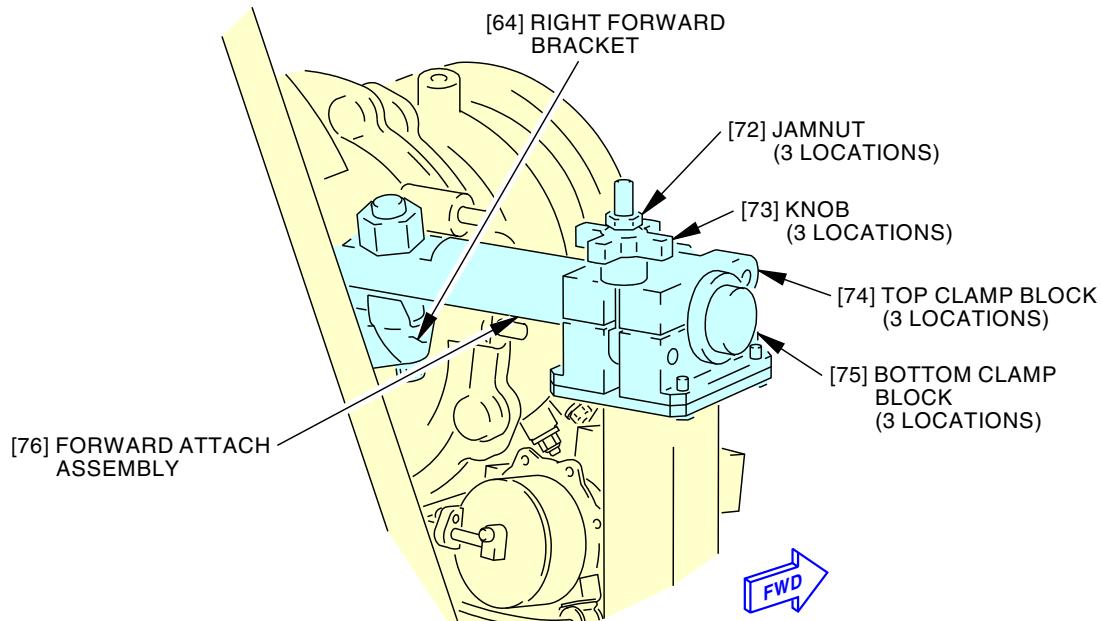
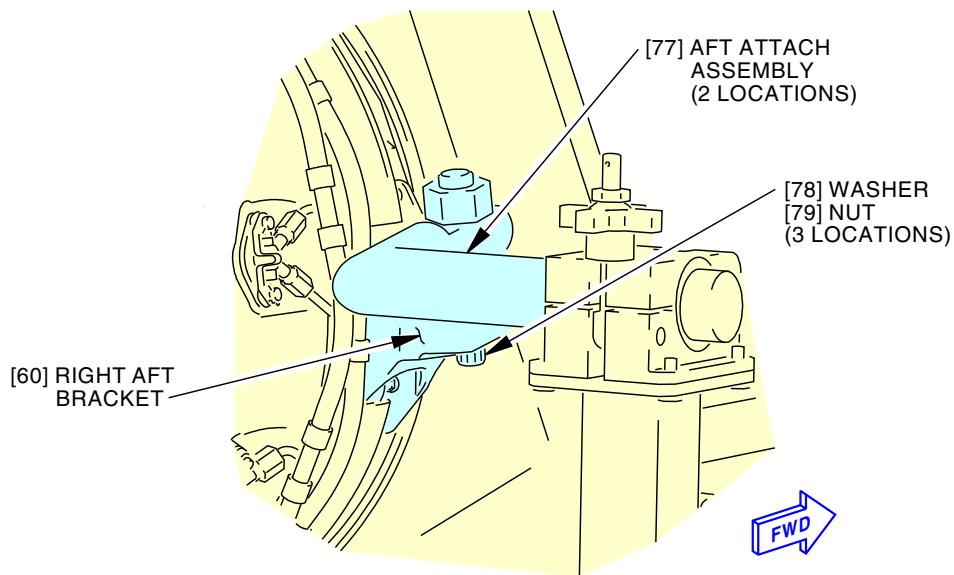
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**Auxiliary Power Unit (APU) Installation (Fishpole Hoist Procedure)  
Figure 401/49-11-00-990-801 (Sheet 12 of 12)**

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**TASK 49-11-00-400-802**

**5. APU Power Plant Installation (Fishpole Hoist Procedure)**

(Figure 401)

**A. General**

- (1) Cable hoist equipment, C49007-35 can only be operated by fishpole hoists with the furnished cable. The Didsbury brand hoists cannot be used.
- (2) Chain hoist equipment, C49007-36 can only be operated by fishpole hoists with the customer furnished 1/4" chain.
- (3) Cable hoist equipment, C49007-42 can only be operated by fishpole hoists with the furnished cable. The Didsbury brand MINILIFT P/N 10/3641 can also be used.

**B. References**

Reference	Title
12-13-31-200-801	APU Oil Level Inspection (P/B 301)
49-11-00-710-801	APU Operational Test (P/B 501)
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)
49-13-11-200-801	APU Mounts Inspection (APU Removed) (P/B 601)
49-15-11-000-801	Air Inlet Seal Removal (P/B 401)
49-15-11-400-801	Air Inlet Seal Installation (P/B 401)
49-17-11-200-801	Insulation Panel Inspection (P/B 601)
49-61-00-040-801	Low Oil Quantity BITE Deactivation (P/B 201)
49-61-00-700-801	APU BITE Procedure (P/B 201)
52-48-21-400-801	Auxiliary Power Unit (APU) Cowl Door 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-1550	Bonding Meter - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659
COM-1563	Hoist - Fishpole, 500 lb Safe Working Limit (SWL) Part #: 10/4180 Supplier: K1425 Part #: IA5101-1 Supplier: 053H3 Part #: IA5101-501 Supplier: 053H3 Part #: IA5119-1 Supplier: 053H3 Part #: IA5119-501 Supplier: 053H3 Part #: PF51-003-1 Supplier: 1YRX6 Part #: PF51-009-1 Supplier: 1YRX6 Opt Part #: 10/3641 Supplier: K1425 Opt Part #: 10/3641C1 Supplier: K1425 Opt Part #: MINILIFT Supplier: K1425

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(Continued)

<b>Reference</b>	<b>Description</b>
COM-1592	Hoist - Fishpole, Chain, 1,000 lb Safe Working Limit (SWL) Part #: AP6108 Supplier: 4Y309
SPL-1957	Base - Transportation, APU Part #: F72950-158 Supplier: 81205
SPL-1968	Equipment - Hoist, Auxiliary Power Unit (AE131-9 APU) Part #: C49007-36 Supplier: 81205 Part #: C49007-42 Supplier: 81205 Opt Part #: C49007-35 Supplier: 81205
SPL-1970	Assembly - Cradle, APU (AE131-9) Part #: C49010-50 Supplier: 81205
SPL-1971	Protector - Thread, APU Mount Bolt Part #: C49006-1 Supplier: 81205
STD-858	Tag - DO NOT OPERATE
STD-1057	Air Source - Regulated, Dry Filtered, Compressed 60-105 PSIG (414-723.9 KPa)(22 SCFM)
STD-1064	Scraper - Phenolic, Hard Resin
STD-1208	Lever - Wood, 2 Inch by 4 Inch, 4-7 Feet Long
STD-1242	Hammer - Standard
STD-3906	Mallet - Rubber

**D. Consumable Materials**

<b>Reference</b>	<b>Description</b>	<b>Specification</b>
A00160	Sealant - Firewall - Hydraulic Fluid Resistant	BMS5-63
B00130	Alcohol - Isopropyl	TT-I-735
D00006	Compound - Antiseize, Pure Nickel Special - Never-Seez NSBT-8N/-16N	
D50011	Grease - Perfluoropolyether - Christo-lube MCG111	
D50055	Oil - Aircraft Turbine Engine Oil for AE 131-9[B] APU (AMM 12-13-31/301)	
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)
G01048	Lockwire - MS20995C32, Corrosion Resistant Steel - 0.032 Inch (0.8128 mm) Diameter	NASM20995
G02272	Fuel - Turbine, Aviation (Grades JP-4, JP-5, JP-5/JP-8ST)	MIL-DTL-5624
G50222	Brush - Tampico Fiber, Non-Metallic	
G51056	Fuel - Standard Specification For Aviation Turbine Fuels (Jet A And Jet A-1)	ASTM D1655

**E. Expendables/Parts**

<b>AMM Item</b>	<b>Description</b>	<b>AIPC Reference</b>	<b>AIPC Effectivity</b>
5	Fuel supply tube	49-31-11-02-030	LOM ALL
7	Packing	49-31-11-02-015	LOM ALL

EFFECTIVITY
LOM ALL

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AMM Item	Description	AIPC Reference	AIPC Effectivity
11	Bleed air duct	49-52-11-02-015	LOM ALL
71	APU	49-11-00-02-085	LOM ALL

**F. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**G. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**H. Prepare to the APU Installation**

SUBTASK 49-11-00-210-003

- (1) Visually examine the left forward mount for the APU [48], left aft mount for the APU [52], right aft mount for the APU [59], and right forward mount for the APU [63] for wear, cracks, and damage.
  - (a) If you find wear, cracks, or damage, do this task: APU Mounts Inspection (APU Removed), TASK 49-13-11-200-801.

SUBTASK 49-11-00-210-004

- (2) Visually examine the forward hoist bracket [42] and aft hoist bracket [41] on the Auxiliary Power Unit (APU) for wear, cracks, and damage.

SUBTASK 49-11-00-220-001

- (3) Make sure that the height of the air inlet seal [68] is between 1.375 in. (34.9 mm) and 1.625 in. (41.3 mm).
  - (a) If necessary, remove and install the air inlet seal [68] (TASK 49-15-11-000-801 and TASK 49-15-11-400-801).

SUBTASK 49-11-00-420-002

- (4) If it is necessary, remove the protection covers from the compressor inlet section of the APU and APU exhaust duct.

**I. Fishpole Hoist Equipment Installation**

SUBTASK 49-11-00-480-002

**WARNING**  MAKE SURE THAT THE FISHPOLE HOIST IS IN A SERVICEABLE CONDITION. MAKE SURE THAT THERE ARE NO SIGNS OF DAMAGE ON THE CABLES OR CHAINS. IF THERE IS DAMAGE, INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT CAN OCCUR.

**WARNING**  MAKE SURE THAT WHEN YOU USE THE CABLE OR CHAIN HOIST EQUIPMENT, THAT YOU OPERATE THE FISHPOLE HOIST WITH SUPPLIED EQUIPMENT. IF YOU DO NOT OBEY INSTRUCTIONS, DAMAGE TO EQUIPMENT AND INJURY TO PERSONNEL CAN OCCUR.

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(WARNING PRECEDES)



**WARNING**  
MAKE SURE THAT THE CABLE IS ON THE PULLEYS FOR THE FORWARD/AFT ARM ASSEMBLY. MAKE SURE THAT THEY ARE ON THE SAME VERTICAL PLANE WITH THE RELATED FISHPOLE HOIST PULLEY. IF YOU DO NOT OBEY INSTRUCTIONS, DAMAGE TO EQUIPMENT AND INJURY TO PERSONNEL CAN OCCUR.



**CAUTION**

MAKE SURE THAT THE TWO CABLES OF THE TWO FISHPOLE HOISTS ARE EQUALLY WOUND AROUND THE DRUM BEFORE YOU OPERATE. IF YOU DO NOT HAVE THE CABLE EQUALLY WOUND BEFORE OPERATION, THE APU CAN FALL SUDDENLY.

- (1) Do these steps to install the two fishpole hoists [40], (fishpole hoist, COM-1563 or chain fishpole hoist, COM-1592) to the forward hoist bracket [42] and aft hoist bracket [41] on the APU:
  - (a) Put the APU [71] in position below the APU compartment.
  - (b) Extend the two fishpole hoists [40] to a length that is easy to use.
  - (c) Unwind the two cables or chains of the two fishpole hoists [40] until the two clevis fittings [44] align with the forward hoist bracket [42] and aft hoist bracket [41] on the APU.
  - (d) Install the two pins [43] that attach the clevis fittings [44] to the forward hoist bracket [42] and aft hoist bracket [41].
    - 1) Install the pin into the aft hoist bracket and clevis fitting from the forward side of the APU.
  - (e) Wind and tighten the two cables or chains of the two fishpole hoists [40].

NOTE: The weight of an APU is approximately 410 lb (186 kg).

## J. APU Installation

SUBTASK 49-11-00-420-003



**CAUTION**

REMOVE ANY INSTALLED PROTECTION COVERS FROM THE OPENINGS. IF YOU DO NOT REMOVE THE PROTECTION COVERS, DAMAGE TO THE APU CAN OCCUR.

- (1) Remove the protection covers from the compressor inlet section of the APU, APU exhaust duct and any other openings.

SUBTASK 49-11-00-080-007

- (2) Do these steps to remove the APU [71] from the cradle assembly [69], (cradle assembly, SPL-1970), and transportation base [70], (transportation base, SPL-1957):
  - (a) Make sure that the two cables or chains of the two fishpole hoists [40] are tight to hold the weight of the APU.
  - (b) Loosen the three jammuts [72] from the three knobs [73] on the cradle assembly [69].
  - (c) Loosen the three knobs [73] until the three top clamp blocks [74] disengage the three bottom clamp blocks [75].
  - (d) Open the three top clamp blocks [74].
  - (e) Remove the three nuts [79] and three washers [78] that attach the left aft bracket [54], right aft bracket [60], and right forward bracket [64] to the cradle assembly [69].
  - (f) Remove the forward attach assembly [76] from the right forward bracket [64].

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- (g) Remove the two aft attach assemblies [77] from the left aft bracket [54] and right aft bracket [60].
- (h) Slowly wind the two cables or chains of the two fishpole hoists [40] to lift the APU from the cradle assembly.
- (i) Close the three top clamp blocks [74].
- (j) Tighten the three knobs [73].
- (k) Tighten the three jammuts [72] on the three knobs [73].
- (l) Remove the cradle assembly [69] and transportation base [70] from the area.

**SUBTASK 49-11-00-420-004**

- (3) Do these steps to install the APU [71] into the APU compartment:
  - (a) Make sure that the thread protectors [58], (thread protector, SPL-1971) are installed on the three cone bolts [53].
  - (b) Lift the APU [71] into position:
    - 1) Hold the left aft mount for the APU [52] and right aft mount for the APU [59] in position.



**CAUTION**

BE CAREFUL WHEN YOU MOVE THE APU IN THE APU COMPARTMENT. YOU MUST TILT THE APU APPROXIMATELY 10-15 DEGREES IN THE FORWARD-END-DOWN POSITION WHILE THE APU IS IN THE APU COMPARTMENT. DAMAGE TO THE INSULATION AROUND THE RIGHT FRONT MOUNT, THE FUEL SUPPLY LINE, STARTER-GENERATOR WIRE HARNESS AND ENGINE WIRE HARNESS CAN OCCUR.

- 2) Tilt the APU [71] so that the forward end of the APU is lower than the aft end.

NOTE: When the APU [71] is installed, it is in the 11° forward-end-down position.

- 3) Slowly lift the APU [71] until the left aft bracket [54], right aft bracket [60], and right forward bracket [64] are below the three cone bolts [53].
- 4) Make sure that the left aft mount for the APU [52], right aft mount for the APU [59], and right forward mount for the APU [63] are engaged at the same time.



**CAUTION**

CAREFULLY LIFT THE APU SO THAT YOU DO NOT DAMAGE THE CONED SURFACES OF THE APU MOUNTS. IF YOU DO NOT, IT CAN CAUSE DAMAGE.



**CAUTION**

IF YOU OPERATE THE AIR-POWERED FISHPOLE UNTIL THE RELEASE OF THE CLUTCH TO MAKE SURE THAT THE CONE BOLTS ARE SEATED, IT WILL CAUSE MORE STRESS. THIS CAN CAUSE THE APU SLING TO FAIL OVER TIME AND CAUSE DAMAGE TO THE EQUIPMENT.

- 5) Lift the APU [71] until the three cone bolts [53] are engaged.
- 6) Lift the APU [71] until the air inlet seal [68] is fully engaged with the compressor inlet section of the APU [67].

NOTE: The compressed area of the air inlet seal must show no signs of buckling or caught on the edge of the compressor inlet section of the APU.

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- 7) Measure the height of the compressed area of the air inlet seal [68] with the APU installed.

NOTE: The height from the bottom to the top of the air inlet seal (between the inlet adapter assembly and APU) must be less than 1.125 in. (28.6 mm).

- (c) Connect the APU [71] to the left aft mount for the APU [52], right aft mount for the APU [59], and right forward mount for the APU [63]:
- 1) Remove the thread protector [58], (thread protector, SPL-1971) from the three cone bolts [53].
  - 2) Apply the Pure Nickel Special compound, D00006, to the threads of the three cone bolts [53].
  - 3) Install the washer [55], washer [61], washer [65], nut [56], nut [62], and nut [66] on the three cone bolts [53].
  - 4) Do the torque limit test for the nut [56], nut [62], and nut [66]:
    - a) Tighten the three nuts to a run-on torque of not more than 100 in-lb (11.3 N·m).
    - b) Stop when a minimum of one full thread and the cone bolt chamfer extends below each nut (but not before the washer touches the APU mount).
    - c) Make sure that the break-away torque necessary to turn the three nuts from this position is more than 14 in-lb (1.6 N·m).
    - d) Replace the nut(s) that do not meet these torque limits.
    - e) If the nut(s) were replaced, do the torque limit test again for the new nut(s).
  - 5) Tighten the nut [56], nut [62], and nut [66] to 375 in-lb (42.4 N·m) - 425 in-lb (48.0 N·m).
- (d) Connect the APU [71] to the left forward mount for the APU [48]:
- 1) Remove the nut [46], washer [92], washer [50], bolt [51], and bushing [57] from the left forward mount for the APU [48].
  - 2) Install the rig pin [47] in the left forward mount for the APU [48].
- NOTE: The rig pin is a component of the thread protector, SPL-1971.
- 3) Align the holes of the left forward bracket [45] to the left forward mount for the APU [48].
  - 4) If the holes of the left forward bracket [45] and left forward mount for the APU [48] do not align, adjust the left forward mount:
    - a) Remove the MS20995C32 lockwire, G01048, from the bottom jamnut [49] on the left forward mount for the APU [48].
    - b) Turn the bottom jamnut [49] clockwise or counterclockwise until the holes of the left forward bracket [45] align with the left forward mount for the APU [48].
- NOTE: One full turn of the jamnut will extend or retract the left forward mount a distance of 0.04 in. (1.0 mm).
- c) Make sure that you can see a minimum of one full thread from the bottom jamnut [49].
  - d) If more adjustments are necessary, remove the seven screws and seven washers that attach the firewall cover to the top insulation panel.
  - e) Move the firewall cover down until you can get access to the top jamnut [49].
  - f) Remove the MS20995C32 lockwire, G01048, from the top jamnut [49] on the left forward mount for the APU [48].

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- g) Turn the top jamnut [49] clockwise or counterclockwise until the holes of the left forward bracket [45] align with the left forward mount for the APU [48].  
NOTE: One full turn of the jamnut will extend or retract the left forward mount a distance of 0.04 in. (1.0 mm).
  - h) Make sure that you can see a minimum of one full thread from the top jamnut [49].
  - i) Tighten the jamnuts [49].
  - j) Install the MS20995C32 lockwire, G01048, on the jamnuts [49].
  - k) Remove the remaining sealant from the surface of the firewall cover and top insulation panel with a hard resin phenolic scraper, STD-1064, or an equivalent tool.
  - l) Clean the surface with alcohol, B00130, and a cotton wiper, G00034.
  - m) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057, to dry the surface.  
NOTE: It is recommended that you use a pressure of 60 psig (414 kPa)-90 psig (621 kPa) of air or nitrogen to dry the surface.
  - n) Install the firewall cover to the top insulation panel with the seven washers and seven screws.
  - o) Apply a fillet seal of sealant, A00160, around the firewall cover.
  - p) Remove the unwanted sealant from the firewall cover and top insulation panel with a cotton wiper, G00034.  
NOTE: It is not necessary for the sealant to dry.
- 5) Install the bushing [57], bolt [51], washer [50], washer [92], and nut [46].
  - 6) Remove the rig pin [47] from the left forward mount for the APU [48].

## K. Fishpole Hoist Equipment Removal

SUBTASK 49-11-00-080-001

- (1) Do these steps to remove the two fishpole hoists [40] from the forward hoist bracket [42] and aft hoist bracket [41] on the APU:
  - (a) Remove the two pins [43] that attach the two clevis fittings [44] to the forward hoist bracket [42] and aft hoist bracket [41] on the APU.
  - (b) Wind the two cables or chains of the two fishpole hoists [40] until the two clevis fittings [44] touch the forward arm assembly [31] and aft arm assembly [37].

SUBTASK 49-11-00-080-005

- (2) Do these steps to remove the forward arm assembly [31] and aft arm assembly [37] from the center beam assembly [33]:  
NOTE: The forward arm assembly, center beam assembly, and aft arm assembly are components of the APU hoist equipment, SPL-1968.
  - (a) While you hold the fishpole hoist [40] and forward arm assembly [31], remove the lanyard pin [36] that attaches the forward arm assembly [31] to the center beam assembly [33].
  - (b) Remove the forward arm assembly [31] and fishpole hoist [40].
  - (c) While you hold the fishpole hoist [40] and aft arm assembly [37], remove the lanyard pin [36] that attaches the aft arm assembly [37] to the center beam assembly [33].
  - (d) Remove the aft arm assembly [37] and fishpole hoist [40].

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- (e) Install the two lanyard pins [36] to the forward arm assembly [31] and aft arm assembly [37].
- (f) Remove the two detent pins [39] from the forward arm assembly [31] and aft arm assembly [37].
- (g) Fully wind the two cables or chains of the two fishpole hoists [40].
- (h) Install the two detent pins [39] to the forward arm assembly [31] and aft arm assembly [37].
- (i) Remove the two fishpole hoists [40] from the forward arm assembly [31] and aft arm assembly [37].

SUBTASK 49-11-00-080-006

- (3) Do these steps to remove the center beam assembly [33] from the APU lift fitting [32] and APU lift fitting [34]:
  - (a) Remove the two lanyard pins [35] that attach the center beam assembly [33] to the APU lift fitting [32] and APU lift fitting [34].



**BE CAREFUL WHEN YOU REMOVE THE CENTER BEAM ASSEMBLY FROM THE APU COMPARTMENT. YOU CAN TILT THE CENTER BEAM ASSEMBLY AS NECESSARY TO PREVENT THE CENTER BEAM ASSEMBLY FROM TOUCHING THE FIRE DETECTOR ASSEMBLY. DAMAGE TO THE FIRE DETECTOR ASSEMBLY AND WIRING CAN OCCUR.**

- (b) Remove the center beam assembly [33].

NOTE: The center beam assembly can be removed from the rear side or front side of the APU.

- (c) Install the two lanyard pins [35] to the center beam assembly [33].

## L. APU Connections

SUBTASK 49-11-00-420-005

- (1) Do these steps to connect the exhaust duct muffler [23]:
  - (a) Make sure that the exhaust duct muffler [23] touches the APU.
    - 1) Pull the exhaust duct muffler [23] forward to the APU until the exhaust duct muffler [23] touches the APU.
    - 2) If it is necessary, use a 2 inch by 4 inch, 4-7 feet long wood lever, STD-1208, and standard hammer, STD-1242, to lightly tap the exhaust duct muffler [23] forward to the APU until the exhaust duct muffler [23] touches the APU.
  - (b) If the exhaust duct muffler [23] does not touch the APU or the flanges are not aligned, do these steps to make sure that the exhaust duct muffler [23] touches the APU:
    - 1) Loosen the 16 bolts [24] that attach the seal depressor assembly [25] to the 1156 bulkhead.
    - 2) Move the exhaust duct muffler [23] until the exhaust duct muffler [23] touches the APU.
    - 3) If more adjustments are necessary, loosen the 20 screws [28] that attach the seal support assembly [26] to the exhaust duct muffler [23].
    - 4) Move the exhaust duct muffler [23] until the exhaust duct muffler [23] touches the APU and flanges are aligned.
  - (c) Install the V-band clamp [27] on the exhaust duct muffler [23]:

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- 1) Put the V-band clamp [27] on the exhaust duct muffler [23].
- 2) Tighten the V-band clamp [27] to 70 in-lb (7.9 N·m) - 90 in-lb (10.2 N·m).
- 3) Lightly hit the edge of the V-band clamp [27] with a rubber mallet, STD-3906.
- 4) Continue to tighten and hit the V-band clamp [27] until the torque value stays constant.
- (d) If the 20 screws [28] were loosened during the adjustment of the exhaust duct muffler [23], tighten the 20 screws [28] on the seal support assembly [26].
- (e) If the 16 bolts [24] were loosened during the adjustment of the exhaust duct muffler [23], tighten the 16 bolts [24] on the seal depressor assembly [25].

SUBTASK 49-11-00-420-006

- (2) Do these steps to install the drain tube [29] for the exhaust duct muffler [23]:
  - (a) Remove the caps or plugs from the drain tube [29], fitting [30] on the exhaust duct muffler [23] and fitting [80] on the aft drain tube of the APU.
  - (b) Apply a thin layer of Pure Nickel Special compound, D00006, on the threads of the fitting [30] and fitting [80].
  - (c) Connect the drain tube [29] to the fitting [80] on the aft drain tube of the APU.
  - (d) Connect the drain tube [29] to the fitting [30] on the exhaust duct muffler [23].
  - (e) Tighten the two ends of the drain tube [29] to 230 in-lb (26.0 N·m).

SUBTASK 49-11-00-420-007

- (3) Do these steps to connect the bonding jumper [20]:
  - (a) Clean the surfaces of the two studs:
    - 1) Apply alcohol, B00130, to a tampico fiber brush, G50222, or cotton wiper, G00034.
    - 2) Use a small amount of pressure on the tampico fiber brush, G50222, or cotton wiper, G00034 while you clean the surfaces of the two studs.
    - 3) Continue to clean the surfaces until there are no visible residue on the surfaces.
  - (b) Connect the bonding jumper [20] to the two studs with the two washers [22] and two nuts [21]:
    - 1) Tighten the two nuts [21] to  $180 \pm 10$  in-lb ( $20 \pm 1$  N·m).
    - 2) Measure the bonding resistance between the APU and airplane structure.
      - a) Use an intrinsically safe approved bonding meter, COM-1550 to measure the bonding resistance.
      - b) Make sure that the bonding resistance is 0.5 milliohm or less.

SUBTASK 49-11-00-420-008

- (4) Do these steps to connect the terminal lug (T4) [14], terminal lug (T3) [16], terminal lug (T2) [17], and terminal lug (T1) [18]:
  - (a) Disengage the terminal block cover [19] from the four pins on the starter-generator.
  - (b) Remove the terminal block cover [19].
  - (c) Remove the four nuts [12] from the four terminal studs.
  - (d) Connect the terminal lug (T1) [18], terminal lug (T2) [17], terminal lug (T3) [16], and terminal lug (T4) [14] to the related terminal studs.

NOTE: The terminal strip and the fanning strip show the identification of the terminal studs for each of the terminal lugs (T1), (T2), (T3), and (T4).

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- (e) Install the four nuts [12] on the four terminal studs.
  - 1) Tighten the four nuts [12] to 115 in-lb (13.0 N·m)-135 in-lb (15.3 N·m).
- (f) Put the terminal block cover [19] on the starter-generator.
- (g) Engage the terminal block cover [19] to the four pins on the starter-generator.

SUBTASK 49-11-00-420-009

- (5) Do these steps to install the bleed air duct [11]:
  - (a) Install the two seals [10] on the bleed air duct [11].
  - (b) Put the two coupling clamps [9] on the bleed air valve and bleed duct assembly.  
NOTE: The bleed duct assembly extends through the 1088 bulkhead.
  - (c) Put the bleed air duct [11] in its position.
    - 1) Make sure that the directional flow arrow points away from the front of the APU.

**LOM ALL; AIRPLANES WITH BLEED AIR DUCT P/N 3885004-1/-2**

- 2) Open the two coupling clamps [9] to permit alignment of the bleed air duct [11] to the bleed air valve and bleed duct assembly.
- 3) Make sure that the alignment marks on the two flexible couplings align with the two alignment marks on the bleed air duct [11].
- 4) Make sure that the center of the alignment mark on the bleed air duct [11] is ±0.16 in. (4.1 mm) from the center of the alignment mark on the bleed air valve.

**LOM ALL**

- (d) Put the two coupling clamps [9] over the flanges of the bleed air valve, bleed air duct [11], and bleed duct assembly.
  - 1) For AS1895 or 234-591 clamps: tighten the two coupling clamps [9] to 95 in-lb (10.7 N·m) - 110 in-lb (12.4 N·m).
  - 2) For 543227A or 234-607 clamps: tighten the two coupling clamps [9] to 35 in-lb (4.0 N·m) - 40 in-lb (4.5 N·m).

SUBTASK 49-11-00-420-010

- (6) Do these steps to install the fuel supply tube [5]:
  - (a) Remove the caps or plugs from the fuel supply tube [5], fitting [6], and fuel control unit.
  - (b) Lubricate the two new packings [7] with a light coat of fuel, G02272, or aviation turbine fuel, G51056.
  - (c) Install the two packings [7] on the fuel supply tube [5].
  - (d) Connect the fuel supply tube [5] to the fuel control unit.  
NOTE: Do not reinstall the old nut (shipping hardware) that was discarded. It is a different part number nut and can possibly cause fuel leakage.
  - (e) Turn the tube retainer on the fuel supply tube [5] clockwise until the flange fully engages the stud.
  - (f) Tighten the nut [8] to 35 in-lb (4.0 N·m) - 45 in-lb (5.1 N·m).
  - (g) If Christo-lube MCG111 grease, D50011 is not used on the fitting [6], do these steps:
    - 1) Apply a thin layer of aircraft turbine engine oil, D50055, on the threads of the fitting [6].
    - 2) Connect the fuel supply tube [5] to the fitting [6] on the 1088 bulkhead.
      - a) Tighten to 470 in-lb (53 N·m) - 510 in-lb (58 N·m).

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- (h) If Christo-lube MCG111 grease, D50011, is used on the fitting [6], do these steps:
- 1) Lubricate the external threads of the fitting [6] with Christo-lube MCG111 grease, D50011.  
**NOTE:** The grease should be applied to the external threads only. The grease should not be applied to the internal threads or sealing surface of the fitting.
  - 2) Connect the fuel supply tube [5] to the fitting [6] on the 1088 bulkhead.
    - a) Tighten to 266 in-lb (30 N·m) - 294 in-lb (33 N·m).

SUBTASK 49-11-00-420-011

- (7) Do these steps to connect the electrical connector D10436 (P2) [1], electrical connector D10912 (P1) [2], electrical connector D10434 (P3) [3], and electrical connector D11118 (P4) [4] to the APU firewall receptacles on the 1088 bulkhead:
- (a) Remove the caps from the electrical connectors.
  - (b) Make sure that the minimum clearance between the electrical bundle and fuel tubes is 0.5 in. (12.7 mm).
  - (c) Make sure that the minimum clearance between the electrical bundle and non fuel tubes and structure is 0.2 in. (5.1 mm).
  - (d) Connect the electrical connector D11118 (P4) [4].
  - (e) Connect the electrical connector D10434 (P3) [3].
  - (f) Connect the electrical connector D10912 (P1) [2].
  - (g) Make sure that the clamp attaches to the harness when you connect the electrical connector D10912 (P1) [2].
  - (h) Connect the electrical connector D10436 (P2) [1].
  - (i) Make sure that the clamp attaches to the harness when you connect the electrical connector D10436 (P2) [1].

## M. APU Installation Test

SUBTASK 49-11-00-410-001

- (1) If the APU cowl door was removed, do this task: Auxiliary Power Unit (APU) Cowl Door Installation, TASK 52-48-21-400-801.

**NOTE:** Do not close the APU cowl door at this time. Use the two hold-open rods to hold the APU cowl door open.

SUBTASK 49-11-00-210-009

- (2) Do a general visual inspection of the seven insulation panels:
- (a) Visually examine the seven insulation panels that you can get access from the APU compartment for holes, tears, separation, and damage.
  - (b) If the holes, tears, separation, or damage are found on the insulation panels, do this task: Insulation Panel Inspection, TASK 49-17-11-200-801.

SUBTASK 49-11-00-860-008

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

### F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER
B	21	C00452	FIRE PROTECTION EXTINGUISHERS APU

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**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-11-00-860-009

- (4) Remove the DO NOT OPERATE tag, STD-858 from the APU master switch on the P5 forward overhead panel.

SUBTASK 49-11-00-710-001

- (5) Do the installation test for the APU:

- Do this task: APU Oil Level Inspection, TASK 12-13-31-200-801.
- Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
- During the APU operation, examine the APU for signs of oil and fuel leakage.

NOTE: A fuel leakage rate of 1 drop for each minute (0.04 cc for each minute) is permitted during an APU operation from the forward drain on the APU drain seal.

- (d) If you find oil leakage or more than the fuel leakage rate, do these steps to repair the leakage:

- Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.
- Install a DO NOT OPERATE tag, STD-858 to the APU master switch on the P5 forward overhead panel.
- Repair the cause of the fuel or oil leakage.
- Remove the DO NOT OPERATE tag, STD-858 from the APU master switch on the P5 forward overhead panel.
- Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
- During the APU operation, examine the APU for signs of oil and fuel leakage.
- If you find oil leakage or more than the fuel leakage rate, do the leakage repair again.

- (e) Do this task: APU BITE Procedure, TASK 49-61-00-700-801.

- If maintenance message(s) show for the APU, refer to the applicable Maintenance Message Index in the Fault Isolation Manual (FIM).
- Look at the IDENT/CONFIG page on the Control Display Unit (CDU) display for the APU HOURS.
- If it is necessary to set the APU HOURS to 0.0, then do these steps:
  - Push the line select key 6R adjacent to RESET HOURS SINCE INSTALLATION>.

NOTE: The DO YOU WANT TO RESET THE HOURS SINCE INSTALLATION ON THIS AIRPLANE? shows on the CDU display.

- Push the line select key 5R adjacent to YES>.

NOTE: You push the line select key 2R adjacent to NO> if it is not necessary to set the APU HOURS to 0.0 or to go back to the IDENT/CONFIG page.

- If you have installed a new APU and prefer the LOQ BITE to be deactivated, do this task: Low Oil Quantity BITE Deactivation, TASK 49-61-00-040-801.

- (f) Do this task: APU Operational Test, TASK 49-11-00-710-801.

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**N. Put the Airplane Back to Its Usual Condition**

SUBTASK 49-11-00-410-002

- (1) Close this APU cowl door. To close this APU cowl door, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU cowl door.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Close the APU cowl door.
- (g) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch

———— END OF TASK ————

**TASK 49-11-00-000-803**

**6. APU Power Plant Removal (Hydraulic Jack Procedure)**

(Figure 402)

**A. General**

- (1) This task is a scheduled maintenance task.

**B. References**

Reference	Title
21-00-01-100-801	Oil Contamination Removal from Air Conditioning and Pneumatic Systems (P/B 201)
36-13-01-100-801	Pneumatic Duct Cleaning (P/B 701)
49-15-11-200-801	Air Inlet Seal Inspection (P/B 601)
49-15-15 P/B 401	APU AIR INLET PLENUM - REMOVAL/INSTALLATION
49-17-11-200-801	Insulation Panel Inspection (P/B 601)
49-81-11-200-801	Exhaust Duct Muffler Inspection (P/B 601)
49-81-12-100-801	Exhaust Duct Muffler Drain Fitting Cleaning (P/B 701)
49-91-71-200-801	Eductor Inlet Duct Inspection (P/B 601)
52-48-21-000-801	Auxiliary Power Unit (APU) Cowl Door - Removal (P/B 401)

**C. Tools/Equipment**

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

Reference	Description
SPL-1561	Jack - Hydraulic Part #: 930002 Supplier: FA2A9 Part #: J20009-110 Supplier: 81205 Opt Part #: J20009-108 Supplier: 81205 Opt Part #: J20009-109 Supplier: 81205

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(Continued)

<b>Reference</b>	<b>Description</b>
SPL-1957	Base - Transportation, APU Part #: F72950-158 Supplier: 81205
SPL-1969	Sling - Shop Handling, APU (AE131-9) Part #: C49004-40 Supplier: 81205
SPL-1970	Assembly - Cradle, APU (AE131-9) Part #: C49010-50 Supplier: 81205
SPL-1971	Protector - Thread, APU Mount Bolt Part #: C49006-1 Supplier: 81205
SPL-1972	Equipment - Adapter, APU Jacking Part #: C49008-37 Supplier: 81205
STD-858	Tag - DO NOT OPERATE
STD-4049	Container - Fuel Resistant, 1 Gallon (4 Liter)

**D. Location Zones**

<b>Zone</b>	<b>Area</b>
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**E. Access Panels**

<b>Number</b>	<b>Name/Location</b>
315A	APU Cowl Door

**F. Prepare for the Removal**

SUBTASK 49-11-00-860-010

- (1) Make sure that the Auxiliary Power Unit (APU) master switch, on the P5 forward overhead panel, is in the OFF position.

SUBTASK 49-11-00-480-014

- (2) Attach a DO NOT OPERATE tag, STD-858, to the APU master switch.

SUBTASK 49-11-00-860-011

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

**F/O Electrical System Panel, P6-2**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
B	19	C01344	APU FIRE SW POWER
B	21	C00452	FIRE PROTECTION EXTINGUISHERS APU

**F/O Electrical System Panel, P6-4**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-11-00-000-002

- (4) Do one of the applicable steps to get access to the APU:
  - (a) If it is necessary to remove the APU cowl door, do this task: Auxiliary Power Unit (APU) Cowl Door - Removal, TASK 52-48-21-000-801.
  - (b) If it is not necessary to remove the APU cowl door, open this APU cowl door:

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- 1) Open this access panel:

**Number      Name/Location**

315A      APU Cowl Door

- a) Support the APU panel (cowl door) under the center latch.

- b) Open the three latches.

NOTE: Use this sequence: forward latch, aft latch, middle latch.

- c) Open the APU cowl door.

- d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU cowl door.

- e) Remove the retainer pin from the spring clip on the aft hold-open rod.

- f) Disconnect the two hold-open rods from the two spring clips.

- g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.

- h) Install the two retainer pins in the two rod ends.

**G. Adapter and Hydraulic Jack Installation**

SUBTASK 49-11-00-480-003

- (1) Position the adapter [81] (APU adapter, SPL-1972) on the jack assembly [85] (hydraulic jack, SPL-1561).

SUBTASK 49-11-00-480-004

- (2) Install the four bolts [84], four washers [83], and four nuts [82] that attach the adapter [81] (APU adapter, SPL-1972) to the jack assembly [85] (hydraulic jack, SPL-1561).

**H. Disconnect the APU Power Plant**

SUBTASK 49-11-00-020-012

- (1) Do these steps to disconnect the electrical connector D10436 (P2) [1], electrical connector D10912 (P1) [2], electrical connector D10434 (P3) [3], and electrical connector D11118 (P4) [4] from the APU firewall receptacles on the 1088 bulkhead:

- (a) Disconnect the electrical connector D10436 (P2) [1].

NOTE: Be aware of the clamp that attaches onto the harness when you disconnect the electrical connector D10436 (P2).

- (b) Disconnect the electrical connector D10912 (P1) [2].

NOTE: Be aware of the clamp that attaches onto the harness when you disconnect the electrical connector D10912 (P1).

- (c) Disconnect the electrical connector D10434 (P3) [3].

- (d) Disconnect the electrical connector D11118 (P4) [4].

- (e) Install the caps on the electrical connectors to prevent contamination.

SUBTASK 49-11-00-020-013



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

- (2) Do these steps to remove the fuel supply tube [5]:

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- (a) Put the 1 gallon (4 l) fuel resistant container, STD-4049, under the fuel supply tube [5].
- (b) Disconnect the fuel supply tube [5] from the fitting [6] on the 1088 bulkhead.
- (c) Drain the fuel from the fuel supply tube [5] into the 1 gallon (4 l) fuel resistant container, STD-4049.
- (d) Put the 1 gallon (4 l) fuel resistant container, STD-4049, below the fuel control unit.
- (e) Loosen the nut [8] that attaches the fuel supply tube [5] to the fuel control unit.
- (f) Turn the tube retainer on the fuel supply tube [5] counterclockwise until the flange disengages from the stud.
- (g) Disconnect the fuel supply tube [5] from the fuel control unit.
- (h) Drain the fuel from the fuel supply tube [5] into the 1 gallon (4 l) fuel resistant container, STD-4049.
- (i) Remove the fuel supply tube [5].
- (j) Remove the two packings [7] from the fuel supply tube [5].
  - 1) Discard the two packings [7].
- (k) Install the caps or plugs on the fuel supply tube [5], fitting [6], and fuel control unit.
- (l) Install a protection cover on the fuel supply tube [5] to prevent contamination.
- (m) Remove the 1 gallon (4 l) fuel resistant container, STD-4049.

SUBTASK 49-11-00-020-014

- (3) Do these steps to remove the bleed air duct [11]:
  - (a) Remove the two coupling clamps [9] that hold the bleed air duct [11] to the bleed air valve and bleed duct assembly.  
NOTE: The bleed duct assembly extends through the 1088 bulkhead.
  - (b) Remove the bleed air duct [11].



BE CAREFUL WHEN YOU REMOVE THE TWO SEALS FROM THE BLEED AIR DUCT. DAMAGE TO THE SEALS CAN OCCUR.

**CAUTION**

- (c) Carefully remove the two seals [10] from the bleed air duct [11].
- (d) Install the protection covers on the bleed duct assembly, bleed air duct [11], two seals [10], and bleed air valve to prevent contamination.

SUBTASK 49-11-00-020-015

- (4) Do these steps to disconnect the terminal lug (T4) [14], terminal lug (T3) [16], terminal lug (T2) [17], and terminal lug (T1) [18]:
  - (a) Disengage the terminal block cover [19] from the four pins on the starter-generator.
  - (b) Remove the terminal block cover [19].
  - (c) Remove the four nuts [12] from the four terminal studs.
  - (d) Disconnect the terminal lug (T4) [14], terminal lug (T3) [16], terminal lug (T2) [17], and terminal lug (T1) [18] from the four terminal studs.  
NOTE: The terminal strip and fanning strip show the identification of the terminal studs for each of the terminal lugs (T1), (T2), (T3), and (T4).
  - (e) Install the four nuts [12] on the four terminal studs.
  - (f) Install the terminal block cover [19] on the starter-generator.

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- 1) Put the terminal block cover [19] on the starter-generator.
- 2) Engage the terminal block cover [19] to the four pins on the starter-generator.

SUBTASK 49-11-00-020-016

- (5) Do these steps to disconnect the bonding jumper [20]:
  - (a) Remove the two nuts [21] and two washers [22] that attach the bonding jumper [20] to the APU.
  - (b) Disconnect the bonding jumper [20] from the two studs.
  - (c) Keep the two nuts [21] and two washers [22] for the replacement APU.

SUBTASK 49-11-00-020-017

- (6) Do these steps to remove the drain tube [29] for the exhaust duct muffler:
  - (a) Disconnect the drain tube [29] from the fitting [30] on the exhaust duct muffler [23].
  - (b) Disconnect the drain tube [29] from the fitting [80] on the aft drain tube of the APU.
  - (c) Remove the drain tube [29].
  - (d) Install the caps or plugs on the drain tube [29], fitting [30] and fitting [80].
  - (e) Install a protection cover on the drain tube [29] to prevent contamination.

SUBTASK 49-11-00-020-018

- (7) Do these steps to disconnect the exhaust duct muffler [23]:
  - (a) Remove the V-band clamp [27] from the exhaust duct muffler [23].
  - (b) Disconnect and move the exhaust duct muffler [23] aft about 0.25 in. (6.4 mm) from the APU.

### I. APU Power Plant Removal

SUBTASK 49-11-00-480-005

- (1) Do these steps to attach the adapter [81] (APU adapter, SPL-1972) to the APU:
  - (a) Put the adapter [81] and jack assembly [85] (hydraulic jack, SPL-1561) on the maintenance stand.
    - 1) Make sure that the jack assembly [85] is centered under the APU.
  - (b) Lift the maintenance stand to the APU compartment.
  - (c) Lift the jack assembly [85] until the adapter [81] and the three ground handling mounts [86] are engaged.
  - (d) Install the three pins [87] that attach the adapter [81] to the three ground handling mounts [86].
  - (e) Install the three spring clips [88] in the three pins [87].
  - (f) Use the jack assembly [85] to lift the APU sufficiently to remove the weight of the APU from the four APU mounts.

SUBTASK 49-11-00-020-019

- (2) Do these steps to disconnect the APU from the left forward mount for the APU [48], left aft mount for the APU [52], right aft mount for the APU [59], and right forward mount for the APU [63]:
  - (a) Disconnect the left forward mount for the APU [48]:
    - 1) Remove the nut [46], washer [92], washer [50], and bolt [51] from the left forward bracket [45].
    - 2) Disconnect the left forward mount for the APU [48] from the left forward bracket [45].

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- 3) Let the left forward mount for the APU [48] hang vertically.
  - 4) Make sure that the bushing [57] is installed in the left forward mount for the APU [48].
  - 5) Install the bolt [51], washer [50], washer [92], and nut [46] on the left forward mount for the APU [48].
- (b) Disconnect the left aft mount for the APU [52], right aft mount for the APU [59], and right forward mount for the APU [63]:
- 1) Remove the nut [56] and washer [55] from the cone bolt [53] on the left aft mount for the APU [52].
  - 2) Remove the nut [62] and washer [61] from the cone bolt [53] on the right aft mount for the APU [59].
  - 3) Remove the nut [66] and washer [65] from the cone bolt [53] on the right forward mount for the APU [63].



**WARNING**

MAKE SURE THAT THE THREAD PROTECTORS ARE FULLY ENGAGED ON THE CONE BOLTS. IF THE THREAD PROTECTORS ARE NOT FULLY ENGAGED, THE APU MOUNTS CAN GET CAUGHT ON THE THREAD PROTECTOR. THIS CAN CAUSE THE APU TO MOVE SUDDENLY. A SUDDEN MOVEMENT OF THE APU CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- 4) Install the thread protector [58] (thread protector, SPL-1971) on the three cone bolts [53].

NOTE: The cone bolt is a part of the vibration isolator for the APU mount.

SUBTASK 49-11-00-020-020

- (3) Do these steps to remove the APU [71]:



**CAUTION**

BE CAREFUL WHEN YOU MOVE THE APU IN THE APU COMPARTMENT. YOU MUST TILT THE APU APPROXIMATELY 10-15 DEGREES IN THE FORWARD-END-DOWN POSITION WHILE THE APU IS IN THE APU COMPARTMENT. DAMAGE TO THE INSULATION AROUND THE RIGHT FRONT MOUNT, THE FUEL SUPPLY LINE, STARTER-GENERATOR WIRE HARNESS AND ENGINE WIRE HARNESS CAN OCCUR.

- (a) Tilt the APU [71] so that the forward end of the APU is lower than the aft end.

NOTE: When the APU is installed, it is in the 11° forward-end-down position.



**CAUTION**

IT IS IMPORTANT TO LOWER THE APU EVENLY FROM ALL HOIST POINTS. AN UNEVEN APU DURING REMOVAL COULD DAMAGE THE CONE BOLTS AND POSSIBLY THE FLANGE.

- (b) Slowly lower the APU [71] out of the APU compartment.

NOTE: The weight of an APU is approximately 410 lb (186 kg).



**CAUTION**

DO NOT USE THE ADAPTER AND THE JACK ASSEMBLY TO MOVE THE APU. DAMAGE TO THE APU CAN OCCUR.

- (c) Move the APU [71] away from the APU compartment and the maintenance stand.

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- (d) Make sure that the two rings [91] and two bow shackles [90] are attached to the sling [89] (APU shop sling, SPL-1969).
  - (e) Attach the two bow shackles [90] of the APU shop sling, SPL-1969, to the forward hoist bracket [42] and aft hoist bracket [41] on the APU.
  - (f) Use the sling [89] (APU shop sling, SPL-1969) to lift the APU [71] sufficiently to remove the weight of the APU from the jack assembly [85] (hydraulic jack, SPL-1561).
  - (g) Remove the four nuts [82], four washers [83], and four bolts [84] that attach the adapter [81] (APU adapter, SPL-1972) to the jack assembly [85].
  - (h) Remove the jack assembly [85].
  - (i) Remove the adapter [81] from the APU:
    - 1) Remove the three spring clips [88] from the three pins [87].
    - 2) Remove the three pins [87] that attach the adapter [81] to the three ground handling mounts [86].
    - 3) Remove the adapter [81].
  - (j) Install the forward attach assembly [76] on the right forward bracket [64] with the washer [78] and nut [79].
- NOTE: The cradle assembly [69] (cradle assembly, SPL-1970) has these three components - a forward attach assembly and two aft attach assemblies. These components attach the three APU brackets to the cradle assembly.
- (k) Install the two aft attach assemblies [77] on the left aft bracket [54] and right aft bracket [60] with the two washers [78] and two nuts [79].
  - (l) Loosen the three jammuts [72] from the three knobs [73] on the cradle assembly [69].
  - (m) Loosen the three knobs [73] until the three top clamp blocks [74] disengage from the three bottom clamp blocks [75].
  - (n) Open the three top clamp blocks [74].
  - (o) Slowly lower the APU [71] on the cradle assembly [69] and transportation base [70] (transportation base, SPL-1957) until the forward attach assembly [76] and two aft attach assemblies [77] engage the three bottom clamp blocks [75].
  - (p) Close the three top clamp blocks [74].
  - (q) Tighten the three knobs [73].
  - (r) Tighten the three jammuts [72] on the three knobs [73].
  - (s) Disconnect the two bow shackles [90] of the APU shop sling, SPL-1969, from the forward hoist bracket [42] and aft hoist bracket [41] on the APU.
  - (t) Remove the APU [71], cradle assembly [69], and transportation base [70] from the area.

SUBTASK 49-11-00-210-010

- (4) Do a general visual inspection of the APU compartment:
    - (a) Do this task: Insulation Panel Inspection, TASK 49-17-11-200-801.
    - (b) Do this task: Air Inlet Seal Inspection, TASK 49-15-11-200-801.
    - (c) Visually examine the front area and inner surfaces of the exhaust duct muffler for cracks and damage.
- NOTE: Examine the areas that you can access from the APU compartment.
- 1) If cracks or damage are found on the exhaust duct muffler, do this task: Exhaust Duct Muffler Inspection, TASK 49-81-11-200-801.

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- (d) Visually examine the APU muffler drain tube fitting to make sure that there is no blockage of unwanted materials.
  - 1) If blockage of unwanted materials are found, do this task: Exhaust Duct Muffler Drain Fitting Cleaning, TASK 49-81-12-100-801.
- (e) Visually examine the inner surfaces of the APU air inlet plenum for cracks and damage.

NOTE: Examine the areas that you can access from the APU compartment.

  - 1) If cracks or damage are found on the APU air inlet plenum, do this task: APU AIR INLET PLENUM - REMOVAL/INSTALLATION, PAGEBLOCK 49-15-15/401.
- (f) Do this task: Eductor Inlet Duct Inspection, TASK 49-91-71-200-801.
- (g) Visually examine the bleed air duct for signs of oil and other contamination.
  - 1) If signs of oil and other contamination are found, then do these tasks:
    - a) Clean the bleed air duct, do this task: Pneumatic Duct Cleaning, TASK 36-13-01-100-801.
    - b) Remove the oil contamination from the air conditioning and pneumatic systems, do this task: Oil Contamination Removal from Air Conditioning and Pneumatic Systems, TASK 21-00-01-100-801.

SUBTASK 49-11-00-020-021

- (5) Make sure that all necessary protection covers are installed.

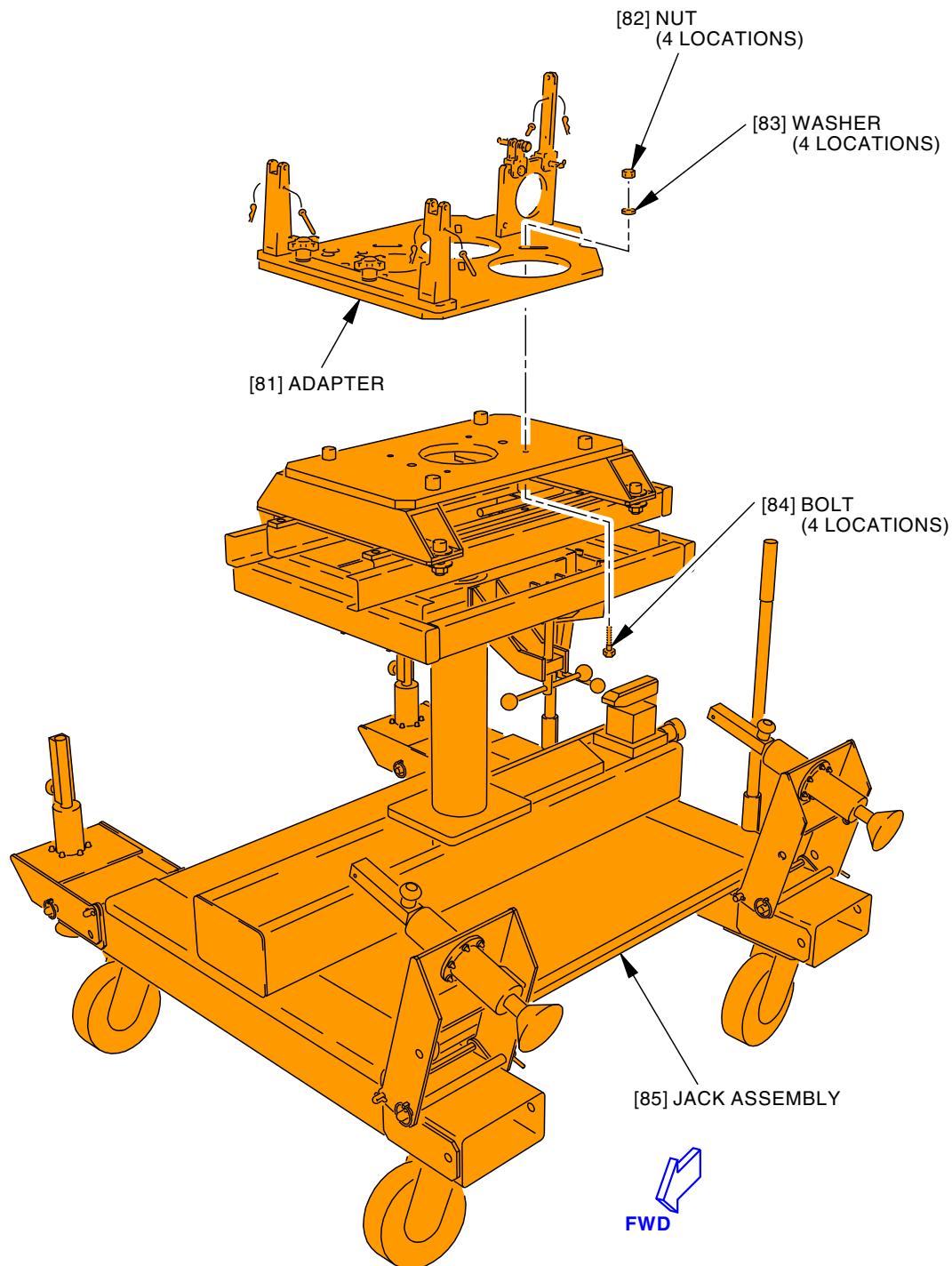
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Auxiliary Power Unit (APU) Installation (Hydraulic Jack Procedure)  
Figure 402/49-11-00-990-802 (Sheet 1 of 13)

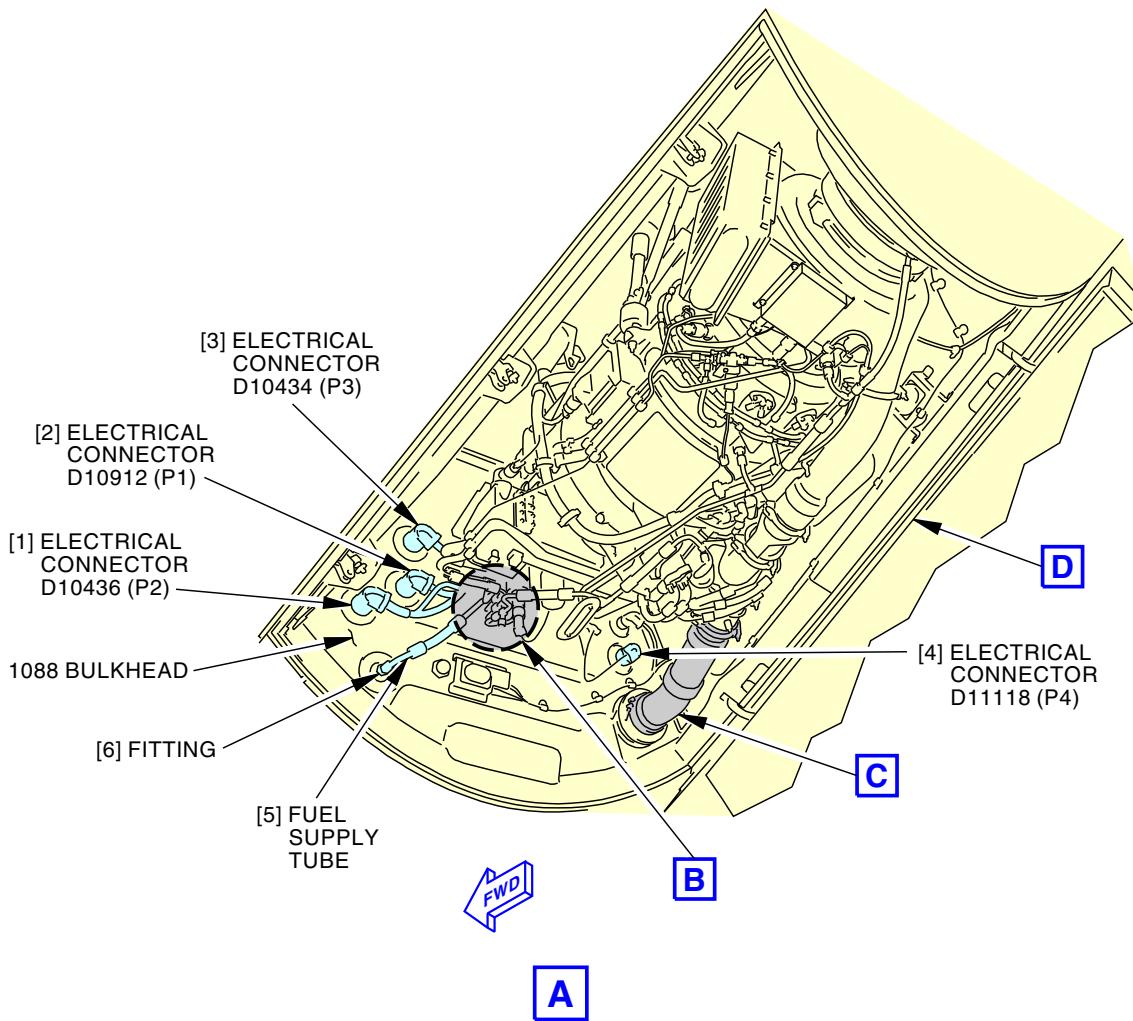
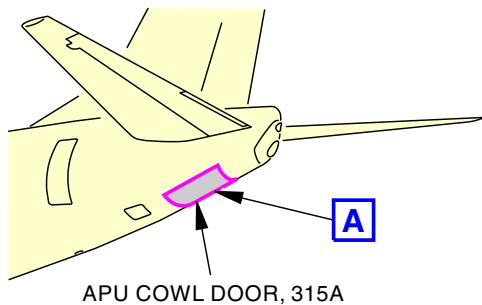
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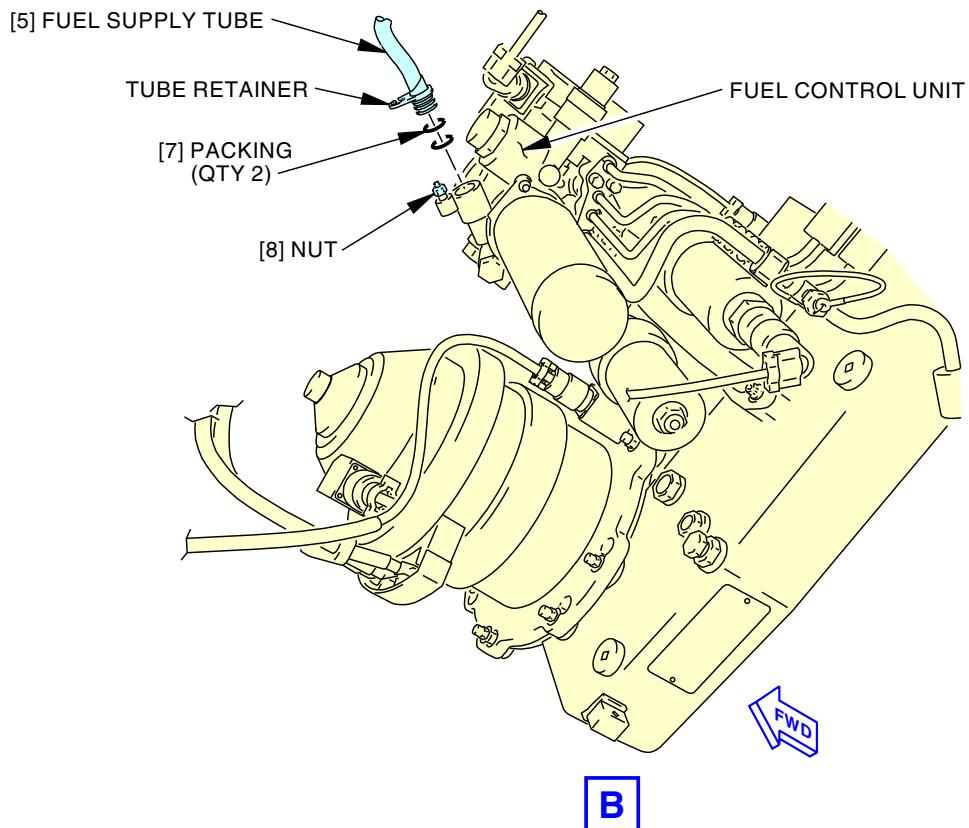
**Auxiliary Power Unit (APU) Installation (Hydraulic Jack Procedure)**  
**Figure 402/49-11-00-990-802 (Sheet 2 of 13)**

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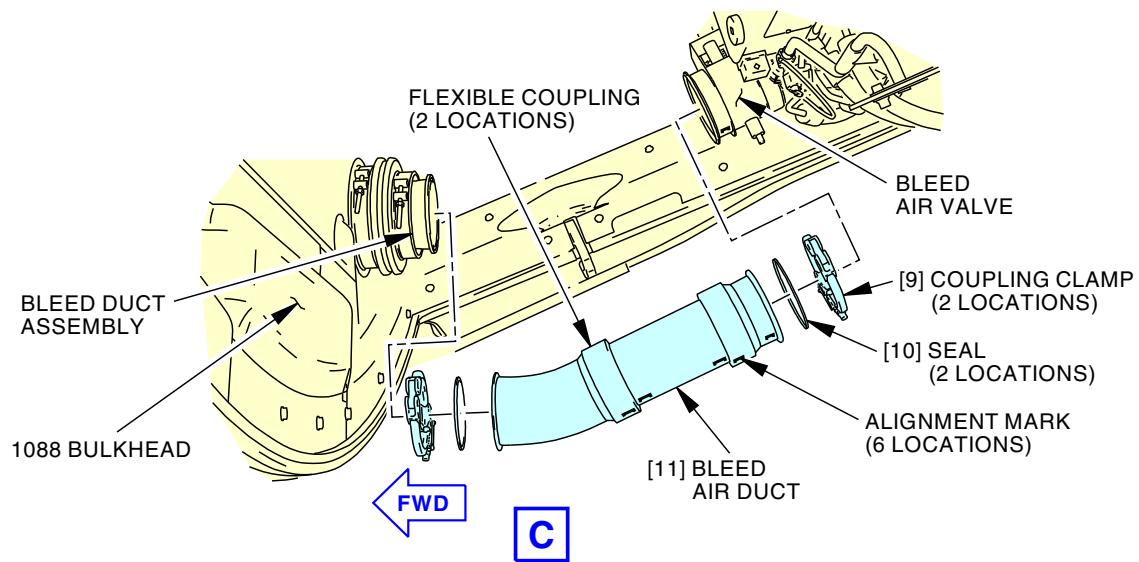
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Auxiliary Power Unit (APU) Installation (Hydraulic Jack Procedure)  
Figure 402/49-11-00-990-802 (Sheet 3 of 13)

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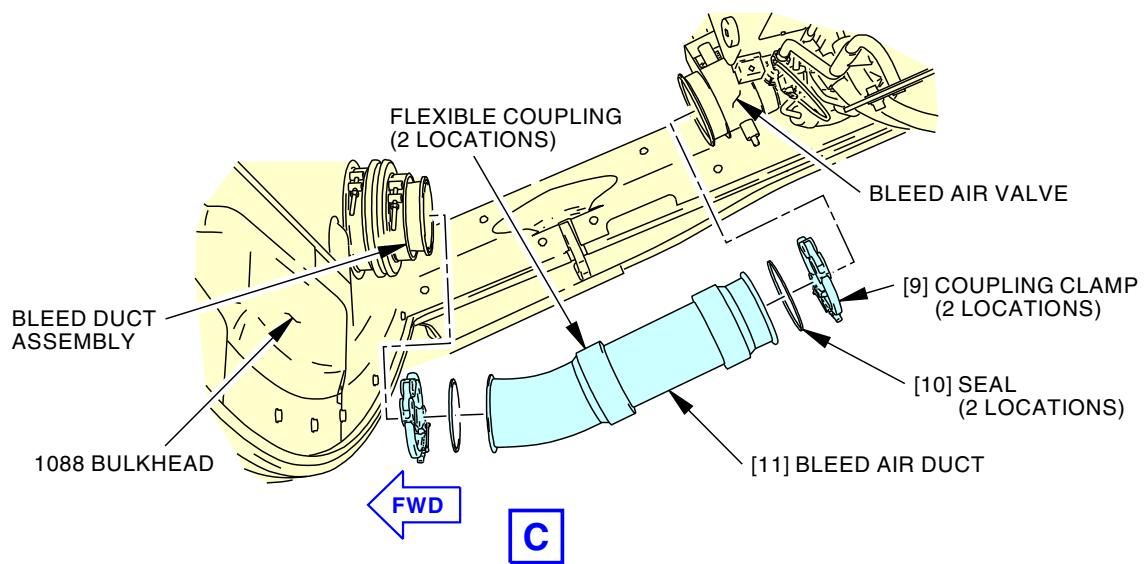
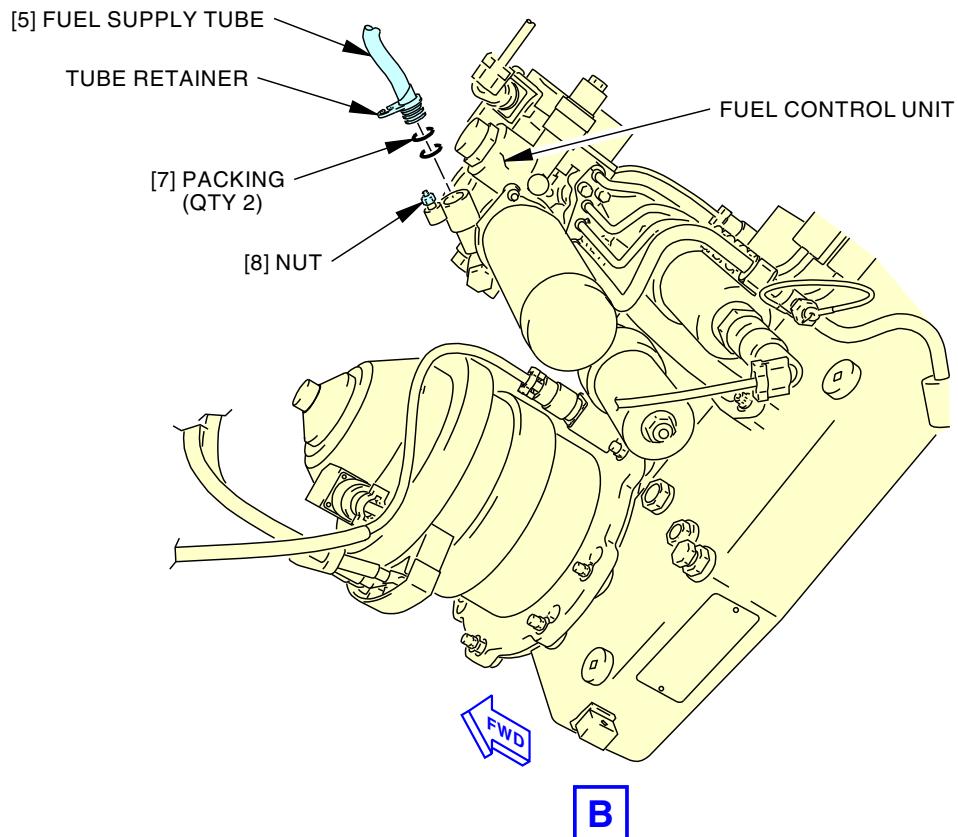
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**Auxiliary Power Unit (APU) Installation (Hydraulic Jack Procedure)**  
**Figure 402/49-11-00-990-802 (Sheet 4 of 13)**

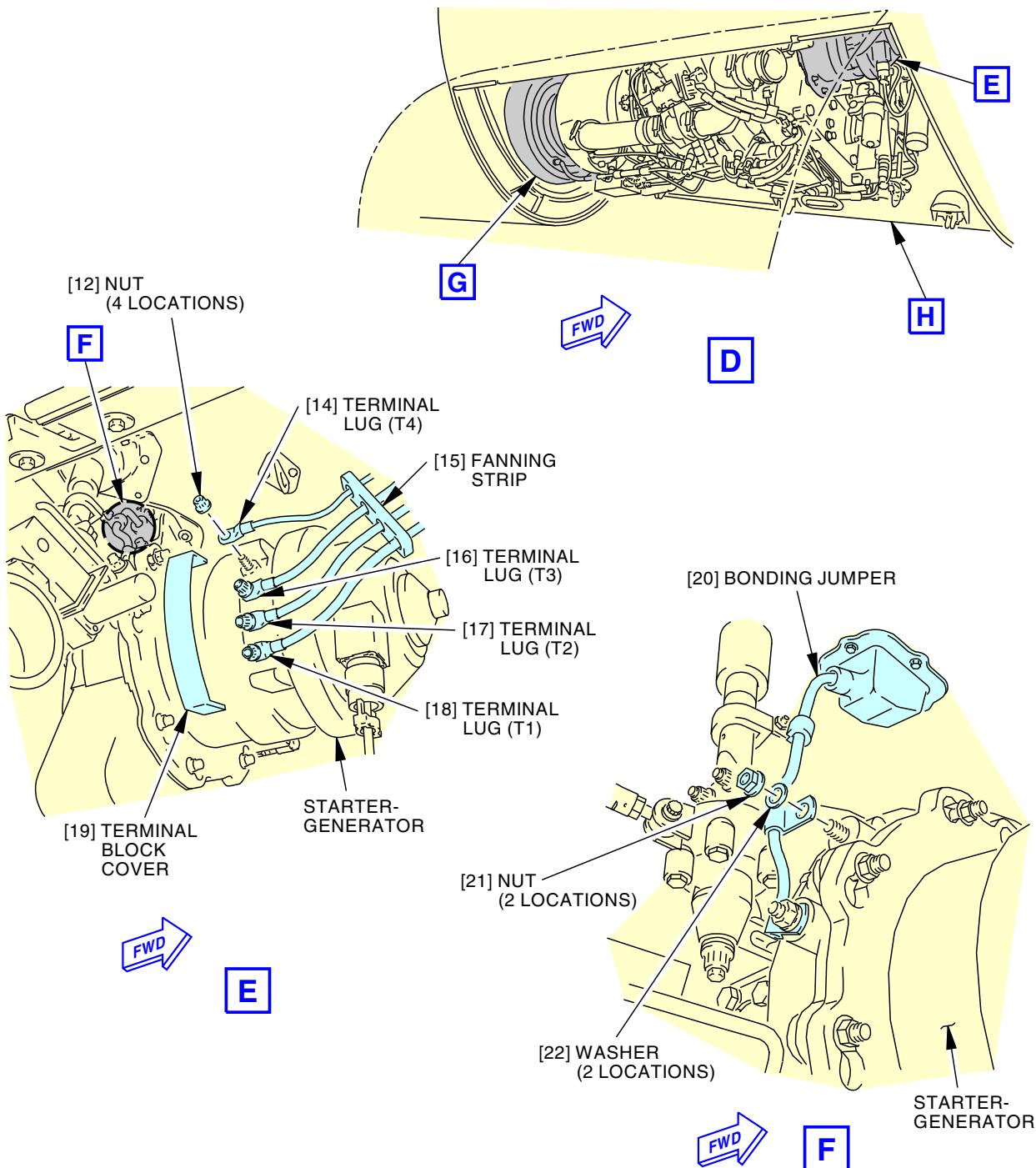
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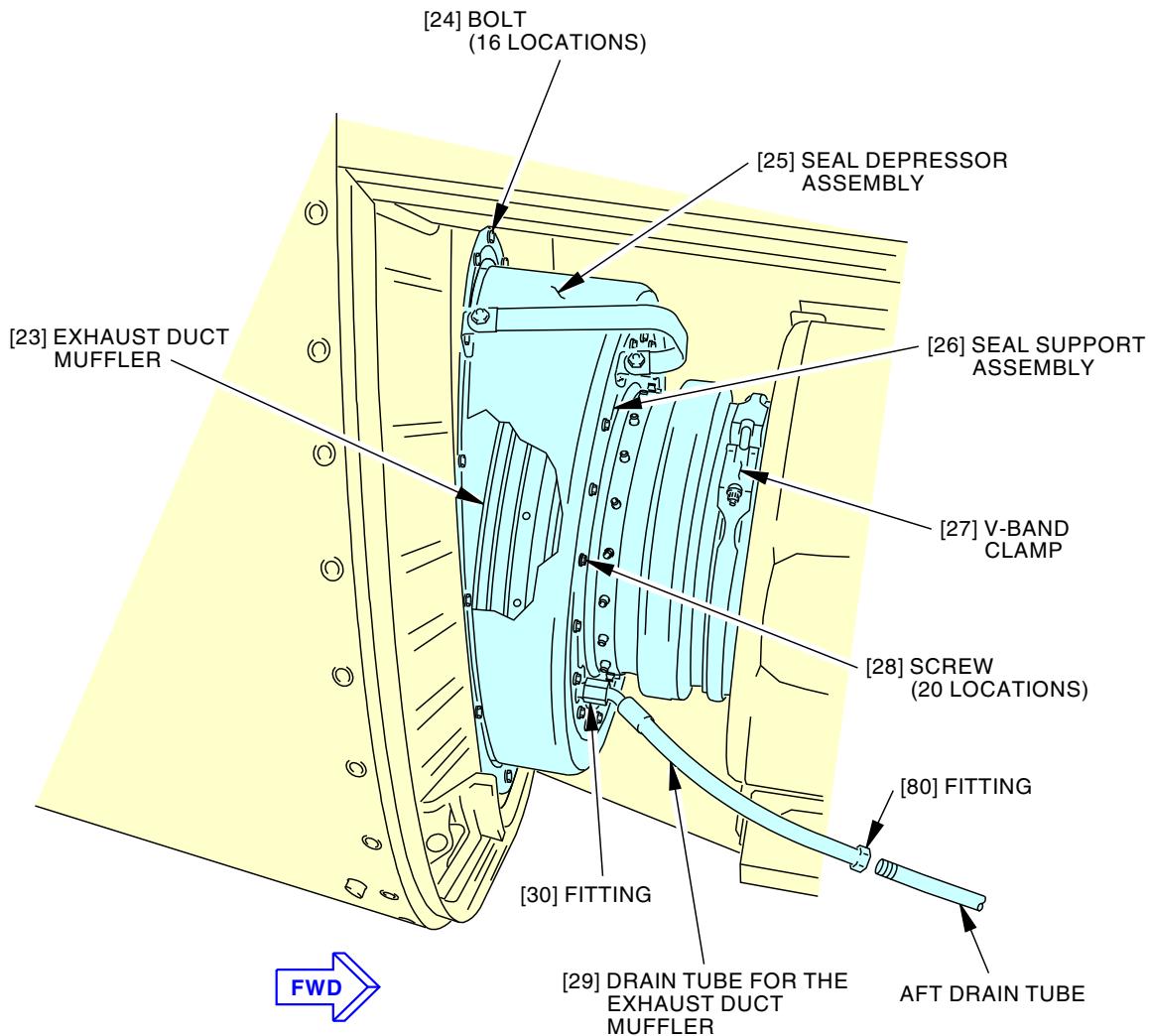


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**Auxiliary Power Unit (APU) Installation (Hydraulic Jack Procedure)**  
**Figure 402/49-11-00-990-802 (Sheet 5 of 13)**

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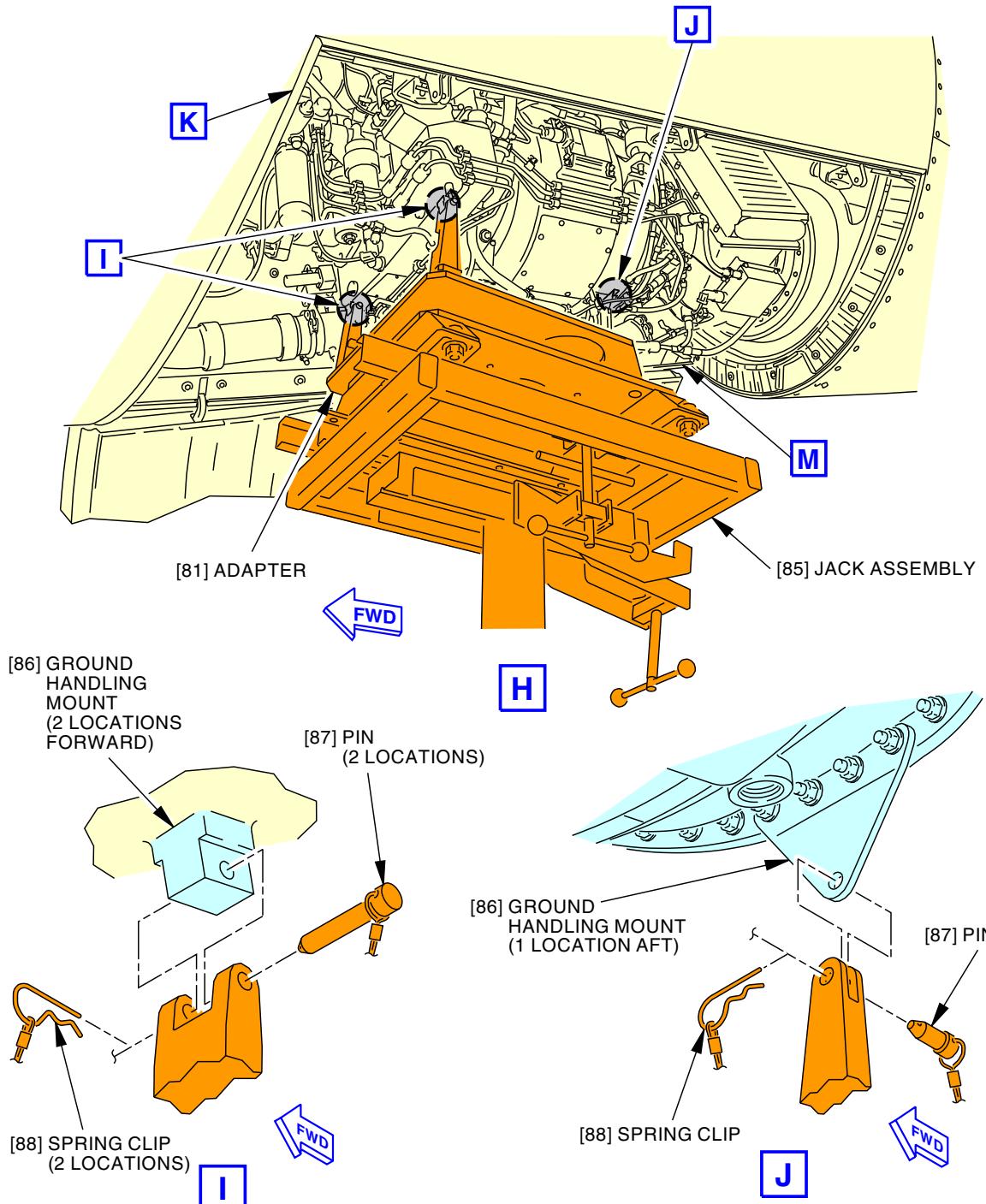
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**Auxiliary Power Unit (APU) Installation (Hydraulic Jack Procedure)**  
**Figure 402/49-11-00-990-802 (Sheet 6 of 13)**

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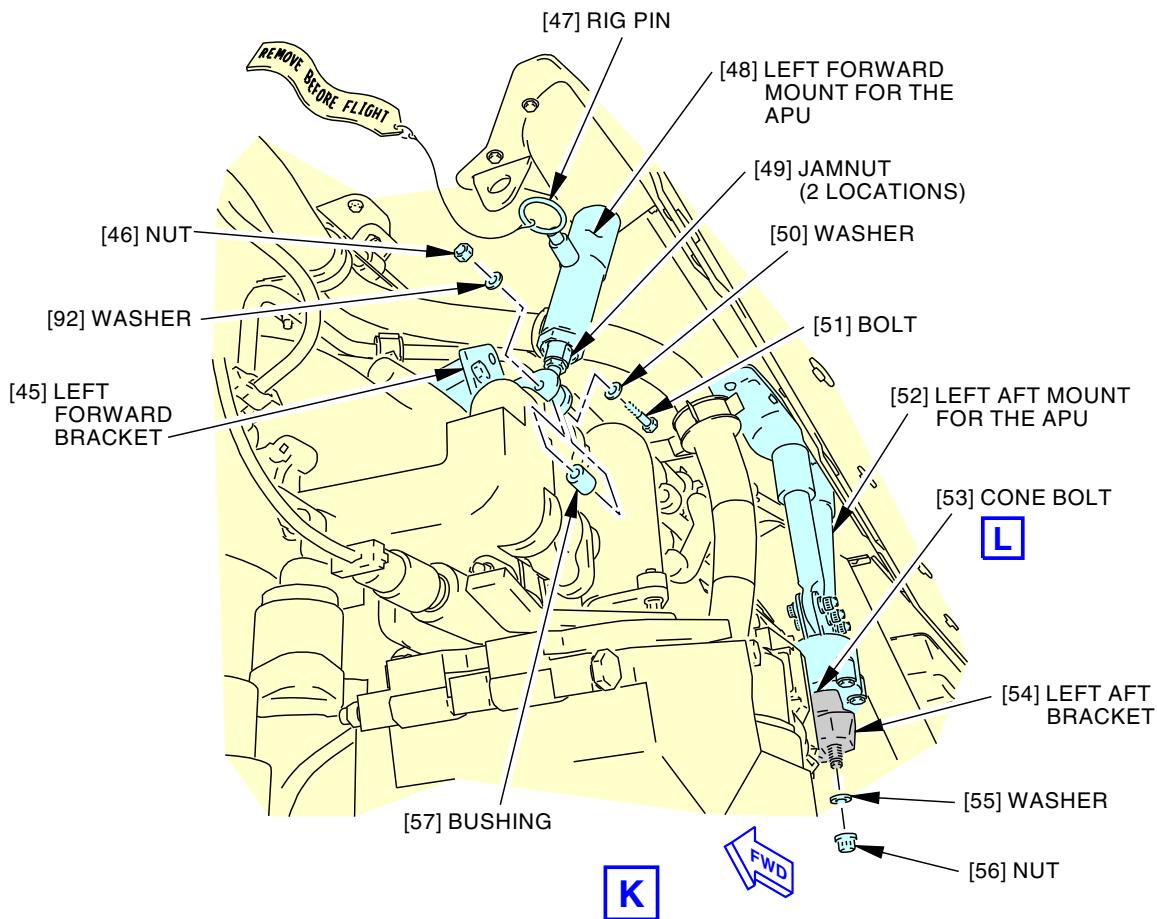
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**Auxiliary Power Unit (APU) Installation (Hydraulic Jack Procedure)**  
**Figure 402/49-11-00-990-802 (Sheet 7 of 13)**

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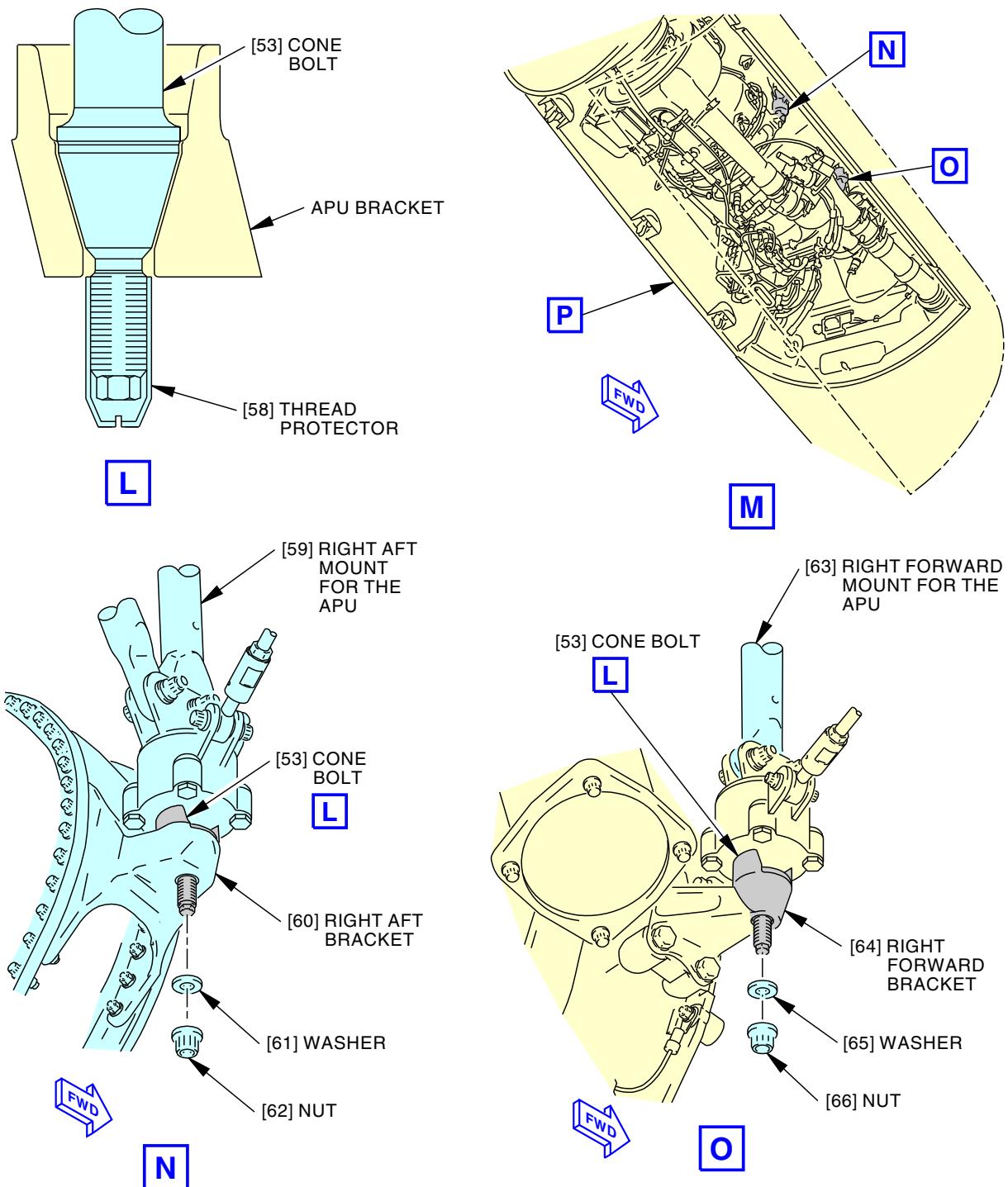
**Auxiliary Power Unit (APU) Installation (Hydraulic Jack Procedure)**  
Figure 402/49-11-00-990-802 (Sheet 8 of 13)

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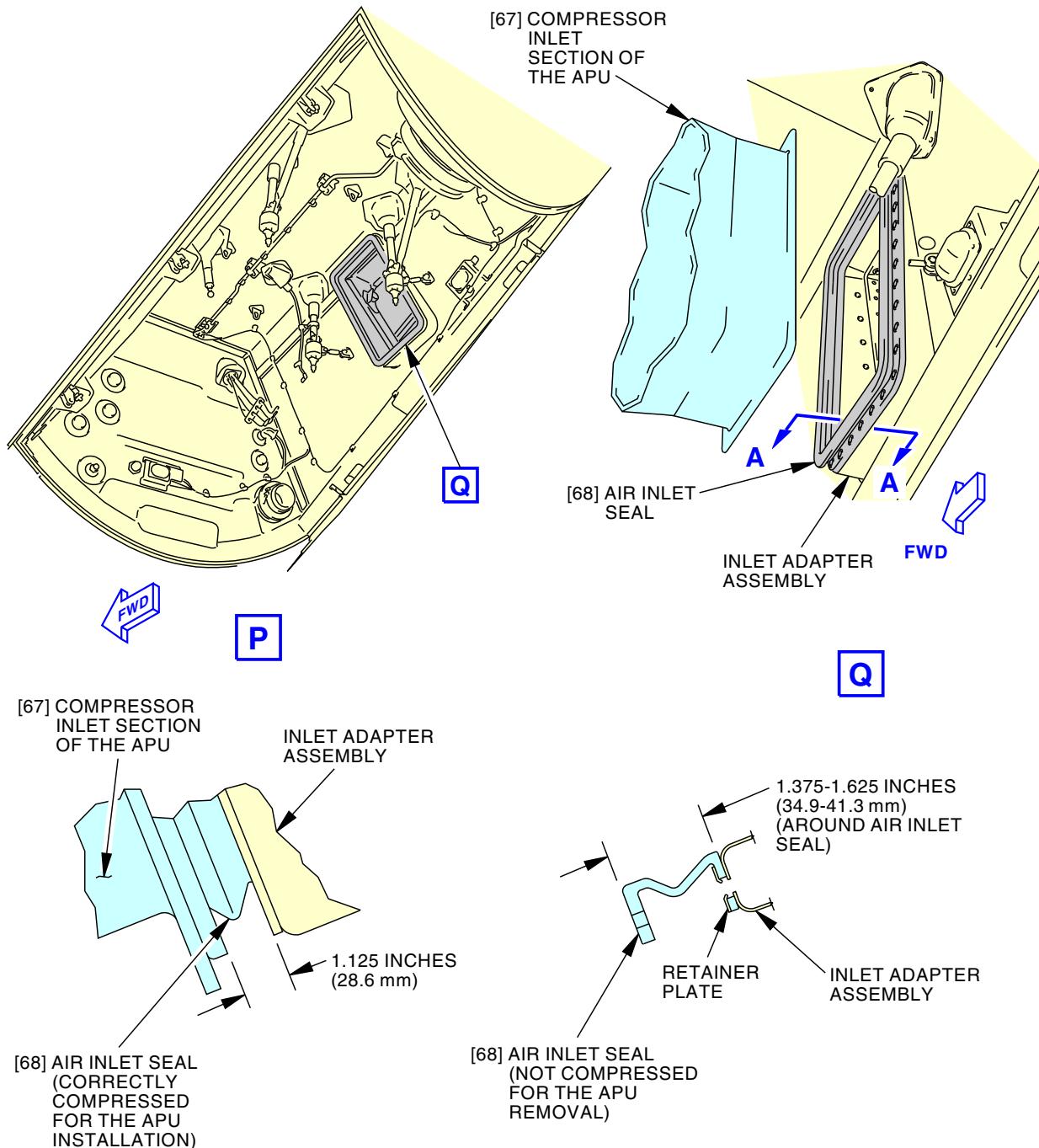


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**Auxiliary Power Unit (APU) Installation (Hydraulic Jack Procedure)**  
**Figure 402/49-11-00-990-802 (Sheet 9 of 13)**

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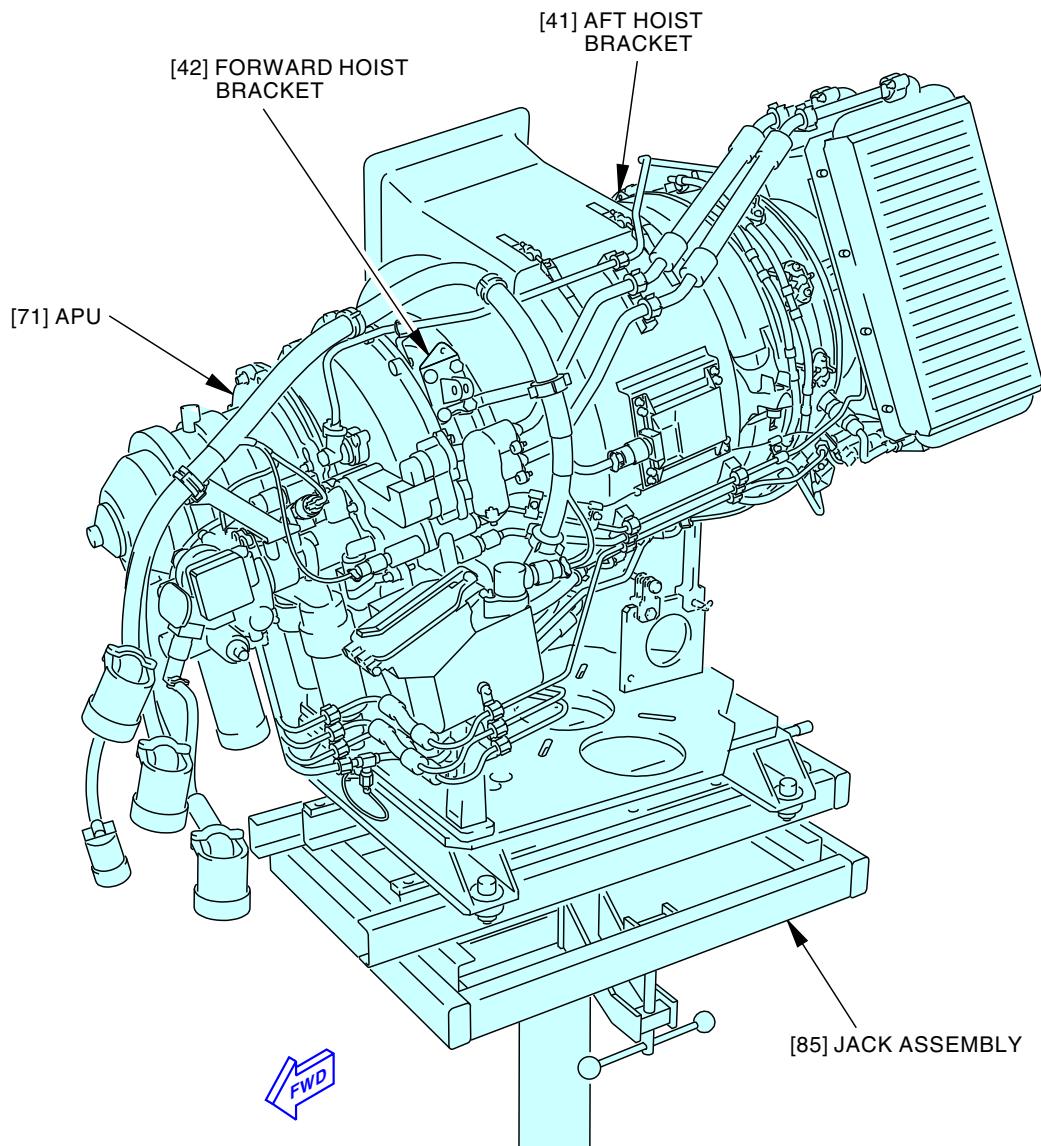
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**Auxiliary Power Unit (APU) Installation (Hydraulic Jack Procedure)  
Figure 402/49-11-00-990-802 (Sheet 10 of 13)**

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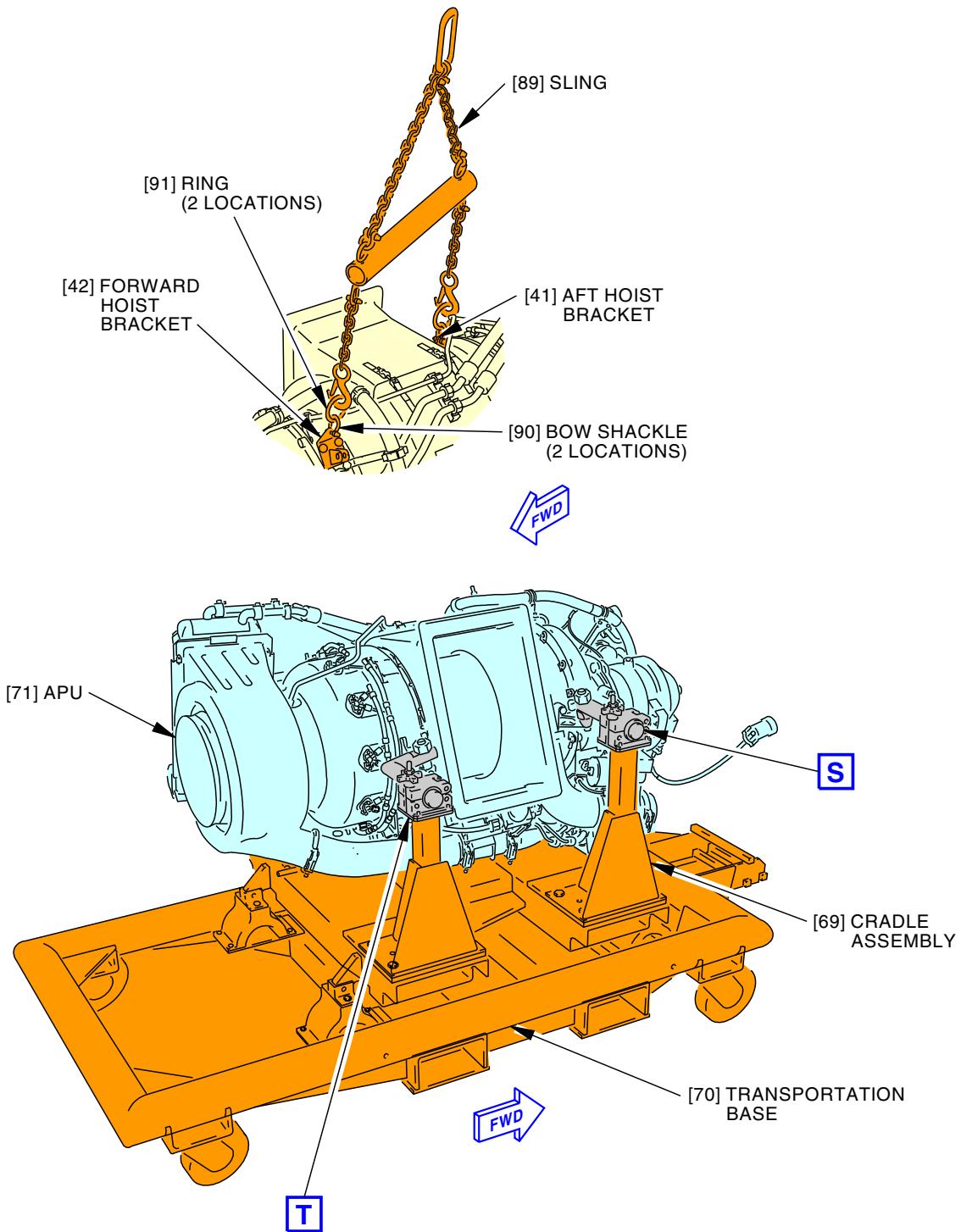
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**Auxiliary Power Unit (APU) Installation (Hydraulic Jack Procedure)**  
**Figure 402/49-11-00-990-802 (Sheet 11 of 13)**EFFECTIVITY  
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Auxiliary Power Unit (APU) Installation (Hydraulic Jack Procedure)  
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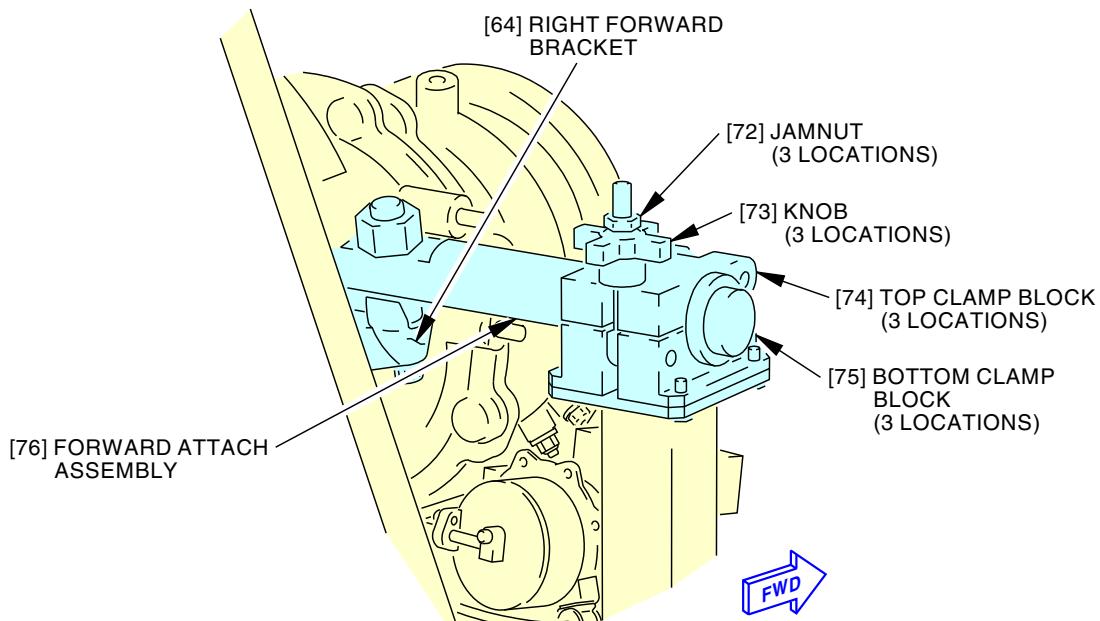
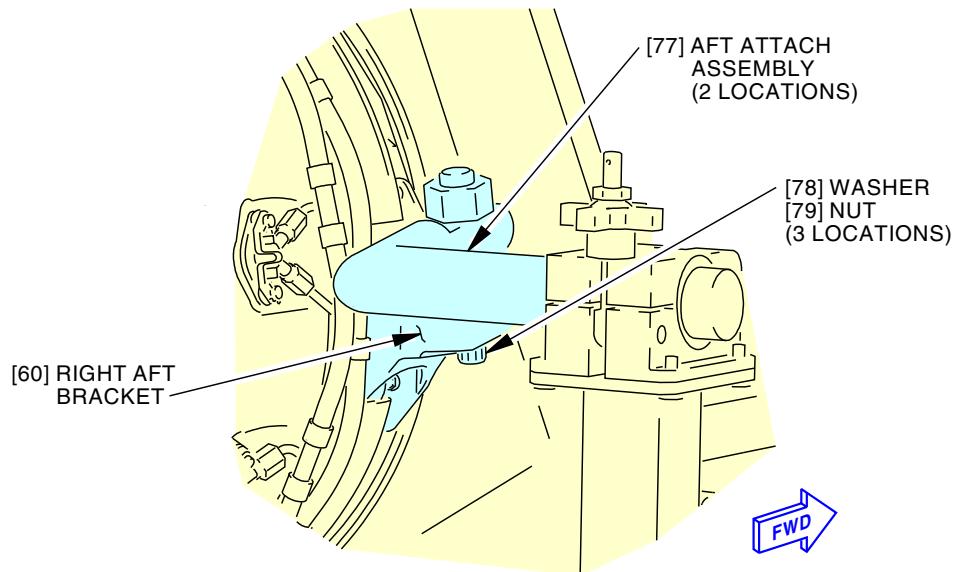
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**Auxiliary Power Unit (APU) Installation (Hydraulic Jack Procedure)  
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**TASK 49-11-00-400-803**

**7. APU Power Plant Installation (Hydraulic Jack Procedure)**  
(Figure 402)

**A. References**

<b>Reference</b>	<b>Title</b>
12-13-31-200-801	APU Oil Level Inspection (P/B 301)
49-11-00-710-801	APU Operational Test (P/B 501)
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)
49-13-11-200-801	APU Mounts Inspection (APU Removed) (P/B 601)
49-15-11-000-801	Air Inlet Seal Removal (P/B 401)
49-15-11-400-801	Air Inlet Seal Installation (P/B 401)
49-17-11-200-801	Insulation Panel Inspection (P/B 601)
49-61-00-040-801	Low Oil Quantity BITE Deactivation (P/B 201)
49-61-00-700-801	APU BITE Procedure (P/B 201)
52-48-21-400-801	Auxiliary Power Unit (APU) Cowl Door 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.

<b>Reference</b>	<b>Description</b>
COM-1550	Bonding Meter - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659
SPL-1561	Jack - Hydraulic Part #: 930002 Supplier: FA2A9 Part #: J20009-110 Supplier: 81205 Opt Part #: J20009-108 Supplier: 81205 Opt Part #: J20009-109 Supplier: 81205
SPL-1957	Base - Transportation, APU Part #: F72950-158 Supplier: 81205
SPL-1969	Sling - Shop Handling, APU (AE131-9) Part #: C49004-40 Supplier: 81205
SPL-1970	Assembly - Cradle, APU (AE131-9) Part #: C49010-50 Supplier: 81205
SPL-1971	Protector - Thread, APU Mount Bolt Part #: C49006-1 Supplier: 81205
SPL-1972	Equipment - Adapter, APU Jacking Part #: C49008-37 Supplier: 81205
STD-858	Tag - DO NOT OPERATE

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<b>Reference</b>	<b>Description</b>
STD-1057	Air Source - Regulated, Dry Filtered, Compressed 60-105 PSIG (414-723.9 KPa)(22 SCFM)
STD-1064	Scraper - Phenolic, Hard Resin
STD-1208	Lever - Wood, 2 Inch by 4 Inch, 4-7 Feet Long
STD-1242	Hammer - Standard
STD-3906	Mallet - Rubber

**C. Consumable Materials**

<b>Reference</b>	<b>Description</b>	<b>Specification</b>
A00160	Sealant - Firewall - Hydraulic Fluid Resistant	BMS5-63
B00130	Alcohol - Isopropyl	TT-I-735
D00006	Compound - Antiseize, Pure Nickel Special - Never-Seez NSBT-8N/-16N	
D50011	Grease - Perfluoropolyether - Christo-lube MCG111	
D50055	Oil - Aircraft Turbine Engine Oil for AE 131-9[B] APU (AMM 12-13-31/301)	
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)
G01048	Lockwire - MS20995C32, Corrosion Resistant Steel - 0.032 Inch (0.8128 mm) Diameter	NASM20995
G02272	Fuel - Turbine, Aviation (Grades JP-4, JP-5, JP-5/JP-8ST)	MIL-DTL-5624
G50222	Brush - Tampico Fiber, Non-Metallic	
G51056	Fuel - Standard Specification For Aviation Turbine Fuels (Jet A And Jet A-1)	ASTM D1655

**D. Expendables/Parts**

<b>AMM Item</b>	<b>Description</b>	<b>AIPC Reference</b>	<b>AIPC Effectivity</b>
5	Fuel supply tube	49-31-11-02-030	LOM ALL
7	Packing	49-31-11-02-015	LOM ALL
10	Seal	49-52-11-02-010	LOM ALL
11	Bleed air duct	49-52-11-02-015	LOM ALL
71	APU	49-11-00-02-085	LOM ALL

**E. Location Zones**

<b>Zone</b>	<b>Area</b>
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**F. Access Panels**

<b>Number</b>	<b>Name/Location</b>
315A	APU Cowl Door



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#### **G. Prepare for the APU Installation**

**SUBTASK 49-11-00-210-007**

- (1) Visually examine the left forward mount for the APU [48], left aft mount for the APU [52], right aft mount for the APU [59], and right forward mount for the APU [63] for wear, cracks and damage.
  - (a) If you find wear, cracks or damage, do this task: APU Mounts Inspection (APU Removed), TASK 49-13-11-200-801.

**SUBTASK 49-11-00-210-008**

- (2) Visually examine the three ground handling mounts [86] on the Auxiliary Power Unit (APU) for wear, cracks, and damage.

**SUBTASK 49-11-00-220-002**

- (3) Make sure that the height of the air inlet seal [68] is between 1.375 in. (34.9 mm) and 1.625 in. (41.3 mm).
  - (a) If necessary, remove and install the air inlet seal [68] (TASK 49-15-11-000-801 and TASK 49-15-11-400-801).

**SUBTASK 49-11-00-420-012**

- (4) If it is necessary, remove the protection covers from the compressor inlet section of the APU and APU exhaust duct.

#### **H. Prepare for the Installation**

**SUBTASK 49-11-00-080-008**

- (1) Do these steps to remove the APU [71] from the cradle assembly [69], (cradle assembly, SPL-1970) and transportation base [70], (transportation base, SPL-1957):
  - (a) Make sure that the APU [71], cradle assembly [69], and transportation base [70] is centered under the sling [89], (APU shop sling, SPL-1969).
  - (b) Make sure that the two rings [91] and two bow shackles [90] are attached to the sling [89], (APU shop sling, SPL-1969).
  - (c) Attach the two bow shackles [90] of the APU shop sling, SPL-1969, to the forward hoist bracket [42] and aft hoist bracket [41] on the APU [71].
  - (d) Make sure that the chains of the APU shop sling, SPL-1969, are tight to hold the weight of the APU [71].

NOTE: The weight of an APU [71] is approximately 410 lb (186 kg).

- (e) Loosen the three jammuts [72] from the three knobs [73] on the cradle assembly [69].
  - (f) Loosen the three knobs [73] until the three top clamp blocks [74] disengage the three bottom clamp blocks [75].
  - (g) Open the three top clamp blocks [74].
  - (h) Remove the three nuts [79] and three washers [78] that attach the left aft bracket [54], right aft bracket [60], and right forward bracket [64] to the cradle assembly [69].
  - (i) Remove the forward attach assembly [76] from the right forward bracket [64].
  - (j) Remove the two aft attach assemblies [77] from the left aft bracket [54] and right aft bracket [60].
  - (k) Slowly lift the APU [71] from the cradle assembly [69].
  - (l) Close the three top clamp blocks [74].
  - (m) Tighten the three knobs [73].

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- (n) Tighten the three jammuts [72] on the three knobs [73].
- (o) Remove the cradle assembly [69] and transportation base [70] from the area.

**I. Adapter and Hydraulic Jack Installation**

SUBTASK 49-11-00-480-006

- (1) Do these steps to attach the APU [71] to the adapter [81], (APU adapter, SPL-1972), and jack assembly [85], (hydraulic jack, SPL-1561):
  - (a) Position the adapter [81] on the jack assembly [85].
  - (b) Install the four bolts [84], four washers [83], and four nuts [82] that attach the adapter [81] to the jack assembly [85], (hydraulic jack, SPL-1561).
  - (c) Put the sling [89], (APU shop sling, SPL-1969) and APU [71] above the adapter [81].
  - (d) Lower the APU [71] until the adapter [81] and three ground handling mounts [86] are engaged.
  - (e) Install the three pins [87] that attach the adapter [81] to the three ground handling mounts [86] on the APU.
  - (f) Install the three spring clips [88] in the three pins [87].
  - (g) Disconnect the two bow shackles [90] of the APU shop sling, SPL-1969, from the forward hoist bracket [42] and aft hoist bracket [41] on the APU.
  - (h) Remove the sling [89], (APU shop sling, SPL-1969) from the area.
  - (i) Put the APU [71] on the maintenance stand.

**J. APU Installation**

SUBTASK 49-11-00-420-013



**CAUTION**

REMOVE THE PROTECTION COVERS FROM THE OPENINGS AS NECESSARY. IF YOU DO NOT REMOVE THE PROTECTION COVERS, DAMAGE TO THE APU CAN OCCUR.

- (1) Remove the protection covers from the compressor inlet section of the APU, APU exhaust duct and any other openings.

SUBTASK 49-11-00-420-014

- (2) Do these steps to install the APU [71] into the APU compartment:
  - (a) Make sure that the APU [71] is directly under the APU compartment.
  - (b) Make sure that the thread protector [58], (thread protector, SPL-1971) is installed on the three cone bolts [53].
  - (c) Lift the APU [71] into position:
    - 1) Hold the left aft mount for the APU [52] and right aft mount for the APU [59] in position.

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**CAUTION**

BE CAREFUL WHEN YOU MOVE THE APU IN THE APU COMPARTMENT. YOU MUST TILT THE APU APPROXIMATELY 10-15 DEGREES IN THE FORWARD-END-DOWN POSITION WHILE THE APU IS IN THE APU COMPARTMENT. DAMAGE TO THE INSULATION AROUND THE RIGHT FRONT MOUNT, THE FUEL SUPPLY LINE, STARTER-GENERATOR WIRE HARNESS AND ENGINE WIRE HARNESS CAN OCCUR.

- 2) Tilt the APU [71] so that the forward end of the APU is lower than the aft end.  
NOTE: When the APU [71] is installed, it is in the 11° forward-end-down position.
- 3) Slowly lift the APU [71] until the left aft bracket [54], right aft bracket [60], and right forward bracket [64] are below the three cone bolts [53].
- 4) Make sure that the left aft mount for the APU [52], right aft mount for the APU [59], and right forward mount for the APU [63] are engaged at the same time.



**CAUTION**

CAREFULLY LIFT THE APU SO THAT YOU DO NOT DAMAGE THE CONED SURFACES OF THE APU MOUNTS. IF YOU DO NOT, IT CAN CAUSE DAMAGE.

- 5) Lift the APU [71] until the three cone bolts [53] are engaged.
  - 6) Lift the APU [71] until the air inlet seal [68] is fully engaged with the compressor inlet section of the APU [67].  
NOTE: The compressed area of the air inlet seal must show no signs of buckling or caught on the edge of the compressor inlet section of the APU.
  - 7) Measure the height of the compressed area of the air inlet seal [68] with the APU installed.  
NOTE: The height from the bottom to the top of the air inlet seal (between the inlet adapter assembly and APU) must be less than 1.125 in. (28.6 mm).
- (d) Connect the APU [71] to the left aft mount for the APU [52], right aft mount for the APU [59], and right forward mount for the APU [63]:
- 1) Remove the thread protector [58], (thread protector, SPL-1971) from the three cone bolts [53].
  - 2) Apply the Pure Nickel Special compound, D00006, to the threads of the three cone bolts [53].
  - 3) Install the washer [55], washer [61], washer [65], nut [56], nut [62], and nut [66] on the three cone bolts [53].
  - 4) Do the torque limit test for the nut [56], nut [62], and nut [66]:
    - a) Tighten the three nuts to a run-on torque of not more than 100 in-lb (11.3 N·m).
    - b) Stop when a minimum of one full thread and cone bolt chamfer extends below each nut (but not before the washer touches the APU mount).
    - c) Make sure that the break-away torque necessary to turn the three nuts from this position is more than 14 in-lb (1.6 N·m).
    - d) Replace the nut(s) that do not meet these torque limits.
    - e) If the nut(s) were replaced, do the torque limit test again for the new nut(s).
  - 5) Tighten the nut [56], nut [62], and nut [66] to 375 in-lb (42.4 N·m) - 425 in-lb (48.0 N·m).

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- (e) Connect the APU [71] to the left forward mount for the APU [48]:
- 1) Remove the nut [46], washer [92], washer [50], and bolt [51] from the left forward mount for the APU [48].
  - 2) Make sure that the bushing [57] is installed in the left forward mount for the APU [48].
  - 3) Install the rig pin [47] in the left forward mount for the APU [48].  
NOTE: The rig pin is a component of the thread protector, SPL-1971.
  - 4) Align the holes of the left forward bracket [45] to the left forward mount for the APU [48].
  - 5) If the holes of the left forward bracket [45] and the left forward mount for the APU [48] do not align, adjust the left forward mount:
    - a) Remove the MS20995C32 lockwire, G01048, from the bottom jamnut [49] on the left forward mount for the APU [48].
    - b) Turn the bottom jamnut [49] clockwise or counterclockwise until the holes of the left forward bracket [45] align with the left forward mount for the APU [48].  
NOTE: One full turn of the jamnut will extend or retract the left forward mount a distance of 0.04 in. (1 mm).
    - c) Make sure that you can see a minimum of one full thread from the bottom jamnut [49].
    - d) If more adjustments are necessary, remove the seven screws and seven washers that attach the firewall cover to the top insulation panel.
    - e) Move the firewall cover down until you can get access to the top jamnut [49].
    - f) Remove the MS20995C32 lockwire, G01048, from the top jamnut [49] on the left forward mount for the APU [48].
    - g) Turn the top jamnut [49] clockwise or counterclockwise until the holes of the left forward bracket [45] align with the left forward mount for the APU [48].  
NOTE: One full turn of the jamnut will extend or retract the left forward mount a distance of 0.04 in. (1 mm).
    - h) Make sure that you can see a minimum of one full thread from the top jamnut [49].
    - i) Tighten the jamnuts [49].
    - j) Install the MS20995C32 lockwire, G01048, on the jamnuts [49].
    - k) Remove the remaining sealant from the surface of the firewall cover and top insulation panel with a hard resin phenolic scraper, STD-1064, or an equivalent tool.
    - l) Clean the surface with alcohol, B00130, and a cotton wiper, G00034.
    - m) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057, to dry the surface.  
NOTE: It is recommended that you use a pressure of 60 psig (414 kPa)-90 psig (621 kPa) of air or nitrogen to dry the surface.
    - n) Install the firewall cover to the top insulation panel with the seven washers and seven screws.
    - o) Apply a fillet seal of sealant, A00160, around the firewall cover.

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- p) Remove the unwanted sealant from the firewall cover and top insulation panel with a cotton wiper, G00034.

NOTE: It is not necessary for the sealant to dry.

- 6) Install the bolt [51], washer [50], washer [92], and nut [46].
- 7) Remove the rig pin [47] from the left forward mount for the APU [48].

**K. Adapter and Hydraulic Jack Removal**

SUBTASK 49-11-00-080-003

- (1) Do these steps to remove the adapter [81], (APU adapter, SPL-1972) from the APU:
  - (a) Remove the three spring clips [88] from the three pins [87].
  - (b) Remove the three pins [87] that attach the adapter [81] to the three ground handling mounts [86].
  - (c) Use the jack assembly [85], (hydraulic jack, SPL-1561) to slowly lower the adapter [81] out of the APU compartment.

SUBTASK 49-11-00-080-004

- (2) Do these steps to remove the adapter [81], (APU adapter, SPL-1972) from the jack assembly [85], (hydraulic jack, SPL-1561):
  - (a) Move the adapter [81] and jack assembly [85] away from the APU compartment.
  - (b) Remove the four nuts [82], four washers [83], and four bolts [84] that attach the adapter [81] to the jack assembly [85].
  - (c) Remove the adapter [81].

**L. APU Connections**

SUBTASK 49-11-00-420-015

- (1) Do these steps to connect the exhaust duct muffler [23]:
  - (a) Make sure that the exhaust duct muffler [23] touches the APU.
    - 1) Pull the exhaust duct muffler [23] forward to the APU until the exhaust duct muffler touches the APU.
    - 2) If it is necessary, use a 2 inch by 4 inch, 4-7 feet long wood lever, STD-1208, and standard hammer, STD-1242, to lightly tap the exhaust duct muffler [23] forward to the APU until the exhaust duct muffler touches the APU.
  - (b) If the exhaust duct muffler [23] does not touch the APU or the flanges are not aligned, do these steps to make sure that the exhaust duct muffler touches the APU:
    - 1) Loosen the 16 bolts [24] that attach the seal depressor assembly [25] to the 1156 bulkhead.
    - 2) Move the exhaust duct muffler [23] until the exhaust duct muffler touches the APU.
    - 3) If more adjustments are necessary, loosen the 20 screws [28] that attach the seal support assembly [26] to the exhaust duct muffler [23].
    - 4) Move the exhaust duct muffler [23] until the exhaust duct muffler touches the APU and flanges are aligned.
  - (c) Install the V-band clamp [27] on the exhaust duct muffler [23]:
    - 1) Put the V-band clamp [27] on the exhaust duct muffler [23].
    - 2) Tighten the V-band clamp [27] to 70 in-lb (7.9 N·m)-90 in-lb (10.2 N·m).
    - 3) Lightly hit the edge of the V-band clamp [27] with a rubber mallet, STD-3906.

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- 4) Continue to tighten and hit the V-band clamp [27] until the torque value stays constant.
- (d) If the 20 screws [28] were loosened during the adjustment of the exhaust duct muffler [23], tighten the 20 screws on the seal support assembly [26].
- (e) If the 16 bolts [24] were loosened during the adjustment of the exhaust duct muffler [23], tighten the 16 bolts on the seal depressor assembly [25].

SUBTASK 49-11-00-420-016

- (2) Do these steps to install the drain tube [29] for the exhaust duct muffler:
  - (a) Remove the caps or plugs from the drain tube [29], fitting [30] on the exhaust duct muffler and fitting [80] on the aft drain tube of the APU.
  - (b) Apply a thin layer of Pure Nickel Special compound, D00006, on the threads of the fitting [30] and fitting [80].
  - (c) Connect the drain tube [29] to the fitting [80] on the aft drain tube of the APU.
  - (d) Connect the drain tube [29] to the fitting [30] on the exhaust duct muffler.
  - (e) Tighten the two ends of the drain tube [29] to 230 in-lb (26 N·m).

SUBTASK 49-11-00-420-017

- (3) Do these steps to connect the bonding jumper [20]:
  - (a) Clean the surfaces of the two studs:
    - 1) Apply alcohol, B00130, to a tampico fiber brush, G50222, or cotton wiper, G00034.
    - 2) Use a small amount of pressure on the tampico fiber brush, G50222, or cotton wiper, G00034, while you clean the surfaces of the two studs.
    - 3) Continue to clean the surfaces until there are no visible residue on the surfaces.
  - (b) Connect the bonding jumper [20] to the two studs with the two washers [22] and two nuts [21]:
    - 1) Tighten the two nuts [21] to  $180 \pm 10$  in-lb ( $20 \pm 1$  N·m).
    - 2) Measure the bonding resistance between the APU and airplane structure.
      - a) Use an intrinsically safe approved bonding meter, COM-1550.
      - b) Make sure that the bonding resistance is 0.5 milliohm or less.

SUBTASK 49-11-00-420-018

- (4) Do these steps to connect the terminal lug (T4) [14], terminal lug (T3) [16], terminal lug (T2) [17], and terminal lug (T1) [18]:
  - (a) Disengage the terminal block cover [19] from the four pins on the starter-generator.
  - (b) Remove the terminal block cover [19].
  - (c) Remove the four nuts [12] from the four terminal studs.
  - (d) Connect the terminal lug (T1) [18], terminal lug (T2) [17], terminal lug (T3) [16], and terminal lug (T4) [14] to the related terminal studs.

NOTE: The terminal strip and the fanning strip show the identification of the terminal studs for each of the terminal lugs (T1), (T2), (T3), and (T4).
  - (e) Install the four nuts [12] on the four terminal studs.
    - 1) Tighten the four nuts [12] to 115 in-lb (13.0 N·m) - 135 in-lb (15.3 N·m).
  - (f) Put the terminal block cover [19] on the starter-generator.
  - (g) Engage the terminal block cover [19] to the four pins on the starter-generator.

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SUBTASK 49-11-00-420-019

- (5) Do these steps to install the bleed air duct [11]:
- Install the two seals [10] on the bleed air duct [11].
  - Put the two coupling clamps [9] on the bleed air valve and bleed duct assembly.  
NOTE: The bleed duct assembly extends through the 1088 bulkhead.
  - Put the bleed air duct [11] in its position.
    - Make sure that the directional flow arrow points away from the front of the APU.

**LOM ALL; AIRPLANES WITH BLEED AIR DUCT P/N 3885004-1/-2**

- Open the two coupling clamps [9] to permit alignment of the bleed air duct [11] to the bleed air valve and bleed duct assembly.
- Make sure that the alignment marks on the two flexible couplings align with the two alignment marks on the bleed air duct [11].
- Make sure that the center of the alignment mark on the bleed air duct [11] is  $\pm 0.16$  in. (4 mm) from the center of the alignment mark on the bleed air valve.

**LOM ALL**

- Put the two coupling clamps [9] over the flanges of the bleed air valve, bleed air duct [11], and bleed duct assembly.
  - For AS1895 or 234-591 clamps: tighten the two coupling clamps [9] to 95 in-lb (10.7 N·m) - 110 in-lb (12.4 N·m).
  - For 543227A or 234-607 clamps: tighten the two coupling clamps [9] to 35 in-lb (4.0 N·m) - 40 in-lb (4.5 N·m).

SUBTASK 49-11-00-420-020

- (6) Do these steps to install the fuel supply tube [5]:
- Remove the caps or plugs from the fuel supply tube [5], fitting [6], and fuel control unit.
  - Lubricate the two packings [7] with a light coat of fuel, G02272 or aviation turbine fuel, G51056.
  - Install the two packings [7] on the fuel supply tube [5].
  - Connect the fuel supply tube [5] to the fuel control unit.
  - Turn the tube retainer on the fuel supply tube [5] clockwise until the flange fully engages the stud.
  - Tighten the nut [8] to 35 in-lb (4.0 N·m) - 45 in-lb (5.1 N·m).
  - If Christo-lube MCG111 grease, D50011, is not used on the fitting [6], do these steps:
    - Apply a thin layer of aircraft turbine engine oil, D50055, on the threads of the fitting [6].
    - Connect the fuel supply tube [5] to the fitting [6] on the 1088 bulkhead.
      - Tighten to 470 in-lb (53 N·m) - 510 in-lb (58 N·m).
  - If Christo-lube MCG111 grease, D50011, is used on the fitting [6], do these steps:
    - Lubricate the external threads of the fitting [6] with Christo-lube MCG111 grease, D50011.
      - Do not apply the grease to the internal threads or the sealing surface of the fitting [6].
    - Connect the fuel supply tube [5] to the fitting [6] on the 1088 bulkhead.

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- a) Tighten to 266 in-lb (30 N·m) - 294 in-lb (33 N·m).

SUBTASK 49-11-00-420-021

- (7) Do these steps to connect the electrical connector D10436 (P2) [1], electrical connector D10912 (P1) [2], electrical connector D10434 (P3) [3], and electrical connector D11118 (P4) [4] to the APU firewall receptacles on the 1088 bulkhead:

- (a) Remove the caps from the electrical connectors.
- (b) Connect the electrical connector D11118 (P4) [4].
- (c) Connect the electrical connector D10434 (P3) [3].
- (d) Connect the electrical connector D10912 (P1) [2].

NOTE: Be aware of the clamp that attaches onto the harness when you connect the electrical connector D10912 (P1).

- (e) Connect the electrical connector D10436 (P2) [1].

NOTE: Be aware of the clamp that attaches onto the harness when you connect the electrical connector D10436 (P2).

## M. APU Installation Test

SUBTASK 49-11-00-410-003

- (1) If the APU Cowl Door, 315A was removed, do this task: Auxiliary Power Unit (APU) Cowl Door Installation, TASK 52-48-21-400-801.

NOTE: Do not close the APU Cowl Door, 315A at this time. Use the two hold-open rods to hold the APU Cowl Door, 315A open.

SUBTASK 49-11-00-210-011

- (2) Do a general visual inspection of the seven insulation panels:

- (a) Visually examine the seven insulation panels that you can get access from the APU compartment for holes, tears, separation, and damage.
- (b) If the holes, tears, separation or damage are found on the insulation panels, do this task: Insulation Panel Inspection, TASK 49-17-11-200-801.

SUBTASK 49-11-00-860-012

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER
B	21	C00452	FIRE PROTECTION EXTINGUISHERS APU

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-11-00-860-013

- (4) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.

SUBTASK 49-11-00-710-002

- (5) Do the installation test for the APU:

- (a) Do this task: APU Oil Level Inspection, TASK 12-13-31-200-801.
- (b) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.

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- (c) During the APU operation, examine the APU for signs of oil and fuel leakage.  
NOTE: A fuel leakage rate of 1 drop for each minute (0.04 cc for each minute) is permitted during an APU operation from the forward drain on the APU drain seal.
- (d) If you find oil leakage or more than the fuel leakage rate, do these steps to repair the leakage:
  - 1) Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.
  - 2) Install a DO NOT OPERATE tag, STD-858, to the APU master switch on the P5 forward overhead panel.
  - 3) Repair the cause of the fuel or oil leakage.
  - 4) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.
  - 5) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
  - 6) During the APU operation, examine the APU for signs of oil and fuel leakage.
  - 7) If you find oil leakage or more than the fuel leakage rate, do the leakage repair again.
- (e) Do this task: APU BITE Procedure, TASK 49-61-00-700-801.
  - 1) If maintenance message(s) show for the APU, refer to the applicable Maintenance Message Index in the Fault Isolation Manual (FIM).
  - 2) Look at the IDENT/CONFIG page on the Control Display Unit (CDU) display for the APU HOURS.
  - 3) If it is necessary to set the APU HOURS to 0.0, then do these steps:
    - a) Push the line select key 6R adjacent to RESET HOURS SINCE INSTALLATION>.  
NOTE: The DO YOU WANT TO RESET THE HOURS SINCE INSTALLATION ON THIS AIRPLANE? shows on the CDU display.
    - b) Push the line select key 5R adjacent to YES>.  
NOTE: You push the line select key 2R adjacent to NO> if it is not necessary to set the APU HOURS to 0.0 or to go back to the IDENT/CONFIG page.
  - 4) If you have installed a new APU and prefer the LOQ BITE to be deactivated, do this task: Low Oil Quantity BITE Deactivation, TASK 49-61-00-040-801.
- (f) Do this task: APU Operational Test, TASK 49-11-00-710-801.

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

SUBTASK 49-11-00-410-023

- (1) To close the access panel, do these steps:

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

315A	APU Cowl Door
------	---------------

- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.

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(f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.

1) Make sure that the installation of fire shield has not shifted.

2) If it is necessary, hand form the insulation blanket to obtain a better clearance.

(g) Close the APU Cowl Door, 315A.

(h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

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APU POWER PLANT - ADJUSTMENT/TEST

1. **General**

- A. This procedure has the task to do the APU operational test.

**TASK 49-11-00-710-801**

2. **APU Operational Test**

(Figure 501)

**A. References**

Reference	Title
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)

**B. Location Zones**

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
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. Procedure**

**SUBTASK 49-11-00-860-073**

- (1) Do the Auxiliary Power Unit (APU) operational test:

- (a) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.  
(b) Operate the APU with no load for a minimum of two minutes.

NOTE: For extended APU service life, it is recommended that you operate the APU for two minutes before you apply a pneumatic load. You can apply an electrical load when the APU GEN OFF BUS light comes on.

- (c) Make sure that the BUS TRANS switch [11] on the P5 forward overhead panel is in the AUTO position.  
(d) Make sure that the APU GEN OFF BUS light [10] comes on.  
(e) Set the AC selector switch [2] to the APU GEN position.  
(f) Look at the CPS FREQ display [1].

NOTE: Without load applied to the APU, the CPS FREQ display must become stable at 395 - 405 CPS.

- (g) Set the two APU GEN switches [9] to the ON position and then release.

NOTE: One of the two APU GEN switches will connect the APU starter-generator to the two 115V Alternating Current (AC) transfer busses.

- (h) Make sure that the APU GEN OFF BUS light [10] goes off.

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- (i) Put an electrical load of 60 amps/23% AC load on the APU starter-generator.

NOTE: The APU Exhaust Gas Temperature (EGT) indicator on the P5 forward overhead panel can spike (move) quickly to half scale (752°F (400°C) - 932°F (500°C)) when you put an electrical load on the APU starter-generator and then will become stable after a few bounces. This APU condition is satisfactory.

NOTE: APU Gen is rated 90kVA i.e. 260A per phase, 60A is 23% of the load. When adding loads to the busses powered by the APU generator, the operator will need to check that the APU generator load on the P5-13 reaches 23%. Turning on a hydraulic pump (electric) and all the lights gets very close to the 60A load.

- (j) Set these switches on the P5 forward overhead panel:

- 1) Set the ISOLATION VALVE switch [6] to the OPEN position.
- 2) Make sure that the engine 1 BLEED switch [12] and engine 2 BLEED switch [7] are in the OFF position.
- 3) Make sure that the L PACK switch [4] and R PACK switch [5] are in the OFF position.
- 4) Set the APU BLEED switch [8] to the ON position.
- 5) Set the three switches for the temperature controls [3] to the AUTO position.
- 6) Set the L PACK switch [4] and R PACK switch [5] to the AUTO position.

NOTE: It is recommended that you operate the APU with the two air conditioning packs when maximum cabin cooling is necessary. Use the two air conditioning packs as an alternative to the one air conditioning pack operation. The results of the operation of two air conditioning packs will be cooler cabin temperatures, lower APU fuel burn, better APU hot section life and lower APU noise. Refer to Service Letter 737-SL-49-060 for more data on these results.

- (k) Let the APU EGT become stable (one to two minutes).

- (l) Set the L PACK switch [4] and R PACK switch [5] to the HIGH position.

- (m) Let the APU become stable (one to two minutes).

- (n) Look at the CPS FREQ display [1].

NOTE: With the APU fully loaded, the CPS FREQ display must become stable at 395 - 405 CPS. A small change in the APU starter-generator frequency (2 - 4 CPS) and the bleed duct pressure (1 psi (7 kPa) - 2 psi (14 kPa)) are permitted for the fully loaded condition.

- (o) Set these switches on the P5 forward overhead panel to remove the pneumatic load:

- 1) Set the L PACK switch [4] and R PACK switch [5] to the OFF position.
- 2) Set the three switches for the temperature controls [3] to the OFF position.
- 3) Set the APU BLEED switch [8] to the OFF position.
- 4) Set the ISOLATION VALVE switch [6] to the CLOSE position.

- (p) Remove the electrical load from the APU starter-generator.

- (q) Set the two APU GEN switches [9] to the OFF position.

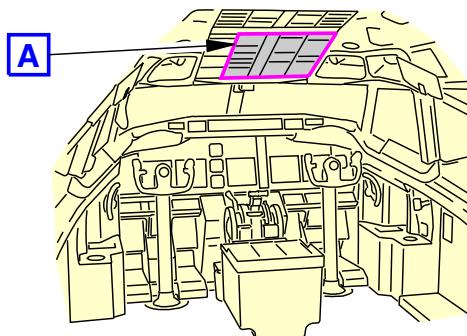
- (r) Make sure that the APU GEN OFF BUS light [10] comes on.

- (s) Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

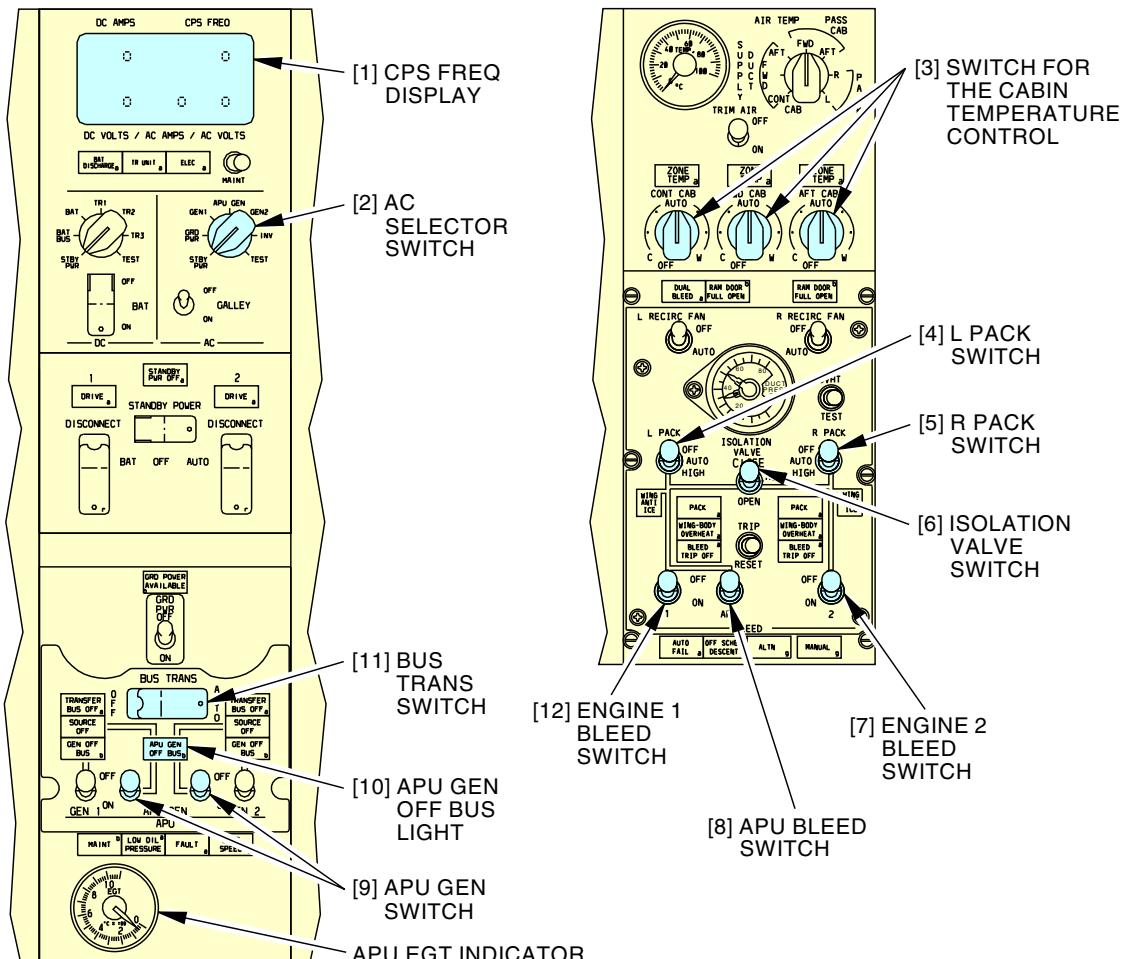
— END OF TASK —

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FLIGHT COMPARTMENT



FORWARD OVERHEAD PANEL, P5

A

H02615 S0006579004\_V4

**APU Operational Test**  
Figure 501/49-11-00-990-803

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APU POWER PLANT - INSPECTION/CHECK

**1. General**

- A. This procedure has these tasks:
- (1) A visual inspection of the APU power plant
  - (2) An inspection after an APU power plant fire.

**LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-426 PRE SB 131-49-7971**

- (3) An inspection for APU 1st stage turbine blade shift (walk).

**NOTE:** If Honeywell SB 131-49-7971 has been done (the first stage dual alloy turbine (DAT) wheel assembly has been installed), it is not necessary to do this inspection.

**LOM ALL**

**TASK 49-11-00-200-801**

**2. APU Power Plant Inspection**

**A. References**

<b>Reference</b>	<b>Title</b>
12-13-31-200-801	APU Oil Level Inspection (P/B 301)
20-10-18-900-801	Maintenance Practices (P/B 201)
49-13-11-200-801	APU Mounts Inspection (APU Removed) (P/B 601)
49-15-11-200-801	Air Inlet Seal Inspection (P/B 601)
49-16-11-100-801	Clean the APU Drains (P/B 701)
49-16-11-680-801	Drain Mast Servicing (P/B 301)
49-17-11-200-801	Insulation Panel Inspection (P/B 601)
49-81-11-200-801	Exhaust Duct Muffler Inspection (P/B 601)
49-81-11-200-803	Exhaust Duct Muffler Seal Inspection (P/B 601)
49-91-13-200-801	Oil Filter Indicator Inspection (P/B 601)
49-91-41-200-801	Oil Cooler Inspection (P/B 601)
49-91-71-200-801	Eductor Inlet Duct Inspection (P/B 601)
49-91-81-200-801	Magnetic Drain Plug Inspection (P/B 601)

**B. Tools/Equipment**

<b>Reference</b>	<b>Description</b>
STD-858	Tag - DO NOT OPERATE

**C. Location Zones**

<b>Zone</b>	<b>Area</b>
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**D. Access Panels**

<b>Number</b>	<b>Name/Location</b>
315A	APU Cowl Door



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## E. Prepare for the Inspection

SUBTASK 49-11-00-860-014

- (1) Make sure that the Auxiliary Power Unit (APU) master switch, on the P5 forward overhead panel, is in the OFF position.
  - (a) Install the DO NOT OPERATE tag, STD-858, on the APU master switch.

SUBTASK 49-11-00-860-015

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

### F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

### F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-11-00-010-018

- (3) To open the access panel, do these steps:

#### Number      Name/Location

315A      APU Cowl Door

- (a) Support the APU panel (cowl door) under the center latch.
- (b) Open the three latches.

NOTE: Use this sequence: forward latch, aft latch, middle latch.
- (c) Open the APU Cowl Door, 315A.
- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

## F. APU Power Plant Inspection

SUBTASK 49-11-00-210-012

- (1) Do these steps to inspect the APU power plant:

- (a) If the APU is removed from the APU compartment, then do these steps:
  - 1) Visually examine the air inlet seal for deformation, wear, and damage.
    - a) If you find signs of deformation, wear or damage, do this task: Air Inlet Seal Inspection, TASK 49-15-11-200-801.
  - 2) Visually examine the front area and inner surfaces of the exhaust duct muffler that you can get access from the APU compartment for cracks and damage.
    - a) If you find cracks or signs of damage, do this task: Exhaust Duct Muffler Inspection, TASK 49-81-11-200-801.
- 3) Do this task: Exhaust Duct Muffler Seal Inspection, TASK 49-81-11-200-803..



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- 4) Visually examine the air inlet duct that you can get access from the APU compartment for blockage of unwanted materials.
  - a) If you find blockage of unwanted materials, remove the blockage.
- 5) Visually examine the exhaust cap for cracks or missing material.
  - a) If the cracks, missing material, or a missing cap are found, speak to Boeing for analysis and recommended instructions.
- (b) Visually examine the air inlet duct that you can get access for blockage of unwanted materials and damage that can cause a decrease in airflow.
  - 1) If you find blockage of unwanted materials, remove the blockage.
  - 2) If you find damage that can cause a decrease in airflow, then repair the problems that you find.
- (c) Measure the height of the air inlet seal with the APU installed.

NOTE: The height from the bottom to the top of the air inlet seal (between the inlet adapter assembly and APU) must be less than 1.125 in. (28.6 mm).
- (d) Do these steps to visually examine the compressor inlet plenum for blockage of unwanted materials:
  - 1) Loosen the eight captive screws that attach the access door to the compressor inlet plenum.
  - 2) Remove the access door from the compressor inlet plenum.

NOTE: A lanyard is attached to the access door to keep the access door with the APU.
  - 3) Visually examine the compressor inlet plenum for blockage of unwanted materials.
    - a) If you find blockage of unwanted materials, then remove the blockage.
  - 4) Install the access door to the compressor inlet plenum with the eight captive screws.
- (e) Visually examine the four APU mounts for cracks, corrosion, and damage.
  - 1) If the cracks or signs of corrosion or damage are found, do this task: APU Mounts Inspection (APU Removed), TASK 49-13-11-200-801.
- (f) Visually examine the load compressor scroll housing for cracks (Figure 601).
  - 1) Cracks on the scroll housing near the exit duct are permitted.
    - a) Intersecting cracks or missing material on the scroll housing near the exit duct are not permitted.
    - b) If the intersecting cracks or missing material are found, remove and repair the APU.
- (g) Visually examine the compressor scroll housing flange to discharge duct interface for loose or missing fasteners, loose or missing inserts, and damaged or missing seal (View D, Figure 601).
  - 1) If you find loose or missing inserts, damaged or missing seal, or loose or missing fasteners, do these steps:
    - a) Repair or replace inserts (TASK 20-10-18-900-801).  
<1> If oversized inserts are used, make sure that the external thread size after higher-level insert installation is 7/16 inches or less.
    - b) Replace damaged or missing seal.
    - c) Replace missing or damaged fasteners.

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- (h) Visually examine the seven insulation panels for holes, tears, separation, and damage.
  - 1) If the holes, tears, separation, or signs of damage are found, do this task: Insulation Panel Inspection, TASK 49-17-11-200-801.
- (i) Visually examine the front area and inner surfaces of the eductor inlet duct that you can get access from the APU compartment for damage.
  - 1) If the signs of damage are found, do this task: Eductor Inlet Duct Inspection, TASK 49-91-71-200-801.
- (j) Visually examine the APU compartment structure for cracks, wear, and damage.
- (k) Visually examine the air inlet scoop on the lower forward right side of the APU compartment for blockage of unwanted materials and damage.
- (l) Examine these components of the APU power plant for tightness, worn areas, cracks, and corrosion:
  - 1) Electrical connectors for the starter-generator wire harness
  - 2) Electrical connectors for the engine wire harness
  - 3) Four terminal lugs (T1), (T2), (T3), and (T4) on the fanning strip for the starter-generator
  - 4) Four Exhaust Gas Temperature (EGT) thermocouple leads for the EGT thermocouple 1 and EGT thermocouple 2
  - 5) Spring clips and quick-release clamps that attach the engine wire harness to the APU
  - 6) Clamps and connections that attach the fuel and oil tubes to the APU.
- (m) Visually examine the oil and fuel tubes for kinks, cracks, and leakage.  
NOTE: During an APU operation, a fuel leakage rate of 1 drop for each minute (0.04 cc for each minute) is permitted from the forward drain on the APU drain seal.
  - 1) If the kinks, cracks, or leakage are found from the oil and/or fuel tubes, repair the problems that were found.

**LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-424 PRE HONEYWELL SB 131-49-8023;  
AIRPLANES WITH FLEXIBLE DRAIN TUBES**

- 2) If you find more than the fuel leakage rate, do a check of the witness drain tees to isolate the problem to the fuel control unit, Inlet Guide Vane (IGV) actuator or the surge control valve, do this task: Drain Mast Servicing, TASK 49-16-11-680-801.

**LOM 425-434, 437-447, 450-999; LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-424 POST  
HONEYWELL SB 131-49-8023**

- 3) If you find more than the fuel leakage rate, do a check of the drain tubes for the fuel control unit, IGV actuator or the surge control valve, do this task: Drain Mast Servicing, TASK 49-16-11-680-801.

NOTE: Honeywell SB 131-49-8023 replaced the flexible drain tubes with rigid drain tubes, and removed the three witness drain tees.

**LOM ALL**

- (n) Visually inspect and clean the APU drains, do this task: Clean the APU Drains, TASK 49-16-11-100-801.
- (o) Use the oil sight glass to visually inspect the APU oil level, do this task: APU Oil Level Inspection, TASK 12-13-31-200-801.

NOTE: The oil sight glass can be found on the aft side of the APU gearbox.

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- (p) Visually examine the red button on the oil filter indicator for the lube filter housing.
  - 1) If the red button on the oil filter indicator has extended, do this task: Oil Filter Indicator Inspection, TASK 49-91-13-200-801.
- (q) Inspect the magnetic element for the magnetic drain plug, do this task: Magnetic Drain Plug Inspection, TASK 49-91-81-200-801.
- (r) Visually inspect the oil cooler for blockage of unwanted materials, contamination, and damage.
  - 1) If you find blockage of unwanted materials, remove the blockage.
  - 2) If you find contamination or signs of damage, do this task: Oil Cooler Inspection, TASK 49-91-41-200-801.
- (s) Examine these systems of the APU power plant for tightness and damage:
  - 1) The APU fuel system:
    - a) Fuel control unit
    - b) Ten fuel nozzles
    - c) Fuel flow divider
    - d) Primary and secondary fuel manifolds.
      - <1> No damage allowed.
  - 2) The APU ignition and start system:
    - a) Starter-generator
    - b) Ignition unit
    - c) Igniter plug
    - d) Igniter plug lead.
  - 3) The bleed air system for the APU:
    - a) Bleed air valve
    - b) IGV actuator
    - c) Inlet pressure sensor (P2)
    - d) Total pressure sensor (PT)
      - NOTE: The drain hole on the total pressure tube removes unwanted fluids from the total pressure sensor (PT).
    - e) Delta pressure sensor (DP)
      - NOTE: The drain holes on the static and total pressure tubes remove fluids from the delta pressure sensor (DP).

**LOM ALL PRE SB 131-49-7483**

- f) Surge control valve.

NOTE: APUs WITH THE SUPPORT BRACKET ON THE SURGE DUCT (PRE-HONEYWELL-SB 131-49-7483);

If you find cracks in the support bracket of the surge duct, no corrective action is required. The support bracket is located just aft of the surge control valve.

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**LOM ALL POST SB 131-49-7483**

- g) Surge control valve.

**LOM ALL**

- 4) The APU controls system:
  - a) Speed sensor
  - b) Inlet temperature sensor (T2).
- 5) The EGT indicating system:
  - a) EGT thermocouple 1
  - b) EGT thermocouple 2.
- 6) The APU indicating system.
  - a) Data memory module.
- 7) The APU lubrication system:
  - a) Lube module
  - b) Temperature control valve
  - c) Oil cooler
  - d) Magnetic drain plug
  - e) Oil level sensor
  - f) Oil temperature sensor
  - g) Low oil pressure switch.
- 8) The APU drains:
  - a) No damage allowed.

**G. Put the Airplane Back to Its Usual Condition**

SUBTASK 49-11-00-860-016

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-11-00-860-017

- (2) Remove the DO NOT OPERATE tag, from the APU master switch, on the P5 forward overhead panel.

SUBTASK 49-11-00-410-013

- (3) To close the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.

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**LOM ALL**

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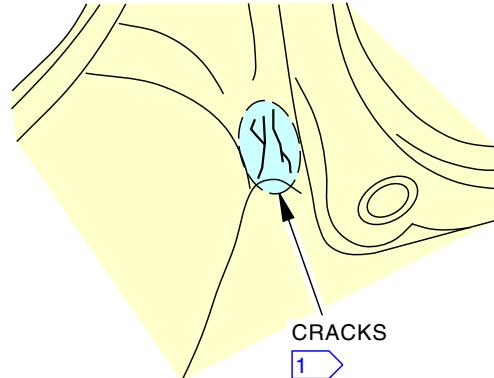
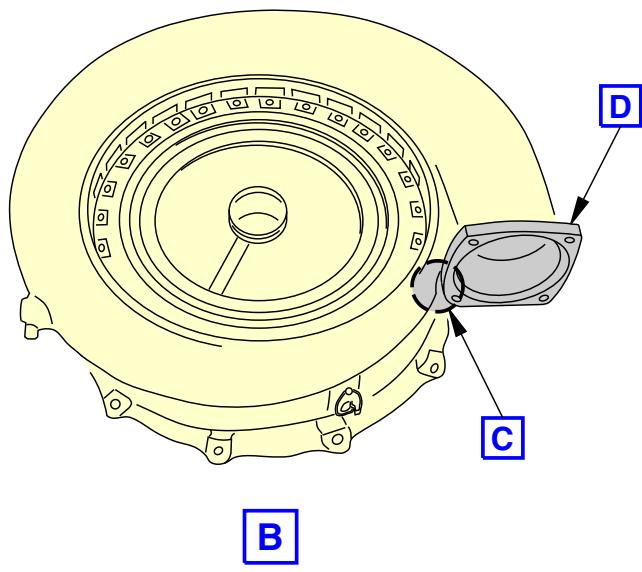
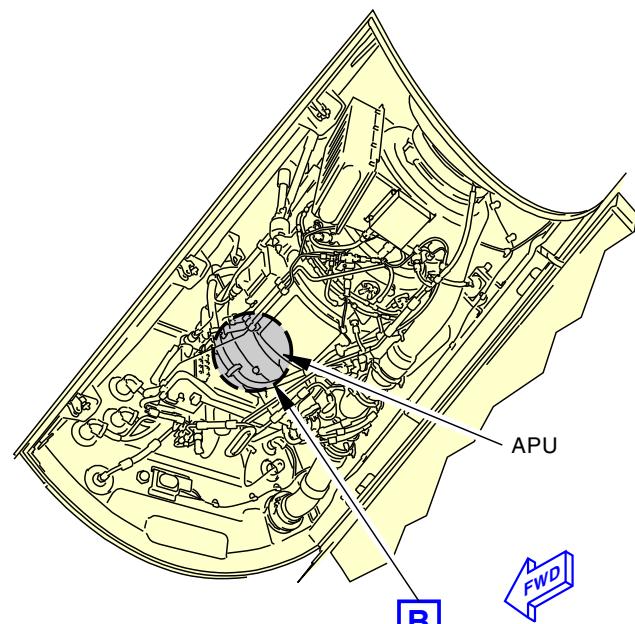
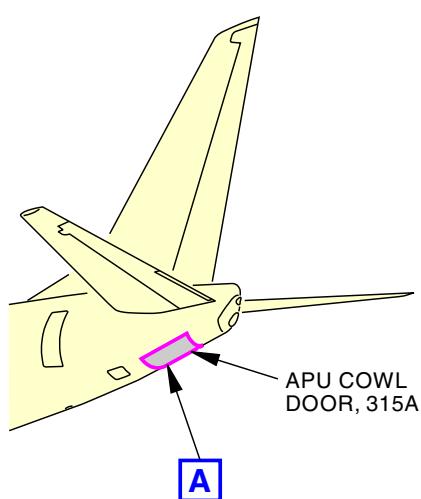
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

EFFECTIVITY  
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**1** CRACKS ARE PERMITTED IN THIS AREA.  
INTERSECTING CRACKS OR MISSING  
MATERIAL ARE NOT PERMITTED

2884898 S0000684927\_V2

**APU Scroll Housing Cracks Inspection**  
**Figure 601/49-11-00-990-837 (Sheet 1 of 2)**

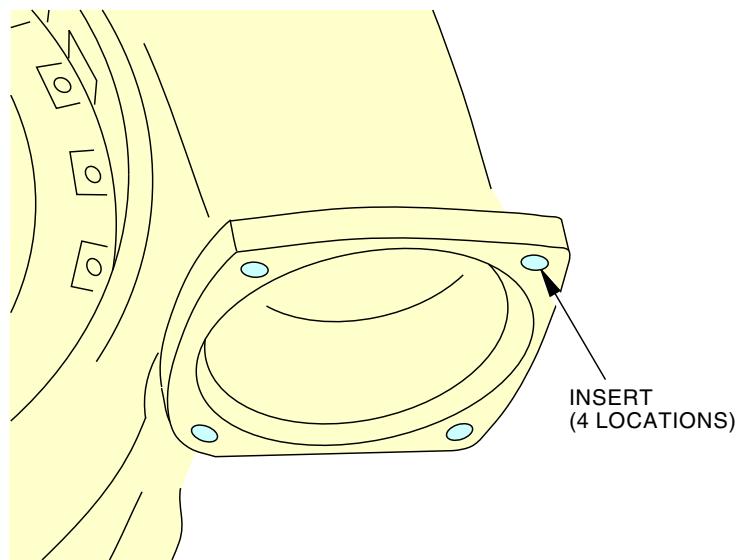
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D

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**APU Scroll Housing Cracks Inspection**  
**Figure 601/49-11-00-990-837 (Sheet 2 of 2)**

EFFECTIVITY  
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D633A101-LOM

ECCN 9E991 BOEING PROPRIETARY - See title page for details

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**TASK 49-11-00-200-802**

**3. Inspection After an APU Power Plant Fire**

**A. References**

<b>Reference</b>	<b>Title</b>
49-11-00-000-801	APU Power Plant Removal (P/B 401)
49-11-00-400-801	APU Power Plant Installation (P/B 401)

**B. Tools/Equipment**

<b>Reference</b>	<b>Description</b>
STD-1134	Vacuum Source, 24 Inches Hg Minimum

**C. Consumable Materials**

<b>Reference</b>	<b>Description</b>	<b>Specification</b>
B01023	Cleaner - Primary - Ardrox 6025	
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CLA)
G00116	Sponge - Synthetic	
G02418	Water - De-ionized	
G02439	Brush - Nylon Bristle	
G50140	Gloves - Protective, Latex or Nitrile	

**D. Location Zones**

<b>Zone</b>	<b>Area</b>
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**E. Access Panels**

<b>Number</b>	<b>Name/Location</b>
315A	APU Cowl Door

**F. Prepare for the Inspection**

SUBTASK 49-11-00-860-241

- (1) Make sure the APU master switch on the P5 forward overhead panel is OFF and install a DO-NOT-OPERATE tag.

SUBTASK 49-11-00-860-242

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

**F/O Electrical System Panel, P6-2**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
A	14	C00033	AUX POWER UNIT CONT



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SUBTASK 49-11-00-010-019

- (3) To open the access panel, do these steps:

**Number**    **Name/Location**

315A      APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.
- (b) Open the three latches.  
*NOTE:* Use this sequence: forward latch, aft latch, middle latch.
- (c) Open the APU Cowl Door, 315A.
- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

**G. Procedure**

SUBTASK 49-11-00-210-025

- (1) Visually examine the APU power plant for the cause of the APU fire or an APU that became too hot.
- (a) If you find external damage to the APU, replace the APU.  
These are the tasks:  
APU Power Plant Removal, TASK 49-11-00-000-801,  
APU Power Plant Installation, TASK 49-11-00-400-801.
  - (b) If you do not find external damage to the APU, refer to the fault isolation manual for the APU fire detection system to find the cause of the high temperature indication.

SUBTASK 49-11-00-210-026

- (2) Do these steps to visually examine the APU compartment and its structural components for signs of fire damage:
- (a) Visually examine the APU compartment and its structural components for signs of fire damage.
  - (b) Visually examine the four APU mounts and seven insulation panels for signs of fire damage.
  - (c) If you find signs of fire damage in the APU compartment and its structural components, contact Boeing Service Engineering for the disposition of the APU and APU compartment due to a fire condition.

*NOTE:* An APU fire will affect the safety and structural components integrity of the airplane. Boeing engineering and structural repair personnel will review airline operator-supplied information and provide recommendations on a case-by-case basis.

SUBTASK 49-11-00-160-001

- (3) Do these steps to remove and/or clean the fire extinguishing agent used for the APU power plant fire from the external surfaces of the APU and APU compartment:
- (a) Do these steps if foam was the fire extinguishing agent:

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**CAUTION**

DO NOT LET THE FOAM GO IN THE HOLES ON THE APU. FOAM THAT STAYS IN THE APU CAN CAUSE CORROSION OF THE ENGINE INTERNAL COMPONENTS.

- 1) Clean the areas of the APU and APU compartment where the foam was used with clean water, cotton wiper, G00034, brush, G02439, sponge, G00116, protective gloves, G50140 or other equivalent equipment.

NOTE: It is recommended that you use de-ionized water, G02418 to clean the external surfaces of the oil cooler.

- 2) Make sure you remove all signs of the foam from the APU and APU compartment.

- (b) Do these steps if dry chemical powder was the fire extinguishing agent:



**CAUTION**

DO NOT USE WATER TO REMOVE THE DRY CHEMICAL POWDER FROM THE APU. THE DRY AGENTS IN THE CHEMICAL POWDER, WHEN MIX WITH WATER, WILL MAKE A COMPOUND THAT CAN CAUSE CORROSION. DO NOT LET THE DRY CHEMICAL POWDER GO IN THE HOLES ON THE APU. DRY CHEMICAL POWDER THAT STAY IN THE APU CAN CAUSE CORROSION OF THE ENGINE INTERNAL COMPONENTS.

- 1) Clean the areas of the APU and APU compartment where the dry chemical powder was used with a vacuum source (24 inches Hg minimum), STD-1134 or other equivalent tool to remove the powder.

- 2) If the dry chemical powder was changed to a glaze-like formation due to high temperatures, clean the areas with Ardrox 6025 cleaner, B01023, cotton wiper, G00034, brush, G02439, sponge, G00116, protective gloves, G50140 or other equivalent equipment.

- 3) Make sure you remove all signs of the dry chemical powder from the APU and APU compartment.

- (c) Do these steps if halogen or halon was the fire extinguishing agent:

- 1) In-flight use of the fire extinguishing system is permitted with no special cleaning procedure.



**WARNING**

DO NOT BREATHE THE GAS FROM THE FIRE EXTINGUISHING AGENT IN THE APU COMPARTMENT AFTER IT IS USED. DO NOT LET THE FIRE EXTINGUISHING AGENT TOUCH YOUR SKIN. YOU MUST HAVE A GOOD FLOW OF AIR AT THE LOCATION WHERE THE AGENT WAS USED. IF YOU DO NOT OBEY THESE PRECAUTIONS, INJURY TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- 2) Ground use of the fire extinguishing system is permitted but make sure the APU cowl door is opened for a minimum of 30 minutes to remove all halogen or halon gases. No special cleaning procedure is necessary.

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- 3) If it is necessary, clean the external surfaces of the APU from the power section (combustion chamber) to the turbine exhaust port with clean water, cotton wiper, G00034, brush, G02439, sponge, G00116, protective gloves, G50140 or other equivalent equipment.

NOTE: It is recommended that you use de-ionized water, G02418 to clean the external surfaces of the oil cooler.

**H. Put the Airplane Back to Its Usual Condition**

SUBTASK 49-11-00-860-243

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-11-00-860-244

- (2) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.

SUBTASK 49-11-00-410-014

- (3) To close the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

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LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-426 PRE SB 131-49-7971

**TASK 49-11-00-210-801**

**4. APU 1st Stage Turbine Blade Shift (Walk) Inspection**

(Figure 602)

**A. General**

- (1) Experience has shown that 1st stage turbine blade shift (walking) can occur after 3000 cycles (depends on operating conditions). When this occurs, one or more of the 1st stage turbine blades can move or "walk" within the turbine disc. This blade movement will result in increased rotor imbalance that can result in damage to the adjacent hardware.

**B. References**

<b>Reference</b>	<b>Title</b>
49-11-00 P/B 401	APU POWER PLANT - REMOVAL/INSTALLATION

**C. Tools/Equipment**

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

<b>Reference</b>	<b>Description</b>
COM-9904	Light - Inspection (Explosion Proof) - 120V, 50 - 400Hz, FM Approved Part #: 2127-803 Supplier: 53494
STD-600	Mirror - Inspection
STD-858	Tag - DO NOT OPERATE
STD-1400	Fiberscope - Flexible Borescope
STD-7518	Lens - Magnifying, 4X magnification at least

**D. Location Zones**

<b>Zone</b>	<b>Area</b>
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**E. Access Panels**

<b>Number</b>	<b>Name/Location</b>
315A	APU Cowl Door

**F. Prepare for the Inspection**

SUBTASK 49-11-00-860-304

- (1) Make sure the Auxiliary Power Unit (APU) master switch on the P5 forward overhead panel is OFF and install a DO NOT OPERATE tag, STD-858.

SUBTASK 49-11-00-860-305

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

**F/O Electrical System Panel, P6-2**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
B	19	C01344	APU FIRE SW POWER

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**LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-426 PRE SB 131-49-7971 (Continued)**

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-11-00-010-020

- (3) To open the access panel, do these steps:

**Number      Name/Location**

315A	APU Cowl Door
------	---------------

- (a) Support the APU panel (cowl door) under the center latch.

- (b) Open the three latches.

NOTE: Use this sequence: forward latch, aft latch, middle latch.

- (c) Open the APU Cowl Door, 315A.

- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.

- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.

- (f) Disconnect the two hold-open rods from the two spring clips.

- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.

- (h) Install the two retainer pins in the two rod ends.

**G. APU 1st Stage Turbine Blade Shift (Walk) Inspection**

SUBTASK 49-11-00-210-030

- (1) Do the steps that follow to examine the exhaust center body cap:

- (a) Remove the exhaust V-band clamp and insert a fiberscope, STD-1400 or inspection mirror, STD-600 between the APU exhaust duct flange and the bellows.

- (b) Alternate: Use an explosion proof inspection light, COM-9904 and magnifying lens, STD-7518 to look down the airplane tailpipe.

- (c) Look for cracks radiating from the holes for the three retaining bolts near the center of the cap.

- 1) If you find cracks, missing material or a missing cap, speak to Boeing for analysis and recommended instructions.

- (2) Examine the aft end of the turbine scavenge oil tube at the 6 o'clock position for signs of oil wetness.

NOTE: In some cases where the turbine blade shift is advanced, the turbine bearing scavenge tube has been found separated at the aft end near the turbine, located near the 6 o'clock position.

- (3) If signs of blade 'walk' are found; it is optional to replace the APU at the next maintenance opportunity (APU POWER PLANT - REMOVAL/INSTALLATION, PAGEBLOCK 49-11-00/401).

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**LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-426 PRE SB 131-49-7971 (Continued)**

**H. Put the Airplane Back to Its Usual Condition**

SUBTASK 49-11-00-860-307

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-11-00-860-308

- (2) Remove the DO NOT OPERATE tag, STD-858 from the APU master switch on the P5 forward overhead panel.

SUBTASK 49-11-00-410-015

- (3) To close the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

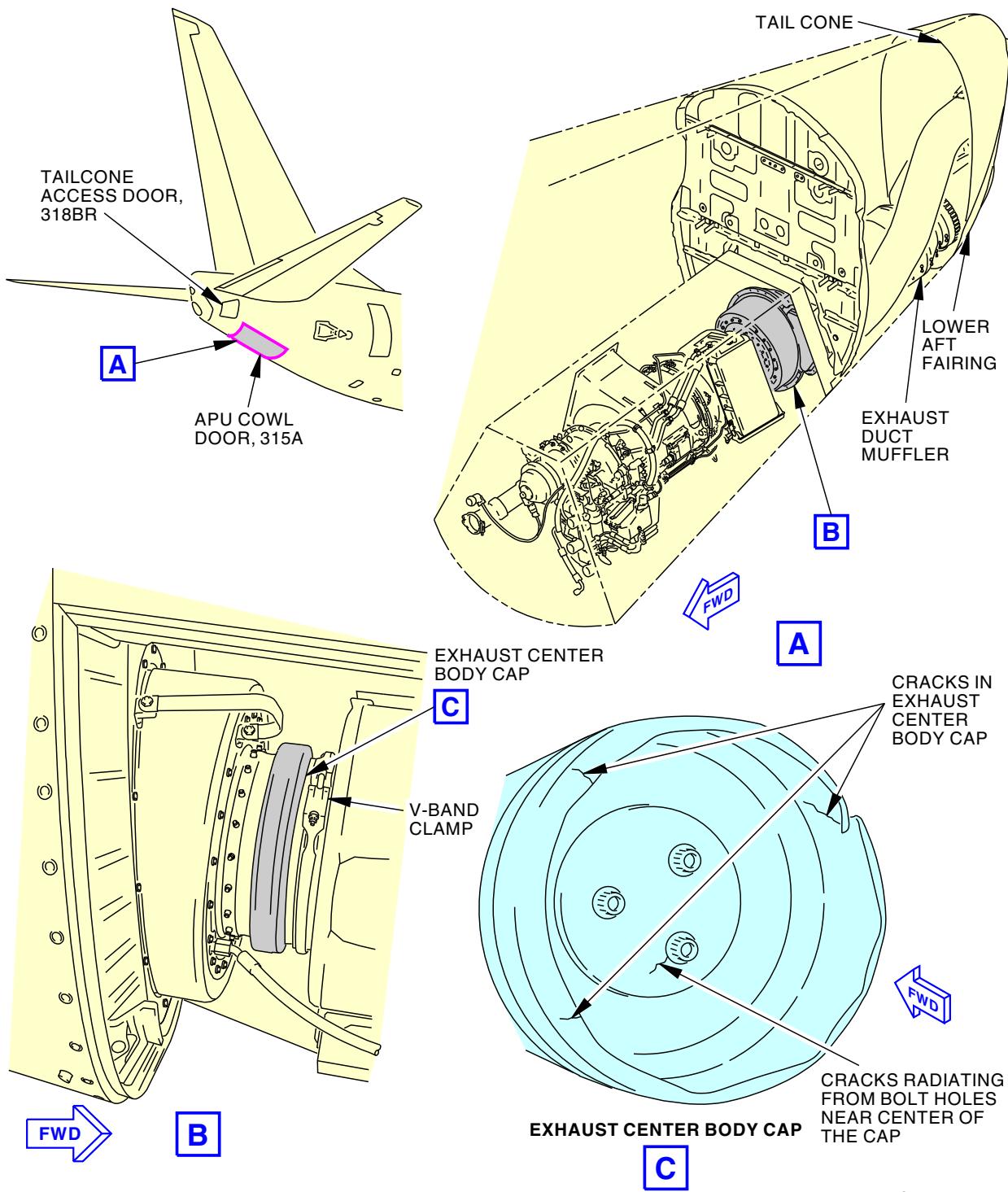
- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

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**Signs of APU 1st Stage Blade Shift (Walk)**  
**Figure 602/49-11-00-990-810**

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 LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,  
 422-426 PRE SB 131-49-7971

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APU POWER PLANT - REPAIR

**1. General**

- A. This procedure has this task:
- (1) A repair of the APU compressor inlet door fasteners.

**TASK 49-11-00-300-801**

**2. Repair the APU Compressor Inlet Access Door Fasteners**

**A. Tools/Equipment**

Reference	Description
STD-725	Punch

**B. Consumable Materials**

Reference	Description	Specification
B50126	Solvent - Degreasing, General Purpose	MIL-PRF-680
G50316	Cloth - Clean, Dry, Lint-free, White, Cotton	

**C. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Access door	49-11-00-12-070	LOM ALL
3	Stud	49-11-00-12-055	LOM ALL
4	Retaining spring	49-11-00-12-065	LOM ALL
5	Grommet	49-11-00-12-060	LOM ALL

**D. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**E. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**F. Prepare for the repair**

**SUBTASK 49-11-00-860-295**

- (1) Make sure the APU master switch on the P5 forward overhead panel is OFF and install a DO-NOT-OPERATE tag.

**SUBTASK 49-11-00-860-296**

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

**F/O Electrical System Panel, P6-2**

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT

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SUBTASK 49-11-00-010-021

- (3) To open the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.
- (b) Open the three latches.  
*NOTE:* Use this sequence: forward latch, aft latch, middle latch.
- (c) Open the APU Cowl Door, 315A.
- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

## G. Procedure

SUBTASK 49-11-00-000-001

- (1) To remove the access door [1] do these steps:

- (a) Remove the bolt [2] that attaches the lanyard to the compressor inlet plenum.
- (b) Loosen the eight captive screws that attach the access door [1] to the compressor inlet plenum.
- (c) Remove the access door [1] from the compressor inlet plenum.

SUBTASK 49-11-00-300-001

- (2) To repair the compressor inlet access door fasteners do these steps:

- (a) Remove any damaged studs [3], retaining springs [4], or grommets [5] from the access door [1].



CLEANING OPERATIONS USING SOLVENTS SHOULD BE PERFORMED IN A WELL-VENTILATED ATMOSPHERE. EXERCISE NORMAL SAFETY PRECAUTIONS DURING USE. REPEATED OR PROLONGED CONTACT WITH THE SKIN COULD CAUSE INJURY TO PERSONNEL.

- (b) Clean the studs [3], retaining springs [4], grommets [5], and holes of the access door [1] with a cotton cloth, G50316 and degreasing solvent, B50126.
- (c) Install the new grommets [5] into the access door [1] with a punch, STD-725.
- (d) Install the new retaining springs [4] and new studs [3] on the access door [1].

SUBTASK 49-11-00-400-001

- (3) To install the access door [1] do these steps:

- (a) Install the bolt [2] that attaches the Lanyard to the compressor inlet plenum.
- (b) Install the access door [1] to the compressor inlet plenum with the eight captive screws.

EFFECTIVITY  
LOM ALL

**49-11-00**



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**H. Put the Airplane Back to Its Usual Condition**

SUBTASK 49-11-00-860-297

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-11-00-860-298

- (2) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.

SUBTASK 49-11-00-410-016

- (3) To close the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

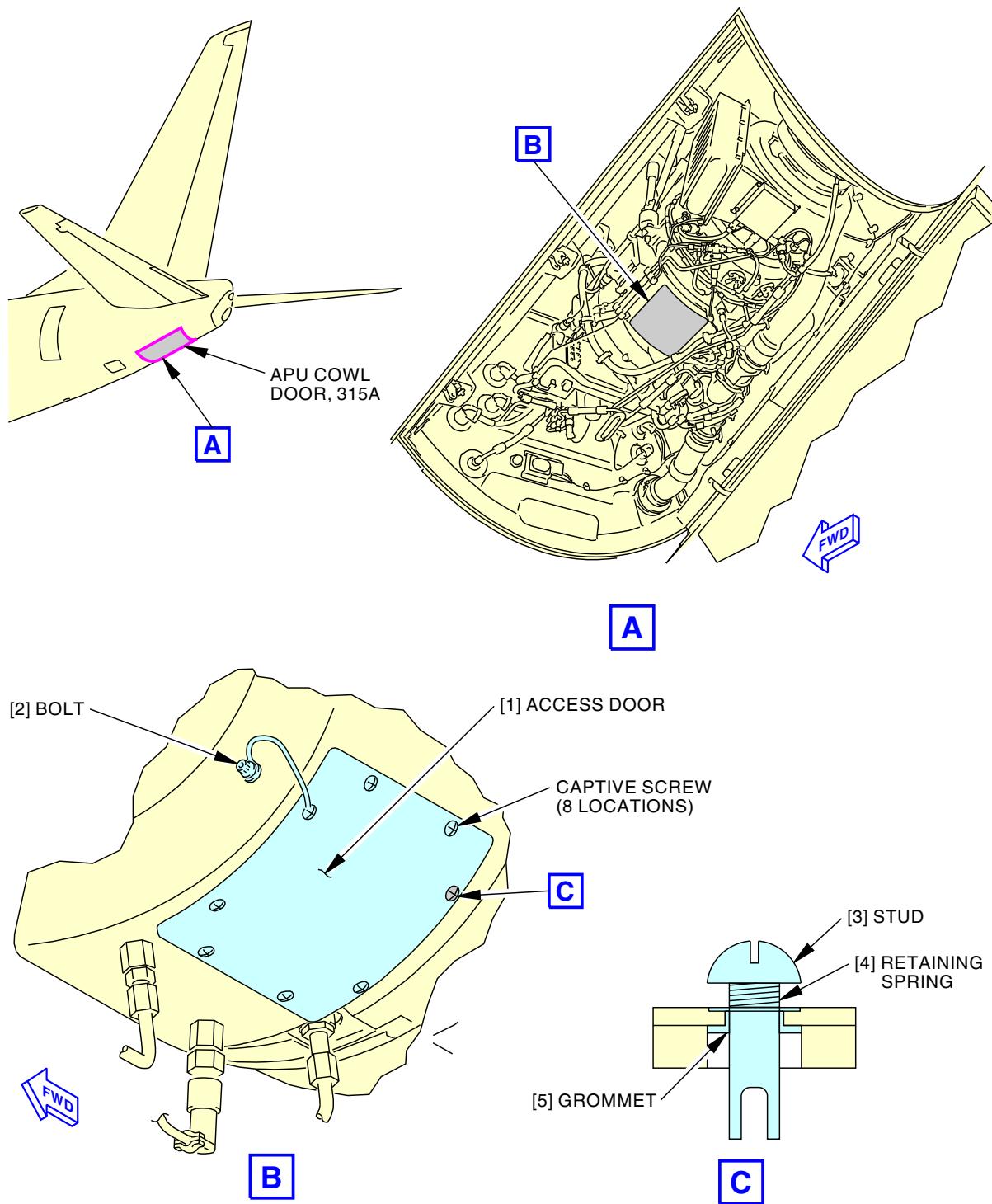
- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

EFFECTIVITY  
LOM ALL

**49-11-00**



1444705 S0000261767\_V2

**APU Compressor Inlet Access Door Fastener Repair**  
**Figure 801/49-11-00-990-808**

 EFFECTIVITY  
 LOM ALL

**49-11-00**

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APU HARNESS - REMOVAL/INSTALLATION

**1. General**

- A. This procedure has these tasks:
  - (1) A removal of the starter-generator wire harness
  - (2) An installation of the starter-generator wire harness
  - (3) A removal of the engine wire harness
  - (4) An installation of the engine wire harness.
- B. The APU has two wire harnesses. The starter-generator wire harness is installed on the starter-generator and the 1088 bulkhead. The engine wire harness is installed on the APU and the 1088 bulkhead.

**TASK 49-11-01-000-801**

**2. Starter-Generator Wire Harness Removal**

(Figure 401)

**A. Location Zones**

<b>Zone</b>	<b>Area</b>
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**B. Access Panels**

<b>Number</b>	<b>Name/Location</b>
315A	APU Cowl Door

**C. Prepare for the Removal**

SUBTASK 49-11-01-860-001

- (1) Make sure that the Auxiliary Power Unit (APU) master switch, on the P5 forward overhead panel, is OFF and install a DO-NOT-OPERATE tag.

SUBTASK 49-11-01-860-002

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

**F/O Electrical System Panel, P6-2**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-11-01-010-007

- (3) To open the access panel, do these steps:

**Number**    **Name/Location**

315A       APU Cowl Door

- (a) Support the APU panel (cowl door) under the center latch.
- (b) Open the three latches.

NOTE: Use this sequence: forward latch, aft latch, middle latch.

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LOM ALL

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- (c) Open the APU Cowl Door, 315A.
- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

**D. Starter-Generator Wire Harness Removal**

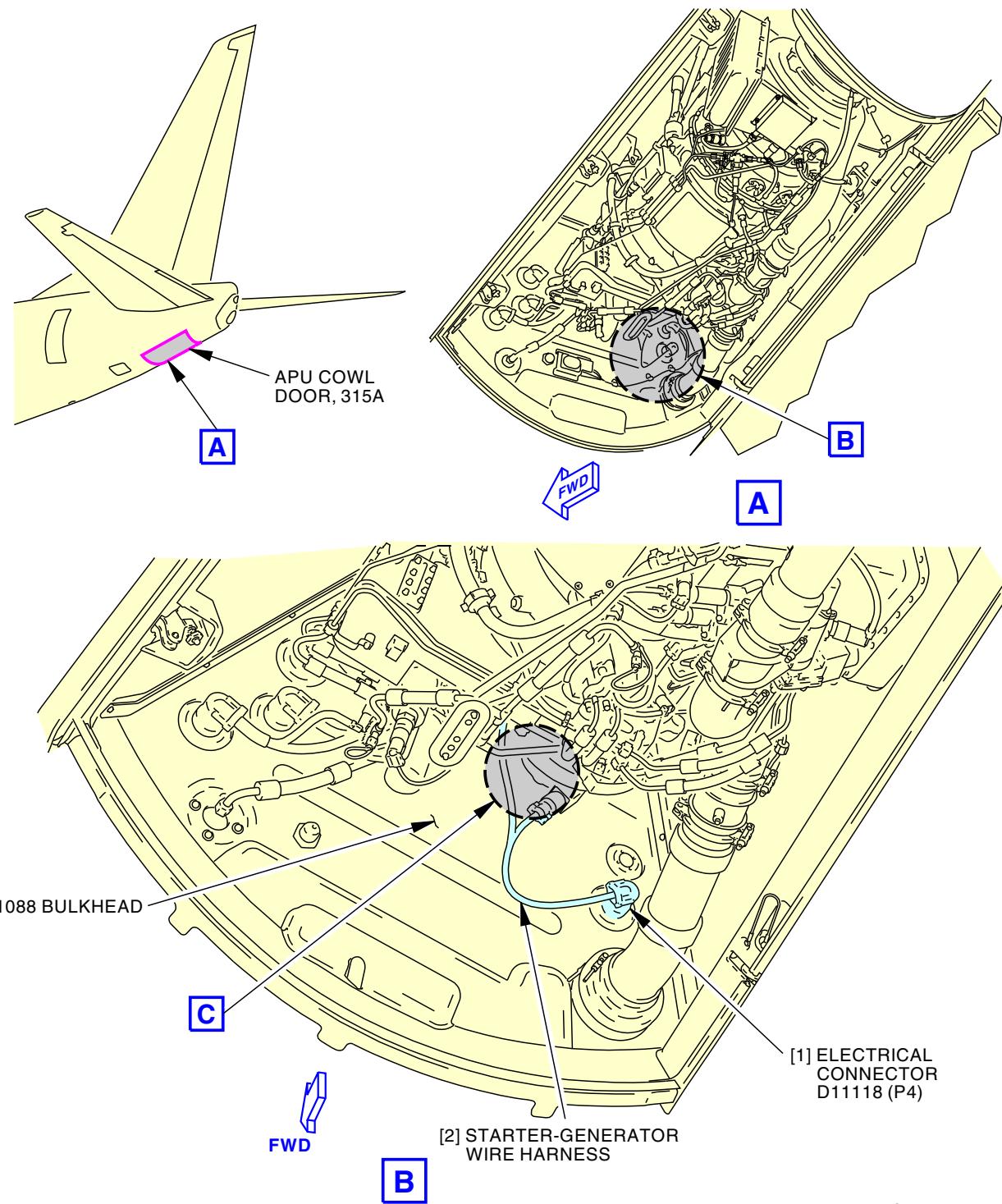
SUBTASK 49-11-01-020-001

- (1) Do these steps to remove the wire harness [2] for the starter-generator:
  - (a) Disconnect the electrical connector D11118 (P4) [1] from the APU firewall receptacle on the 1088 bulkhead.
  - (b) Disconnect the electrical connector (P5) [3] from the starter-generator.
  - (c) Disconnect the electrical connector (P6) [4] from the starter-generator.
  - (d) Remove the wire harness [2].
  - (e) Install the caps on the electrical connectors to prevent contamination.

———— END OF TASK ————

EFFECTIVITY  
LOM ALL

**49-11-01**



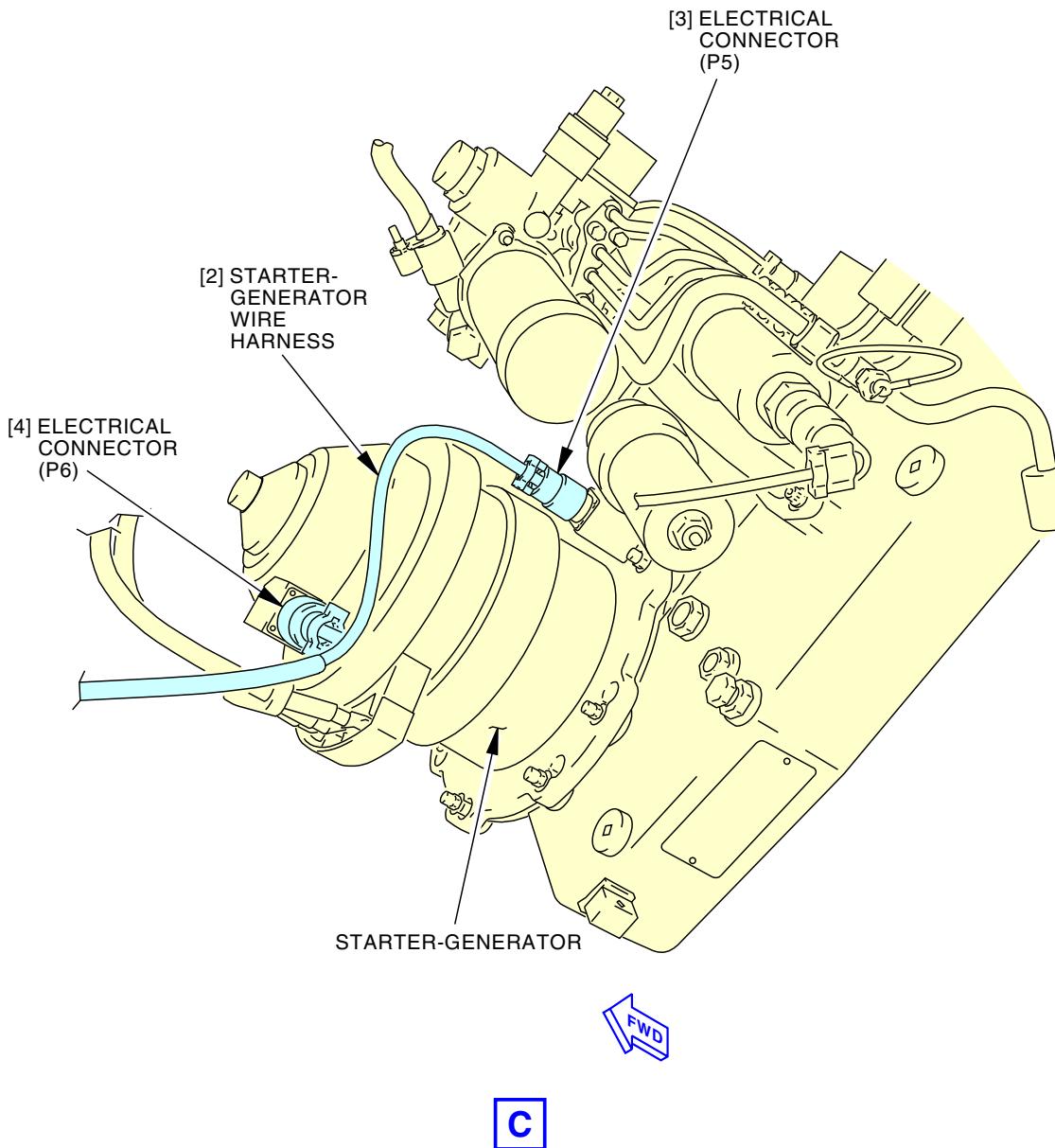
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**Starter-Generator Wire Harness Installation  
Figure 401/49-11-01-990-801 (Sheet 1 of 2)**

EFFECTIVITY  
LOM ALL

**49-11-01**

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F64110 S0006579016\_V2

**Starter-Generator Wire Harness Installation**  
**Figure 401/49-11-01-990-801 (Sheet 2 of 2)**

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**TASK 49-11-01-400-801**

**3. Starter-Generator Wire Harness Installation**

(Figure 401, Figure 403)

**A. References**

Reference	Title
49-11-00-710-801	APU Operational Test (P/B 501)
49-11-00-860-802	APU Usual Shutdown (P/B 201)
49-11-01-200-801	Wire Harness Inspection (P/B 601)
49-11-01-200-802	Electrical Connector and Terminal Inspection (P/B 601)
49-61-00-700-801	APU BITE Procedure (P/B 201)

**B. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Wire harness	49-11-01-02-010	LOM ALL

**C. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**D. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**E. Starter-Generator Wire Harness Installation**

SUBTASK 49-11-01-210-003

(1) Do these tasks:

- (a) Wire Harness Inspection, TASK 49-11-01-200-801.
- (b) Electrical Connector and Terminal Inspection, TASK 49-11-01-200-802.

SUBTASK 49-11-01-420-001

(2) To install the wire harness [2] for the starter-generator, do the following steps:

NOTE: See Figure 403 for examples of fully tightened connectors.

- (a) Remove the caps from the electrical connectors.
- (b) Put the wire harness [2] near the 1088 bulkhead.
- (c) Connect the electrical connector (P6) [4] to the starter-generator.
- (d) Connect the electrical connector (P5) [3] to the starter-generator.
- (e) Connect the electrical connector D11118 (P4) [1] to the Auxiliary Power Unit (APU) firewall receptacle on the 1088 bulkhead.

**F. Starter-Generator Wire Harness Installation Test**

SUBTASK 49-11-01-860-003

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

**F/O Electrical System Panel, P6-2**

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

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**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-11-01-860-004

- (2) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.

SUBTASK 49-11-01-710-001

- (3) Do this task: APU Operational Test, TASK 49-11-00-710-801.

SUBTASK 49-11-01-740-001

- (4) Do this task: APU BITE Procedure, TASK 49-61-00-700-801.  
(a) If maintenance message(s) show for the APU electrical system or the starter-generator, refer to the applicable Maintenance Message Index in the FIM.

SUBTASK 49-11-01-860-005

- (5) If it is not necessary to do other tasks, do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

**G. Put the Airplane Back to Its Usual Condition**

SUBTASK 49-11-01-410-007

- (1) To close the access panel, do these steps:

Number    Name/Location

315A	APU Cowl Door
------	---------------

- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.  
(b) Disconnect the two hold-open rods from the two brackets.  
(c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.  
(d) Install the retainer pin in the rod end of the forward hold-open rod.  
(e) Install the retainer pin to the spring clip on the aft hold-open rod.  
(f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.  
    1) Make sure that the installation of fire shield has not shifted.  
    2) If it is necessary, hand form the insulation blanket to obtain a better clearance.  
(g) Close the APU Cowl Door, 315A.  
(h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

**TASK 49-11-01-000-802**

**4. Engine Wire Harness Removal**

(Figure 402 and Figure 403)

**A. Tools/Equipment**

<u>Reference</u>	<u>Description</u>
STD-858	Tag - DO NOT OPERATE

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LOM ALL

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AIRCRAFT MAINTENANCE MANUAL

**B. Location Zones**

<b>Zone</b>	<b>Area</b>
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**C. Access Panels**

<b>Number</b>	<b>Name/Location</b>
315A	APU Cowl Door

**D. Prepare for the Removal**

SUBTASK 49-11-01-860-011

- (1) Make sure that the APU master switch, on the P5 forward overhead panel, is in the OFF position.
  - (a) Install the DO NOT OPERATE tag, STD-858, on the APU master switch.

SUBTASK 49-11-01-860-012

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

**F/O Electrical System Panel, P6-2**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-11-01-010-010

- (3) To open the access panel, do these steps:

**Number**      **Name/Location**

315A      APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.
- (b) Open the three latches.

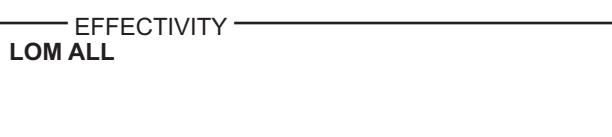
NOTE: Use this sequence: forward latch, aft latch, middle latch.
- (c) Open the APU Cowl Door, 315A.
- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

**E. Engine Wire Harness Removal**

SUBTASK 49-11-01-020-005

- (1) Do these steps to remove the engine wire harness [25]:

NOTE: The steps are applicable to both 3888449-1 and 3888449-2 engine wire harnesses unless otherwise noted.



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- (a) Disconnect the electrical connector (P13) [51] from the ignition unit.
- (b) Disconnect the Exhaust Gas Temperature (EGT) thermocouples EGT leads [59] and EGT leads [61].
  - 1) Remove the nuts [60] that attach the EGT leads [61] to the EGT thermocouple 1.  
NOTE: There are two different nuts that attach the two EGT leads to each thermocouple. The nut for the alumel stud is larger than the nut for the chromel stud.
  - 2) Remove the nuts [58] that attach the EGT leads [59] to the EGT thermocouple 2.
  - 3) Disconnect the EGT leads [61] and EGT leads [59].
- (c) Release the engine wire harness [25] from the spring clip [52], spring clip [53], and spring clip [54].
- (d) Disconnect the electrical connector (P9) [57] from the surge control valve.
- (e) Release the engine wire harness [25] from the spring clip [55] and spring clip [56].
- (f) Disconnect the electrical connector (P23) [50] from the flow divider solenoid for the fuel flow divider.
- (g) Release the engine wire harness [25] from the spring clip [49] and spring clip [39].
- (h) For 3888449-2, disconnect the ground jumper [62] from the electrical connector (P21) [40] backshell clamp.
- (i) Remove the bolt [63] and nut [64] that secure the clamps [65] to the aft bearing retainer tube.
- (j) Disconnect the electrical connector (P21) [40] from the inlet temperature sensor.
  - 1) Remove the lockwire from the electrical connector (P21) [40].
  - 2) Disconnect the electrical connector (P21) [40].
- (k) Disconnect the electrical connector (P20) [41] from the delta pressure sensor.
- (l) Disconnect the electrical connector (P19) [42] from the total pressure sensor.
- (m) Release the engine wire harness [25] from the spring clip [38].
- (n) Disconnect the electrical connector (P10) [48] from the bleed air valve.
- (o) Disconnect the electrical connector (P18) [43] from the inlet pressure sensor.
- (p) Disconnect the electrical connector (P12) [44] from the speed sensor.
- (q) Disconnect the electrical connector (P17) [47] from the Inlet Guide Vane (IGV) actuator.
- (r) Release the engine wire harness [25] from the spring clip [49], spring clip [45], spring clip [46], spring clip [35], spring clip [36], and spring clip [37].
- (s) Disconnect the electrical connector (P11) [34] from the data memory module.
- (t) Disconnect the electrical connector (P16) [32] from the oil level sensor.
- (u) Release the engine wire harness [25] from the spring clip [33].
- (v) Open the quick-release clamps [26].
  - 1) Release the engine wire harness [25] from the quick-release clamps [26].
- (w) Disconnect the electrical connector (P24) [28] from the filter bypass switch (oil filter indicator on the generator filter housing).
- (x) Release the engine wire harness [25] from the spring clips [29].
- (y) Disconnect the electrical connector (P14) [31] from the low oil pressure switch.

EFFECTIVITY  
LOM ALL

**49-11-01**



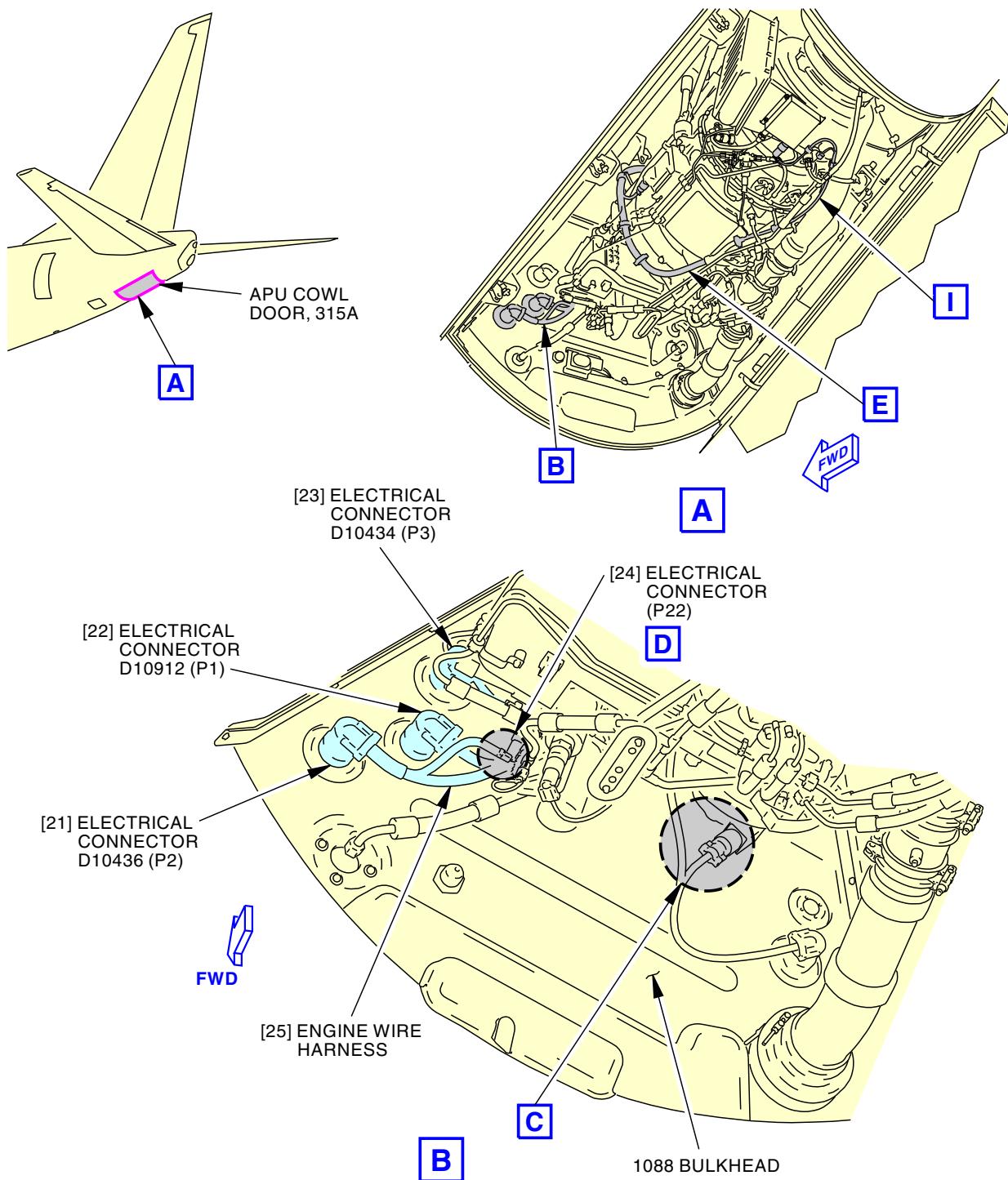
**737-600/700/800/900**  
**AIRCRAFT MAINTENANCE MANUAL**

- (z) For 3888449-2, disconnect the ground jumper [66] from the electrical connector (P15) [30] backshell clamp.
- (aa) Disconnect the electrical connector (P15) [30] from the oil temperature sensor.
  - 1) Remove the lockwire from the electrical connector (P15) [30].
  - 2) Disconnect the electrical connector (P15) [30].
- (ab) Open the quick-release clamp [27].
  - 1) Release the engine wire harness [25] from the quick-release clamp [27].
- (ac) Disconnect the electrical connector (P22) [24] from the fuel control unit.
- (ad) Disconnect the electrical connector D10436 (P2) [21], electrical connector D10912 (P1) [22], and electrical connector D10434 (P3) [23] from the APU firewall receptacles on the 1088 bulkhead.
  - 1) Disconnect the electrical connector D10436 (P2) [21].
  - 2) Disconnect the electrical connector D10912 (P1) [22].
  - 3) Disconnect the electrical connector D10434 (P3) [23].
- (ae) Remove the engine wire harness [25].
- (af) Install the caps on the electrical connectors.

———— END OF TASK ————

EFFECTIVITY  
LOM ALL

**49-11-01**



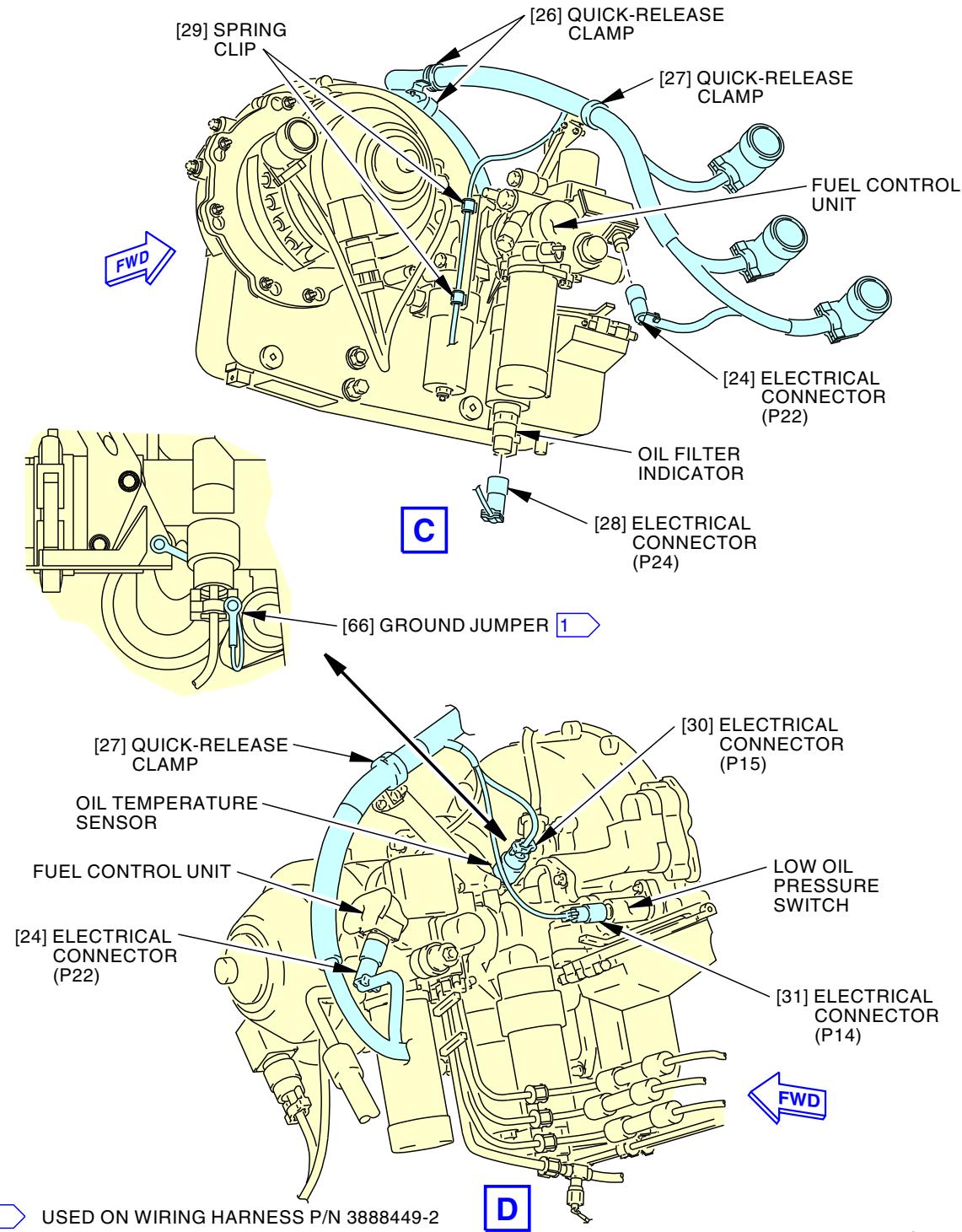
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**Engine Wire Harness Installation**  
Figure 402/49-11-01-990-806 (Sheet 1 of 7)

EFFECTIVITY  
LOM ALL

**49-11-01**

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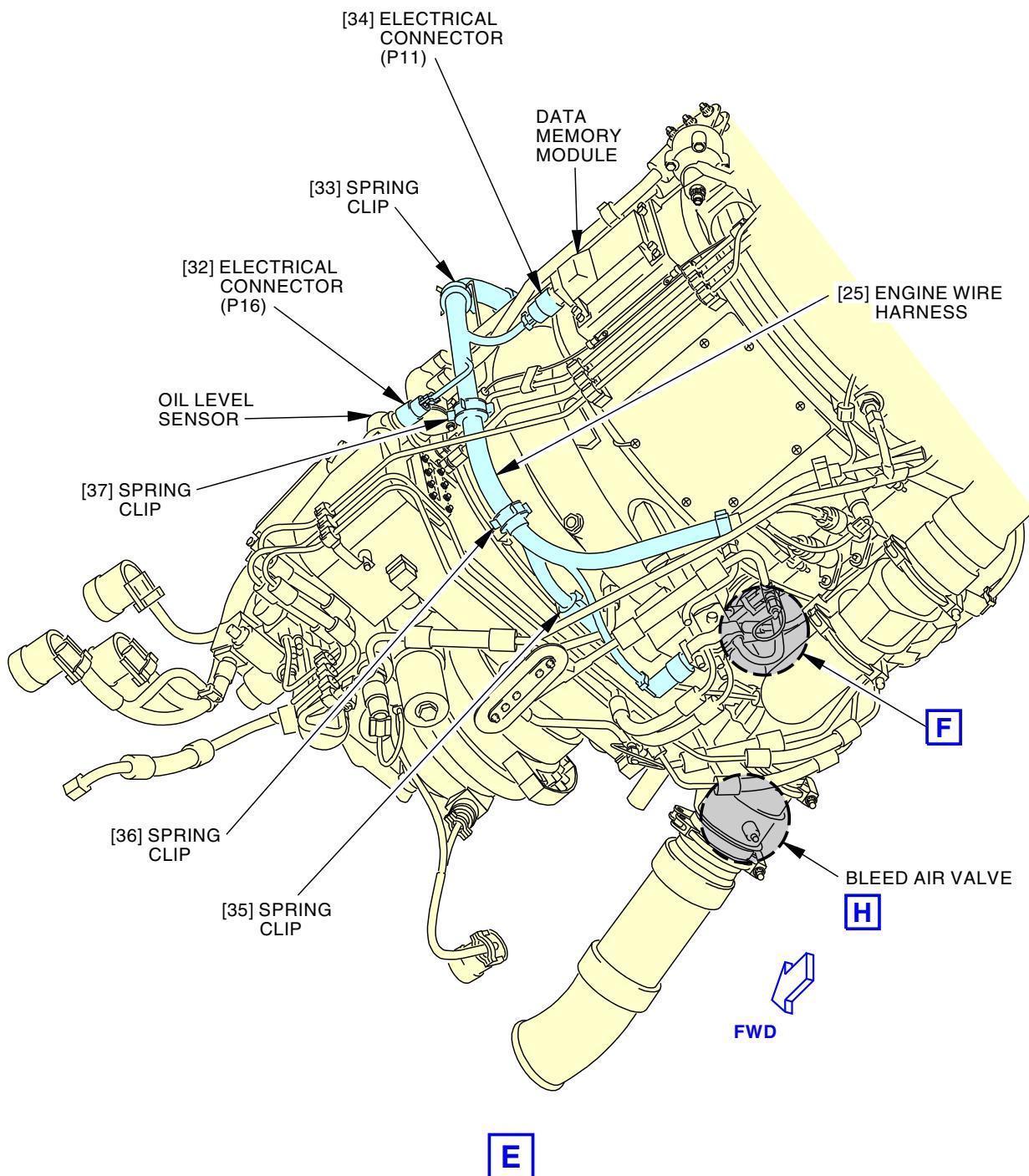
**Engine Wire Harness Installation  
Figure 402/49-11-01-990-806 (Sheet 2 of 7)**

EFFECTIVITY  
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**49-11-01**

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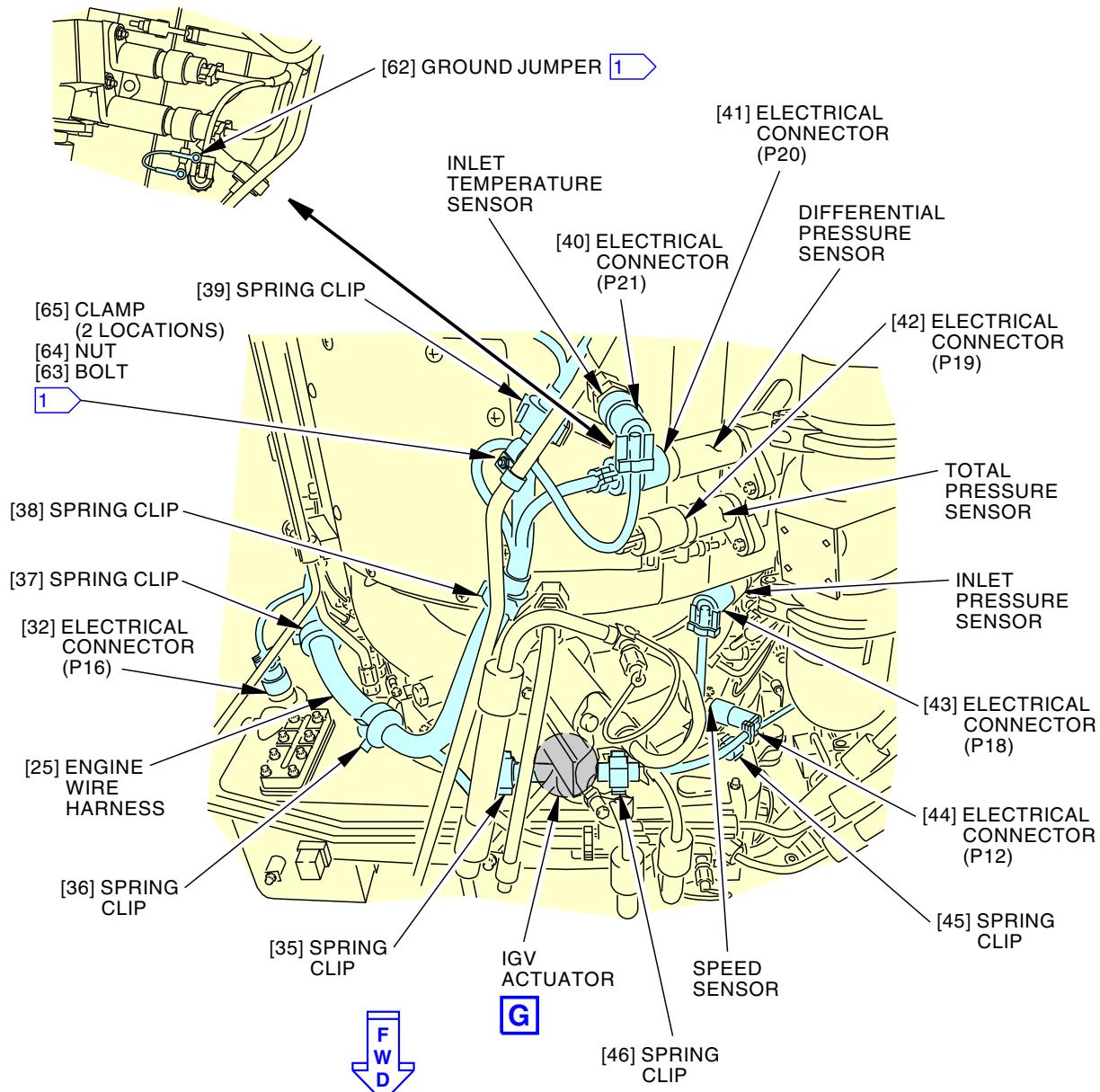
**Engine Wire Harness Installation**  
Figure 402/49-11-01-990-806 (Sheet 3 of 7)

EFFECTIVITY  
LOM ALL

**49-11-01**

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USED ON WIRING HARNESS P/N 3888449-2

F67299 S0006579022\_V4

**Engine Wire Harness Installation  
Figure 402/49-11-01-990-806 (Sheet 4 of 7)**

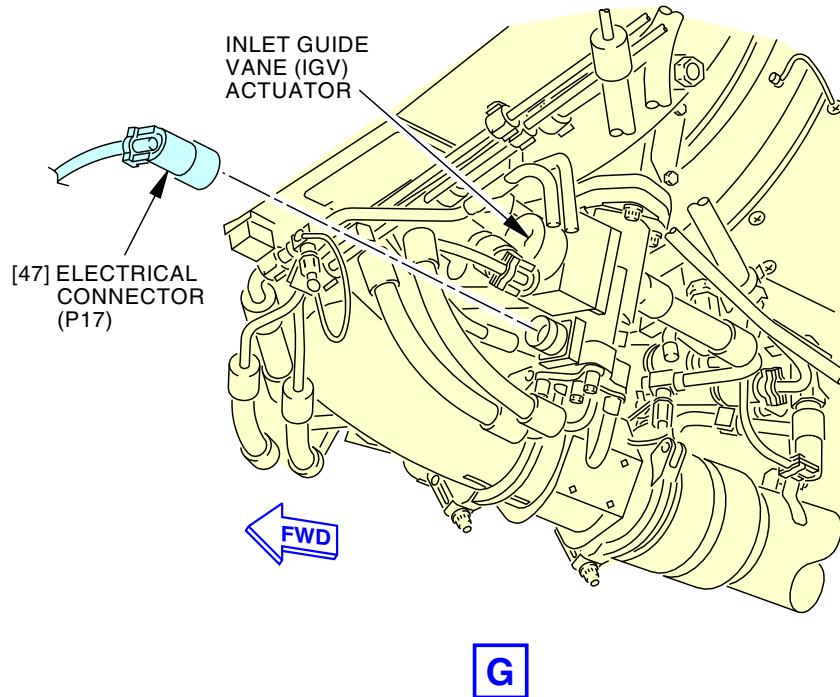
EFFECTIVITY  
LOM ALL

**49-11-01**

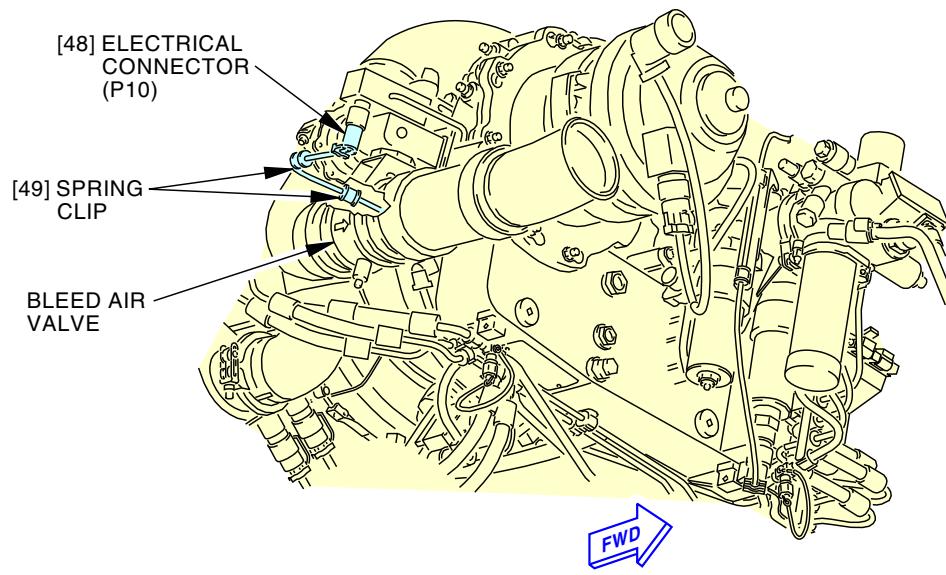
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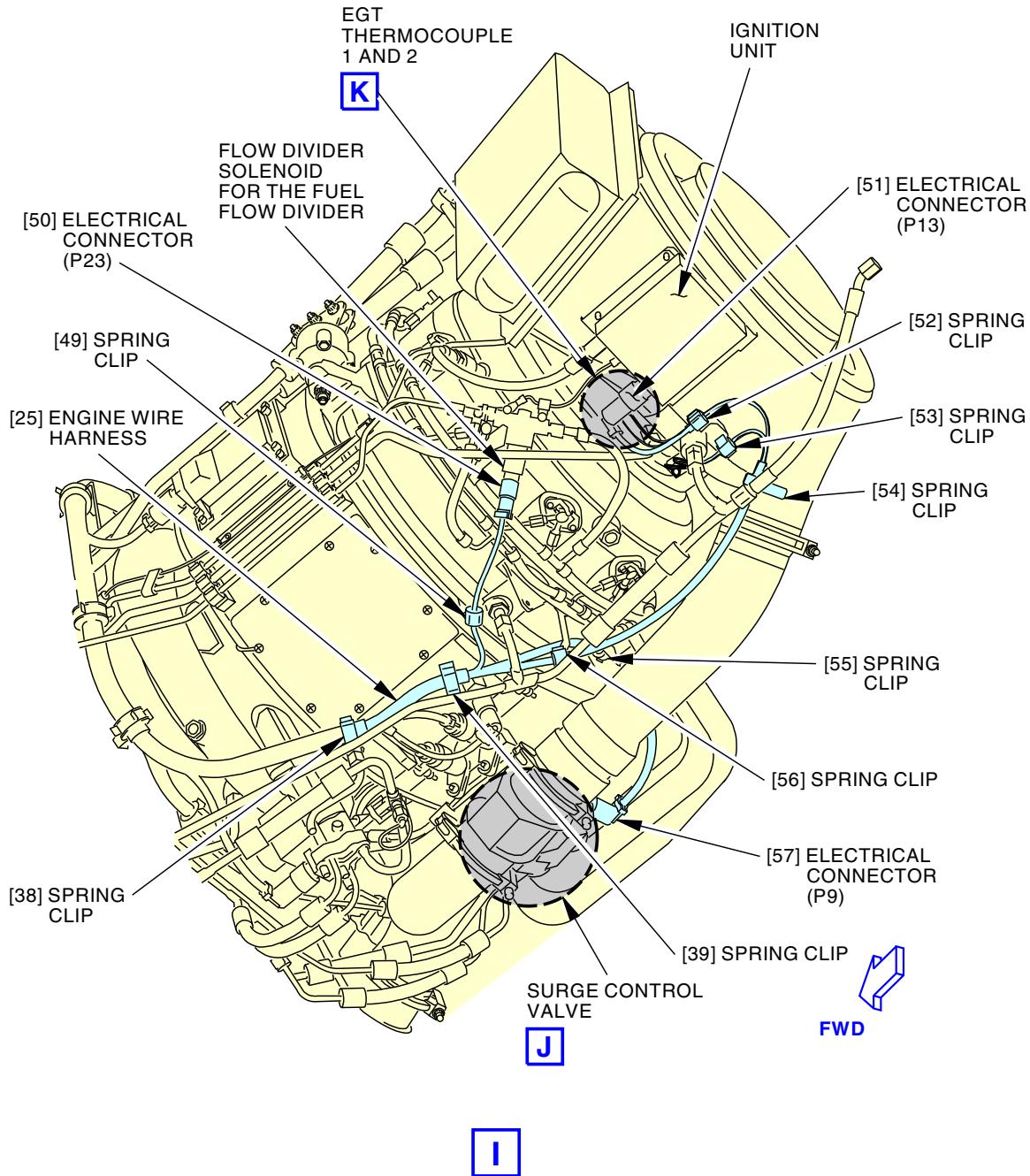
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Engine Wire Harness Installation  
Figure 402/49-11-01-990-806 (Sheet 5 of 7)

EFFECTIVITY  
LOM ALL

49-11-01



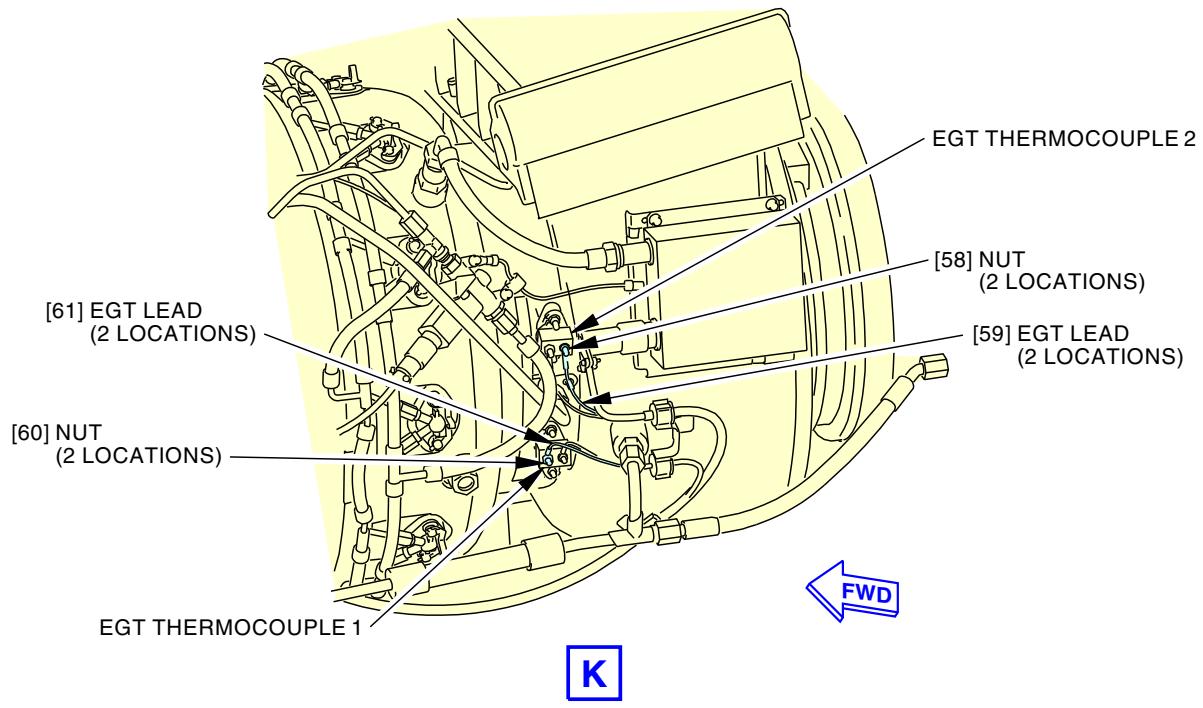
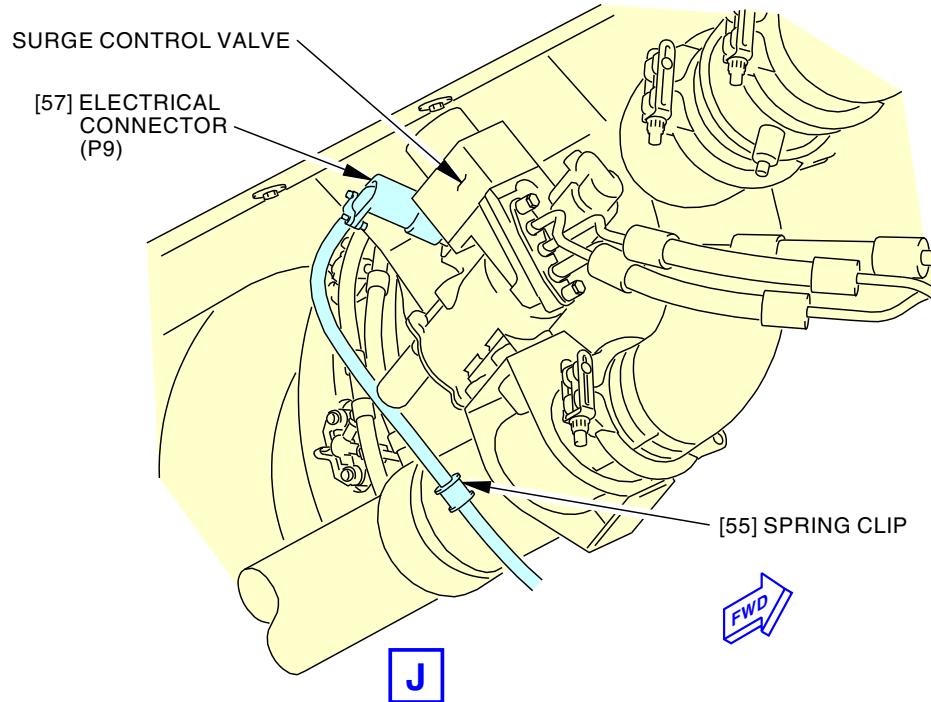
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**Engine Wire Harness Installation**  
**Figure 402/49-11-01-990-806 (Sheet 6 of 7)**

EFFECTIVITY  
 LOM ALL

**49-11-01**

D633A101-LOM



F64654 S0006579025\_V3

**Engine Wire Harness Installation  
Figure 402/49-11-01-990-806 (Sheet 7 of 7)**

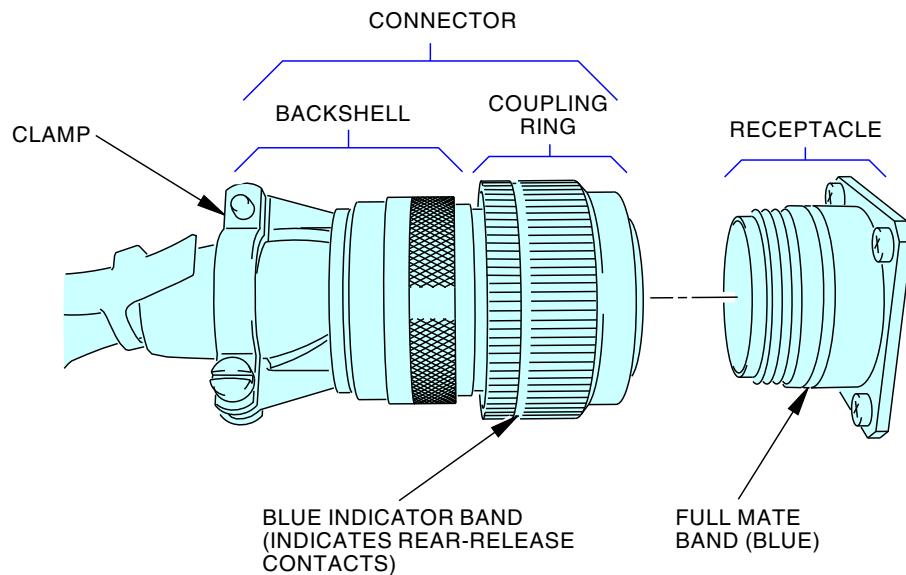
EFFECTIVITY  
LOM ALL

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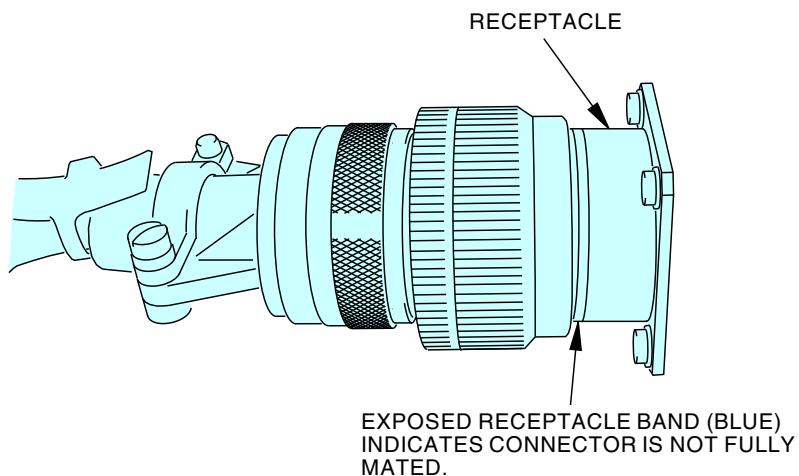
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**BOEING**  
**737-600/700/800/900**  
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**RATCHETING SELF-LOCKING CONNECTOR AND RECEPTACLE**



**RATCHETING SELF-LOCKING CONNECTOR - NOT FULLY MATED**

2160845 S0000474905\_V3

**APU Electrical Connectors - Examples of Fully Tightened Connectors**  
**Figure 403/49-11-01-990-807 (Sheet 1 of 4)**

EFFECTIVITY  
**LOM ALL**

**49-11-01**

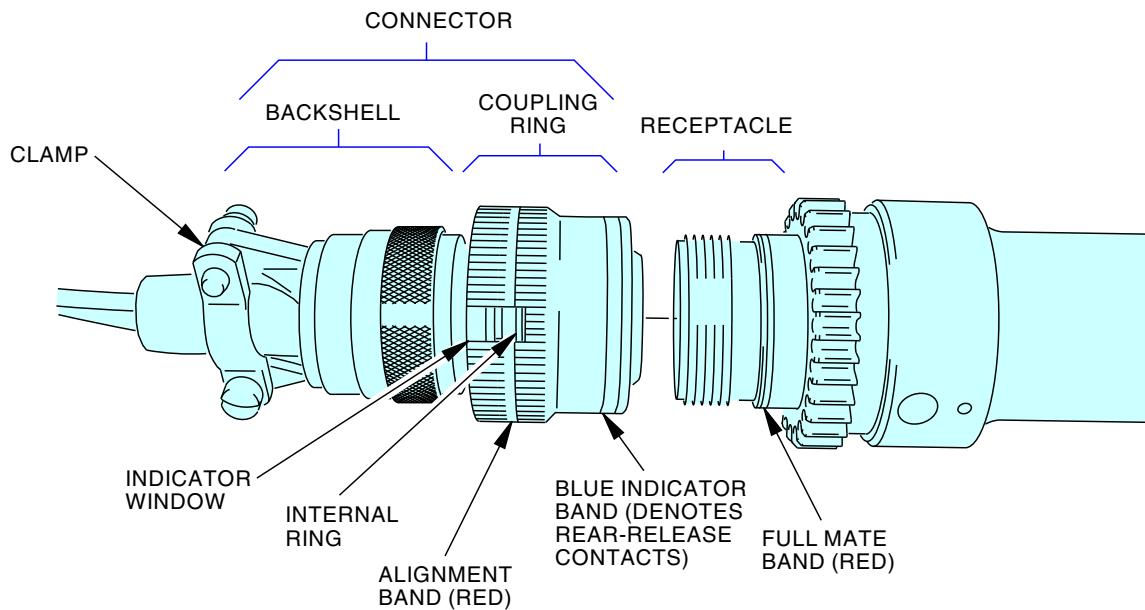
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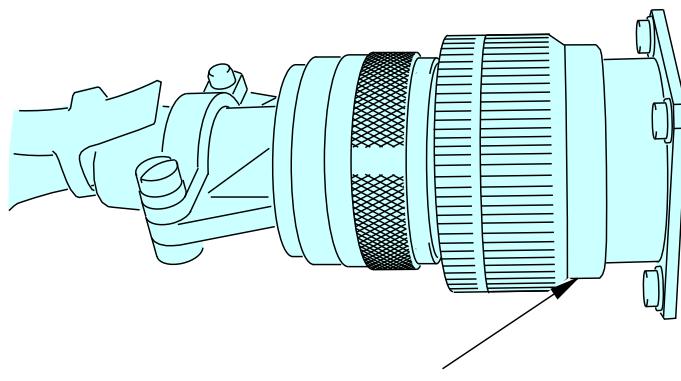
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RATCHETING SELF-LOCKING CONNECTOR WITH OPTIONAL INDICATOR WINDOW



RECEPTACLE BAND COVERED BY COUPLING RING INDICATES CONNECTOR IS FULLY MATED.

RATCHETING SELF-LOCKING CONNECTOR - FULLY MATED

2160884 S0000474916\_V3

APU Electrical Connectors - Examples of Fully Tightened Connectors  
Figure 403/49-11-01-990-807 (Sheet 2 of 4)

EFFECTIVITY  
LOM ALL

**49-11-01**

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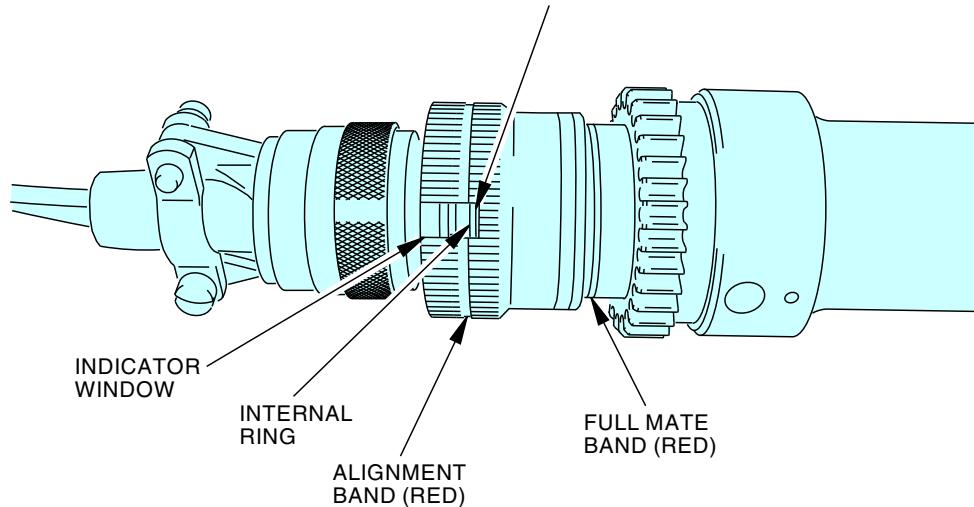
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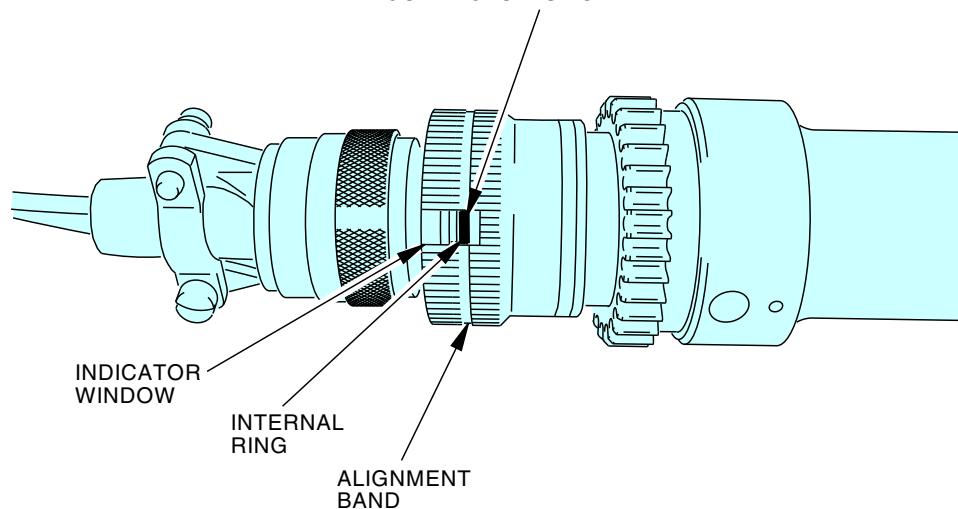
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INTERNAL RING IS NOT IN LINE WITH ALIGNMENT BAND, INDICATING CONNECTOR IS NOT FULLY MATED.



RATCHETING SELF-LOCKING CONNECTOR - NOT FULLY MATED

INTERNAL RING IS IN LINE WITH ALIGNMENT BAND, INDICATING CONNECTOR IS FULLY MATED.



RATCHETING SELF-LOCKING CONNECTOR WITH OPTIONAL INDICATOR WINDOW - FULLY MATED

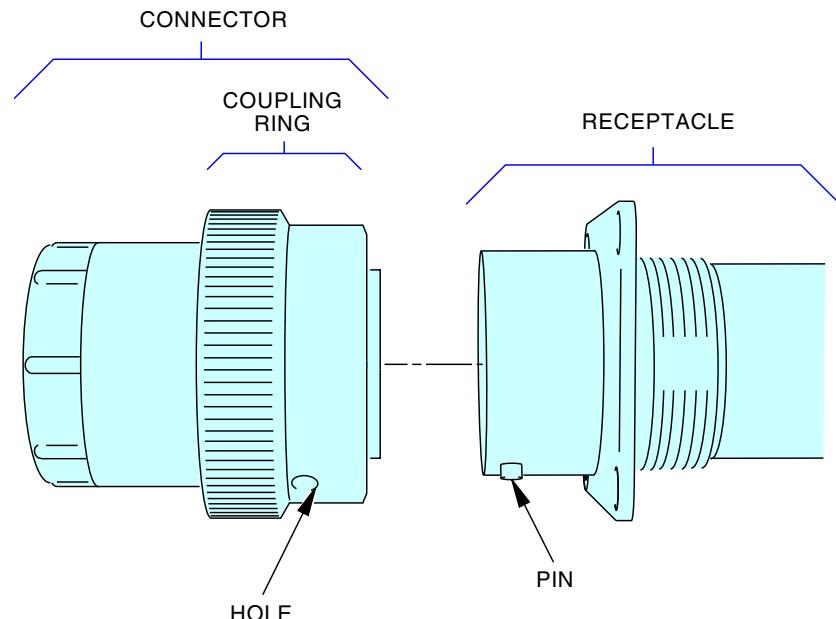
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APU Electrical Connectors - Examples of Fully Tightened Connectors  
Figure 403/49-11-01-990-807 (Sheet 3 of 4)

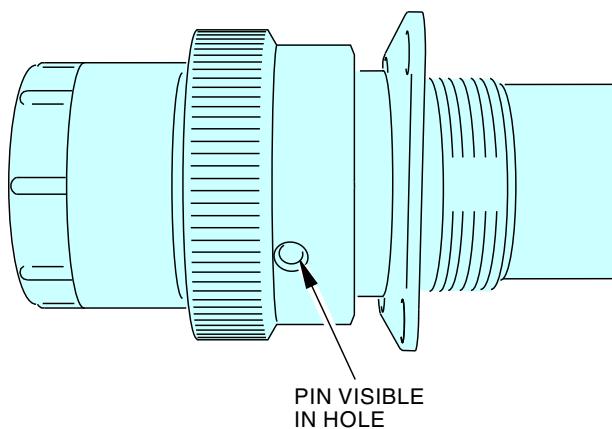
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**BAYONET CONNECTOR AND RECEPTACLE**



**BAYONET CONNECTOR - FULLY MATED**

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**APU Electrical Connectors - Examples of Fully Tightened Connectors**  
Figure 403/49-11-01-990-807 (Sheet 4 of 4)

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**TASK 49-11-01-400-802**

**5. Engine Wire Harness Installation**

(Figure 402 and Figure 403)

**A. References**

Reference	Title
20-10-44-400-801	Lockwire, Cotter Pins, and Lockrings - Installation (P/B 401)
49-11-00-710-801	APU Operational Test (P/B 501)
49-11-00-860-802	APU Usual Shutdown (P/B 201)
49-11-01-200-801	Wire Harness Inspection (P/B 601)
49-11-01-200-802	Electrical Connector and Terminal Inspection (P/B 601)
49-61-00-700-801	APU BITE Procedure (P/B 201)
SWPM 20-20-00	ELECTRICAL BONDING PROCESSES

**B. Tools/Equipment**

Reference	Description
STD-592	Meter - Milliohms, Range from 0.001 to 100 milliohms

**C. Consumable Materials**

Reference	Description	Specification
B00130	Alcohol - Isopropyl	TT-I-735
G50021	Pad - General Purpose Scrubbing - Scotch-Brite 96W	
G50225	Lockwire - MS20995C20, Corrosion Resistant Steel - 0.020 Inch (0.508 mm) Diameter	NASM20995
G51860	Lockwire - MS20995C10, Corrosion Resistant Steel - 0.010 Inch (0.254 mm) Diameter	

**D. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
25	Engine wire harness	49-11-01-02-005	LOM ALL

**E. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**F. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**G. Engine Wire Harness Installation**

**SUBTASK 49-11-01-210-004**

- (1) Do these tasks:

- (a) Wire Harness Inspection, TASK 49-11-01-200-801.
- (b) Electrical Connector and Terminal Inspection, TASK 49-11-01-200-802.

**SUBTASK 49-11-01-420-002**

- (2) Do these steps to install the engine wire harness [25]:

NOTE: See Figure 403 for examples of fully tightened connectors.

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- (a) Remove the caps from the electrical connectors.
- (b) Connect the electrical connector D10436 (P2) [21], electrical connector D10912 (P1) [22], and electrical connector D10434 (P3) [23] to the Auxiliary Power Unit (APU) firewall receptacles on the 1088 bulkhead.
  - 1) Connect the electrical connector D10434 (P3) [23].
  - 2) Connect the electrical connector D10912 (P1) [22].
  - 3) Connect the electrical connector D10436 (P2) [21].
- (c) Connect the electrical connector (P22) [24] to the fuel control unit.
- (d) Put the engine wire harness [25] into the quick-release clamp [27].

NOTE: Grommets are installed on the engine wire harness to correctly position the engine wire harness on the quick-release clamps and spring clips.

  - 1) Close the quick-release clamp [27].
- (e) Connect the electrical connector (P15) [30] to the oil temperature sensor.
  - 1) Install MS20995C10 lockwire, G51860, on the electrical connector (P15) [30] (TASK 20-10-44-400-801).
- (f) For 3888449-2, connect the ground jumper [66] as follows:
  - 1) Clean the contact of the ground jumper [66] with alcohol, B00130, and Scotch-Brite 96W pad, G50021.
  - 2) Secure the ground jumper [66] to the electrical connector (P15) [30] backshell clamp.
  - 3) Measure the electrical bonding resistance for the ground jumper [66] (SWPM 20-20-00).
    - a) Use a milliohm meter .001 to 100 milliohms, STD-592.
    - b) Make sure that the bonding resistance for the ground jumper [66] is 0.008 ohms (8 milliohms) or less.
- (g) Connect the electrical connector (P14) [31] to the low oil pressure switch.
- (h) Put the engine wire harness [25] into the spring clips [29].
- (i) Connect the electrical connector (P24) [28] to the filter bypass switch (oil filter indicator on the generator filter housing).
- (j) Put the engine wire harness [25] into the quick-release clamps [26].
  - 1) Close the quick-release clamp [26].
- (k) Put the engine wire harness [25] into the spring clip [33].
- (l) Connect the electrical connector (P16) [32] to the oil level sensor.
- (m) Connect the electrical connector (P11) [34] to the data memory module.
- (n) Put the engine wire harness [25] into the spring clip [37], spring clip [36], spring clip [35], spring clip [46], spring clip [45], and spring clip [49].
- (o) Connect the electrical connector (P17) [47] to the Inlet Guide Vane (IGV) actuator.
- (p) Connect the electrical connector (P12) [44] to the speed sensor.
- (q) Connect the electrical connector (P18) [43] to the inlet pressure sensor.
- (r) Connect the electrical connector (P10) [48] to the bleed air valve.
- (s) Put the engine wire harness [25] into the spring clip [38].
- (t) Connect the electrical connector (P19) [42] to the total pressure sensor.

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- (u) Connect the electrical connector (P20) [41] to the delta pressure sensor.
- (v) Connect the electrical connector (P21) [40] to the inlet temperature sensor.
  - 1) Install MS20995C20 lockwire, G50225, on the electrical connector (P21) [40] (TASK 20-10-44-400-801).
- (w) For 3888449-2, connect the ground jumper [62] and clamps [65] as follows:
  - 1) Clean the contact of the ground jumper [62] with alcohol, B00130, and Scotch-Brite 96W pad, G50021.
  - 2) Secure the ground jumper [62] to the electrical connector (P21) [40] backshell clamp.
  - 3) Measure the electrical bonding resistance for the ground jumper [62] (SWPM 20-20-00).
    - a) Use a milliohm meter .001 to 100 milliohms, STD-592.
    - b) Make sure that the bonding resistance for the ground jumper [62] is 0.008 ohms (8 milliohms) or less.
  - 4) Secure the engine wire harness [25] to the aft bearing retainer tube with the clamps [65], bolt [63], and nut [64].
- (x) Put the engine wire harness [25] into the spring clip [39] and spring clip [49].
- (y) Connect the electrical connector (P23) [50] to the flow divider solenoid for the fuel flow divider.
- (z) Put the engine wire harness [25] into the spring clip [56] and spring clip [55].
- (aa) Connect the electrical connector (P9) [57] to the surge control valve.
- (ab) Put the engine wire harness [25] into the spring clip [54], spring clip [53], and spring clip [52].
- (ac) Connect the EGT leads [59] and EGT leads [61].
  - 1) Connect the EGT lead [61] to the EGT thermocouple 1.

NOTE: The alumel stud on the EGT thermocouple 1 is larger than the chromel stud.

    - a) Make sure that the two EGT leads are connected to the correct studs.
  - 2) Install the nuts [60] that attach the EGT leads [61] to the EGT thermocouple 1.

NOTE: There are two different nuts that attach the two EGT leads to the EGT thermocouple 1. The nut for the alumel stud is larger than the nut for the chromel stud.

    - a) Tighten the nut [60] for the alumel stud to 24 in-lb (2.7 N·m) - 40 in-lb (4.5 N·m).
    - b) Tighten the nut [60] for the chromel stud to 15 in-lb (1.7 N·m) - 20 in-lb (2.3 N·m).
  - 3) Connect the EGT leads [59] to the EGT thermocouple 2.

NOTE: The alumel stud on the EGT thermocouple 2 is larger than the chromel stud.

    - a) Make sure that the two EGT leads are connected to the correct studs.

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- 4) Install the nuts [58] that attach the EGT leads [59] to the EGT thermocouple 2.

NOTE: There are two different nuts that attach the two EGT leads to the EGT thermocouple 2. The nut for the alumel stud is larger than the nut for the chromel stud.

- a) Tighten the nut [58] for the alumel stud to 24 in-lb (2.7 N·m) - 40 in-lb (4.5 N·m).
- b) Tighten the nut [58] for the chromel stud to 15 in-lb (1.7 N·m) - 20 in-lb (2.3 N·m).

- (ad) Connect the electrical connector (P13) [51] to the ignition unit.

**H. Engine Wire Harness Installation Test**

SUBTASK 49-11-01-860-008

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-11-01-860-009

- (2) Remove the DO NOT OPERATE tag from the APU master switch, on the P5 forward overhead panel.

SUBTASK 49-11-01-710-002

- (3) Do this task: APU Operational Test, TASK 49-11-00-710-801.

SUBTASK 49-11-01-740-002

- (4) Do this task: APU BITE Procedure, TASK 49-61-00-700-801.

- (a) If maintenance message(s) show, refer to the applicable Maintenance Message Index in the Fault Isolation Manual (FIM).

SUBTASK 49-11-01-860-010

- (5) If it is not necessary to do other tasks, do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

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

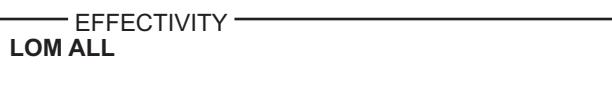
SUBTASK 49-11-01-410-008

- (1) To close the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.



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- 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

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WIRE HARNESS - INSPECTION/CHECK

**1. General**

- A. This procedure has these tasks:
  - (1) An inspection of the APU and airplane wire harnesses
  - (2) An inspection of the electrical connectors and terminals.
- B. The APU has two wire harnesses. The starter-generator wire harness is installed on the starter-generator and the 1088 bulkhead. The engine wire harness is installed on the APU and the 1088 bulkhead.

**TASK 49-11-01-200-801**

**2. Wire Harness Inspection**

**A. References**

Reference	Title
49-11-01-000-801	Starter-Generator Wire Harness Removal (P/B 401)
49-11-01-000-802	Engine Wire Harness Removal (P/B 401)
49-11-01-400-801	Starter-Generator Wire Harness Installation (P/B 401)
49-11-01-400-802	Engine Wire Harness Installation (P/B 401)
SWPM 20-10-13	Standard Wiring Practices Manual

**B. Location Zones**

Zone	Area
118	Electrical and Electronics Compartment - Right
121	Forward Cargo Compartment - Left
122	Forward Cargo Compartment - Right
142	Aft Cargo Compartment - Right
314	Stabilizer Torsion Box Compartment - Right
315	APU Compartment - Left
316	APU Compartment - Right

**C. Access Panels**

Number	Name/Location
117A	Electronic Equipment Access Door
311BL	Stabilizer Trim Access Door
315A	APU Cowl Door
821	Forward Cargo Door
822	Aft Cargo Door

**D. Prepare for the Inspection**

SUBTASK 49-11-01-010-009

- (1) To open the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowling door) under the center latch.
- (b) Open the three latches.

NOTE: Use this sequence: forward latch, aft latch, middle latch.

- (c) Open the APU Cowl Door, 315A.



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- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

SUBTASK 49-11-01-010-004

- (2) To get access to the airplane wire harness for the air inlet door actuator and door position switch.

- (a) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
31BL	Stabilizer Trim Access Door

SUBTASK 49-11-01-010-005

- (3) To get access to the airplane wire harness for the start converter unit, start power unit and battery, do this step:

- (a) Open these access panels:

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

- (b) Remove the bottom center access panel in the forward cargo compartment to get access to the rear side of the battery.

SUBTASK 49-11-01-010-006

- (4) To get access to the airplane wire harness for the electronic control unit, do this step:

- (a) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
822	Aft Cargo Door

## E. Procedure

SUBTASK 49-11-01-210-001

- (1) Do these steps to inspect the APU and airplane wire harnesses:

- (a) Examine the wire harnesses for disconnected and loose electrical connectors and terminal lugs.
    - 1) If you find a disconnected or loose electrical connector or terminal lug, connect or tighten the connector or terminal lug.
  - (b) Examine the wire harnesses for damaged insulation, shields and splices.
    - 1) If you find damage to the airplane wire harnesses, refer to the Standard Wiring Practices Manual to repair the problems that you find (SWPM 20-10-13).
    - 2) If you find damage to the starter-generator wire harness on the APU, repair the problems that you find or replace the wire harness. These are the tasks:
      - Starter-Generator Wire Harness Removal, TASK 49-11-01-000-801
      - Starter-Generator Wire Harness Installation, TASK 49-11-01-400-801
    - 3) If you find damage to the engine wire harness on the APU, repair the problems that you find or replace the wire harness. These are the tasks:

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- Engine Wire Harness Removal, TASK 49-11-01-000-802
- Engine Wire Harness Installation, TASK 49-11-01-400-802

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

SUBTASK 49-11-01-410-009

- (1) To close the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- Remove the two retainer pins from the two hold-open rods in the APU compartment.
- Disconnect the two hold-open rods from the two brackets.
- Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- Install the retainer pin in the rod end of the forward hold-open rod.
- Install the retainer pin to the spring clip on the aft hold-open rod.
  - Make sure that the installation of fire shield has not shifted.
  - If it is necessary, hand form the insulation blanket to obtain a better clearance.
- Close the APU Cowl Door, 315A.
- Close the three latches.

**NOTE:** Use this sequence: middle latch, aft latch, forward latch.

SUBTASK 49-11-01-410-004

- (2) After you examine the airplane wire harness for the air inlet door actuator and door position switch, do this step:

- (a) Close this access panel:

**Number      Name/Location**

311BL      Stabilizer Trim Access Door

SUBTASK 49-11-01-410-005

- (3) Do these steps after you examine the airplane wire harness for the start converter unit, start power unit and battery:

- If the bottom center access panel was removed to get access to the rear side of the battery, install the access panel in the forward cargo compartment.
- Close these access panels:

**Number      Name/Location**

117A      Electronic Equipment Access Door

821      Forward Cargo Door

SUBTASK 49-11-01-410-006

- (4) After you examine the airplane wire harness for the electronic control unit, do this step:

- (a) Close this access panel:

**Number      Name/Location**

822      Aft Cargo Door

———— END OF TASK ————

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**TASK 49-11-01-200-802**

**3. Electrical Connector and Terminal Inspection**

**A. References**

Reference	Title
49-11-01-960-801	Wire Harness Terminal Replacement (P/B 801)
49-11-01-960-802	Electrical Connector Contact Replacement (P/B 801)
49-11-01-960-803	Electrical Connector Replacement (P/B 801)
SWPM 20-60-01	Standard Wiring Practices Manual
SWPM 20-61-00	Standard Wiring Practices Manual

**B. Consumable Materials**

Reference	Description	Specification
G00150	Tape - Nitto P-421 NAT (Formerly Permacel) PTFE Film Tape	
G50225	Lockwire - MS20995C20, Corrosion Resistant Steel - 0.020 Inch (0.508 mm) Diameter	NASM20995

**C. Location Zones**

Zone	Area
118	Electrical and Electronics Compartment - Right
121	Forward Cargo Compartment - Left
122	Forward Cargo Compartment - Right
142	Aft Cargo Compartment - Right
314	Stabilizer Torsion Box Compartment - Right
315	APU Compartment - Left
316	APU Compartment - Right

**D. Procedure**

SUBTASK 49-11-01-210-002

(1) Do these steps to inspect the electrical connector and terminal:

- (a) Examine the electrical connector or terminal that you disconnected for contamination and damage.
  - 1) If the electrical connector or terminal has contamination, then clean the connector or terminal (SWPM 20-60-01).
  - 2) If the engine or airplane wire harness has a damaged terminal, do this task: Wire Harness Terminal Replacement, TASK 49-11-01-960-801.
  - 3) If the electrical connector on the APU harness has a bent or pushed pin, do this task: Electrical Connector Contact Replacement, TASK 49-11-01-960-802.
  - 4) If the electrical connector on the airplane wire harness has a bent or pushed pin, replace the electrical connector contact (SWPM 20-61-00).
  - 5) If the electrical connector on the APU harness has damage and needs to be replaced, do this task: Electrical Connector Replacement, TASK 49-11-01-960-803.
  - 6) If the electrical connector on the airplane wire harness has damage, refer to the Standard Wiring Practices Manual to repair the problems that you find or replace the connector.
- (b) Examine the contact socket on the electrical plug or the receptacle for contamination and retention:

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- 1) If the contact socket has contamination, then clean the socket (SWPM 20-60-01).
  - 2) Put a new pin into the contact socket to check if there is retention.
  - 3) If there is no retention between the new pin and contact socket, refer to the Standard Wiring Practices Manual to replace the used pin and/or contact socket.
- (2) Do these steps to examine the internal connections of the electrical connector:
- (a) Remove the lockwire from the backshell.
  - (b) Loosen the saddle clamp and coupling collar from the electrical connector.
  - (c) Disconnect the backshell from the electrical connector.
  - (d) Remove the tape from the wires.
  - (e) Examine for internal connections for signs of damage.
    - 1) If it is necessary, do this task Electrical Connector Contact Replacement, TASK 49-11-01-960-802.
  - (f) Connect the backshell on the new electrical connector.
  - (g) Tighten the coupling collar finger tight.
  - (h) Install the Nitto P-421 tape, G00150 around the wires that are in the saddle clamp area.
  - (i) Tighten the saddle clamp on the backshell.
  - (j) Install the MS20995C20 lockwire, G50225 on the backshell.

———— END OF TASK ————

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APU HARNESS - REPAIRS

**1. General**

- A. This procedure has these tasks for the repair of the APU harness:
- (1) Wire harness terminal replacement
  - (2) Electrical connector contact replacement
  - (3) Electrical connector replacement.

**TASK 49-11-01-300-801**

**2. APU Harness Repair**

**A. Location Zones**

Zone	Area
315	APU Compartment - Left
316	APU Compartment - Right

**B. APU Harness Repair**

SUBTASK 49-11-01-960-001

- (1) If the APU harness has a damaged terminal, do this task: Wire Harness Terminal Replacement, TASK 49-11-01-960-801.

SUBTASK 49-11-01-960-002

- (2) If the electrical connector on the APU harness has a bent or pushed pin, do this task: Electrical Connector Contact Replacement, TASK 49-11-01-960-802.

SUBTASK 49-11-01-960-003

- (3) If the electrical connector on the APU harness has damage and needs to be replaced, do this task: Electrical Connector Replacement, TASK 49-11-01-960-803.

———— END OF TASK ————

**TASK 49-11-01-960-801**

**3. Wire Harness Terminal Replacement**

(Figure 801)

**A. Tools/Equipment**

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

Reference	Description
COM-1593	Kit - Crimp Tool, 737 Part #: DMC1264 Supplier: 11851 Opt Part #: G01P3 Supplier: 54443
STD-2489	Cutter - Diagonal, Side-Cushioned

**B. Procedure**

SUBTASK 49-11-01-020-003

- (1) Do these steps to remove the damaged terminal from the wire harness:
  - (a) Disconnect the damaged terminal from the component.
  - (b) Cut the wire near the damaged terminal with the side-cushioned diagonal cutter, STD-2489.

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SUBTASK 49-11-01-420-003

- (2) Do these steps to install a new terminal on the wire harness:
- (a) Remove 0.2-0.3 inch (5.1-7.6 mm) of insulation from the wire.
  - (b) Put the bare wire in the center of the new terminal.
  - (c) Use the crimp tool in the tool kit, COM-1593 to crimp the terminal.
  - (d) Pull back lightly on the wire to make sure the terminal is attached correctly.
  - (e) Connect the terminal to the component.

———— END OF TASK ————

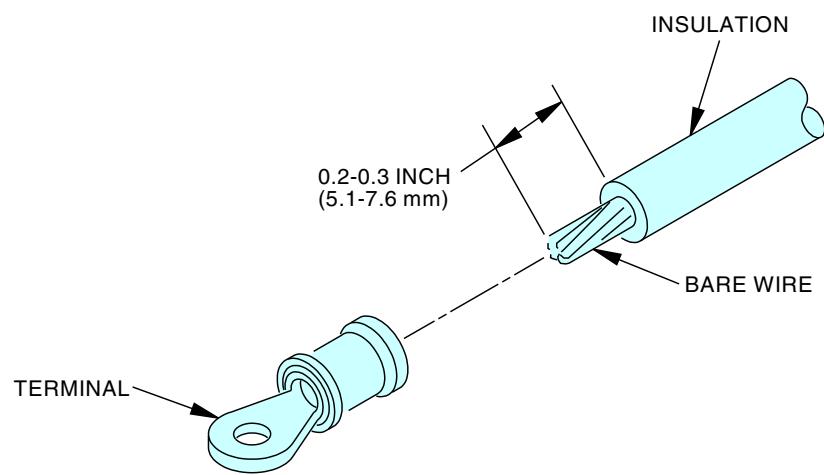
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**WIRE/TERMINAL CONNECTION**

G28867 S0006579033\_V2

**APU Harness Repair (Terminal)**  
**Figure 801/49-11-01-990-803**

EFFECTIVITY  
LOM ALL

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**TASK 49-11-01-960-802**

**4. Electrical Connector Contact Replacement**

(Figure 802)

**A. Tools/Equipment**

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

Reference	Description
COM-1593	Kit - Crimp Tool, 737 Part #: DMC1264 Supplier: 11851 Opt Part #: G01P3 Supplier: 54443

**B. Consumable Materials**

Reference	Description	Specification
G00150	Tape - Nitto P-421 NAT (Formerly Permacel) PTFE Film Tape	
G50225	Lockwire - MS20995C20, Corrosion Resistant Steel - 0.020 Inch (0.508 mm) Diameter	NASM20995

**C. Procedure**

SUBTASK 49-11-01-020-004

- (1) Do these steps to remove the damaged electrical connector contact:
  - (a) Disconnect the electrical connector from the component.
  - (b) Remove the lockwire from the backshell.
  - (c) Loosen the saddle clamp and coupling collar from the electrical connector.
  - (d) Disconnect the backshell from the electrical connector.
  - (e) Remove the tape from the wires.
  - (f) Use the contact removal tool in the tool kit, COM-1593 to remove the damaged contact from the electrical connector.
  - (g) Cut the wire near the damaged contact.

SUBTASK 49-11-01-420-004

- (2) Do these steps to install a new electrical connector contact:
  - (a) Remove 0.125 inch (3.2 mm) of insulation from the end of the wire.
  - (b) Put the bare wire into the new contact until the bare wire touches the bottom barrel of the contact.
  - (c) Use the crimp tool in the tool kit, COM-1593 to crimp the contact.
  - (d) Use the contact insertion tool in the tool kit, COM-1593 to put the contact into the electrical connector.
  - (e) Pull back lightly on the wire to make sure the contact is attached correctly.
  - (f) Connect the backshell on the electrical connector.
  - (g) Tighten the coupling collar finger tight.
  - (h) Install the Nitto P-421 tape, G00150 around the wires that are in the saddle clamp area.
  - (i) Tighten the saddle clamp on the backshell.
  - (j) Install the MS20995C20 lockwire, G50225 on the backshell.

EFFECTIVITY  
LOM ALL

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(k) Connect the electrical connector to the component.

———— END OF TASK ————

— EFFECTIVITY —  
**LOM ALL**

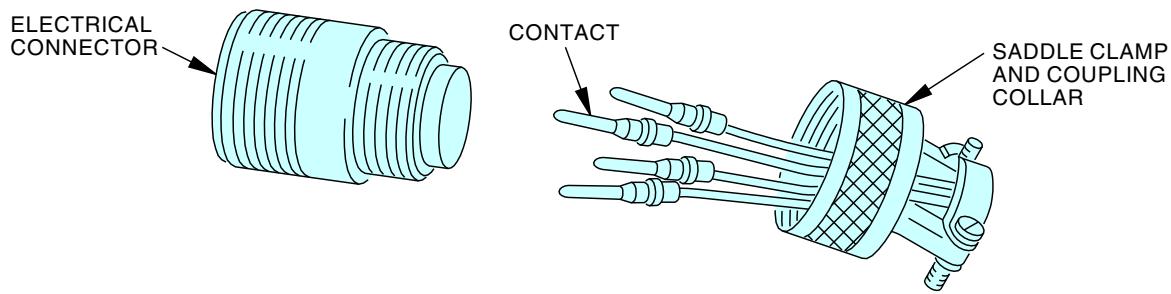
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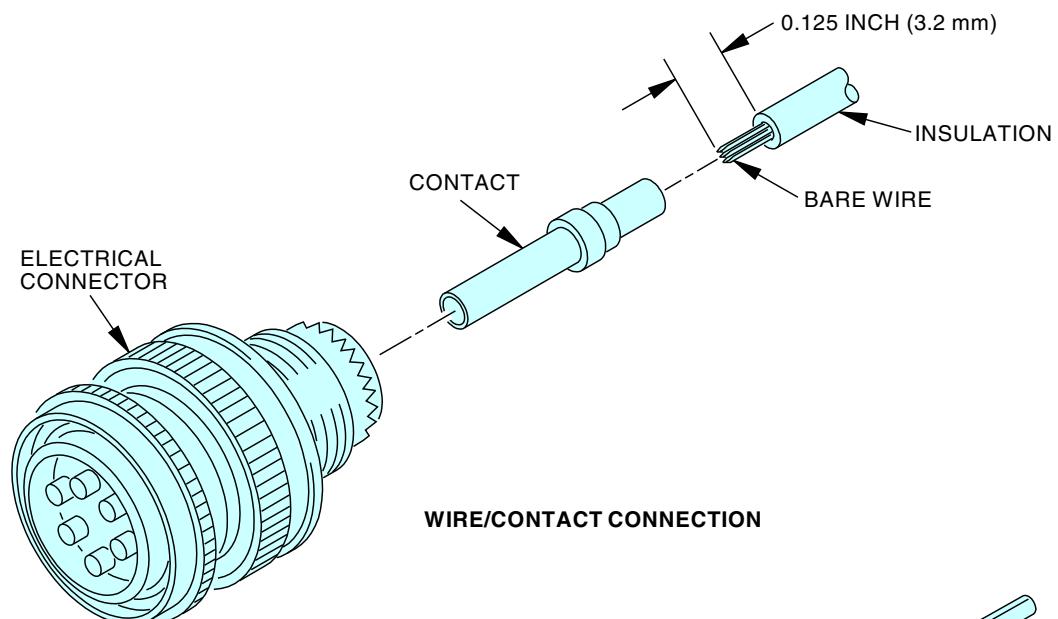
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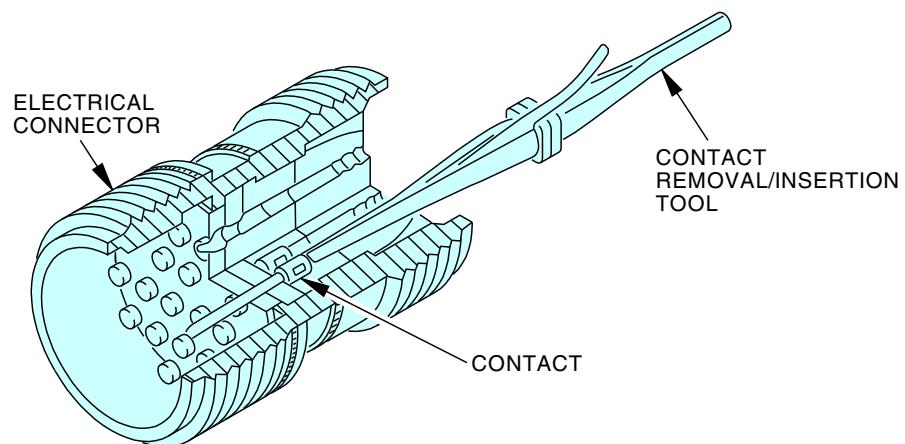
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AIRCRAFT MAINTENANCE MANUAL



ELECTRICAL CONNECTOR COMPONENTS



WIRE/CONTACT CONNECTION



CONTACT INSTALLATION

G28870 S0006579035\_V2

**APU Harness Repair (Electrical Connector)**  
Figure 802/49-11-01-990-804

EFFECTIVITY  
LOM ALL

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ECCN 9E991 BOEING PROPRIETARY - See title page for details

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**TASK 49-11-01-960-803**

**5. Electrical Connector Replacement**

(Figure 802)

**A. Tools/Equipment**

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

Reference	Description
COM-1593	Kit - Crimp Tool, 737 Part #: DMC1264 Supplier: 11851 Opt Part #: G01P3 Supplier: 54443

**B. Consumable Materials**

Reference	Description	Specification
G00150	Tape - Nitto P-421 NAT (Formerly Permacel) PTFE Film Tape	
G50225	Lockwire - MS20995C20, Corrosion Resistant Steel - 0.020 Inch (0.508 mm) Diameter	NASM20995

**C. Procedure**

SUBTASK 49-11-01-960-004

- (1) Do these steps to replace the damaged electrical connector:
  - (a) Disconnect the damaged electrical connector from the component.
  - (b) Remove the lockwire from the backshell.
  - (c) Loosen the saddle clamp and coupling collar from the electrical connector.
  - (d) Disconnect the backshell from the electrical connector.
  - (e) Remove the tape from the wires.
  - (f) Use the contact removal tool in the tool kit, COM-1593 to remove one contact from the damaged electrical connector.
  - (g) Use the contact insertion tool to install the contact in the new electrical connector at the correct pin location.
  - (h) Pull back lightly on the wire to make sure the contact is attached correctly.
  - (i) Continue to remove one contact from the damaged electrical connector and install the contact to the new electrical connector until all contacts are installed on the new connector.
  - (j) Connect the backshell on the new electrical connector.
  - (k) Tighten the coupling collar finger tight.
  - (l) Install the Nitto P-421 tape, G00150 around the wires that are in the saddle clamp area.
  - (m) Tighten the saddle clamp on the backshell.
  - (n) Install the MS20995C20 lockwire, G50225 on the backshell.
  - (o) Connect the electrical connector to the component.

— END OF TASK —

EFFECTIVITY  
LOM ALL

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AIRCRAFT MAINTENANCE MANUAL  
APU SYSTEM - MAINTENANCE PRACTICES

**1. General**

- A. This procedure has these tasks:
  - (1) APU system deactivation
  - (2) APU system activation.
- B. The removal of the APU system decreases the weight of the airplane. Refer to the Weight and Balance Manual to correct the operational characteristics for the airplane.

**TASK 49-11-02-040-801**

**2. APU System Deactivation**

(Figure 201)

**A. References**

Reference	Title
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)
49-11-00-000-801	APU Power Plant Removal (P/B 401)

**B. Tools/Equipment**

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

Reference	Description
SPL-1971	Protector - Thread, APU Mount Bolt Part #: C49006-1 Supplier: 81205
SPL-11395	Tool Kit - APU Deletion **Dispatch Tool** Part #: C49009-1 Supplier: 81205

**C. Consumable Materials**

Reference	Description	Specification
D00070	Fluid - Hydraulic, Petroleum Base	MIL-PRF-5606 (Replaces MIL-H-5606)
D00504	Grease - Petrolatum	VV-P-236

**D. Location Zones**

Zone	Area
117	Electrical and Electronics Compartment - Left
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
211	Flight Compartment - Left
314	Stabilizer Torsion Box Compartment - Right
315	APU Compartment - Left
316	APU Compartment - Right

**E. Access Panels**

Number	Name/Location
117A	Electronic Equipment Access Door
311BL	Stabilizer Trim Access Door
315A	APU Cowling Door



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**F. Prepare for the Deactivation**

SUBTASK 49-11-02-710-001

- (1) Do these steps to do an operational check of the APU air inlet door:
  - (a) Make sure that the BAT switch [1], on the P5 forward overhead panel, is in the ON position.
  - (b) Set the APU master switch [6], on the P5 forward overhead panel, to the ON position.
  - (c) Make sure that the air inlet door opens in approximately 30 seconds.
  - (d) Set the APU master switch [6] to the OFF position and install an INOP tag [5].
  - (e) Make sure that the air inlet door closes in approximately 30 seconds.

SUBTASK 49-11-02-860-010



**WARNING**

MAKE SURE THAT THE DOWNLOCK PINS ARE INSTALLED IN ALL OF THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR CAN RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (2) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 49-11-02-010-001

- (3) Open this access panel:

Number    Name/Location

311BL      Stabilizer Trim Access Door

**G. APU System Deactivation**

SUBTASK 49-11-02-860-002

- (1) Set the APU GEN switches [4], on the P5 forward overhead panel, to the OFF position and install INOP tags [7].

SUBTASK 49-11-02-860-003

- (2) Set the APU BLEED switch [3], on the P5 forward overhead panel, to the OFF position and install an INOP tag [2].

SUBTASK 49-11-02-860-004

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

LOM 465-999; LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464 PRE SB  
737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER
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LOM 465-999; LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464 PRE SB 737-49-1150  
REV 0 OR POST SB 737-49-1150 REV 1 (Continued)

(Continued)

**F/O Electrical System Panel, P6-4**

Row    Col    Number    Name

**LOM ALL**

This circuit breaker is inoperative and should remain open:

**F/O Electrical System Panel, P6-4**

Row    Col    Number    Name

**LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464 POST SB 737-49-1150  
REV 0 AND PRE SB 737-49-1150 REV 1**

B      14      C01424      AUX POWER UNIT SCU FAN POWER (INOP)

**LOM ALL**

SUBTASK 49-11-02-010-007

- (4) To get access to the P91 panel, open this access panel:

**Number      Name/Location**

117A      Electronic Equipment Access Door

SUBTASK 49-11-02-860-009



**WARNING**

WHEN YOU OPEN THE P91 AND P92 PANELS, MAKE SURE THAT THE OUTER DOOR STAYS AS OPEN AS POSSIBLE. IF THE OUTER DOOR TURNS IN, THE ATTACHED DOOR COMPONENTS COULD TOUCH THE INNER DOOR COMPONENTS. THIS CAN CAUSE AN ARC CONDITION WHEN YOU SUPPLY POWER. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT AND INJURY TO PERSONNEL CAN OCCUR.



**WARNING**

DO NOT TOUCH THE CONDUCTORS IN THE P91 AND P92 PANELS. BE CAREFUL WHEN YOU GET ACCESS TO THE CIRCUIT BREAKERS ON THE INNER SIDE OF THE P91 AND P92 PANELS (ROW F). IF IT IS POSSIBLE, REMOVE AIRPLANE ELECTRICAL POWER FIRST. THE P91 AND P92 PANELS HAVE HIGH VOLTAGES AND CURRENTS. ELECTRICAL VOLTAGE AND CURRENT CAN KILL YOU OR CAUSE INJURIES.

- (5) Open this circuit breaker and install safety tag:

**Power Distribution Panel Number 1, P91**

Row    Col    Number    Name

A      11      C01336      APU START CONV

SUBTASK 49-11-02-410-005

- (6) Close this access panel:

**Number      Name/Location**

117A      Electronic Equipment Access Door

SUBTASK 49-11-02-040-001

- (7) Do these steps for the APU fuel shutoff valve [10] deactivation:

- (a) Get access to the APU fuel shutoff valve [10].

NOTE: The APU fuel shutoff valve is on the rear spar of the left wing in the wheel well.

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**LOM ALL**

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- (b) Make sure that the APU fuel shutoff valve [10] is fully closed.

NOTE: The manual override handle on the APU fuel shutoff valve gives an OPEN or CLOSED indication of the shutoff valve position.

- 1) If the APU fuel shutoff valve [10] is not fully closed, set the manual override handle [8] to the CLOSED position.
- (c) Disconnect the electrical connector, D920 [9] from the APU fuel shutoff valve [10].
- (d) Install the protection covers on the electrical connector, D920 [9] and valve receptacle.
- (e) Attach the airplane harness to an adjacent support structure.

**SUBTASK 49-11-02-040-002**

- (8) Do these steps for the inlet door actuator deactivation:

- (a) Disconnect the electrical connector, D922 [12] from the inlet door actuator [11].  
NOTE: The inlet door actuator is installed aft of the rear pressure bulkhead on the inner side of the air inlet door.
- (b) Install the cap chains on the electrical connector, D922 [12] and actuator receptacle.
- (c) Attach the airplane harness to an adjacent support structure.

**SUBTASK 49-11-02-020-001**

- (9) Do this task: APU Power Plant Removal, TASK 49-11-00-000-801.

**SUBTASK 49-11-02-480-001**

- (10) Do these steps to install the APU deletion tool kit, SPL-11395:

NOTE: The APU deletion tool kit, SPL-11395 (C49009-1), has these parts:

- 1) C49009-2, support frame
  - 2) C49009-3, plug for the exhaust duct muffler
  - 3) C49009-4, plug for the bleed duct assembly
  - 4) C4909-5, turnbuckle assy
  - 5) C4909-6, plug for the fuel supply line
  - 6) 660-022M24N, protection cover
  - 7) 660-022M28N, protection cover (Quantity of 3).
- (a) Remove the caps and install the protection covers on the electrical receptacles for the electrical connectors D10912 (P1), D10436 (P2), and D10434 (P3).
  - (b) Remove the cap and install the protection cover on the electrical receptacle for the electrical connector D11118 (P4).
  - (c) Do these steps to install the plug [13] on the fuel supply line [14]:
    - 1) Remove the cap or plug from the fuel supply line [14].
    - 2) Lubricate the plug [13] with a light coat of the lubricant, grease, D00504, or fluid, D00070.
    - 3) Install the plug [13] on the fuel supply line [14].
  - (d) Do these steps to install the plug [18] on the bleed duct assembly [15]:
    - 1) Remove the protection cover from the bleed duct assembly [15].
    - 2) Install the seal [16] on the bleed duct assembly [15].  
NOTE: The seal is a part of the bleed air duct.
    - 3) Install the plug [18] on the bleed duct assembly [15].

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- 4) Put the clamp [17] over the plug [18] and flange of the bleed duct assembly [15].

NOTE: The clamp is a part of the bleed air duct.

- a) Tighten the clamp [17] to 95 in-lb (10.7 N·m) - 110 in-lb (12.4 N·m).

- (e) Do these steps to install the support frame [37] to the left forward mount [19], left aft mount [24], right forward mount [30], and right aft mount [28]:

- 1) Remove the thread protector, SPL-1971, from the cone bolts [31] on the left aft mount [24], right forward mount [30], and right aft mount [28].
- 2) Put the support frame [37] in its position.
- 3) Install the support frame [37] on the cone bolts [31] for the left aft mount [24], right forward mount [30], and right aft mount [28] with the washers [32] and nuts [33].

NOTE: The washers and nuts are parts of the APU mount system.

- a) Tighten the nuts [33] to 375 in-lb (42.4 N·m) - 425 in-lb (48.0 N·m).

- 4) Remove the nut [22], washers [21], and bolt [20] from the left forward mount [19].
- 5) Make sure that the bushing [23] is installed in the left forward mount [19].
- 6) Install the support frame [37] to the left forward mount [19] with the bolt [20], washers [21], and nut [22].

- (f) Do these steps to connect the terminal lugs [35] for the starter-generator to the terminal board [36]:

- 1) Install the terminal lug [35] to the terminal studs on the terminal board [36] with the nuts [34].

- (g) Connect the bonding jumper [29] to the support frame [37] with the nuts [34].

- (h) Do these steps to install the plug [40] on the exhaust duct muffler [38]:

- 1) Install the plug [40] on the exhaust duct muffler [38].
- 2) Put the clamp [39] over the plug [40] and exhaust duct muffler [38].

NOTE: The clamp is a part of the exhaust duct muffler.

- a) Tighten the clamp [39] to 70 in-lb (7.9 N·m) - 90 in-lb (10.2 N·m).

- (i) Do these steps to connect the turnbuckle [27] to the support frame [37]:

- 1) Align the hole of the turnbuckle [27] to the support frame [37].
- 2) If the holes of the support frame [37] and turnbuckle [27] do not align, adjust the turnbuckle [27]:
  - a) Turn the adjustment nuts on the turnbuckle [27] clockwise or counterclockwise until the holes of the turnbuckle [27] and support frame [37] are aligned.
- 3) Install the bolt [25] and nut [26] that attach the turnbuckle [27] to the support frame [37].

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

SUBTASK 49-11-02-410-004

- (1) To close the access panel, do these steps:

<u>Number</u>	<u>Name/Location</u>
315A	APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the Auxiliary Power Unit (APU) compartment.

- (b) Disconnect the two hold-open rods from the two brackets.

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LOM ALL

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- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

**SUBTASK 49-11-02-410-002**

- (2) Close this access panel:

**Number      Name/Location**

311BL      Stabilizer Trim Access Door

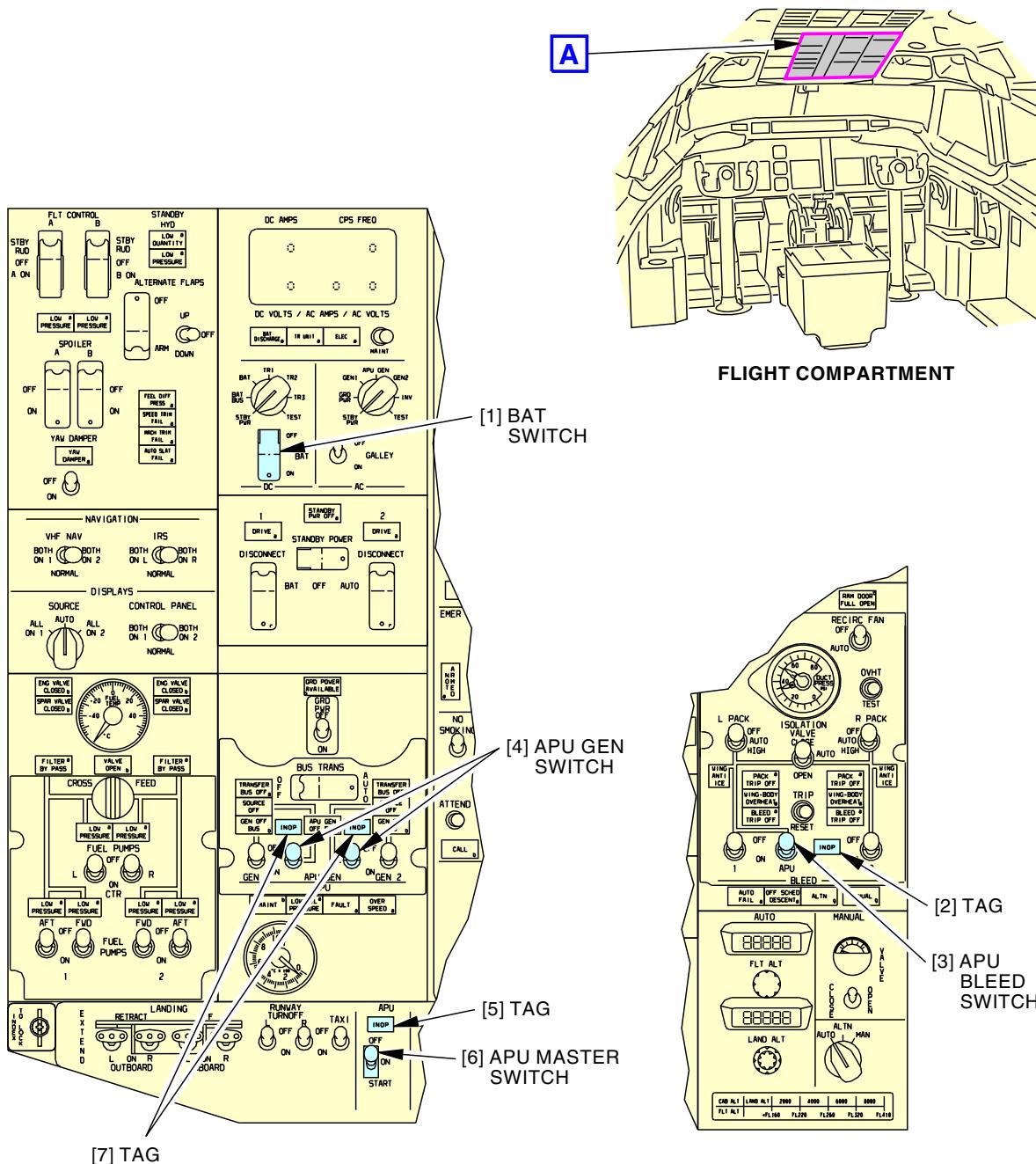
**SUBTASK 49-11-02-210-001**

- (3) Do a general visual inspection of the APU compartment after the first flight and then every 100 hours until you do the APU system activation procedure.

———— END OF TASK ————

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FORWARD OVERHEAD PANEL, P5

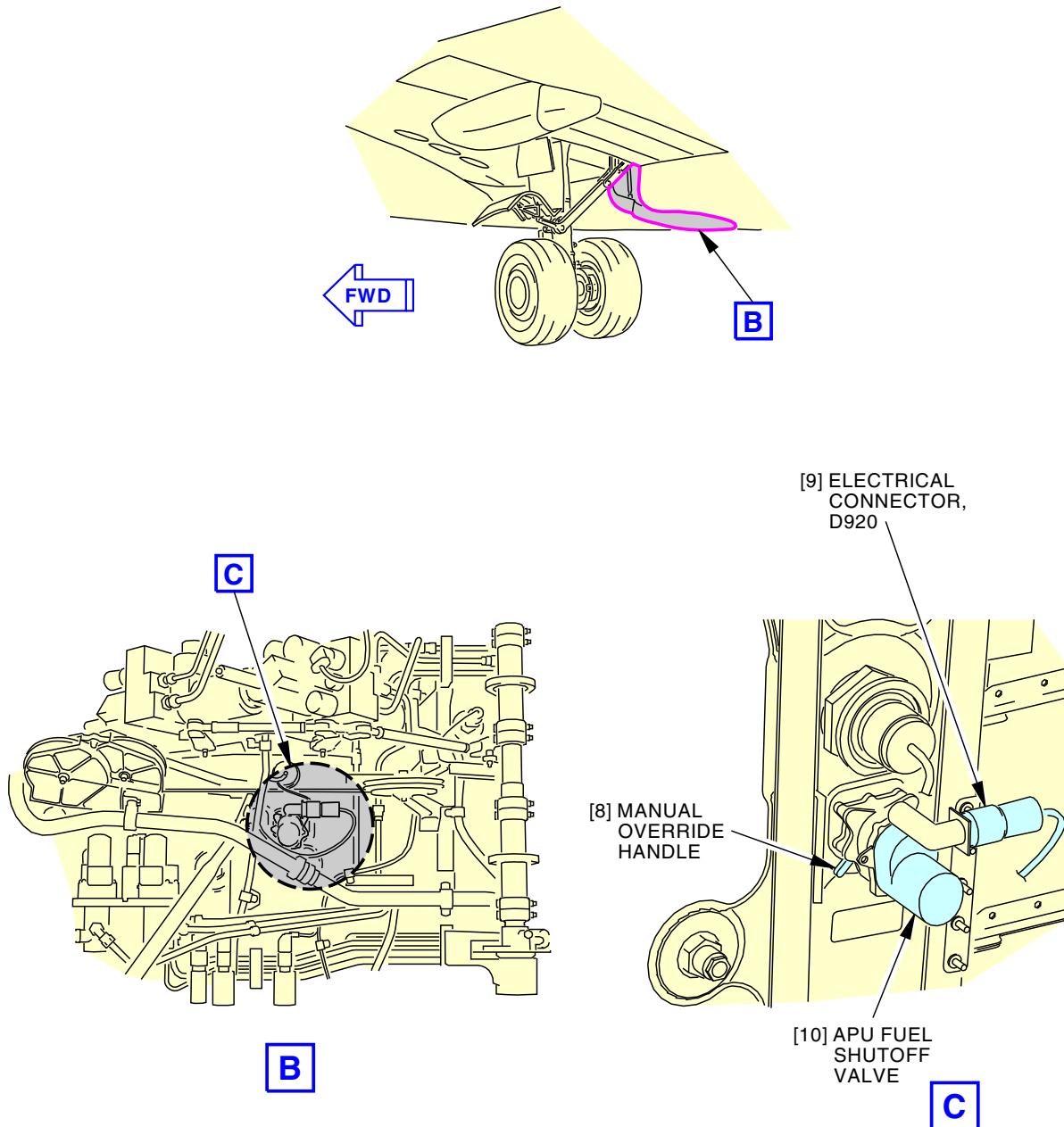
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**Auxiliary Power Unit (APU) System Deactivation**  
Figure 201/49-11-02-990-801 (Sheet 1 of 5)

EFFECTIVITY  
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**49-11-02**

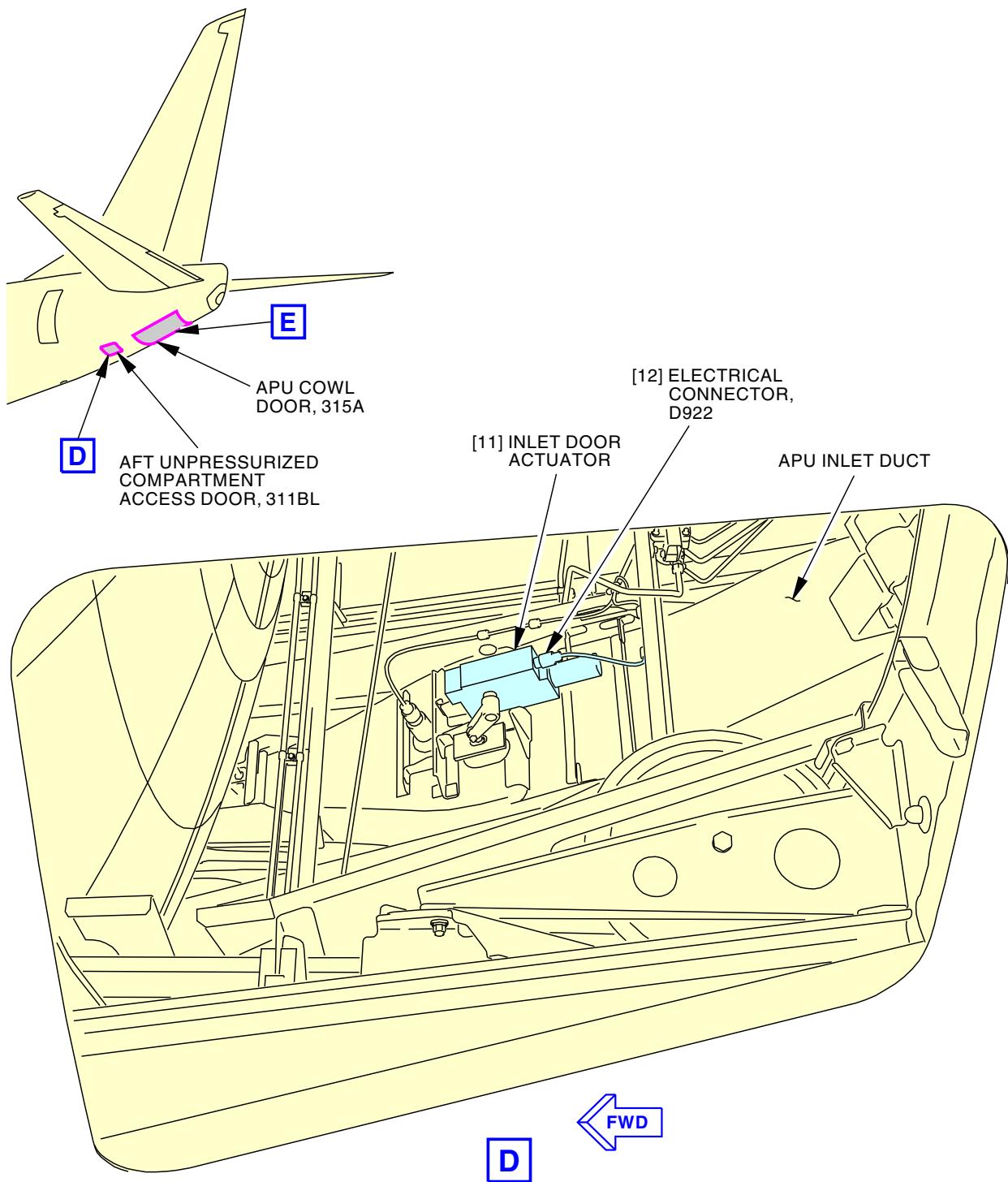


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**Auxiliary Power Unit (APU) System Deactivation**  
**Figure 201/49-11-02-990-801 (Sheet 2 of 5)**

 EFFECTIVITY  
 LOM ALL

**49-11-02**

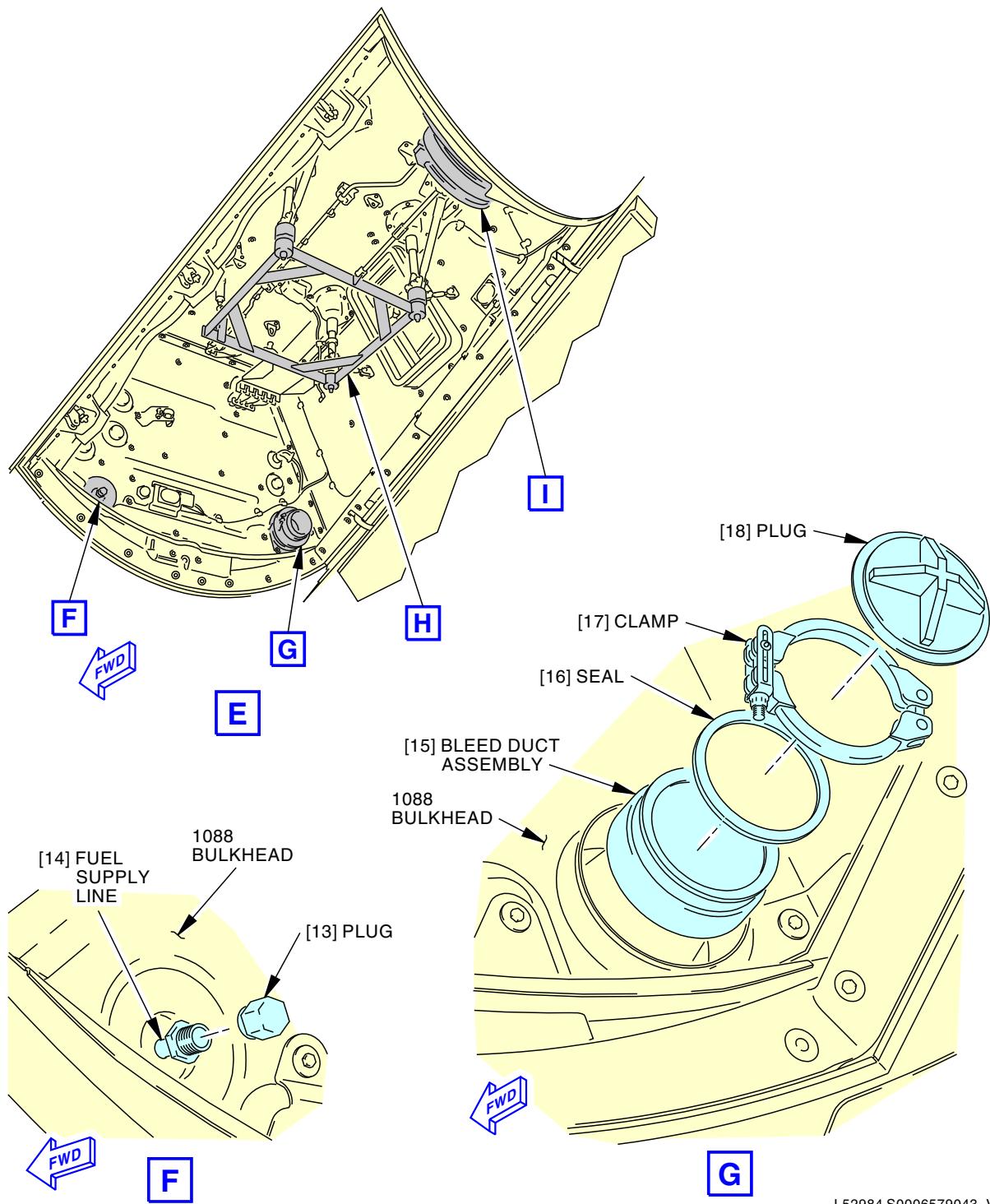


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**Auxiliary Power Unit (APU) System Deactivation**  
Figure 201/49-11-02-990-801 (Sheet 3 of 5)EFFECTIVITY  
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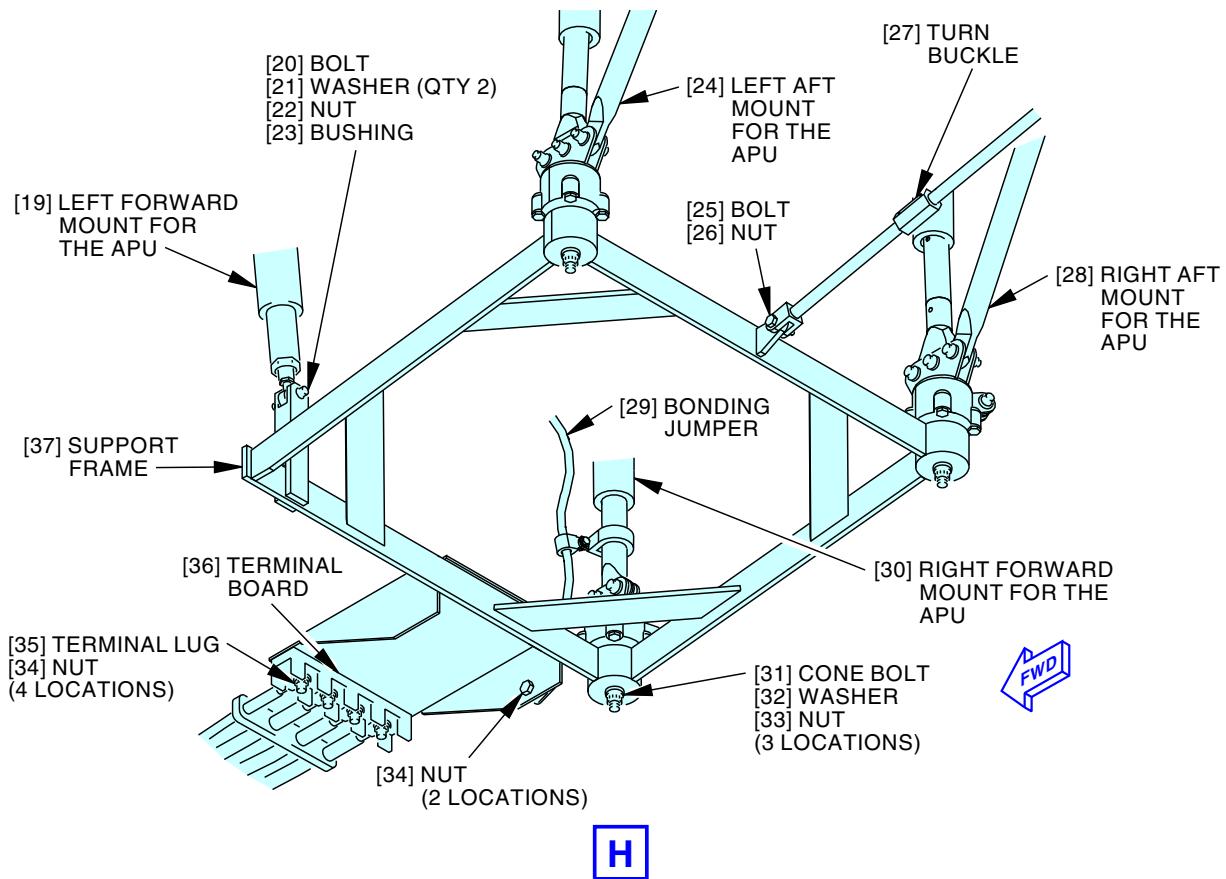
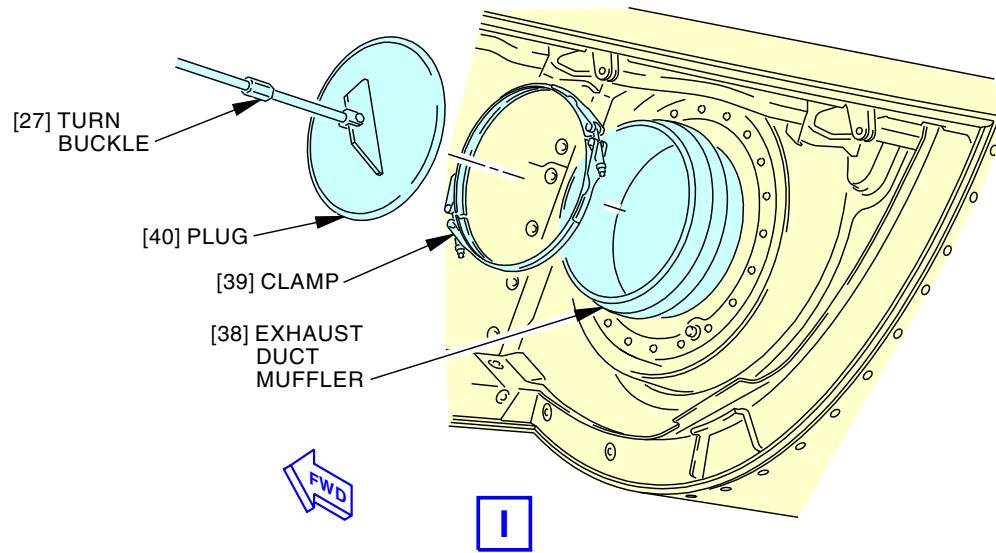
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**Auxiliary Power Unit (APU) System Deactivation**  
**Figure 201/49-11-02-990-801 (Sheet 4 of 5)**

 EFFECTIVITY  
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**Auxiliary Power Unit (APU) System Deactivation  
Figure 201/49-11-02-990-801 (Sheet 5 of 5)**

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**TASK 49-11-02-440-801**

**3. APU System Activation**

(Figure 201)

**A. References**

Reference	Title
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)
49-11-00-400-801	APU Power Plant 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
SPL-1971	Protector - Thread, APU Mount Bolt Part #: C49006-1 Supplier: 81205
STD-858	Tag - DO NOT OPERATE

**C. Location Zones**

Zone	Area
117	Electrical and Electronics Compartment - Left
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
211	Flight Compartment - Left
314	Stabilizer Torsion Box Compartment - Right
315	APU Compartment - Left
316	APU Compartment - Right

**D. Access Panels**

Number	Name/Location
117A	Electronic Equipment Access Door
311BL	Stabilizer Trim Access Door
315A	APU Cowl Door

**E. Prepare for the Activation**

SUBTASK 49-11-02-860-011



MAKE SURE THAT THE DOWNLOCK PINS ARE INSTALLED IN ALL OF THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR CAN RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 49-11-02-010-002

- (2) Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

EFFECTIVITY  
LOM ALL

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**AIRCRAFT MAINTENANCE MANUAL**

SUBTASK 49-11-02-010-004

- (3) To open the access panel, do these steps:

**Number**    **Name/Location**

315A      APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.

- (b) Open the three latches.

NOTE: Use this sequence: forward latch, aft latch, middle latch.

- (c) Open the APU Cowl Door, 315A.

- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.

- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.

- (f) Disconnect the two hold-open rods from the two spring clips.

- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.

- (h) Install the two retainer pins in the two rod ends.

## F. APU System Activation

SUBTASK 49-11-02-860-006

- (1) Remove the INOP tag [2], tag [5], and tags [7] from these switches, at the P5 forward overhead panel:

- (a) APU BLEED switch [3]

- (b) APU master switch [6]

- (c) APU GEN switches [4].

SUBTASK 49-11-02-860-007

- (2) Make sure that the APU master switch [6], on the P5 forward overhead panel, is in the OFF position and install a DO NOT OPERATE tag, STD-858.

SUBTASK 49-11-02-420-001

- (3) Remove the protection covers and connect the electrical connector, D920 [9] to the APU fuel shutoff valve [10].

NOTE: The APU fuel shutoff valve is on the rear spar of the left wing in the wheel well.

SUBTASK 49-11-02-420-002

- (4) Remove the cap chains and connect the electrical connector, D922 [12] to the inlet door actuator [11].

NOTE: The inlet door actuator is installed aft of the rear pressure bulkhead on the inner side of the air inlet door.

SUBTASK 49-11-02-080-001

- (5) Do these steps to remove the APU deletion kit, C49009-1:

NOTE: The APU deletion kit, C49009-1, has these parts:

1) 660-022M28N, protection cover (Quantity of 3)

2) C49009-2, support frame

3) C49009-3, plug for the exhaust duct muffler

4) C49009-4, plug for the bleed duct assembly

5) M83723/60-1-24AN, protection cover

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LOM ALL

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- 6) MS21921-8, plug for the fuel supply line
  - 7) NASM21042-6, nut (Quantity of 6)
  - 9) NAS1297-3D12, bolt
  - 10) NAS509-3, nut.
- (a) Remove the nut [26] and bolt [25] that attach the turnbuckle [27] to the support frame [37].
  - (b) Do these steps to remove the plug [40] from the exhaust duct muffler [38]:
    - 1) Remove the clamp [39] from the exhaust duct muffler [38].  
NOTE: The clamp is a part of the exhaust duct muffler.
    - 2) Remove the plug [40].
  - (c) Remove the nuts [34] that attach the bonding jumper [29] to the support frame [37].
  - (d) Remove the nuts [34] that attach the terminal lugs [35] for the starter-generator to the terminal board [36].
  - (e) Do these steps to remove the support frame [37] from the left forward mount [19], left aft mount [24], right forward mount [30], and right aft mount [28]:
    - 1) Remove the nut [22], washers [21], and bolt [20] from the left forward mount [19].
    - 2) Disconnect the support frame [37] from the left forward mount [19].
    - 3) Make sure that the bushing [23] is installed in the left forward mount [19].
    - 4) Install the bolt [20], washers [21], and nut [22] on the left forward mount [19].
    - 5) Remove the nuts [33] and washers [32] that attach the support frame [37] to the left aft mount [24], right forward mount [30], and right aft mount [28].  
NOTE: The three washers and three nuts are parts of the APU mount system.
    - 6) Remove the support frame [37].



**WARNING**

MAKE SURE THAT THE THREAD PROTECTORS ARE FULLY ENGAGED ON THE CONE BOLTS. IF THE THREAD PROTECTORS ARE NOT FULLY ENGAGED, THE APU MOUNTS CAN GET CAUGHT ON THE THREAD PROTECTOR. THIS CAN CAUSE THE APU TO MOVE SUDDENLY. A SUDDEN MOVEMENT OF THE APU CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- 7) Install the thread protector, SPL-1971, on the cone bolts [31].
- (f) Do these steps to remove the plug [18] from the bleed duct assembly [15]:
    - 1) Remove the clamp [17] from the bleed duct assembly [15].  
NOTE: The clamp is a part of the bleed air duct.
    - 2) Remove the plug [18].
    - 3) Remove the seal [16] from the bleed duct assembly [15].  
NOTE: The seal is a part of the bleed air duct.

SUBTASK 49-11-02-420-003

- (6) Do this task: APU Power Plant Installation, TASK 49-11-00-400-801.

NOTE: During the APU power plant installation, the four protection covers for the electrical receptacles and plug for the fuel supply line are removed.

EFFECTIVITY  
LOM ALL

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SUBTASK 49-11-02-860-008

- (7) During the APU installation test, do this step:
- (a) To get access to the P91 panel, open this access panel:

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



WHEN YOU OPEN THE P91 AND P92 PANELS, MAKE SURE THAT THE OUTER DOOR STAYS AS OPEN AS POSSIBLE. IF THE OUTER DOOR TURNS IN, THE ATTACHED DOOR COMPONENTS COULD TOUCH THE INNER DOOR COMPONENTS. THIS CAN CAUSE AN ARC CONDITION WHEN YOU SUPPLY POWER. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT AND INJURY TO PERSONNEL CAN OCCUR.



DO NOT TOUCH THE CONDUCTORS IN THE P91 AND P92 PANELS. BE CAREFUL WHEN YOU GET ACCESS TO THE CIRCUIT BREAKERS ON THE INNER SIDE OF THE P91 AND P92 PANELS (ROW F). IF IT IS POSSIBLE, REMOVE AIRPLANE ELECTRICAL POWER FIRST. THE P91 AND P92 PANELS HAVE HIGH VOLTAGES AND CURRENTS. ELECTRICAL VOLTAGE AND CURRENT CAN KILL YOU OR CAUSE INJURIES.

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

**Power Distribution Panel Number 1, P91**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01336	APU START CONV

- (c) Close this access panel:

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

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

LOM 465-999; LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464 PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B 14 C01424 AUX POWER UNIT SCU FAN POWER

LOM ALL

This circuit breaker is inoperative and should remain open:

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464 POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B 14 C01424 AUX POWER UNIT SCU FAN POWER (INOP)

EFFECTIVITY  
LOM ALL

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LOM ALL

G. Put the Airplane Back to Its Usual Condition

SUBTASK 49-11-02-410-003

- (1) Close this access panel:

Number      Name/Location

311BL      Stabilizer Trim Access Door

———— END OF TASK ————

EFFECTIVITY  
LOM ALL

**49-11-02**



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APU MOUNTS - REMOVAL/INSTALLATION

**1. General**

- A. This procedure has these tasks:
  - (1) A removal of the APU mounts
  - (2) An installation of the APU mounts.
- B. There are four APU mounts installed on the top of the section 48 compartment. It is possible to remove one or more APU mounts independently from each other.

**TASK 49-13-11-000-802**

**2. APU Mounts Removal**

(Figure 401)

**A. References**

Reference	Title
49-11-00-000-801	APU Power Plant Removal (P/B 401)

**B. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**C. Prepare for the Removal**

SUBTASK 49-13-11-010-002

- (1) Remove the Auxiliary Power Unit (APU) (TASK 49-11-00-000-801).

**D. APU Mount Removal**

SUBTASK 49-13-11-020-002

- (1) Do these steps to remove the left forward mount [1]:

- (a) Remove the screws [12] and washers [11] that attach the firewall cover [5] and flameshield [10] to the top insulation panel.

NOTE: The firewall cover is attached to the top insulation panel with sealant. The flameshield is attached to the firewall cover with sealant.

- (b) Move the firewall cover [5] down until you can get access to the top end of the left forward mount [1].
  - (c) Remove the nut [9], washers [7], bushing [8], and bolt [6] that attach the left forward mount [1] to the support bracket.
  - (d) Remove the left forward mount [1] and firewall cover [5].
  - (e) If it is necessary, remove the firewall cover [5] from the left forward mount [1].

NOTE: It is not necessary to remove the firewall cover if the left forward mount is satisfactory.

SUBTASK 49-13-11-020-003

- (2) Do these steps to remove the left aft mount [2]:

NOTE: The left aft mount has the forward strut assembly, aft strut assembly, and vibration isolator.

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- (a) Remove the screws [21] and washers [20] that attach the forward firewall cover [19] to the top insulation panel.  
NOTE: The forward firewall cover and aft firewall cover are attached to the top insulation panel with sealant.
- (b) Remove the screws [13] and washers [14] that attach the aft firewall cover [29] to the top insulation panel.
- (c) Move the forward firewall cover [19] and aft firewall cover [29] down until you can get access to the two top ends of the left aft mount [2].
- (d) Remove the nuts [18], washers [17], bushings [16], and bolts [15] that attach the left aft mount [2] to the two support brackets.
- (e) Remove the left aft mount [2], forward firewall cover [19], and aft firewall cover [29].
- (f) If it is necessary, remove the forward firewall cover [19] and aft firewall cover [29] from the left aft mount [2].  
NOTE: It is not necessary to remove the forward firewall cover and aft firewall cover if the left aft mount is satisfactory.
- (g) If it is necessary to remove the vibration isolator [27], forward strut assembly [22] or aft strut assembly [28], do these steps:  
NOTE: It is necessary to remove the vibration isolator, forward strut assembly or aft strut assembly if you find signs of wear and damage that are more than the limits for the left aft mount.
  - 1) Remove the nuts [26], washers [25], bushings [24], and bolts [23] that attach the vibration isolator [27] to the forward strut assembly [22] or aft strut assembly [28].
  - 2) Remove the forward strut assembly [22] or aft strut assembly [28] from the vibration isolator [27].
  - 3) Remove the vibration isolator [27].

SUBTASK 49-13-11-020-004

- (3) Do these steps to remove the right aft mount [3]:

NOTE: The right aft mount has the aft strut assembly, side strut assembly, forward strut assembly, and vibration isolator.

- (a) Remove the nuts [45], washers [42], bushings [43], and bolts [41] that attach the side strut assembly [44] to the support bracket and vibration isolator [46].
- (b) Remove the side strut assembly [44].
- (c) Remove the screws [30] and washers [31] that attach the forward firewall cover [32] to the top insulation panel.  
NOTE: The forward firewall cover and aft firewall cover are attached to the top insulation panel with sealant.
- (d) Remove the screws [38] and washers [37] that attach the aft firewall cover [39] to the top insulation panel.
- (e) Move the forward firewall cover [32] and aft firewall cover [39] down until you can get access to the two top ends of the right aft mount [3].
- (f) Remove the nuts [33], washers [35], bushings [34], and bolts [36] that attach the right aft mount [3] to the two support brackets.
- (g) Remove the right aft mount [3], forward firewall cover [32], and aft firewall cover [39].

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LOM ALL

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**AIRCRAFT MAINTENANCE MANUAL**

- (h) If it is necessary, remove the forward firewall cover [32] and aft firewall cover [39] from the right aft mount [3].
- NOTE: It is not necessary to remove the forward firewall cover and aft firewall cover if the right aft mount is satisfactory.
- (i) If it is necessary to remove the aft strut assembly [40], forward strut assembly [51], and/or vibration isolator [46], do these steps:
- NOTE: It is necessary to remove the aft strut assembly, forward strut assembly, and vibration isolator if you find signs of wear and damage that are more than the limits for the right aft mount.
- 1) Remove the nuts [47], washers [49], bushings [48], and bolts [50] that attach the vibration isolator [46] to the aft strut assembly [40] and forward strut assembly [51].
  - 2) Remove the aft strut assembly [40] and forward strut assembly [51] from the vibration isolator [46].
  - 3) Remove the vibration isolator [46].

SUBTASK 49-13-11-020-005

- (4) Do these steps to remove the right forward mount [4]:
- (a) Remove the nuts [64], washers [60], bushings [62], and bolts [61] that attach the side strut assembly [63] to the support bracket and vibration isolator [66].
  - (b) Remove the side strut assembly [63].
  - (c) Remove the nut [71], washers [72], and screw [59] that attach the clamp [70] and clamp [73] to the bonding jumper [78] and right forward mount [4].
  - (d) Remove the clamp [70] and clamp [73].
  - (e) If it is necessary to remove the left firewall cover [79] for the bonding jumper [78], do these steps:

NOTE: It is necessary to remove the left firewall cover and bonding jumper if you must remove the top insulation panel.

NOTE: The left firewall cover and right firewall cover are attached to the top insulation panel with sealant.

    - 1) Remove the screws [80] and screws [81] that attach the left firewall cover [79] to the top insulation panel.
    - 2) Move the left firewall cover [79] down until you can get access to the top end of the bonding jumper [78].
    - 3) Remove the nuts [74], washers [75], and bolts [76] that attach the bonding jumper [78] to the support bracket.

NOTE: The mounting parts and the lug for the bonding jumper are sealed with sealant.
    - 4) Remove the bonding jumper [78] and left firewall cover [79].
    - 5) If it is necessary, remove the left firewall cover [79] from the bonding jumper [78].

NOTE: It is not necessary to remove the left firewall cover if the bonding jumper is satisfactory.
  - (f) Remove the screws [57] and washers [56] that attach the right firewall cover [58] to the top insulation panel.
  - (g) Move the right firewall cover [58] down until you can get access to the top end of the right forward mount [4].

EFFECTIVITY  
LOM ALL

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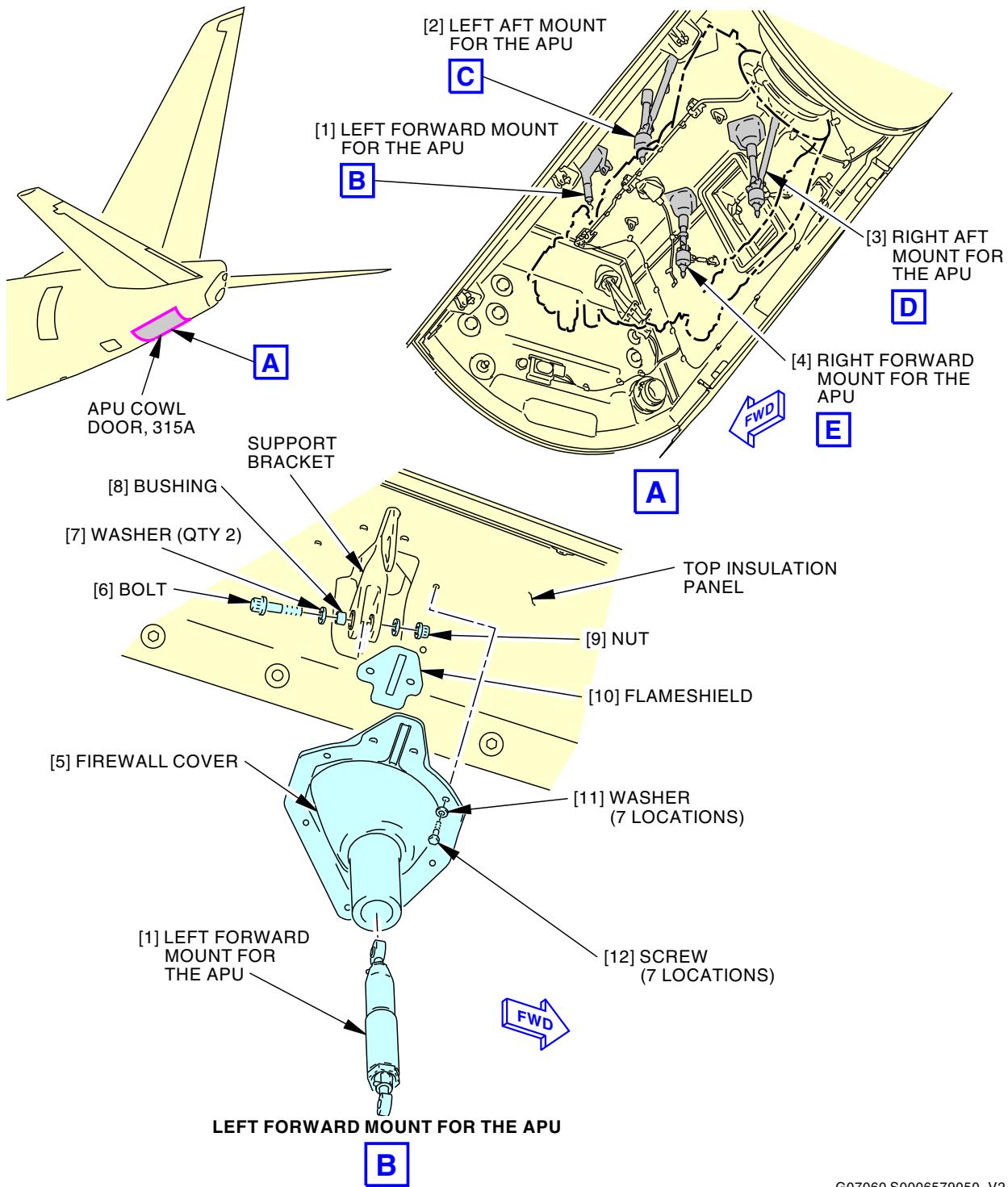
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- (h) Remove the nut [52], washers [54], bushing [53], and bolt [55] that attach the right forward mount [4] to the support bracket.
- (i) Remove the right forward mount [4] and right firewall cover [58].
- (j) If it is necessary, remove the right firewall cover [58] from the right forward mount [4].  
NOTE: It is not necessary to remove the right firewall cover if the right forward mount is satisfactory.
- (k) If it is necessary to remove the vibration isolator [66] and/or the right forward mount [4], then do these steps:  
NOTE: It is necessary to remove the vibration isolator and right forward mount if you find signs of wear and damage that are more than the limits for the right forward mount.
  - 1) Remove the nuts [65], washers [68], washers [82], bushings [67], and bolts [69] that attach the vibration isolator [66] to the right forward mount [4].
  - 2) Remove the right forward mount [4] from the vibration isolator [66].
  - 3) Remove the vibration isolator [66].

———— END OF TASK ————

EFFECTIVITY  
LOM ALL

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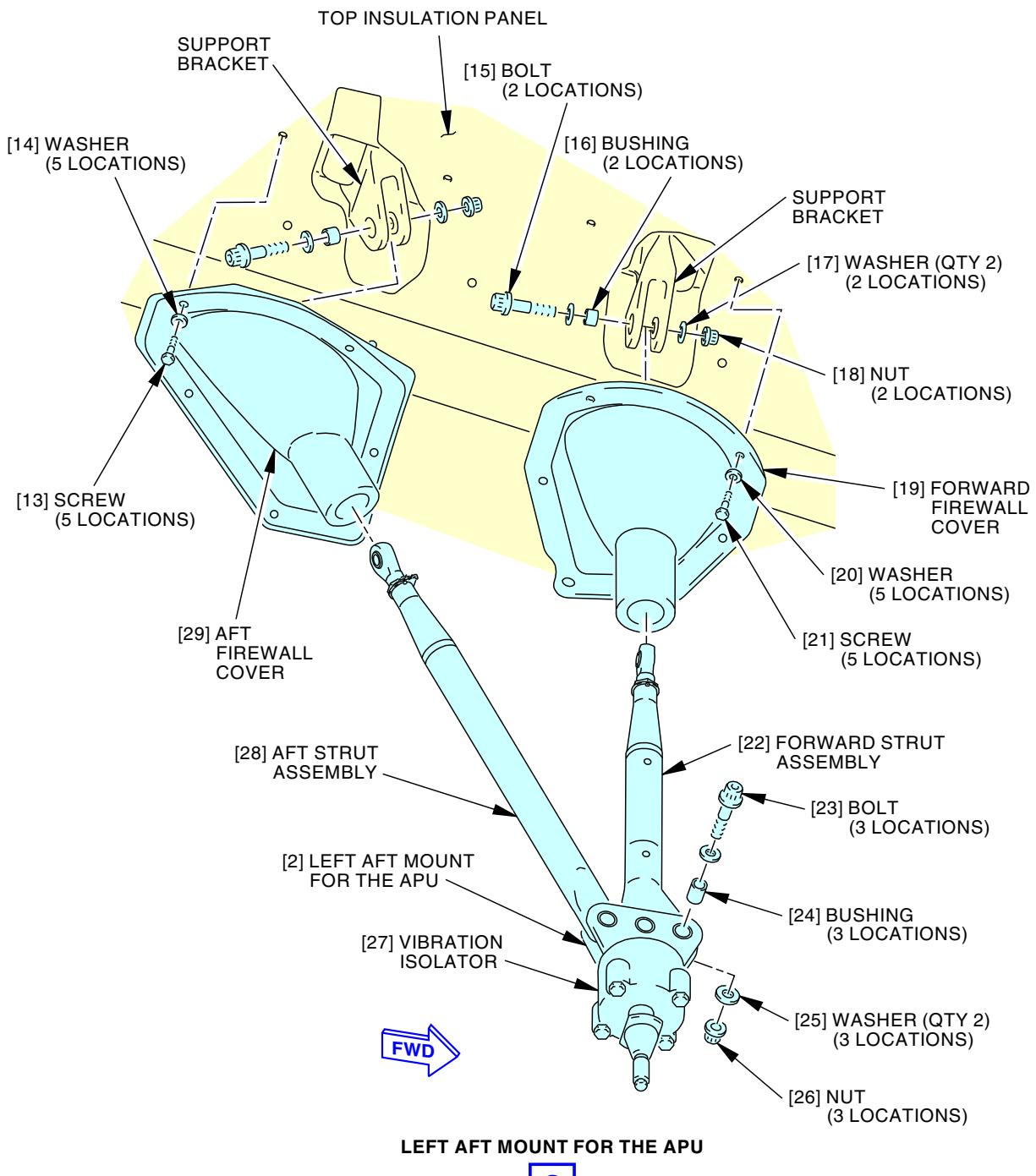
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G07060 S0006579050\_V2

**APU Mounts Installation**  
**Figure 401/49-13-11-990-803 (Sheet 1 of 5)**

EFFECTIVITY  
LOM ALL

**49-13-11**

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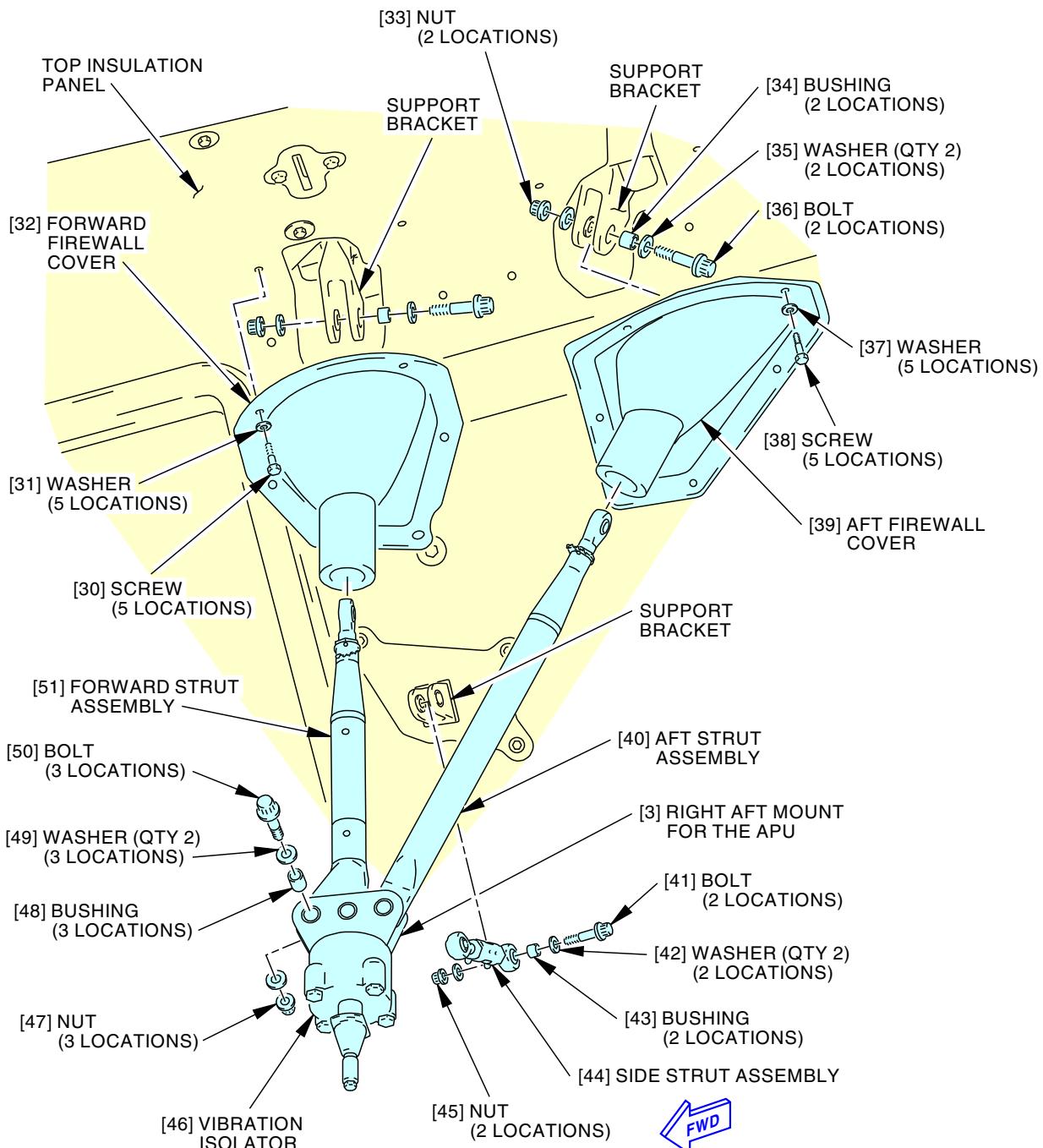
**APU Mounts Installation**  
**Figure 401/49-13-11-990-803 (Sheet 2 of 5)**

EFFECTIVITY  
LOM ALL

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**49-13-11**

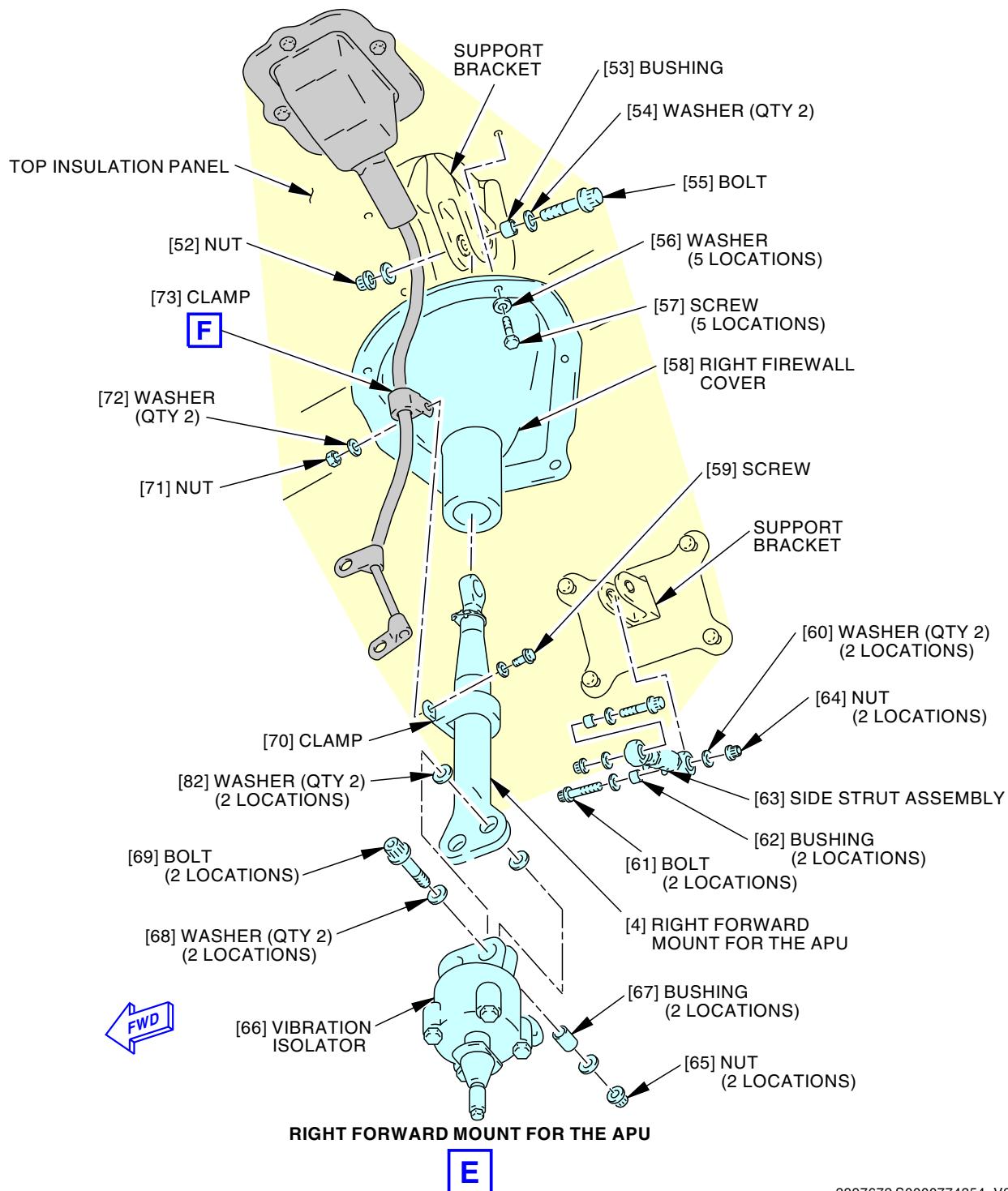
**737-600/700/800/900  
AIRCRAFT MAINTENANCE MANUAL**


G07906 S0006579052\_V2

**APU Mounts Installation**  
**Figure 401/49-13-11-990-803 (Sheet 3 of 5)**

EFFECTIVITY  
LOM ALL

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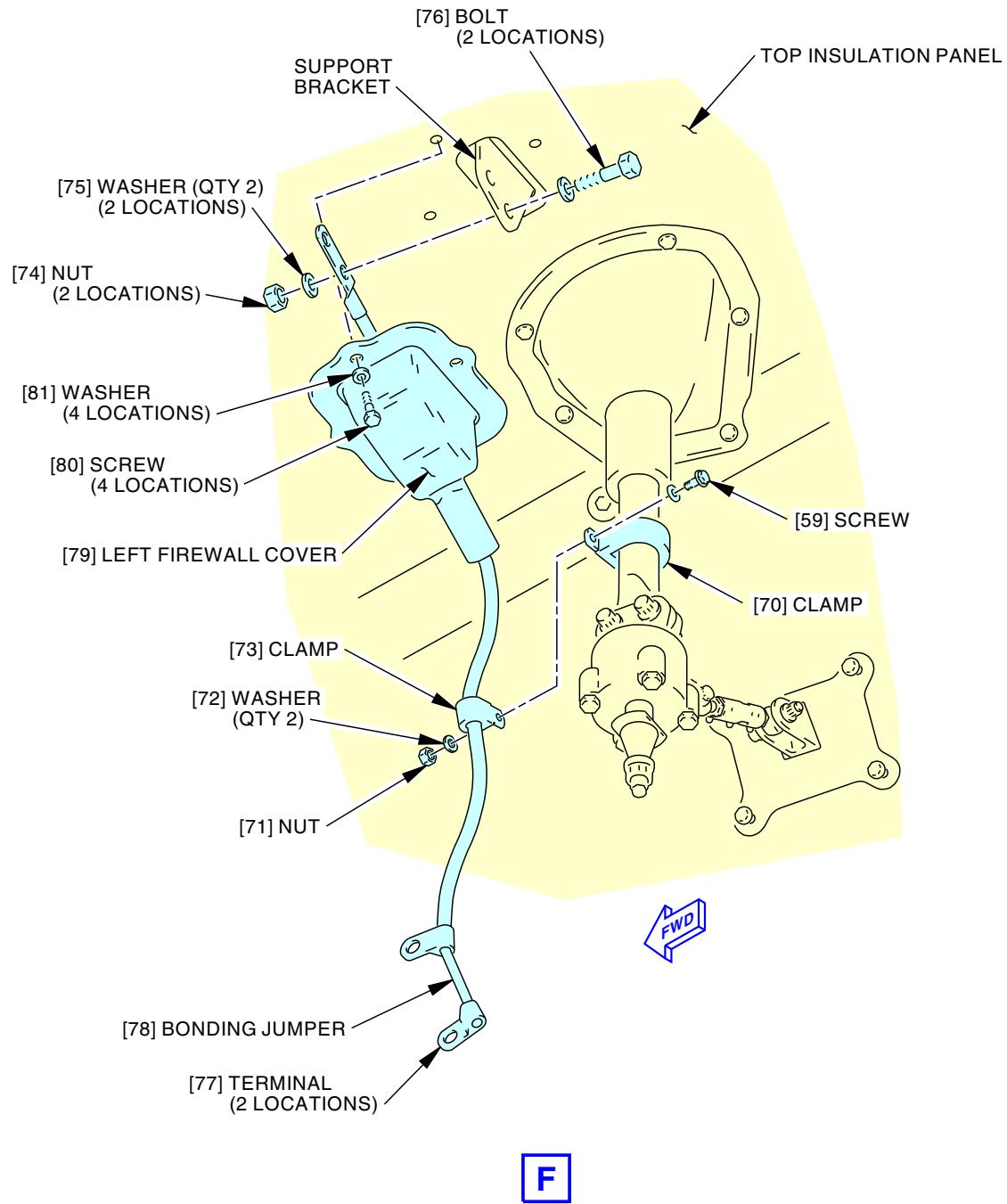
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AIRCRAFT MAINTENANCE MANUAL**


2997672 S0000774254\_V2

**APU Mounts Installation**  
**Figure 401/49-13-11-990-803 (Sheet 4 of 5)**

EFFECTIVITY  
**LOM ALL**

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G09124 S0006579054\_V2

**APU Mounts Installation**  
Figure 401/49-13-11-990-803 (Sheet 5 of 5)

EFFECTIVITY  
LOM ALL

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**TASK 49-13-11-400-802**

**3. APU Mounts Installation**

(Figure 401)

**A. References**

Reference	Title
49-11-00-400-801	APU Power Plant 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-1550	Bonding Meter - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659
STD-1057	Air Source - Regulated, Dry Filtered, Compressed 60-105 PSIG (414-723.9 KPa)(22 SCFM)
STD-1064	Scraper - Phenolic, Hard Resin

**C. Consumable Materials**

Reference	Description	Specification
A00081	Adhesive - Silicone Rubber - RTV 106	BAC5010 Type 74
A00160	Sealant - Firewall - Hydraulic Fluid Resistant	BMS5-63
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
B00130	Alcohol - Isopropyl	TT-I-735
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)
G01912	Lockwire - MS20995NC32, Monel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

**D. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Left forward mount	49-13-51-04A-410	LOM ALL
4	Right forward mount	49-13-51-04A-130	LOM ALL
5	Firewall cover	49-13-51-04A-315	LOM ALL
10	Flameshield	49-13-51-04A-330	LOM ALL
19	Forward firewall cover	49-13-51-04A-280	LOM ALL
22	Forward strut assembly	49-13-51-04A-365	LOM ALL
27	Vibration isolator	49-13-51-04A-165	LOM ALL
28	Aft strut assembly	49-13-51-04A-360	LOM ALL

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(Continued)

AMM Item	Description	AIPC Reference	AIPC Effectivity
29	Aft firewall cover	49-13-51-04A-255	LOM ALL
32	Forward firewall cover	49-13-51-04A-200	LOM ALL
39	Aft firewall cover	49-13-51-04A-170	LOM ALL
40	Aft strut assembly	49-13-51-04A-360	LOM ALL
44	Side strut assembly	49-13-51-04A-030	LOM ALL
46	Vibration isolator	49-13-51-04A-120	LOM ALL
51	Forward strut assembly	49-13-51-04A-365	LOM ALL
58	Right firewall cover	49-13-51-04A-200	LOM ALL
63	Side strut assembly	49-11-00-02-055	LOM ALL
66	Vibration isolator	49-13-51-04A-125	LOM ALL
79	Left firewall cover	49-13-51-04A-230	LOM ALL

**E. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**F. APU Mount Installation**

SUBTASK 49-13-11-420-002

- (1) Do these steps to install the left forward mount [1]:

- (a) Visually examine the firewall cover [5] for the flameshield [10].
  - 1) If it is not installed, install the flameshield [10]:
    - a) If you see remaining sealant on the firewall cover [5] and the top insulation panel, remove the remaining sealant from the surface with a hard resin phenolic scraper, STD-1064, or an equivalent tool.
    - b) Clean the surface with alcohol, B00130, and a cotton wiper, G00034.
    - c) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057, to dry the surface.

NOTE: It is recommended that you use a pressure of  $75 \pm 15$  psig (517  $\pm$  103 kPa) of air or nitrogen to dry the surface.
  - d) Apply RTV 106 adhesive, A00081, or sealant, A00160, to the faying surface of the flameshield [10].
  - e) Install the flameshield [10] on the firewall cover [5].
  - f) Remove the unwanted adhesive or sealant from the firewall cover [5] with a cotton wiper, G00034.

NOTE: It is not necessary for the adhesive or sealant to dry. You can install the firewall cover with the wet adhesive or sealant on the top insulation panel.
- 2) If the flameshield [10] is installed, clean the surface of the firewall cover [5] and the top insulation panel:



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- a) If you see remaining sealant on the firewall cover [5] and the top insulation panel, remove the remaining sealant from the surface with a hard resin phenolic scraper, STD-1064, or an equivalent tool.
- b) Clean the surface with alcohol, B00130, and a cotton wiper, G00034.
- c) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057, to dry the surface.

NOTE: It is recommended that you use a pressure of  $75 \pm 15$  psig  
( $517 \pm 103$  kPa) of air or nitrogen to dry the surface.

- (b) If the firewall cover [5] was removed, put the firewall cover [5] on the left forward mount [1].
  - (c) Move the firewall cover [5] down until you can get access to the top end of the left forward mount [1].
  - (d) Install the top end of the left forward mount [1] to the support bracket with the bushing [8], washers [7], bolt [6], and nut [9].
- NOTE: The bushing should be adjacent to the side of the bolt head.
- (e) Install the firewall cover [5] to the top insulation panel with the washers [11] and screws [12].
  - (f) Apply fillet seal of sealant, A00160, around the firewall cover [5].
  - (g) Remove the unwanted sealant from the firewall cover [5] and the top insulation panel with a cotton wiper, G00034.

NOTE: It is not necessary for the sealant to dry. You can install the other APU mounts or the APU with the wet sealant on the top insulation panel.

**SUBTASK 49-13-11-420-003**

- (2) Do these steps to install the left aft mount [2]:

NOTE: The left aft mount has the forward strut assembly, aft strut assembly, and vibration isolator.

- (a) If the forward strut assembly [22], aft strut assembly [28], and/or vibration isolator [27] were removed from the left aft mount [2], do these steps:
  - 1) Put the forward strut assembly [22] and aft strut assembly [28] on the vibration isolator [27].
  - 2) Install the vibration isolator [27] on the forward strut assembly [22] and aft strut assembly [28] with the bushings [24], washers [25], bolts [23], and nuts [26].

NOTE: The bushings should be adjacent to the side of the bolt heads.

- (b) Clean the surface of the forward firewall cover [19], aft firewall cover [29], and the top insulation panel:
  - 1) If you see remaining sealant on the forward firewall cover [19], aft firewall cover [29], and the top insulation panel, remove the remaining sealant from the surface with a hard resin phenolic scraper, STD-1064, or an equivalent tool.
  - 2) Clean the surface with alcohol, B00130, and a cotton wiper, G00034.
  - 3) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057, to dry the surface.

NOTE: It is recommended that you use a pressure of  $75 \pm 15$  psig ( $517 \pm 103$  kPa) of air or nitrogen to dry the surface.

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- (c) If the forward firewall cover [19] and aft firewall cover [29] were removed, put the forward firewall cover [19] and aft firewall cover [29] on the forward strut assembly [22] and aft strut assembly [28].
- (d) Move the forward firewall cover [19] down until you can get access to the top end of the forward strut assembly [22].
- (e) Move the aft firewall cover [29] down until you can get access to the top end of the aft strut assembly [28].
- (f) Install the top ends of the forward strut assembly [22] and aft strut assembly [28] to the two support brackets with the bushings [16], washers [17], bolts [15], and nuts [18].  
NOTE: The bushings should be adjacent to the side of the bolt heads.
- (g) Install the forward firewall cover [19] to the top insulation panel with the washers [20] and screws [21].
- (h) Install the aft firewall cover [29] to the top insulation panel with the washers [14] and screws [13].
- (i) Apply fillet seal of sealant, A00160, around the forward firewall cover [19] and aft firewall cover [29].
- (j) Remove the unwanted sealant from the forward firewall cover [19], aft firewall cover [29], and the top insulation panel with a cotton wiper, G00034.  
NOTE: It is not necessary for the sealant to dry. You can install the other Auxiliary Power Unit (APU) mounts or the APU with the wet sealant on the top insulation panel.

SUBTASK 49-13-11-420-004

- (3) Do these steps to install the right aft mount [3]:

NOTE: The right aft mount has the aft strut assembly, side strut assembly, forward strut assembly, and vibration isolator.

- (a) If the aft strut assembly [40], forward strut assembly [51], and/or vibration isolator [46] were removed from the right aft mount [3], do these steps:

- 1) Put the aft strut assembly [40] and forward strut assembly [51] on the vibration isolator [46].
- 2) Install the vibration isolator [46] on the aft strut assembly [40] and forward strut assembly [51] with the bushings [48], washers [49], bolts [50], and nuts [47].

NOTE: The bushings should be adjacent to the side of the bolt heads.

- (b) Clean the surface of the forward firewall cover [32], aft firewall cover [39], and the top insulation panel:

- 1) If you see remaining sealant on the forward firewall cover [32], aft firewall cover [39], and the top insulation panel, remove the remaining sealant from the surface with a hard resin phenolic scraper, STD-1064, or an equivalent tool.
- 2) Clean the surface with alcohol, B00130, and a cotton wiper, G00034.
- 3) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057, to dry the surface.

NOTE: It is recommended that you use a pressure of  $75 \pm 15$  psig ( $517 \pm 103$  kPa) of air or nitrogen to dry the surface.

- (c) If the forward firewall cover [32] and aft firewall cover [39] were removed, put the forward firewall cover [32] and aft firewall cover [39] on the forward strut assembly [51] and aft strut assembly [40].

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- (d) Move the forward firewall cover [32] down until you can get access to the top end of the forward strut assembly [51].
- (e) Move the aft firewall cover [39] down until you can get access to the top end of the aft strut assembly [40].
- (f) Install the top ends of the aft strut assembly [40] and forward strut assembly [51] to the two support brackets with the bushings [34], washers [35], bolts [36], and nuts [33].  
NOTE: The bushings should be adjacent to the bolt heads.
- (g) Install the forward firewall cover [32] to the top insulation panel with the washers [31] and screws [30].
- (h) Install the aft firewall cover [39] to the top insulation panel with the washers [37] and screws [38].
- (i) Apply fillet seal of sealant, A00160, around the forward firewall cover [32] and aft firewall cover [39].
- (j) Remove the unwanted sealant from the forward firewall cover [32], aft firewall cover [39], and the top insulation panel with a cotton wiper, G00034.  
NOTE: It is not necessary for the sealant to dry. You can install the other APU mounts or the APU with the wet sealant on the top insulation panel.
- (k) Put the side strut assembly [44] into the support bracket and vibration isolator [46].
- (l) Install the bushings [43], washers [42], bolts [41], and nuts [45] that attach the side strut assembly [44] to the support bracket and vibration isolator [46].  
NOTE: The bushings should be adjacent to the side of the bolt heads.

SUBTASK 49-13-11-420-005

- (4) Do these steps to install the right forward mount [4]:
  - (a) If the vibration isolator [66] was removed from the right forward mount [4], do these steps:
    - 1) Put the right forward mount [4] on the vibration isolator [66].
    - 2) Install the vibration isolator [66] on the right forward mount [4] with the bushings [67], washers [68], washers [82], bolts [69], and nuts [65].  
NOTE: The bushings should be adjacent to the side of the nuts. Optionally bushings can be installed adjacent to the side of the bolt heads.
  - (b) Clean the surface of the right firewall cover [58] and the top insulation panel:
    - 1) If you see remaining sealant on the right firewall cover [58] and the top insulation panel, remove the remaining sealant from the surface with a hard resin phenolic scraper, STD-1064, or an equivalent tool.
    - 2) Clean the surface with alcohol, B00130, and a cotton wiper, G00034.
    - 3) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057, to dry the surface.  
NOTE: It is recommended that you use a pressure of  $75 \pm 15$  psig ( $517 \pm 103$  kPa) of air or nitrogen to dry the surface.
  - (c) If the right firewall cover [58] was removed, put the right firewall cover [58] on the right forward mount [4].
  - (d) Move the right firewall cover [58] down until you can get access to the top end of the right forward mount [4].

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- (e) Install the top end of the right forward mount [4] to the support bracket with the bushing [53], washers [54], bolt [55], and nut [52].  
NOTE: The bushing should be adjacent to the side of the bolt head.
- (f) Install the right firewall cover [58] to the top insulation panel with the washers [56] and screws [57].
- (g) Apply fillet seal of sealant, A00160, around the right firewall cover [58].
- (h) Remove the unwanted sealant from the right firewall cover [58] and the top insulation panel with a cotton wiper, G00034.  
NOTE: It is not necessary for the sealant to dry. You can install the other APU mounts or the APU with the wet sealant on the top insulation panel.
- (i) If the left firewall cover [79] and bonding jumper [78] were removed, do these steps:
  - 1) If you see remaining sealant on the left firewall cover [79], top insulation panel, nuts [74], washers [75], bolts [76], and the lug for the bonding jumper [78], do these steps to clean the surface of these parts:
    - a) Remove the remaining sealant from the surface with a hard resin phenolic scraper, STD-1064, or an equivalent tool.
    - b) Clean the surface with alcohol, B00130, and a cotton wiper, G00034.
    - c) Continue to clean the surface until there are no visible residue on the surface.
    - d) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057, to dry the surface of these parts.  
NOTE: It is recommended that you use a pressure of  $75 \pm 15$  psig ( $517 \pm 103$  kPa) of air or nitrogen to dry the surface of these parts.
  - 2) If the left firewall cover [79] was removed, put the left firewall cover [79] on the bonding jumper [78].
  - 3) Move the left firewall cover [79] down until you can get access to the top end of the bonding jumper [78].
  - 4) Install the top end of the bonding jumper [78] to the support bracket with the washers [75], bolts [76], and nuts [74].
  - 5) Use an intrinsically safe approved bonding meter, COM-1550, to make sure that the bonding resistance between the bonding jumper [78] and the airplane structure is 0.0025 ohm or less.
  - 6) Apply sealant, A00247, over the bolts [76], washers [75], nuts [74], and the lug of the bonding jumper [78] to prevent corrosion.  
NOTE: It is not necessary for the sealant to dry.
  - 7) Install the left firewall cover [79] to the top insulation panel with the screws [81] and screws [80].
  - 8) Apply fillet seal of sealant, A00160, around the left firewall cover [79].
  - 9) Remove the unwanted sealant from the left firewall cover [79] and the top insulation panel with a cotton wiper, G00034.  
NOTE: It is not necessary for the sealant to dry. You can install the other APU mounts or the APU with the wet sealant on the top insulation panel.
- 10) Make sure that the terminals [77] for the bonding jumper [78] are installed correctly.
- (j) Put the clamp [70] and clamp [73] on the bonding jumper [78] and right forward mount [4].
- (k) Install the clamp [70] and clamp [73] with the washers [72], screw [59], and nut [71].

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- (l) Put the side strut assembly [63] into the support bracket and vibration isolator [66].
- NOTE: If the side strut assembly was replaced, it may be necessary to adjust the side strut assembly length.
- 1) If the side strut assembly [63] need adjustment, do these steps:
    - a) Remove the lockwire from the rod ends.
    - b) Turn the rod ends to adjust the length of the side strut assembly [63]  
NOTE: One half turn of the rod end equals 0.020 in. (0.508 mm) in length.
    - c) Make sure that you can see one full thread at both inspection holes.
    - d) Tighten the jam nuts on the rod ends
    - e) Install the MS20995NC32 lockwire, G01912, on the rod ends.
- (m) Install the bushings [62], washers [60], bolts [61], and nuts [64] that attach the side strut assembly [63] to the support bracket and vibration isolator [66].
- NOTE: The bushings should be adjacent to the side of the bolt heads.

SUBTASK 49-13-11-410-001

- (5) Install the APU, do this task: APU Power Plant Installation, TASK 49-11-00-400-801.

———— END OF TASK ————

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APU MOUNTS - INSPECTION/CHECK

**1. General**

- A. This procedure contains scheduled maintenance task data.
- B. This procedure has these tasks:
  - (1) An inspection of the APU mounts (APU installed)
  - (2) An inspection of the APU mounts (APU removed).
- C. There are two procedures available for the inspection of the APU mounts. You can do a general visual inspection of the APU mounts with the APU installed but there is only a small access to these parts. With the APU removed, you can get access to all parts of the APU mounts for the inspection.

**TASK 49-13-11-200-802**

**2. APU Mounts Inspection**

**A. APU Mounts Inspection**

SUBTASK 49-13-11-200-001

- (1) Do one of these tasks to inspect the APU mounts:
  - (a) Do this task: APU Mounts Inspection (APU Installed), TASK 49-13-11-200-803.
  - (b) Do this task: APU Mounts Inspection (APU Removed), TASK 49-13-11-200-801.

————— END OF TASK ————

**TASK 49-13-11-200-803**

**3. APU Mounts Inspection (APU Installed)**

(Figure 601)

NOTE: This procedure is a scheduled maintenance task.

**A. References**

Reference	Title
49-17-11-000-801	Insulation Panel Removal (P/B 401)
49-17-11-400-801	Insulation Panel Installation (P/B 401)

**B. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**C. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**D. Prepare for the Inspection**

SUBTASK 49-13-11-860-002

- (1) Make sure the Auxiliary Power Unit (APU) master switch on the P5 forward overhead panel is OFF and install a DO-NOT-OPERATE tag.

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SUBTASK 49-13-11-860-003

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-13-11-010-005

- (3) To open the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Support the APU panel (cowl door) under the center latch.

- (b) Open the three latches.

NOTE: Use this sequence: forward latch, aft latch, middle latch.

- (c) Open the APU Cowl Door, 315A.

- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.

- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.

- (f) Disconnect the two hold-open rods from the two spring clips.

- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.

- (h) Install the two retainer pins in the two rod ends.

## E. Procedure

SUBTASK 49-13-11-210-002

- (1) Do these steps to inspect the APU mounts (Figure 601):

- (a) If it is necessary, remove the firewall cover and flameshield, refer to (Insulation Panel Removal, TASK 49-17-11-000-801).

- (b) Make sure all connections for the APU mounts are tight.

- (c) Visually examine these parts of the APU mounts that you can get access for corrosion, cracks and damage:

- 1) Strut assemblies (APU mounts)

- 2) Vibration isolators

- 3) Cone bolts and nuts for the vibration isolator.

- (d) If they are removed, install the firewall cover and flameshield, refer to (Insulation Panel Installation, TASK 49-17-11-400-801).

- (e) If you find corrosion, cracks or damage to these parts, then you must inspect the APU mounts with the APU removed. To inspect them, do this task: APU Mounts Inspection (APU Removed), TASK 49-13-11-200-801.



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

SUBTASK 49-13-11-410-003

- (1) To close the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

SUBTASK 49-13-11-860-004

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

**F/O Electrical System Panel, P6-2**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-13-11-860-005

- (3) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.

———— END OF TASK ————

**TASK 49-13-11-200-801**

**4. APU Mounts Inspection (APU Removed)**

(Figure 601)

NOTE: This procedure is a scheduled maintenance task.

**A. References**

<b>Reference</b>	<b>Title</b>
49-11-00-000-801	APU Power Plant Removal (P/B 401)
49-11-00-400-801	APU Power Plant Installation (P/B 401)
49-13-11-000-802	APU Mounts Removal (P/B 401)
49-13-11-400-802	APU Mounts Installation (P/B 401)
49-17-11-000-801	Insulation Panel Removal (P/B 401)

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(Continued)

Reference	Title
49-17-11-400-801	Insulation Panel Installation (P/B 401)

**B. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**C. APU Mounts Inspection (APU Removed)**

SUBTASK 49-13-11-020-006

- (1) Do this task: APU Power Plant Removal, TASK 49-11-00-000-801.

SUBTASK 49-13-11-210-001

- (2) Do these steps to inspect the Auxiliary Power Unit (APU) mounts:
- (a) If it is necessary, remove the firewall cover and flameshield from the mount to view the mount (TASK 49-17-11-000-801).
  - (b) Visually examine these parts for corrosion, cracks and damage:
    - 1) Strut assemblies (APU mounts)
    - 2) Vibration isolators
    - 3) Cone bolts and nuts for the vibration isolator.
  - (c) If corrosion, cracks or damage are found, do these steps:
    - 1) Remove the parts for the APU mounts that are found with corrosion, cracks, or damage (TASK 49-13-11-000-802).
    - 2) Visually examine the bolts and bushings for corrosion, wear and damage.
      - a) Replace the bolts and bushings that are found with corrosion or damage.
      - b) Replace all the parts that are more than the permitted wear limits (Table 601).

**Table 601/49-13-11-993-803 APU Mount Inspection**

ITEM NUMBER	PART	INNER DIAMETER (ID) / OUTER DIAMETER (OD)	DESIGN LIMITS		WEAR LIMITS		REPAIR	
			DIAMETER		PERMITTED WEAR	MAXIMUM CLEAR-ANCE		
			MINI-MUM	MAXI-MUM				
			INCH (MM)	INCH (MM)	INCH (MM)	INCH (MM)		
1	ROD END	ID	0.3120 (7.92)	0.3125 (7.94)	0.3175 (8.06)	0.0100 (0.25)	*[1]	
2	BOLT	OD	0.3115 (7.91)	0.3120 (7.92)	0.3060 (7.77)	0.0100 (0.25)	*[1]	
3	ROD END	ID	0.2495 (6.34)	0.2500 (6.35)	0.2550 (6.48)	0.0100 (0.25)	*[1]	
4	BOLT	OD	0.2490 (6.32)	0.2495 (6.34)	0.2435 (6.18)	0.0100 (0.25)	*[1]	

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**Table 601/49-13-11-993-803 APU Mount Inspection (Continued)**

ITEM NUMBER	PART	INNER DIAMETER (ID) / OUTER DIAMETER (OD)	DESIGN LIMITS		WEAR LIMITS		REPAIR	
			DIAMETER		PERMITTED WEAR	MAXIMUM CLEARANCE		
			MINI-MUM	MAXI-MUM				
			INCH (MM)	INCH (MM)	INCH (MM)	INCH (MM)		
5	ROD END	ID	0.3120 (7.92)	0.3125 (7.94)	0.3175 (8.06)	0.0100 (0.25)	*[1]	
6	BOLT	OD	0.3115 (7.91)	0.3120 (7.92)	0.3060 (7.77)	0.0100 (0.25)	*[1]	
7	STRUT	ID	0.5625 (14.29)	0.5631 (14.30)	-----	-----	*[2]	
8	BUSHING	OD	0.4365 (11.09)	0.4370 (11.10)	0.4315 (10.96)	0.0100 (0.25)	*[1]	
9	BUSHING	OD	0.5631 (14.30)	0.5638 (14.32)	-----	-----	*[3]	
		ID	0.4400 (11.18)	0.4415 (11.21)	0.4465 (11.34)	0.0100 (0.25)	*[1]	
10	BOLT	OD	0.2490 (6.32)	0.2495 (6.34)	0.2435 (6.18)	0.0100 (0.25)	*[1]	
11	ROD END	ID	0.2497 (6.34)	0.2502 (6.36)	0.2552 (6.48)	0.0100 (0.25)	*[1]	
12	STRUT	ID	0.5625 (14.29)	0.5631 (14.30)	-----	-----	*[2]	
13	BUSHING	OD	0.4365 (11.09)	0.4370 (11.10)	0.4315 (10.96)	0.0100 (0.25)	*[1]	
14	BUSHING	OD	0.5631 (14.30)	0.5638 (14.32)	-----	-----	*[3]	
		ID	0.4400 (11.18)	0.4415 (11.21)	0.4465 (11.34)	0.0100 (0.25)	*[1]	

\*[1] REPLACE WHEN WORN

\*[2] OVERSIZE STRUT HOLE MUST NOT BE MORE THAN 0.625 INCH (15.88 MM) IN DIAMETER

\*[3] REPLACE WITH OVERSIZE BUSHING

- 3) Examine the four bolts and four lockwashers that attach each housing assembly to each vibration isolator for tightness and missing part(s).
  - a) If it is necessary, tighten the bolts or replace the missing part(s).
- 4) Visually examine the surface of each vibration isolator for scratches, nicks, burrs, corrosion, galling, fretting and wear.
  - a) If the individual damaged area is more than 0.500 in. (12.7 mm) diameter by 0.020 in. (0.51 mm) depth or 1.000 in. (25 mm) length by 0.100 in. (2.5 mm) width by 0.020 in. (0.51 mm) depth, replace the vibration isolator.
  - b) If the total damaged area is more than 15% of the total surface area for the vibration isolator, replace the vibration isolator.

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- 5) Visually examine the threads of the cone bolts and nuts on the vibration isolator for galling, wear and damage.
  - a) Replace the vibration isolator and nuts that are found with galling, wear, or damage.
- 6) Install the new or serviceable part(s) for the APU mounts (TASK 49-13-11-400-802).
- (d) Make sure that all connections for the APU mounts and support brackets are tight.
- (e) If they are removed, examine and install the firewall cover and flameshield (TASK 49-17-11-400-801).

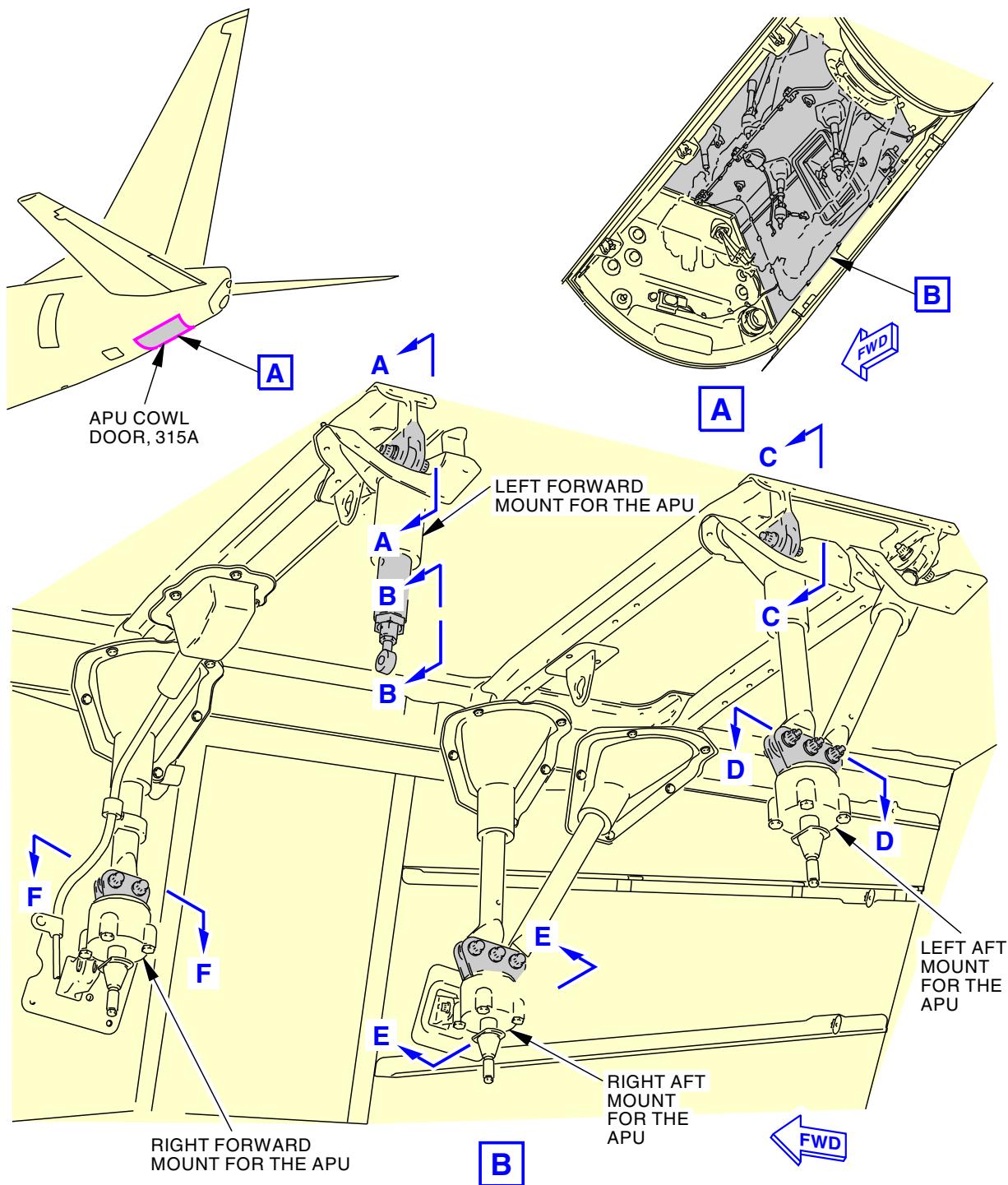
SUBTASK 49-13-11-420-006

- (3) Do this task: APU Power Plant Installation, TASK 49-11-00-400-801.

———— END OF TASK ————

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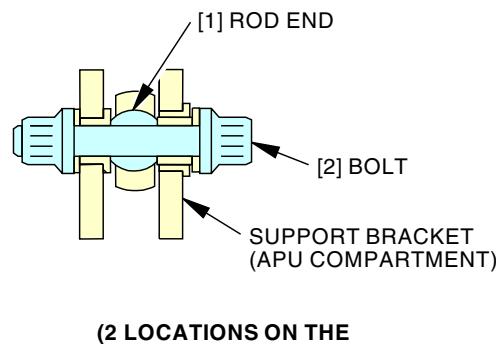
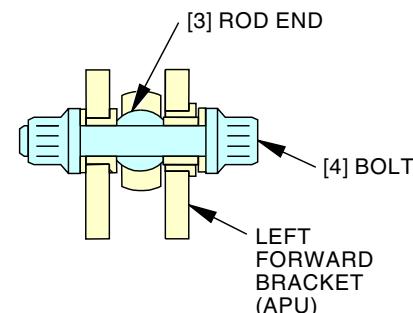
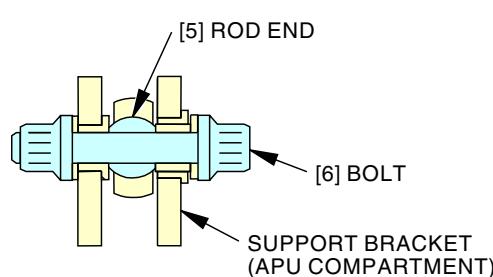
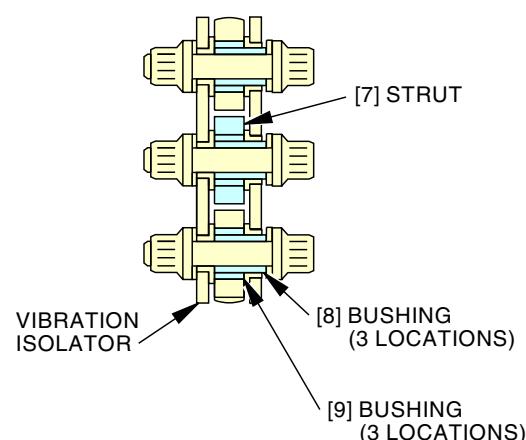
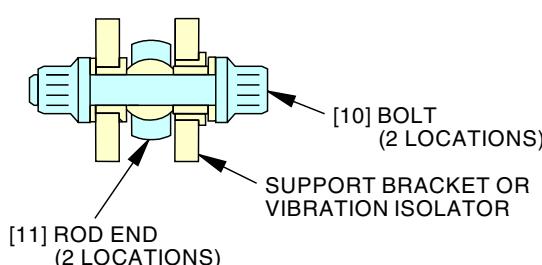
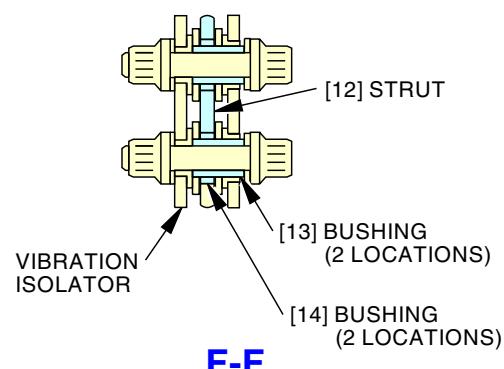
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**APU Mounts Inspection**  
**Figure 601/49-13-11-990-802 (Sheet 1 of 2)**

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**A-A**

**B-B**

**C-C**

**D-D**

**E-E**

**F-F**

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**APU Mounts Inspection**  
**Figure 601/49-13-11-990-802 (Sheet 2 of 2)**

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APU AIR INLET - ADJUSTMENT/TEST

**1. General**

- A. This procedure has these tasks:
  - (1) An adjustment of the air inlet door
  - (2) An adjustment of the position switch for the air inlet door
  - (3) An adjustment of the vortex generator flap
  - (4) A test of the air inlet door.
- B. The adjustments and the test for the air inlet door are necessary for the air inlet system to operate correctly. The three pushrods, position switch for the air inlet door and vortex generator flap must operate smoothly.
- C. The position switch for the air inlet door and vortex generator flap must be adjusted each time the position of the air inlet door changes. The position of the air inlet door changes when you remove it or align it again. You adjust the vortex generator flap after you complete the tasks to adjust the air inlet door and the position switch for the air inlet door.
- D. The position switch for the air inlet door is referred to as the door position switch.

**TASK 49-15-00-800-801**

**2. Air Inlet Door Adjustment**

(Figure 501)

**A. Location Zones**

<u>Zone</u>	<u>Area</u>
211	Flight Compartment - Left
314	Stabilizer Torsion Box Compartment - Right

**B. Access Panels**

<u>Number</u>	<u>Name/Location</u>
311BL	Stabilizer Trim Access Door

**C. Prepare for the Adjustment**

SUBTASK 49-15-00-860-001

- (1) Make sure the BAT switch on the P5 forward overhead panel is ON.

SUBTASK 49-15-00-860-002

- (2) Set the APU master switch on the P5 forward overhead panel to the ON position and attach a DO-NOT-OPERATE tag.

SUBTASK 49-15-00-860-031

- (3) Make sure the air inlet door opens in approximately 30 seconds.

NOTE: It is 'normal' for the air inlet door to pause briefly for approximately 0.5 second as the door opens. This is because the ECU pauses to perform a diagnostic check for the quality of the power to the door actuator and door position switch. The brief pause is considered normal.

SUBTASK 49-15-00-860-003

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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LOM ALL

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**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-15-00-010-001

- (5) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
311BL	Stabilizer Trim Access Door

**D. Procedure**

SUBTASK 49-15-00-220-001

- (1) Do the adjustment of the air inlet door in the fully open position:

- (a) Measure the position of the air inlet door in the fully open position.
  - 1) Make sure the gap between the air inlet door and the door housing is 0.06 in. (1.52 mm) - 0.12 in. (3.05 mm)(Figure 501 (Sheet 1), View A).
  - 2) Make sure the distance from the air inlet door to the inlet door housing (flushness alignment of the door) is less than 0.06 in. (1.52 mm)(Figure 501 (Sheet 2), View C).
- (b) If the air inlet door is not in the limits, adjust the air inlet door:
  - 1) Remove the two nuts [7], four washers [6], [5] and two bolts [4] that connect the two pushrod bearings to the two actuator arms [3].
  - 2) Loosen one of the two locknuts [1] at each end of the two pushrods [2].
  - 3) Turn the ends of the two pushrods [2] until the air inlet door aligns in the limits.  
NOTE: The pushrod will move a distance of 0.02 inch (0.5 mm) with one half of a turn in one direction.
  - 4) Tighten the two locknuts [1] on the two pushrods [2].
  - 5) Put the two pushrods [2] into the two actuator arms [3].
  - 6) Align the holes of the two pushrod bearings with the two actuator arms [3].
  - 7) Install the two bolts [4], four washers [5], [6] and two nuts [7] that connect the two pushrod bearings to the two actuator arms [3].

SUBTASK 49-15-00-860-005

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-15-00-860-008

- (3) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.

SUBTASK 49-15-00-860-009

- (4) Set the APU master switch to the OFF position and attach a DO-NOT-OPERATE tag.

EFFECTIVITY  
LOM ALL

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SUBTASK 49-15-00-860-032

- (5) Make sure the air inlet door closes in approximately 30 seconds.

SUBTASK 49-15-00-860-010

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-15-00-820-002

- (7) Do the adjustment of the air inlet door in the closed position:

- (a) Measure the position of the air inlet door in the closed position (Figure 501 (Sheet 2), View C).

NOTE: The clearance between the center of the air inlet door and the inlet lip must be 1.30-1.40 inches (33.0-35.6 mm).

- (b) If the air inlet door is not in the limits, adjust the air inlet door:

- 1) Remove the two nuts [7], four washers [6], [5] and two bolts [4] that connect the two pushrod bearings to the two actuator arms [3].

- 2) Loosen one of the two locknuts [1] at each end of the two pushrods [2].

- 3) Turn the ends of the two pushrods [2] until the air inlet door aligns in the limits.

NOTE: The pushrod will move a distance of 0.02 inch (0.5 mm) with one half of a turn in one direction.

- 4) Tighten the two locknuts [1] on the two pushrods [2].

- 5) Put the two pushrods [2] into the two actuator arms [3].

- 6) Align the holes of the two pushrod bearings with the two actuator arms [3].

- 7) Install the two bolts [4], four washers [5], [6] and two nuts [7] that connect the two pushrod bearings to the two actuator arms [3].

- a) Tighten the two nuts [7] to 63 in-lb (7.1 N·m) - 67 in-lb (7.6 N·m).

SUBTASK 49-15-00-860-012

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-15-00-860-013

- (9) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.

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LOM ALL

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SUBTASK 49-15-00-820-003

- (10) Do this task: Door Position Switch Adjustment, TASK 49-15-00-800-802.

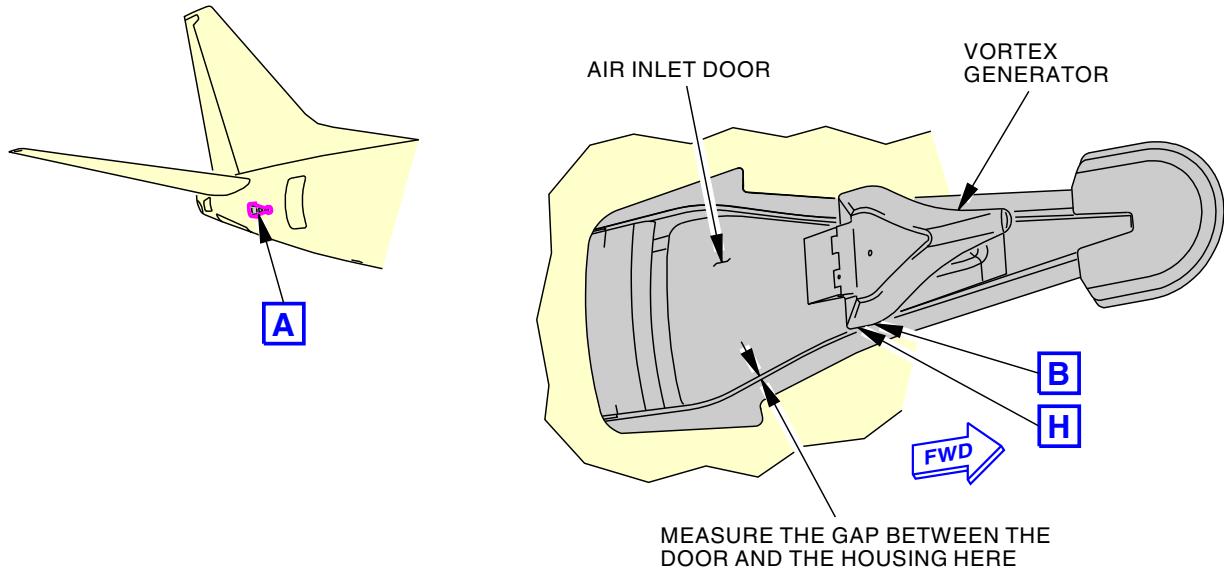
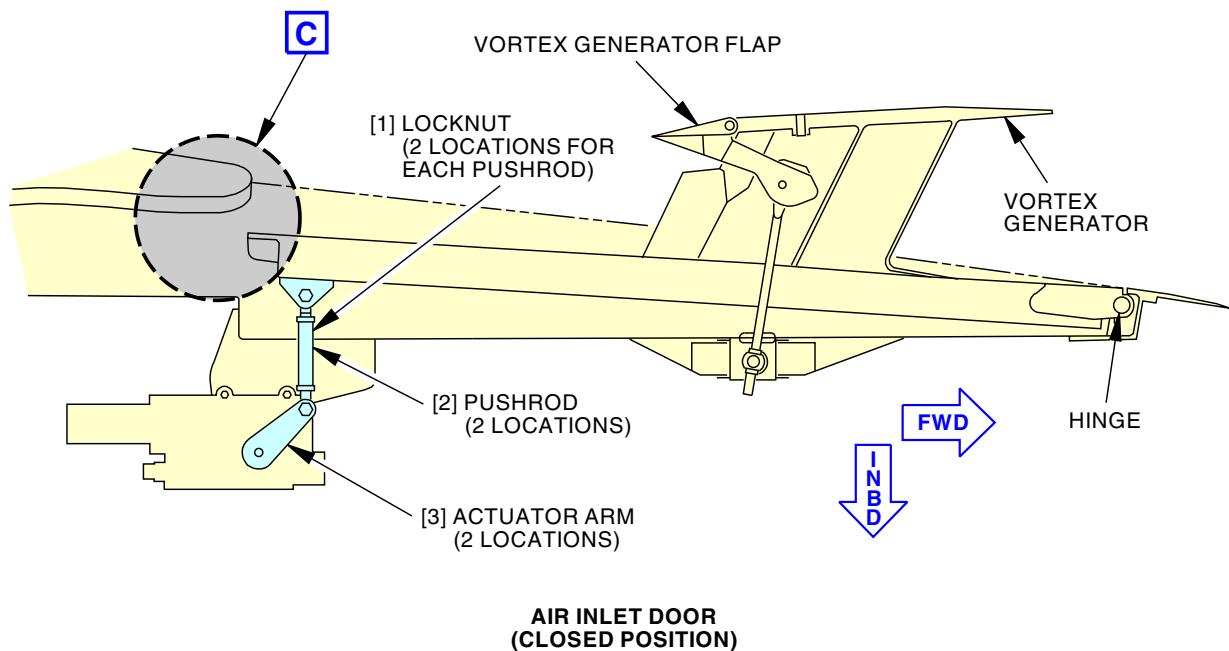
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— EFFECTIVITY —  
**LOM ALL**

**49-15-00**

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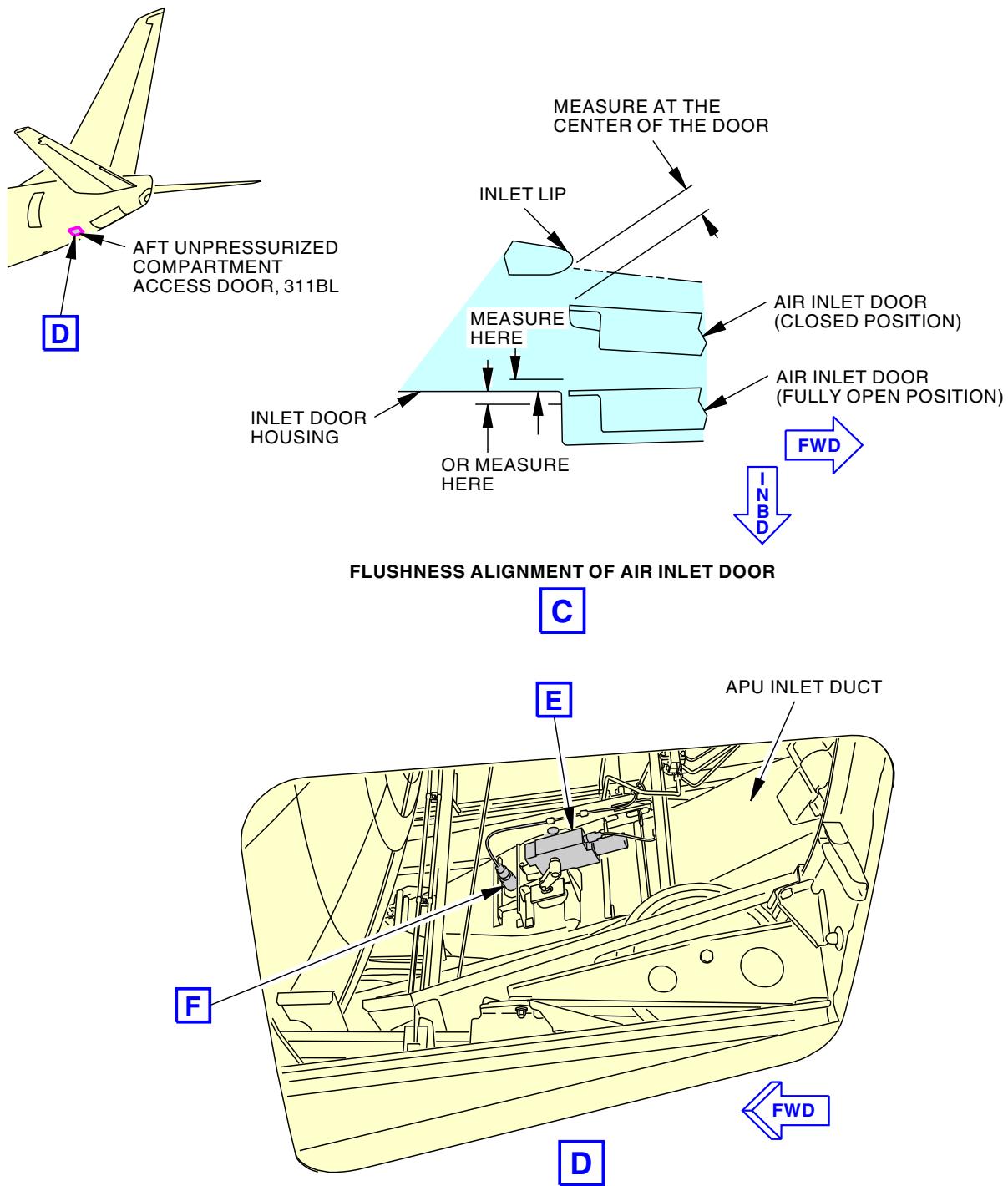
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**Air Inlet Door Adjustment**  
**Figure 501/49-15-00-990-801 (Sheet 1 of 4)**

EFFECTIVITY  
LOM ALL

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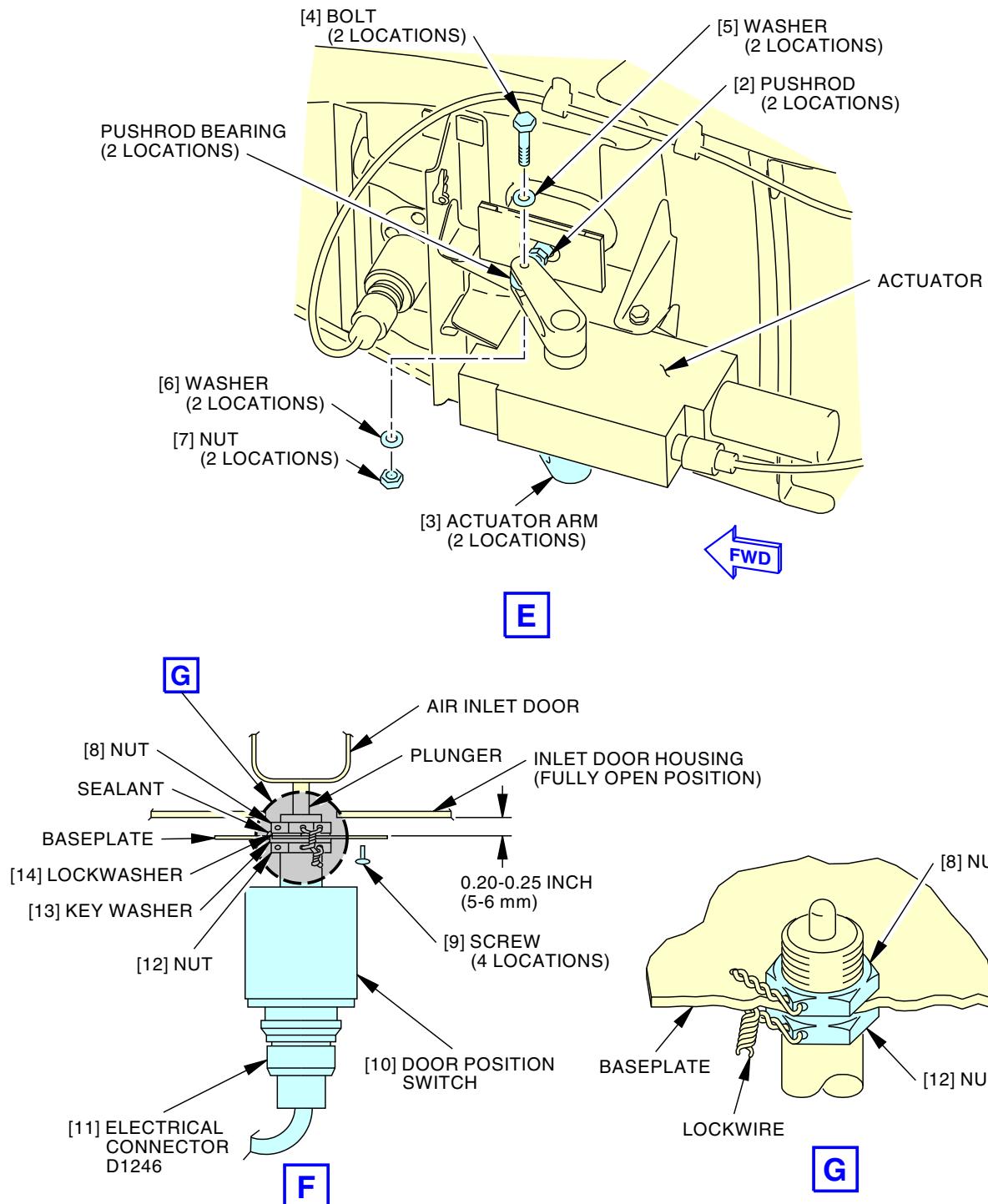


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**Air Inlet Door Adjustment**  
**Figure 501/49-15-00-990-801 (Sheet 2 of 4)**

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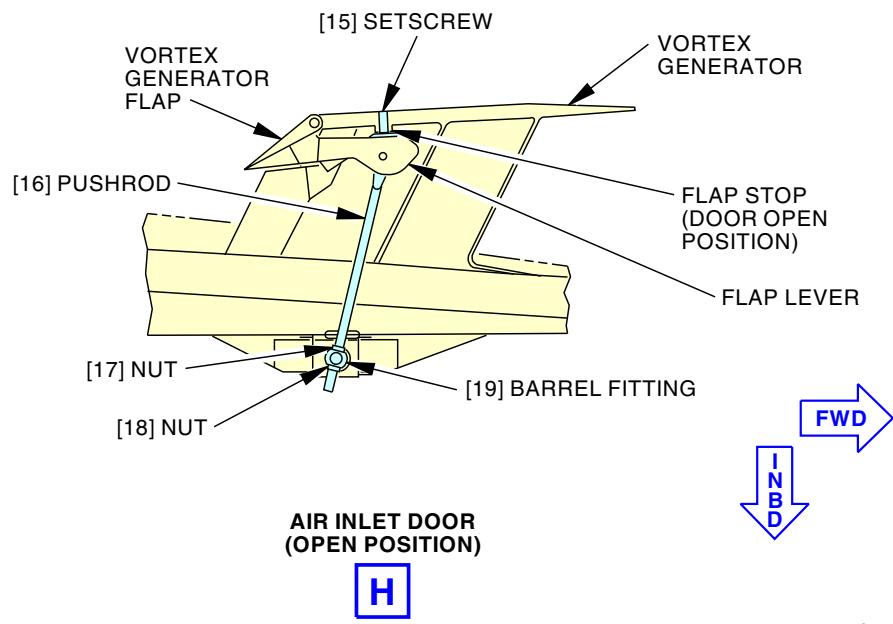
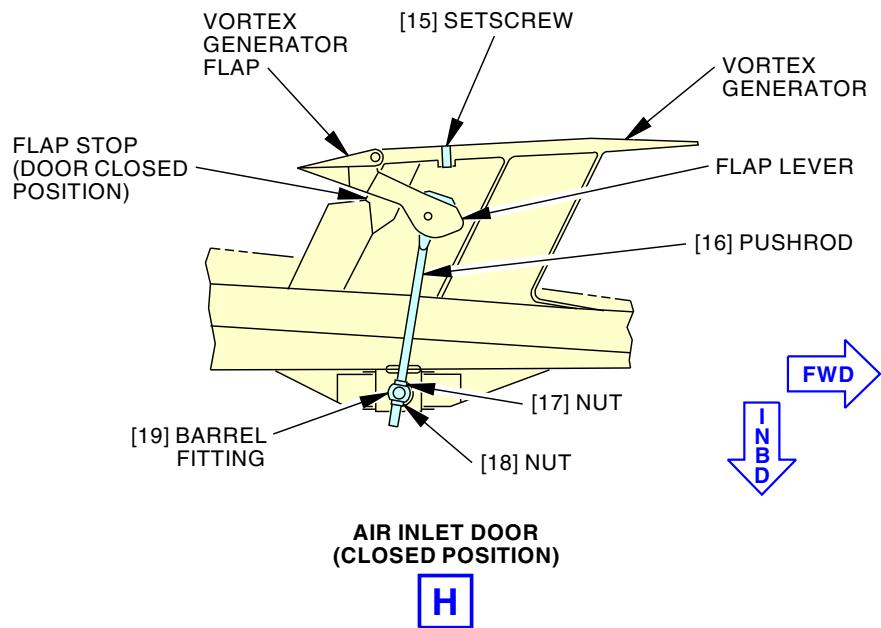
**Air Inlet Door Adjustment**  
**Figure 501/49-15-00-990-801 (Sheet 3 of 4)**

EFFECTIVITY  
LOM ALL

**49-15-00**



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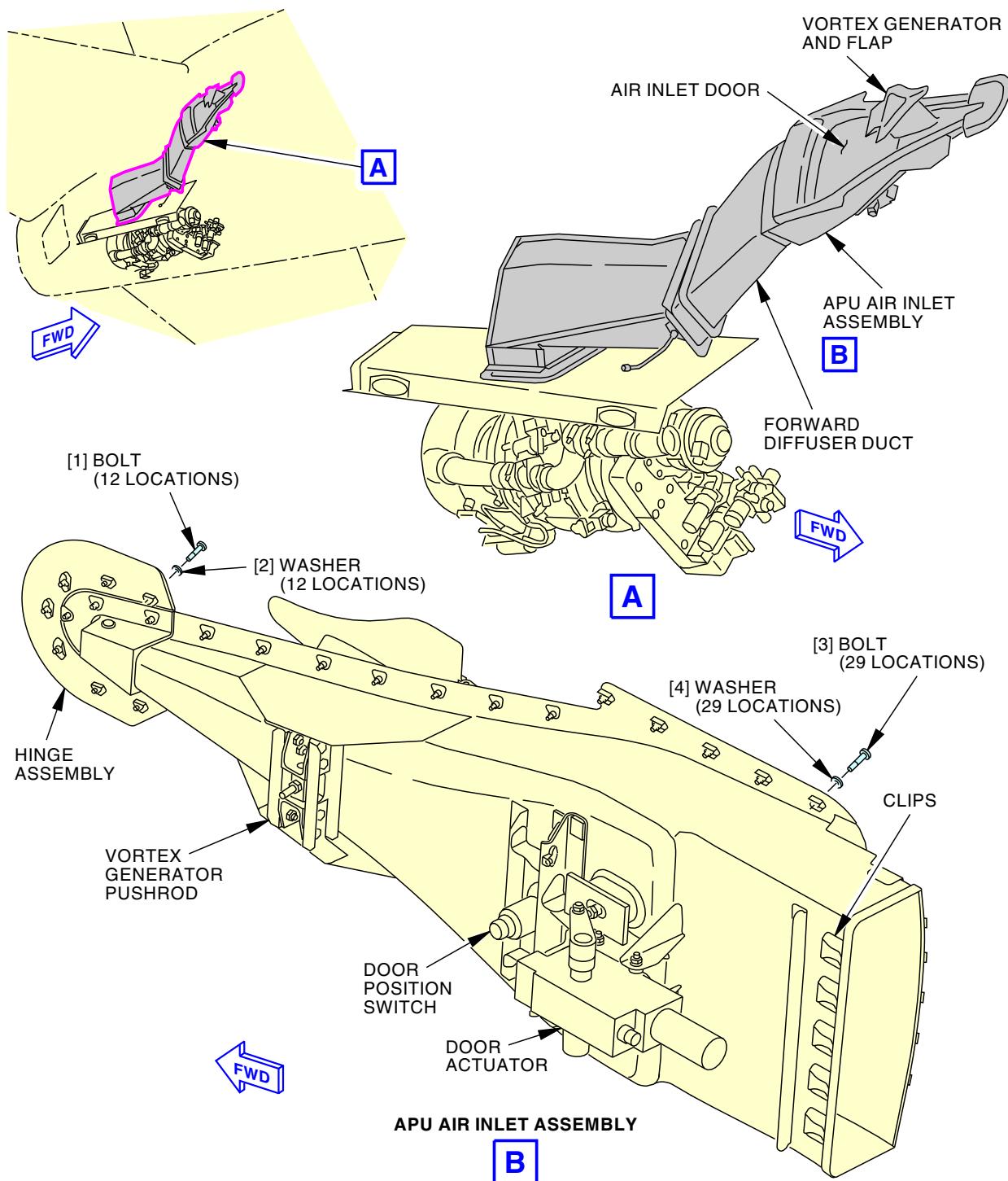
Air Inlet Door Adjustment  
Figure 501/49-15-00-990-801 (Sheet 4 of 4)

EFFECTIVITY  
LOM ALL

**49-15-00**



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**APU Air Inlet Assembly**  
**Figure 502/49-15-00-990-802**

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ECCN 9E991 BOEING PROPRIETARY - See title page for details



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**AIRCRAFT MAINTENANCE MANUAL**

**TASK 49-15-00-800-802**

**3. Door Position Switch Adjustment**

(Figure 501)

**A. Tools/Equipment**

Reference	Description
STD-858	Tag - DO NOT OPERATE
STD-1064	Scraper - Phenolic, Hard Resin

**B. Consumable Materials**

Reference	Description	Specification
A00142	Sealant - Temperature Resistant, Fuel Pressure, And Weather Sealant	BMS5-44
A50110	Sealant - Fuel Tank	BMS5-45 Class B-2
B00130	Alcohol - Isopropyl	TT-I-735
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)
G01912	Lockwire - MS20995NC32, Monel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

**C. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
10	Door position switch	49-15-41-01A-010	LOM ALL

**D. Location Zones**

Zone	Area
211	Flight Compartment - Left
314	Stabilizer Torsion Box Compartment - Right

**E. Access Panels**

Number	Name/Location
311BL	Stabilizer Trim Access Door

**F. Prepare for the Adjustment**

SUBTASK 49-15-00-860-015

- (1) Make sure that the BAT switch, on the P5 forward overhead panel, is in the ON position.

SUBTASK 49-15-00-860-016

- (2) Set the APU master switch, on the P5 forward overhead panel, to the ON position.
  - (a) Install a DO NOT OPERATE tag, STD-858, to the APU master switch.

SUBTASK 49-15-00-860-033

- (3) Make sure that the air inlet door opens in approximately 30 seconds.

NOTE: It is 'normal' for the air inlet door to pause briefly for approximately 0.5 second as the door opens. This is because the Electronic Control Unit (ECU) pauses to perform a diagnostic check for the quality of the power to the door actuator and door position switch. The brief pause is considered normal.

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SUBTASK 49-15-00-860-017

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-15-00-010-002

- (5) Make sure this access panel is open:

**Number      Name/Location**

311BL	Stabilizer Trim Access Door
-------	-----------------------------

## G. Door Position Switch Adjustment

SUBTASK 49-15-00-020-001

- (1) Disconnect the electrical connector D1246 [11] from the door position switch [10].

SUBTASK 49-15-00-020-002

- (2) Do these steps to adjust the door position switch [10]:

- Remove the screws [9] that attach the baseplate to the inlet door housing.
- Remove the door position switch [10] and baseplate from the inlet door housing.
- Remove the lockwire from the nut [8] and nut [12].
- Put the door position switch [10] and baseplate on the inlet door housing.

NOTE: The plunger for the door position switch must touch the air inlet door.

- Make sure that you do not compress the plunger to the air inlet door.

- Turn the nut [8] and nut [12] to adjust the position of the door position switch [10] until you can get a clearance between the inlet door housing and the baseplate.
  - Make sure that the clearance between the bottom of the inlet door housing and the top of the baseplate is 0.20 in. (5 mm) - 0.25 in. (6 mm).

- Put the tab of the key washer [13] on the flat side of the nut [12].
- Tighten the nut [8] to 30 in-lb (3.4 N·m) - 40 in-lb (4.5 N·m).
- Remove the remaining sealant from the surface of the lockwasher [14] with a hard resin phenolic scraper, STD-1064, or an equivalent tool.
- Clean the surface with alcohol, B00130, and cotton wiper, G00034.
- Use cotton wiper, G00034, to dry the surface.
- Apply a bead of sealant, A00142, or sealant, A50110, around the lockwasher [14].
- Install MS20995NC32 lockwire, G01912, on the nut [8] and nut [12].
- Install the baseplate on the inlet door housing with the screws [9].

SUBTASK 49-15-00-420-002

- (3) Connect the electrical connector D1246 [11] to the door position switch [10].

EFFECTIVITY  
LOM ALL

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SUBTASK 49-15-00-860-019

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-15-00-860-022

- (5) Remove the DO NOT OPERATE tag, from the APU master switch on the P5 forward overhead panel.

SUBTASK 49-15-00-860-023

- (6) Set the APU master switch, on the P5 forward overhead panel, to the OFF position.

SUBTASK 49-15-00-860-024

- (7) Make sure that the air inlet door closes in approximately 30 seconds.

**LOM ALL; AIRPLANES WITH A CURVED AFT PRESSURE BULKHEAD**

SUBTASK 49-15-00-820-004

- (8) Do this task: Vortex Generator Flap Adjustment, TASK 49-15-00-800-803.

————— END OF TASK ————

**TASK 49-15-00-800-803**

**4. Vortex Generator Flap Adjustment**

(Figure 501)

**A. Consumable Materials**

<u>Reference</u>	<u>Description</u>	<u>Specification</u>
G01912	Lockwire - MS20995NC32, Monel - 0.032 Inch (0.8128 mm) Diameter	NASM20995
G50467	Ferrule - Safety Cable End Fitting (Bergen Safety Cable Ferrule - 0.032 Diameter - P/N F30B)	AMS 5689 (321 CRES)

**B. Location Zones**

<u>Zone</u>	<u>Area</u>
211	Flight Compartment - Left
314	Stabilizer Torsion Box Compartment - Right

**C. Access Panels**

<u>Number</u>	<u>Name/Location</u>
311BL	Stabilizer Trim Access Door

**D. Prepare for the Adjustment**

NOTE: The air inlet door and the door position switch must be adjusted before you adjust the vortex generator flap.

NOTE: The air inlet door must be in the closed position.

— EFFECTIVITY —

LOM ALL



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**LOM ALL; AIRPLANES WITH A CURVED AFT PRESSURE BULKHEAD (Continued)**

SUBTASK 49-15-00-860-025

- (1) Make sure the APU master switch on the P5 forward overhead panel is OFF and install a DO-NOT-OPERATE tag.

SUBTASK 49-15-00-010-003

- (2) Make sure this access panel is open:

Number      Name/Location

311BL      Stabilizer Trim Access Door

**E. Procedure**

SUBTASK 49-15-00-820-005

- (1) Do the adjustment of the vortex generator flap:

- (a) Loosen the setscrew [15] from the vortex generator approximately three to four turns.

NOTE: It is necessary to loosen the setscrew and the two nuts before you adjust the vortex generator flap.

- (b) Loosen the two nuts [17], [18] on the pushrod [16] until the nuts clear the barrel fitting [19].

NOTE: Make sure you loosen the nut [17] to the end of the pushrod threads. The position of this nut will permit the clearance necessary to examine the position of the air inlet door and vortex generator flap.

NOTE: You can get access to the nut [17] through a slot in the support channel.

- (c) Pull out on the trailing edge of the air inlet door.

NOTE: This step will make sure that the air inlet door and vortex generator flap are tight.

The vortex generator flap must be tightly set against the flap stop for the door closed position.

- (d) Tighten the nut [18] by hand.

- (e) Tighten the nut [18] again with one and a half more turns.

- (f) Tighten the nut [17] against the barrel fitting [19].

- (g) Install the MS20995NC32 lockwire, G01912 or Ferrule, G50467 on the two nuts [17], [18].

- (h) Make sure the BAT switch on the P5 forward overhead panel is ON.

- (i) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.

- (j) Set the APU master switch to the ON position and attach a DO-NOT-OPERATE tag.

- (k) Make sure the air inlet door opens in approximately 30 seconds.

NOTE: It is 'normal' for the air inlet door to pause briefly for approximately 0.5 second as the door opens. This is because the ECU pauses to perform a diagnostic check for the quality of the power to the door actuator and door position switch. The brief pause is considered normal.

- (l) Turn the setscrew [15] until the setscrew touches the flap lever.

- (m) Tighten the setscrew [15] again with one and a half more turns.

- (n) Remove the DO-NOT-OPERATE tag from the APU master switch.

EFFECTIVITY  
LOM ALL

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**LOM ALL; AIRPLANES WITH A CURVED AFT PRESSURE BULKHEAD (Continued)**

- (o) Set the APU master switch to the OFF position.

NOTE: The air inlet door closes in approximately 30 seconds.

SUBTASK 49-15-00-710-001

- (2) Do a test of the vortex generator flap:

- (a) Set the APU master switch to the ON position and to the OFF position again and again.

NOTE: The air inlet door opens and closes in approximately 30 seconds. After 30 seconds, you can set the APU master switch to the other position.

- (b) Make sure the vortex generator flap operates smoothly.

SUBTASK 49-15-00-700-001

- (3) Do this task: Air Inlet Door Test, TASK 49-15-00-700-801.

**LOM ALL**

————— END OF TASK ————

**TASK 49-15-00-700-801**

**5. Air Inlet Door Test**

(Figure 501)

**A. Location Zones**

Zone	Area
211	Flight Compartment - Left
314	Stabilizer Torsion Box Compartment - Right

**B. Access Panels**

Number	Name/Location
311BL	Stabilizer Trim Access Door

**C. Procedure**

SUBTASK 49-15-00-710-002

- (1) Do the test for the air inlet door (Figure 501):

- (a) Make sure the air inlet door aligns correctly in the closed position.

- 1) Measure the position of the air inlet door in the closed position.

- a) Make sure the clearance between the center of the air inlet door and the inlet lip is 1.30-1.40 inches (33.0-35.6 mm).

- 2) If the air inlet door is not in the limits, do this task: Air Inlet Door Adjustment, TASK 49-15-00-800-801.

- (b) Make sure the BAT switch on the P5 forward overhead panel is ON.

- (c) Set the APU master switch on the P5 forward overhead panel to the ON position and attach a DO-NOT-OPERATE tag.

- (d) Make sure the air inlet door opens in approximately 30 seconds.

NOTE: It is 'normal' for the air inlet door to pause briefly for approximately 0.5 second as the door opens. This is because the ECU pauses to perform a diagnostic check for the quality of the power to the door actuator and door position switch. The brief pause is considered normal.

- (e) Make sure the air inlet door aligns correctly in the fully open position.

EFFECTIVITY  
LOM ALL

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- 1) Measure the position of the air inlet door in the fully open position.
  - a) Make sure the gap between the air inlet door and the door housing is 0.06 in. (1.52 mm) - 0.12 in. (3.05 mm)(Figure 501 (Sheet 1), View A).
  - b) Make sure the distance from the air inlet door to the inlet door housing (flushness alignment of the door) is less than 0.06 in. (1.52 mm)(Figure 501 (Sheet 2), View C)
- 2) If the air inlet door is not in the limits, do this task: Air Inlet Door Adjustment, TASK 49-15-00-800-801.
  - (f) Remove the DO-NOT-OPERATE tag from the APU master switch.
  - (g) Set the APU master switch to the OFF position.  
NOTE: The air inlet door closes in approximately 30 seconds.
  - (h) Set the APU master switch to the ON position and to the OFF position again and again.  
NOTE: The air inlet door opens or closes in approximately 30 seconds. After 30 seconds, you can set the APU master switch to the other position.
  - (i) Make sure the air inlet door actuator operates correctly.
  - (j) If it is not necessary to do other tasks, set the BAT switch to the OFF position.
  - (k) Make sure the APU master switch is OFF.

SUBTASK 49-15-00-410-001

- (2) Close this access door:

**Number      Name/Location**

311BL      Stabilizer Trim Access Door

———— END OF TASK ————

EFFECTIVITY  
LOM ALL

**49-15-00**





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AIR INLET SEAL - REMOVAL/INSTALLATION

**1. General**

- A. This procedure has these tasks:
  - (1) A removal of the air inlet seal
  - (2) An installation of the air inlet seal.
- B. The air inlet seal is installed on the inlet adapter assembly.

**TASK 49-15-11-000-801**

**2. Air Inlet Seal Removal**

(Figure 401)

**A. References**

Reference	Title
49-11-00-000-801	APU Power Plant Removal (P/B 401)

**B. Location Zones**

Zone	Area
316	APU Compartment - Right

**C. Prepare for the Removal**

SUBTASK 49-15-11-020-001

- (1) Remove the APU. To remove it, do this task: APU Power Plant Removal, TASK 49-11-00-000-801.

**D. Air Inlet Seal Removal**

SUBTASK 49-15-11-020-002

- (1) Do these steps to remove the air inlet seal [1]:



BE CAREFUL WHEN YOU INSTALL THE SCREWDRIVER THROUGH THE TOP ACCESS HOLES ON THE AIR INLET SEAL. DAMAGE TO THE AIR INLET SEAL CAN OCCUR.

- (a) Remove the 32 screws [2] that attach the air inlet seal [1] to the inlet adapter assembly [3].  
*NOTE:* You can install a screwdriver through the top access holes on the air inlet seal [1] to help you remove the screws.
- (b) Remove the air inlet seal [1].
- (c) Make sure you install all necessary protection covers.

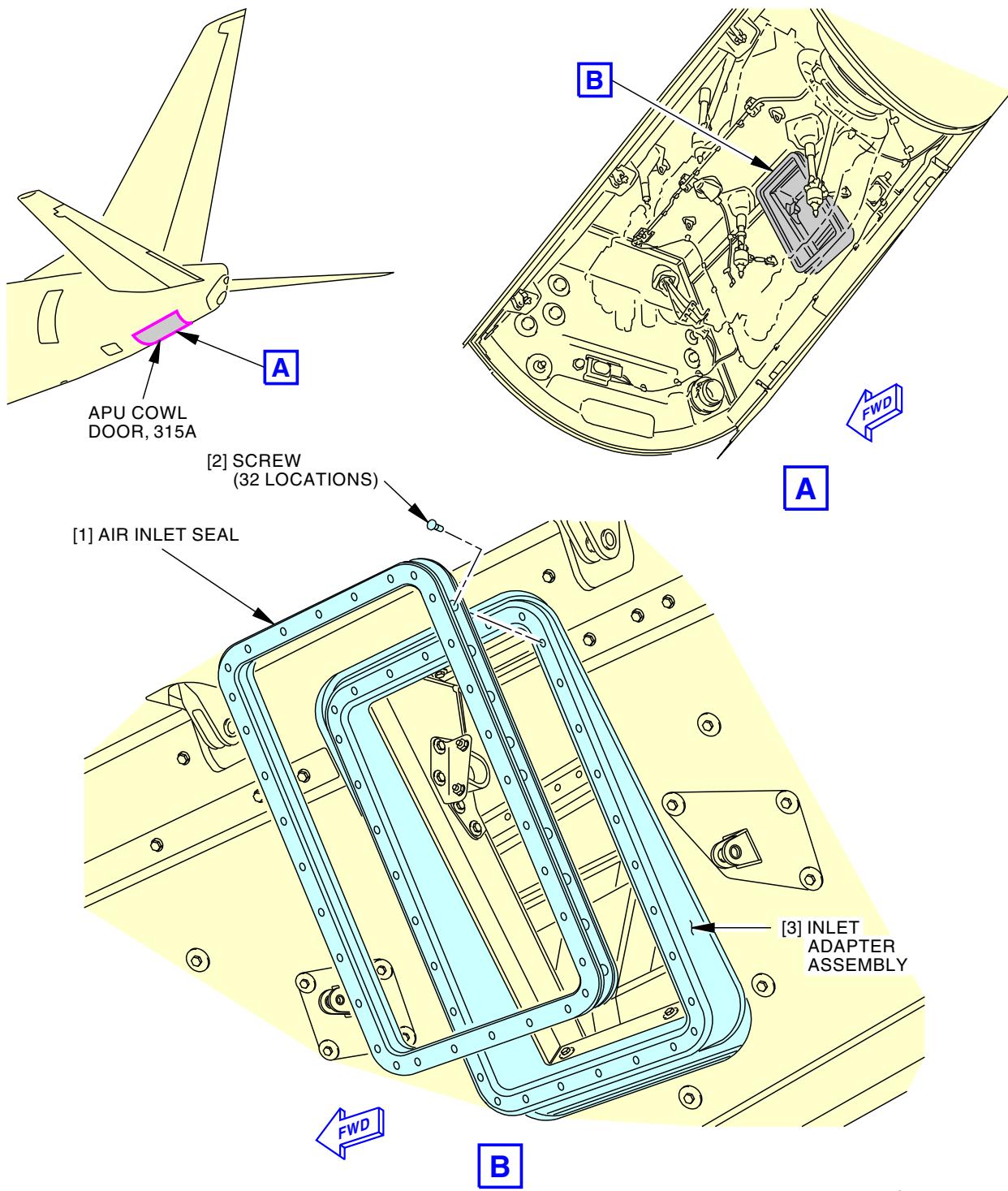
— END OF TASK —

EFFECTIVITY  
LOM ALL

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Air Inlet Seal Installation  
Figure 401/49-15-11-990-801

EFFECTIVITY  
LOM ALL

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TASK 49-15-11-400-801

3. Air Inlet Seal Installation

(Figure 401)

A. References

Reference	Title
49-11-00-400-801	APU Power Plant Installation (P/B 401)

B. Tools/Equipment

Reference	Description
STD-1057	Air Source - Regulated, Dry Filtered, Compressed 60-105 PSIG (414-723.9 kPa)(22 SCFM)
STD-1064	Scraper - Phenolic, Hard Resin

C. Consumable Materials

Reference	Description	Specification
A00160	Sealant - Firewall - Hydraulic Fluid Resistant	BMS5-63
B00130	Alcohol - Isopropyl	TT-I-735
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Air inlet seal	49-15-11-04-025	LOM ALL

E. Location Zones

Zone	Area
316	APU Compartment - Right

F. Procedure

SUBTASK 49-15-11-110-001



**CAUTION** REMOVE THE PROTECTION COVERS FROM THE OPENINGS AS NECESSARY. IF YOU DO NOT REMOVE THE PROTECTION COVERS, DAMAGE TO THE APU CAN OCCUR.

- (1) Do these steps to clean the surfaces of the inlet adapter assembly [3]:
  - (a) Remove the remaining sealant from the surfaces of the inlet adapter assembly [3] with a hard resin phenolic scraper, STD-1064 or an equivalent tool.
  - (b) Clean the surfaces of the inlet adapter assembly [3] with alcohol, B00130 and a cotton wiper, G00034.
  - (c) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057 to dry the surfaces of the inlet adapter assembly [3].

**NOTE:** It is recommended that you use a pressure of 60-90 psig (414-620 kPa) of air or nitrogen to dry the surfaces of the inlet adapter assembly.

SUBTASK 49-15-11-420-001

- (2) Do these steps to install the air inlet seal [1]:

- (a) Apply the sealant, A00160 to the faying surfaces of the air inlet seal [1].

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- (b) Install the air inlet seal [1] on the inlet adapter assembly [3].



**CAUTION** BE CAREFUL WHEN YOU INSTALL THE SCREWDRIVER THROUGH THE TOP ACCESS HOLES ON THE AIR INLET SEAL. DAMAGE TO THE AIR INLET SEAL CAN OCCUR.

- (c) Install the 32 screws [2] that attach the air inlet seal [1] to the inlet adapter assembly [3].

NOTE: You can install a screwdriver through the top access holes on the air inlet seal [1] to help you install the screws.

- (d) Remove the unwanted sealant from the inlet adapter assembly [3] with a cotton wiper, G00034.

NOTE: It is not necessary for the sealant to dry. You can install the APU with the wet sealant on the inlet adapter assembly.

- (e) Make sure that the surfaces of the air inlet seal [1] shows no wrinkles, bubbles or inclusions.

SUBTASK 49-15-11-420-002

- (3) Install the APU. To install it, do this task: APU Power Plant Installation, TASK 49-11-00-400-801.

———— END OF TASK ————

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AIR INLET SEAL - INSPECTION/CHECK

**1. General**

- A. This procedure contains scheduled maintenance task data.
- B. This procedure has the task to inspect the air inlet seal.

**TASK 49-15-11-200-801**

**2. Air Inlet Seal Inspection**

(Figure 601)

NOTE: This procedure is a scheduled maintenance task.

**A. References**

Reference	Title
49-11-00-000-801	APU Power Plant Removal (P/B 401)
49-11-00-400-801	APU Power Plant Installation (P/B 401)
49-15-11-000-801	Air Inlet Seal Removal (P/B 401)
49-15-11-400-801	Air Inlet Seal Installation (P/B 401)

**B. Location Zones**

Zone	Area
316	APU Compartment - Right

**C. Prepare for the Removal**

**SUBTASK 49-15-11-010-001**

- (1) Remove the APU. To remove it, do this task: APU Power Plant Removal, TASK 49-11-00-000-801.

**D. Procedure**

**SUBTASK 49-15-11-210-001**

- (1) Do these steps to inspect the air inlet seal [1]:

- (a) Examine the air inlet seal [1] for any signs of folding, tears or deformation.

- (b) Measure the height of the air inlet seal [1].

NOTE: The height from the bottom to the top of the air inlet seal [1] must be 1.375-1.625 inches (34.9-41.3 mm).

- (c) Make sure the retainer plate and stiffener plate are attached to (have not disbanded from) the air inlet seal [1].

NOTE: You can find the retainer plate between the 32 screws and the air inlet seal [1].  
You can find the stiffener plate on the bottom of the air inlet seal.

- (d) Examine the mating surfaces of the air inlet seal [1] for wrinkles, bubbles, unwanted materials or wear damage through the top rubber layer of fiberglass.

- (e) Examine the seven rubber layers of fiberglass for any separations, missing materials, cracks and tears.

- (f) If you find any of the above damage or the height of the air inlet seal [1] is not in the limits, replace the air inlet seal. These are the tasks:

- Air Inlet Seal Removal, TASK 49-15-11-000-801
- Air Inlet Seal Installation, TASK 49-15-11-400-801

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SUBTASK 49-15-11-410-001

- (2) Install the APU. To install it, do this task: APU Power Plant Installation,  
TASK 49-11-00-400-801.

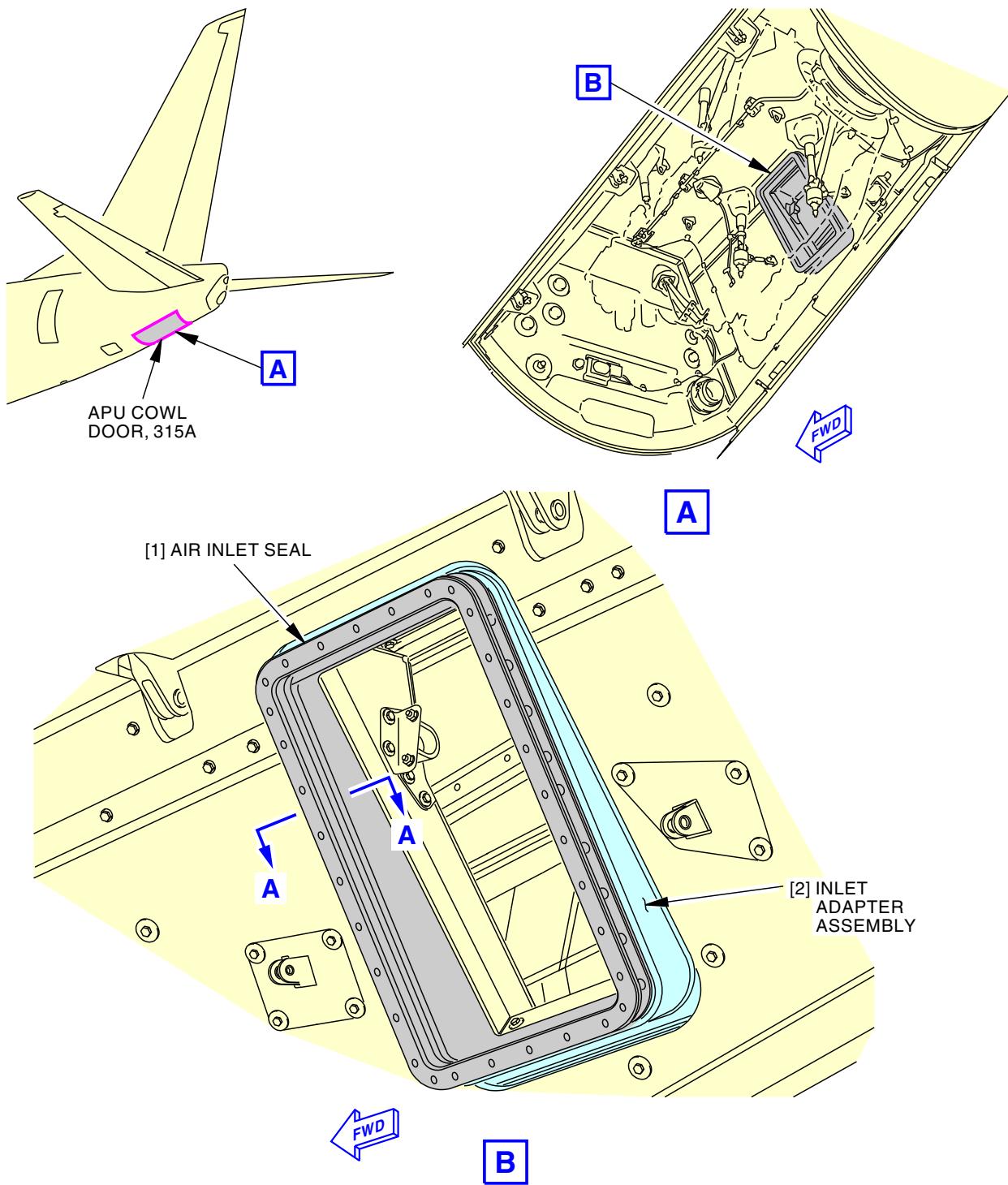
———— END OF TASK ————

— EFFECTIVITY —  
**LOM ALL**

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**Air Inlet Seal Inspection**  
**Figure 601/49-15-11-990-802 (Sheet 1 of 2)**

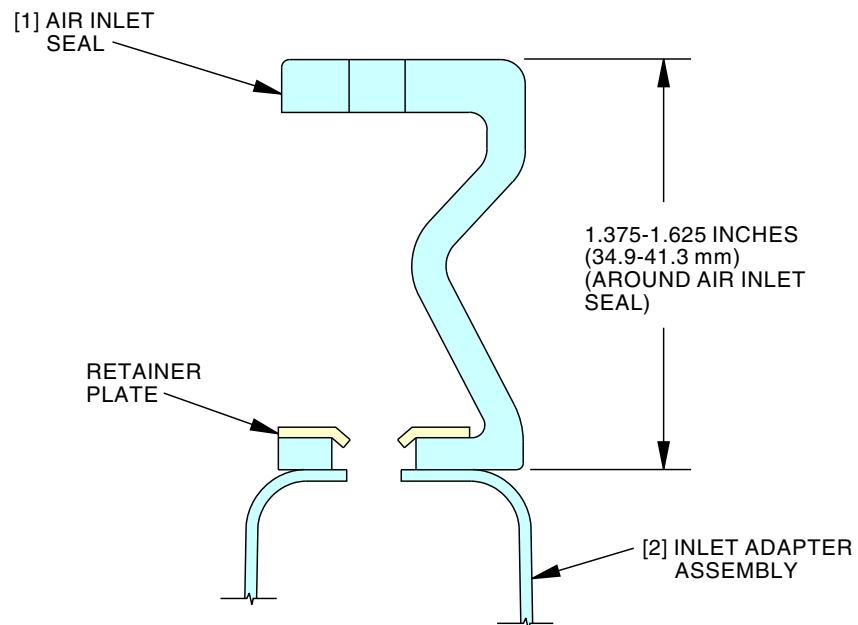
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**A-A**

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**Air Inlet Seal Inspection**  
Figure 601/49-15-11-990-802 (Sheet 2 of 2)

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**APU AIR INLET PLENUM - REMOVAL/INSTALLATION**

**1. General**

- A. This procedure has these tasks:
  - (1) A removal of the air inlet plenum.
  - (2) An installation of the air inlet plenum.
- B. The air inlet plenum is installed between the air inlet door and the APU.

**TASK 49-15-15-000-802**

**2. Air Inlet Plenum Removal (Three Piece Inlet Plenum)**

(Figure 401)

**A. References**

Reference	Title
20-10-09-000-801	Control Cable Pulleys Removal (P/B 401)
20-10-91-000-801	Control Cables Removal (P/B 401)
27-31-00-800-802	Remove Pressure from the Elevator Hydraulic Systems A and B (P/B 201)
49-11-00-000-801	APU Power Plant Removal (P/B 401)
49-13-11-000-802	APU Mounts Removal (P/B 401)
49-17-11-000-801	Insulation Panel Removal (P/B 401)

**B. Tools/Equipment**

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

Reference	Description
SPL-1569	Clamp - Control Cable Part #: A20005-9 Supplier: 81205
STD-764	Scraper - Non-metallic

**C. Location Zones**

Zone	Area
311	Area Aft of Pressure Bulkhead - Left
314	Stabilizer Torsion Box Compartment - Right
316	APU Compartment - Right

**D. Prepare for the Removal**

**SUBTASK 49-15-15-040-004**

- (1) Position the control column in the neutral position and place a DO-NOT-MOVE tag on the control column.

**SUBTASK 49-15-15-040-005**

- (2) Set the FLT CONTROL A and B switches to OFF.

**SUBTASK 49-15-15-040-006**

- (3) Do this task: Remove Pressure from the Elevator Hydraulic Systems A and B, TASK 27-31-00-800-802.

**SUBTASK 49-15-15-010-001**

- (4) Do this task: APU Power Plant Removal, TASK 49-11-00-000-801.

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SUBTASK 49-15-15-010-003

- (5) Do this task: APU Mounts Removal, TASK 49-13-11-000-802.

SUBTASK 49-15-15-010-002

- (6) Remove the forward right, aft right, and upper Auxiliary Power Unit (APU) compartment firewall insulation panels (TASK 49-17-11-000-801).

SUBTASK 49-15-15-010-004

- (7) Remove the eight screws [57] and eight washers [56] for each of the five access covers [55] three on the APU left-hand compartment wall and two on the right-hand compartment wall (View E, Figure 401).

SUBTASK 49-15-15-010-006

- (8) Do these steps to disconnect the right elevator control cable EAR-4:

- (a) Install control cable clamps, SPL-1569, on the cable EAR-3 to maintain a slight tension on the cable forward of STA 1064 bulkhead.
- (b) Disconnect the control cable EAR-4 at the turn barrel forward of the STA 1088 bulkhead, do this task: Control Cables Removal, TASK 20-10-91-000-801.

SUBTASK 49-15-15-010-005



**CAUTION** MAKE SURE THAT THE ELEVATOR CONTROL CABLE STAYS IN THE GUARD TUBE AND STRUCTURAL SUPPORTS. IF YOU PULL THE CABLE OUT, DAMAGE TO THE CABLE AND STRUCTURE CAN OCCUR.

- (9) Pull the elevator control cable aft out of the inlet cable guard tube [61] from the access cover [55].

- (a) Do not pull the cable out further than the cable guard tube [61].

NOTE: The cable continues aft through the two structural supports.

- (b) Do not pull the cable out of the two structural supports.

SUBTASK 49-15-15-010-007

- (10) If it is necessary, remove the control cable pulley at the STA 1088 bulkhead, do this task: Control Cable Pulleys Removal, TASK 20-10-09-000-801.

### E. Air Inlet Plenum Removal

SUBTASK 49-15-15-020-001

- (1) Do these steps to remove the diffuser duct [1]:

- (a) Remove the 26 nuts [48], 26 washers [49], and 26 bolts [50] that attach the diffuser duct [1] to the plenum assembly [47].
- (b) Remove the diffuser duct [1].
- (c) Remove and discard the gasket [3].

SUBTASK 49-15-15-020-002

- (2) Do these steps to remove the inlet adapter assembly [51]:

- (a) Remove the 14 bolts [52] and 14 washers [53] that attach the inlet adapter assembly [51] to the aft plenum assembly [62].
- (b) Remove the inlet adapter assembly [51].

SUBTASK 49-15-15-000-009

- (3) Do these steps to remove the air inlet plenum:

- (a) Disconnect the inlet plenum drain tube [54] from the plenum assembly [47].

EFFECTIVITY  
LOM ALL

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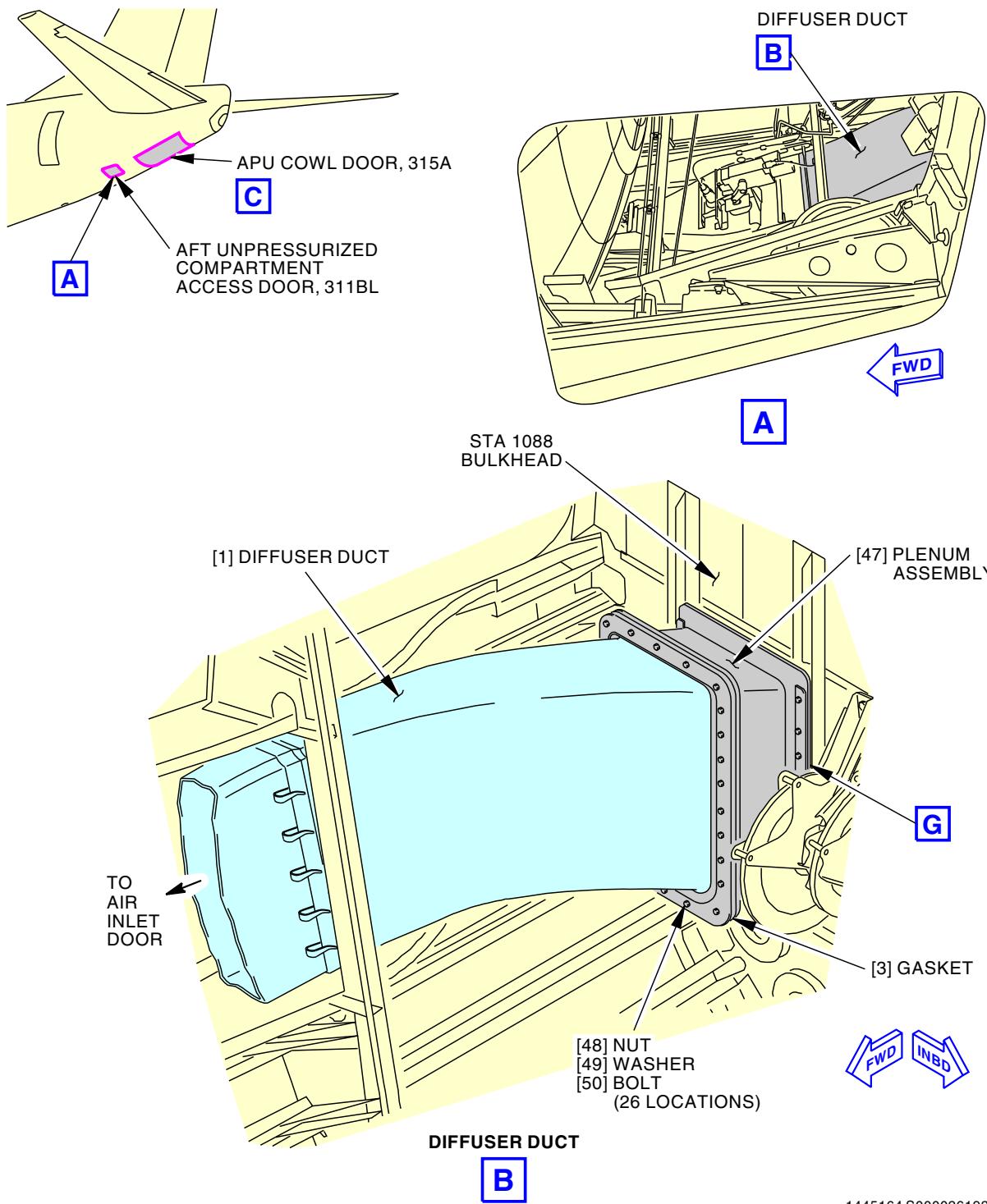
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- (b) Remove the sealant from the inner surface of the plenum assembly [47] and interface of the interconnect frame assembly [60] with a non-metallic scraper, STD-764, or an equivalent tool.
- (c) Remove the 10 bolts [58] and 10 washers [59] that attach the plenum assembly [47] to the STA 1088 bulkhead.
- (d) Remove the plenum assembly [47].
- (e) Remove the sealant from the interconnect frame assembly [60], aft plenum assembly [62], and forward end of the cable guard tube [61] with a non-metallic scraper, STD-764, or an equivalent tool.
- (f) Remove the 26 screws [64] and 26 washers [63] that attach the interconnect frame assembly [60] to the aft plenum assembly [62].
- (g) Remove the interconnect frame assembly [60].
- (h) Remove the sealant from the aft end of the cable guard tube [61] with a non-metallic scraper, STD-764, or an equivalent tool.
- (i) Remove the cable guard tube [61].
- (j) Remove the 18 bolts [67] and 18 washers [68] that attach the aft plenum assembly [62] to the APU compartment wall.
- (k) Remove the eight bolts [65] and eight washers [66] that attach the aft plenum assembly [62] to the APU compartment wall.
- (l) Remove the aft plenum assembly [62].

———— END OF TASK ————

EFFECTIVITY  
LOM ALL

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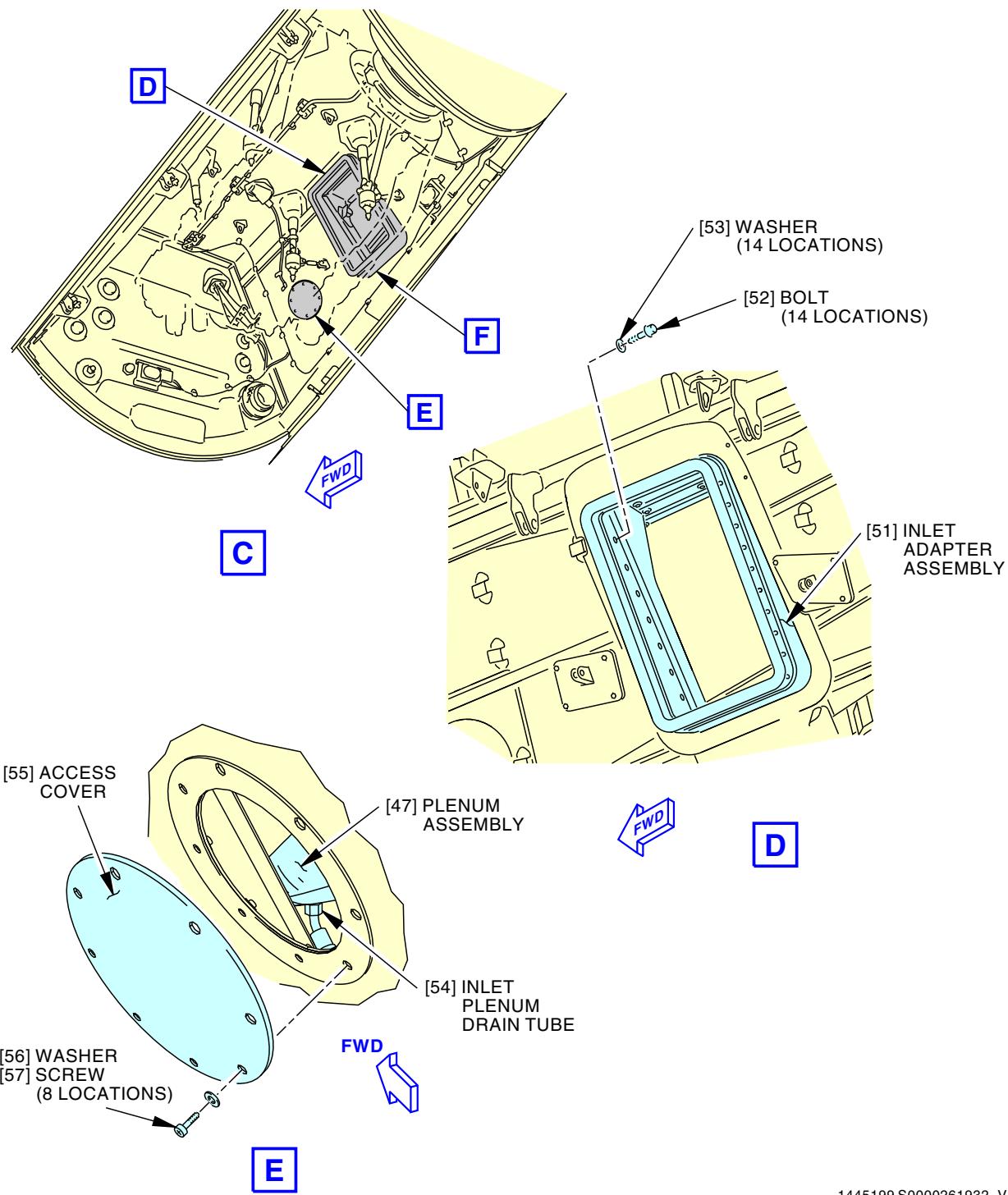
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**Air Inlet Plenum Installation (Three Piece Inlet Plenum)  
Figure 401/49-15-15-990-802 (Sheet 1 of 4)**

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LOM ALL

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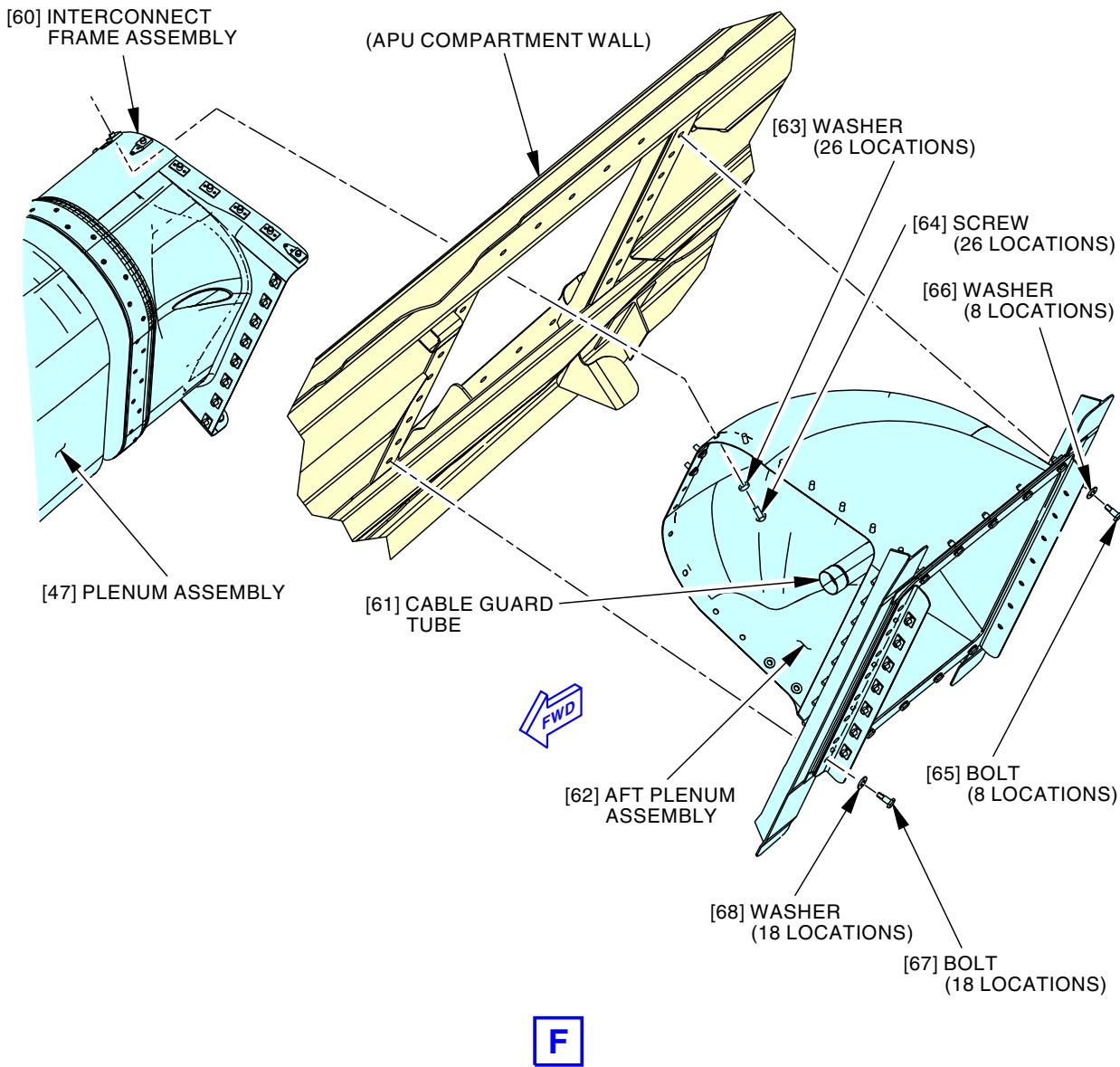


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**Air Inlet Plenum Installation (Three Piece Inlet Plenum)**  
**Figure 401/49-15-15-990-802 (Sheet 2 of 4)**

EFFECTIVITY  
LOM ALL

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1445650 S0000261933\_V3

Air Inlet Plenum Installation (Three Piece Inlet Plenum)  
Figure 401/49-15-15-990-802 (Sheet 3 of 4)

EFFECTIVITY  
LOM ALL

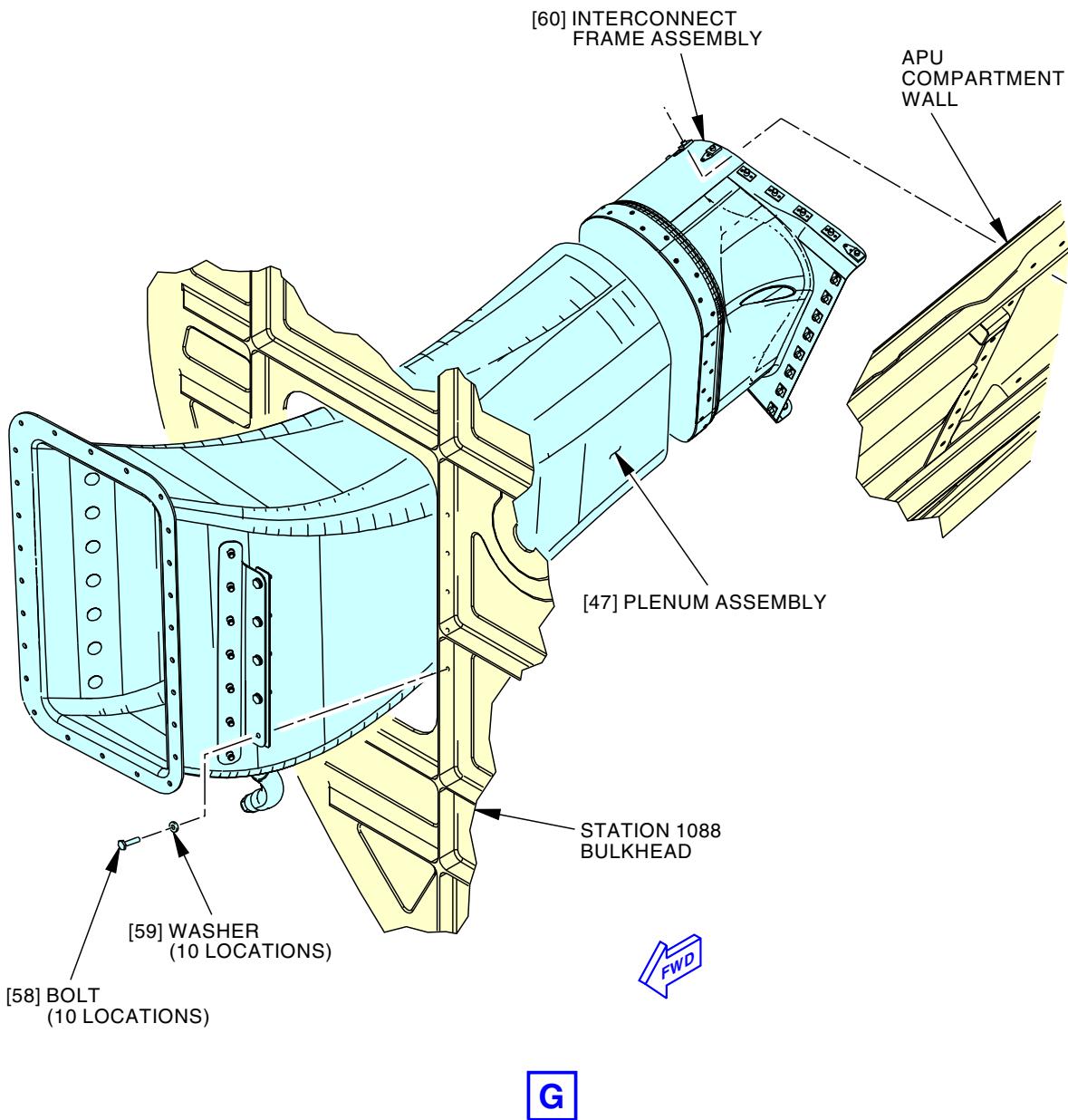
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Air Inlet Plenum Installation (Three Piece Inlet Plenum)  
Figure 401/49-15-15-990-802 (Sheet 4 of 4)

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**TASK 49-15-15-400-802**

**3. Air Inlet Plenum Installation (Three Piece Inlet Plenum)**

(Figure 401)

**A. References**

Reference	Title
20-10-09-400-801	Control Cable Pulleys Installation (P/B 401)
20-10-91-400-801	Control Cables Installation (P/B 401)
27-09-14 P/B 201	FLIGHT CONTROLS CABLES - MAINTENANCE PRACTICES
27-31-00-800-801	Elevator Hydraulic System A and B - Pressurization (P/B 201)
49-11-00-400-801	APU Power Plant Installation (P/B 401)
49-13-11-400-802	APU Mounts Installation (P/B 401)
49-17-11-400-801	Insulation Panel 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
SPL-1569	Clamp - Control Cable Part #: A20005-9 Supplier: 81205
STD-764	Scraper - Non-metallic
STD-1057	Air Source - Regulated, Dry Filtered, Compressed 60-105 PSIG (414-723.9 KPa)(22 SCFM)

**C. Consumable Materials**

Reference	Description	Specification
A00160	Sealant - Firewall - Hydraulic Fluid Resistant	BMS5-63
B00130	Alcohol - Isopropyl	TT-I-735
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)

**D. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Gasket	49-15-00-06-020	LOM ALL
47	Plenum assembly	49-15-00-07-060	LOM ALL
62	Aft plenum assembly	49-15-00-07-045	LOM ALL

**E. Location Zones**

Zone	Area
311	Area Aft of Pressure Bulkhead - Left
314	Stabilizer Torsion Box Compartment - Right
316	APU Compartment - Right

**F. Prepare for the Installation**

**SUBTASK 49-15-15-100-002**

(1) Do these steps before you install the air inlet plenum parts:

(a) If you see remaining sealant on the air inlet plenum parts, then do these steps:

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- 1) Remove the remaining sealant from the surface with a non-metallic scraper, STD-764, or an equivalent tool.
- 2) Clean the surface with alcohol, B00130, and a cotton wiper, G00034.
- 3) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057, to dry the surface.

NOTE: It is recommended that you use a pressure of 60 psig (414 kPa) - 90 psig (621 kPa) of air or nitrogen to dry the surface.

## G. Install the Air Inlet Plenum

SUBTASK 49-15-15-400-006

- (1) Do these steps to install the air inlet plenum:
  - (a) Install the aft plenum assembly [62] with the 18 bolts [67] and 18 washers [68] that attach it to the Auxiliary Power Unit (APU) compartment wall along the top, forward, and bottom sides.
  - (b) Install the eight bolts [65] and eight washers [66] that attach the aft plenum assembly [62] to the APU compartment wall along the aft side.
  - (c) Apply sealant, A00160, to the mating surfaces of these components:
    - 1) The cable guard tube [61] and aft plenum assembly [62].
    - 2) The cable guard tube [61] and interconnect frame assembly [60].
  - (d) Position the cable guard tube [61] onto the aft plenum assembly [62].
  - (e) Install the interconnect frame assembly [60] onto the cable guard tube [61] and aft plenum assembly [62] with the 26 screws [64] and 26 washers [63].
  - (f) Install the plenum assembly [47] with the 10 bolts [58] and 10 washers [59] that attach it to the STA 1088 bulkhead.

NOTE: The aft end of the plenum assembly [47] fits inside the forward end of the interconnect frame assembly [60].
  - (g) Route the right-hand elevator control cable, EAR-4, forward through the cable guard tube [61] and STA 1088 bulkhead.

NOTE: The cable must be routed through the two structural supports aft of the APU inlet before you put the cable through the cable guard tube [61].
  - (h) If it is necessary, install the control cable pulley at the STA 1088 bulkhead, do this task: Control Cable Pulleys Installation, TASK 20-10-09-400-801.
  - (i) Connect the right-hand elevator control cable, EAR-4, at the turn barrel forward of the STA 1088 bulkhead, do this task: Control Cables Installation, TASK 20-10-91-400-801.
    - 1) Tighten the cable turn barrel sufficiently to hold the cable in place.
    - 2) Do the final cable tension and rig later in this task.
  - (j) Remove the control cable clamps, SPL-1569.
  - (k) Apply sealant, A00160, to the joint between the plenum assembly [47] and interconnect frame assembly [60].
  - (l) Apply sealant, A00160, to the joint between the interconnect frame assembly [60] and aft plenum assembly [62].
  - (m) Connect the inlet plenum drain tube [54] to the fitting on the bottom of the plenum assembly [47].

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- (n) Make sure that the routing of the right-hand elevator control cable, EAR-4, from STA 1088 bulkhead to STA 1163 bulkhead is correct.
- (o) Close the forward and aft access covers [55] on the APU right-hand compartment wall.
- (p) Install the eight screws [57] and eight washers [56] for each of the five access covers [55], three on the APU left-hand compartment wall and two on the right-hand compartment wall (View E, Figure 401).

SUBTASK 49-15-15-400-007

- (2) Do these steps to install the air inlet adapter:
  - (a) Install the inlet adapter assembly [51] with the 14 bolts [52] and 14 washers [53] that attach it to the aft plenum assembly [62].

SUBTASK 49-15-15-400-008

- (3) Do these steps to install the diffuser duct [1]:
  - (a) Install the diffuser duct [1] to the plenum assembly [47] with the new gasket [3], 26 bolts [50], 26 washers [49], and 26 nuts [48].
  - (b) Apply sealant, A00160, to the gap between the diffuser duct [1] and the air inlet door.  
NOTE: The sealant must be flush with the duct walls.

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

SUBTASK 49-15-15-430-001

- (1) Rig and adjust the elevator control cables (PAGEBLOCK 27-09-14/201).

SUBTASK 49-15-15-410-003

- (2) Install the forward right, aft right, and upper APU compartment firewall insulation panels (TASK 49-17-11-400-801).

SUBTASK 49-15-15-410-007

- (3) Do this task: APU Mounts Installation, TASK 49-13-11-400-802.

SUBTASK 49-15-15-410-004

- (4) Do this task: APU Power Plant Installation, TASK 49-11-00-400-801.

SUBTASK 49-15-15-440-004

- (5) Do this task: Elevator Hydraulic System A and B - Pressurization, TASK 27-31-00-800-801.

SUBTASK 49-15-15-440-005

- (6) Set the FLT CONTROL A and B switches to ON.

SUBTASK 49-15-15-440-006

- (7) Remove the DO-NOT-MOVE tag from the control column.

———— END OF TASK ————

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APU AIR INLET PLENUM - REPAIR

**1. General**

- A. This procedure has this task:
- (1) A repair of the tube clamp standoff.

**TASK 49-15-15-300-801**

**2. Tube Clamp Standoff - Repair**

(Figure 801)

**A. Tools/Equipment**

Reference	Description
STD-858	Tag - DO NOT OPERATE
STD-6554	Gun - Heat

**B. Consumable Materials**

Reference	Description	Specification
A01057	Adhesive - Hysol EA9394	BMS5-141
B00062	Solvent - Acetone (99.5% Grade)	ASTM D 329 (Supersedes O-A-51)
B00148	Solvent - Methyl Ethyl Ketone (MEK)	ASTM D740
G50077	Abrasive - Aluminum Oxide Paper, 240 grit or finer	
G50316	Cloth - Clean, Dry, Lint-free, White, Cotton	
G51917	Tape - Flash-breaker, 2 mil thick (0.002 inches)	

**C. Location Zones**

Zone	Area
117	Electrical and Electronics Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**D. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**E. Prepare for the Repair**

**SUBTASK 49-15-15-040-007**

- (1) Make sure that the APU master switch, on the P5 forward overhead panel, is in the OFF position.
  - (a) Install the DO NOT OPERATE tag, STD-858, on the APU master switch.

**SUBTASK 49-15-15-860-001**

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

**F/O Electrical System Panel, P6-2**

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

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**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-15-15-010-009

- (3) To open the access panel, do these steps:

**Number**    **Name/Location**

315A      APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.
- (b) Open the three latches.  
      NOTE: Use this sequence: forward latch, aft latch, middle latch.
- (c) Open the APU Cowl Door, 315A.
- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

**F. Tube Clamp Standoff Repair**

SUBTASK 49-15-15-010-010

- (1) Disconnect the tubes to access the applicable standoff.

SUBTASK 49-15-15-930-001

- (2) If the standoff is loose or disconnected and not damaged, mark the necessary location of the standoff for the re-installation.

SUBTASK 49-15-15-020-003

- (3) If the standoff is attached to the APU, do these steps to remove the standoff:
  - (a) Use a heat gun, STD-6554, to apply 250°F (121°C), maximum output temperature to the standoff near the bonded interface.
  - (b) Remove the standoff.

SUBTASK 49-15-15-210-001

- (4) Visually inspect the surface under the removed standoff.
  - (a) Make sure that there are no fraying or separation of the surface.
  - (b) If there is fraying or separation of the surface laminate, remove the APU and contact Honeywell.

SUBTASK 49-15-15-300-001

- (5) Apply tape, G51917, to the outer surface of the repair areas (bonded interface zones).

NOTE: The tape must be 0.06 in. (1.52 mm) - 0.12 in. (3.05 mm) away from the repair area.

SUBTASK 49-15-15-300-002

- (6) Carefully clean the surface with a 240 grit or finer abrasive paper, G50077, to remove the adhesive from the standoff and composite surface.

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SUBTASK 49-15-15-100-003



**WARNING**

DO NOT GET SOLVENTS IN YOUR MOUTH OR EYES, OR ON YOUR SKIN.  
DO NOT BREATHE THE FUMES FROM THESE MATERIALS. PUT ON A  
PROTECTIVE SPLASH GOGGLE AND GLOVES WHEN YOU USE THESE  
MATERIALS. KEEP THESE MATERIALS AWAY FROM SPARKS, FLAME, AND  
HEAT. THESE MATERIALS ARE POISONOUS AND FLAMMABLE AND CAN  
CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

- (7) Clean the mating surface with solvent, B00062, or solvent, B00148, with a clean cotton cloth, G50316.
- Use cotton cloth, G50316, to clean the surface before solvent dries.
  - Make sure that the surface is clean and free from grease, oil, or other contamination that could prevent a good bond.

SUBTASK 49-15-15-300-003

- (8) Let the surface dry for a minimum of 30 minutes.

SUBTASK 49-15-15-300-004

- (9) Apply adhesive to each mating surface.
- Thoroughly mix the two parts of Hysol EA9394 adhesive, A01057, per the manufacturer's instructions.  
*NOTE:* Refer to the manufacturer's instructions for the details.
  - Do not apply adhesive to the bolt holes in the standoff.
  - Apply a thin, consistent layer (0.01 in. (0.25 mm) - 0.02 in. (0.51 mm)) of the adhesive mixture to the composite surface.
  - Apply a thick layer of the adhesive mixture to the standoff base.

SUBTASK 49-15-15-300-005

- (10) Put the standoff to its position immediately with sufficient pressure.
- Make sure that the surfaces are sealed together completely.
  - Make sure that a continuous bead of extruded adhesive is around the edge of the standoff.
  - If squeeze out is less than 100%, disassemble the detail, clean adhesive and reapply.
  - Remove the unwanted adhesive around the edges of the standoff.

SUBTASK 49-15-15-300-007

- (11) Let adhesive to cure for 24 hours at 77°F (25°C).

SUBTASK 49-15-15-300-006

- (12) Remove tape, G51917.

SUBTASK 49-15-15-410-009

- (13) Attach the tubes to the standoff.

**G. Put the Airplane Back to Its Usual Condition**

SUBTASK 49-15-15-410-008

- (1) To close the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- Remove the two retainer pins from the two hold-open rods in the APU compartment.

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- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

SUBTASK 49-15-15-860-002

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-15-15-440-007

- (3) Remove the DO NOT OPERATE tag, STD-858, from the APU master switch.

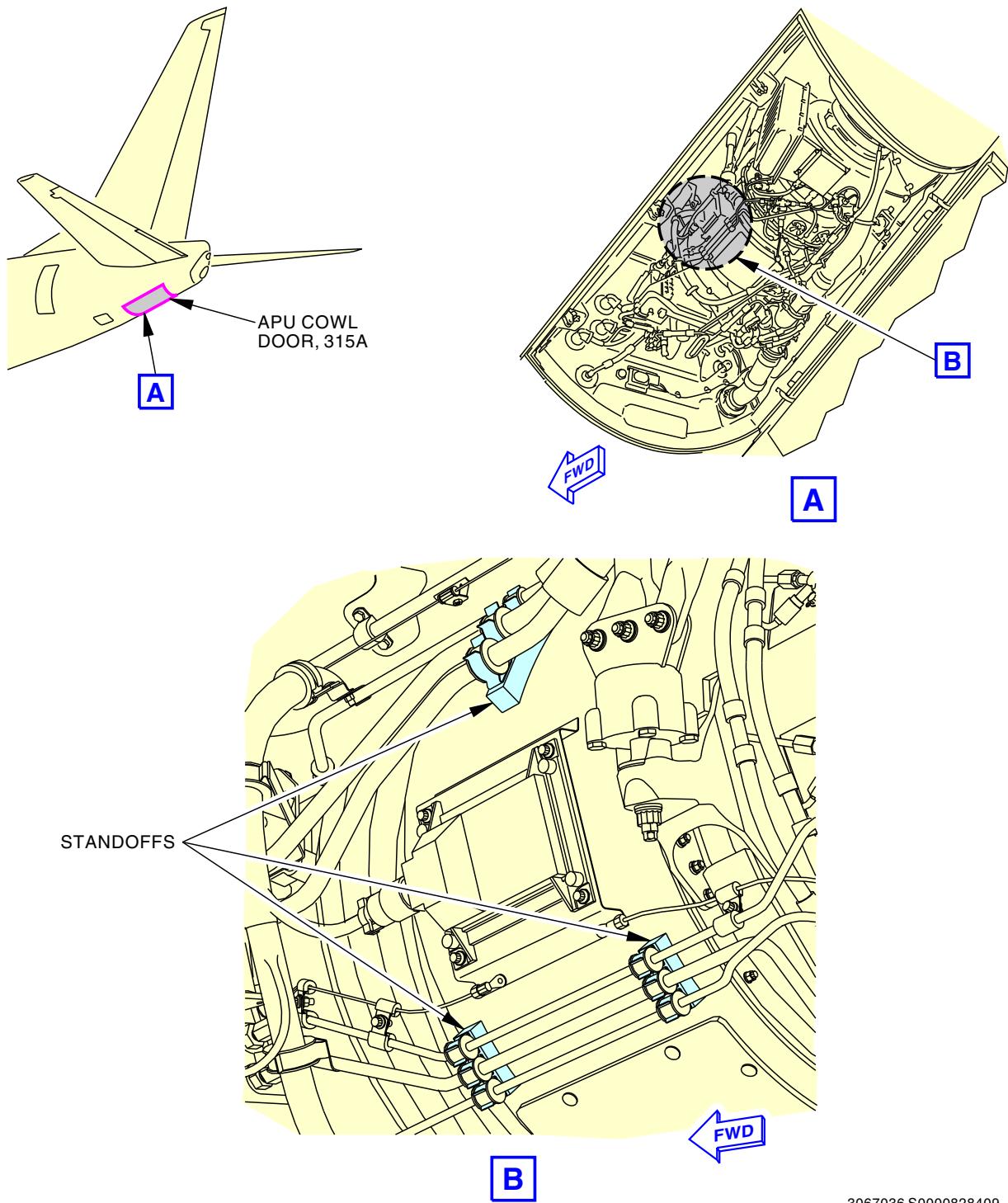
———— END OF TASK ————

EFFECTIVITY  
LOM ALL

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**Tube Clamp Standoff Repair**  
Figure 801/49-15-15-990-803

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ECCN 9E991 BOEING PROPRIETARY - See title page for details

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AIR INLET DOOR - SERVICING

**1. General**

- A. This procedure contains scheduled maintenance task data.
- B. This procedure gives the task to lubricate the parts for the vortex generator.
- C. It is not necessary to remove the vortex generator to do this task.

**TASK 49-15-22-600-801**

**2. Vortex Generator Lubrication**

(Figure 301)

NOTE: This procedure is a scheduled maintenance task.

**A. Consumable Materials**

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

**B. Location Zones**

Zone	Area
211	Flight Compartment - Left
300	Empennage

**C. Prepare for the Lubrication**

SUBTASK 49-15-22-860-005

- (1) Make sure the APU master switch on the P5 forward overhead panel is OFF and install a DO-NOT-OPERATE tag.

SUBTASK 49-15-22-860-006

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

**F/O Electrical System Panel, P6-2**

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT

**D. Procedure**

SUBTASK 49-15-22-640-003

- (1) Do these steps to lubricate the parts on the vortex generator:
  - (a) Remove the nut [9], washer [8], two bushings [5], two washers [7], washer [4] and bolt [3] that attaches the vortex generator flap [6] to the vortex generator.
    - 1) If there is wear damage on the two bushings [5], replace the two bushings [5].
  - (b) Fully lubricate the surfaces of the bolt [3] with a light coat of grease, D00633.
  - (c) Lubricate the inner diameter of the vortex generator flap [6] with a light coat of grease, D00633.
  - (d) Lubricate the inner and outer diameter of the two bushings [5] with a light coat of grease, D00633.

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- (e) Align the vortex generator flap [6] to the vortex generator and install the bushing [5], washer [4], bolt [3], two washers [7], bushing [5], washer [8] and nut [9].  
1) Tighten the nut [9] to 15-20 inch-pounds (1.7-2.3 newton-meters).

**E. Put the Airplane Back to Its Usual Condition**

SUBTASK 49-15-22-860-007

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

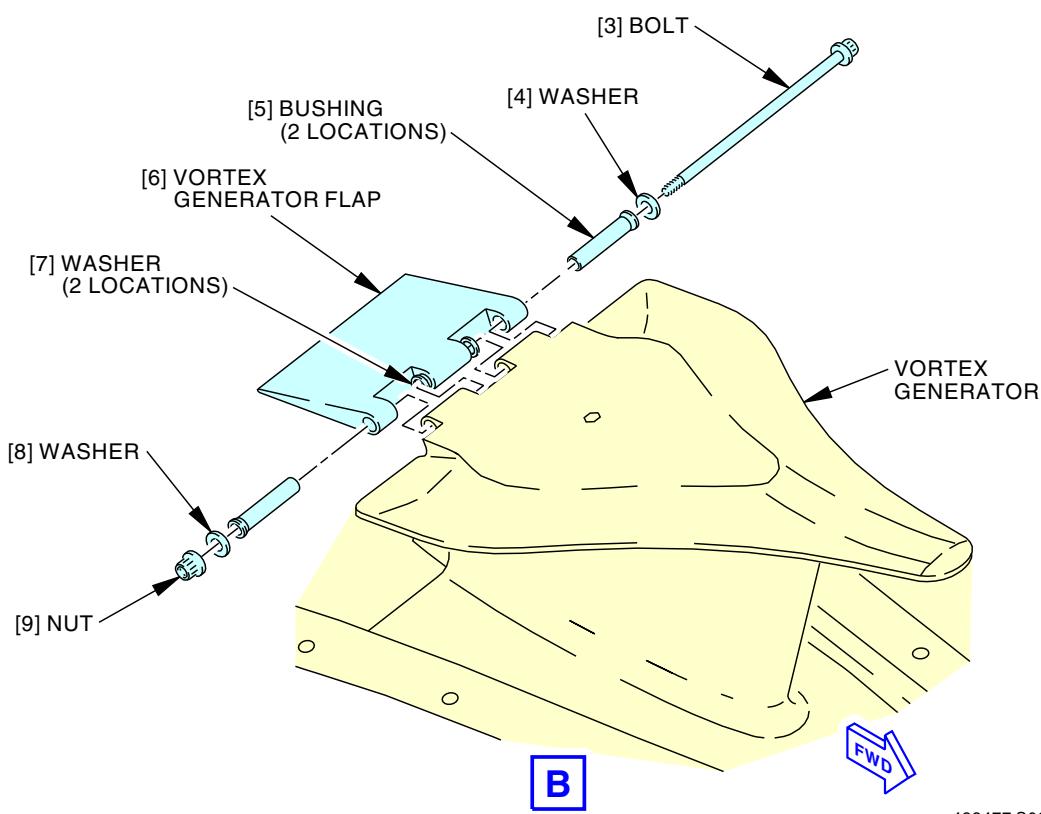
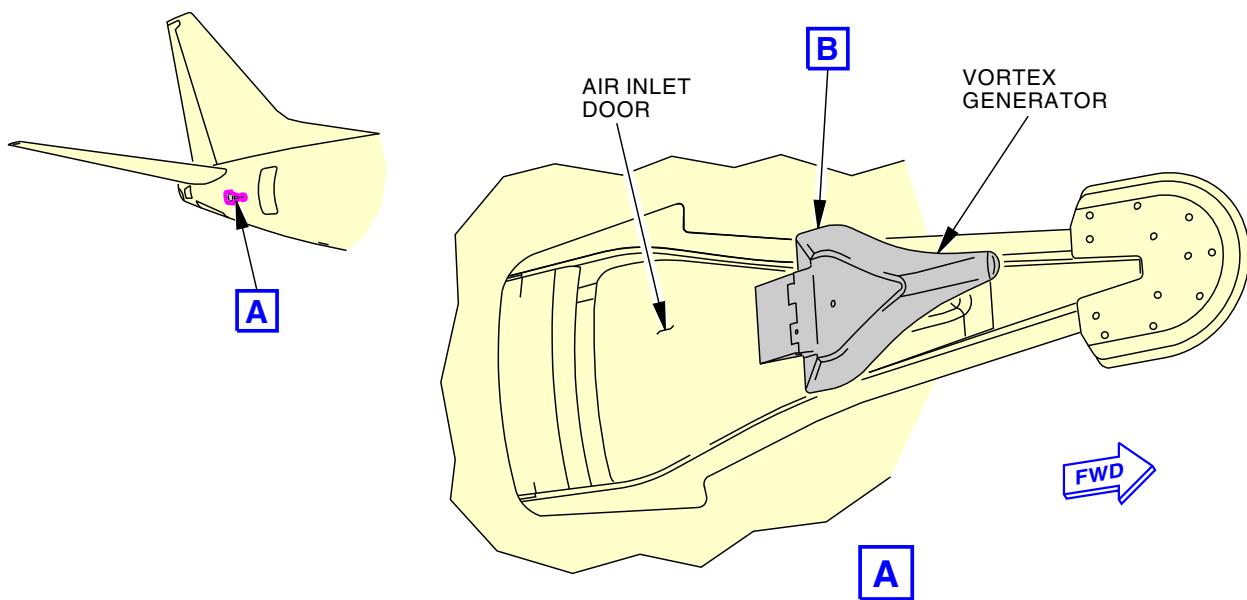
SUBTASK 49-15-22-860-008

- (2) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.

———— END OF TASK ————

— EFFECTIVITY —  
LOM ALL

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**Air Inlet Door Servicing**  
**Figure 301/49-15-22-990-802**

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AIR INLET DOOR - REMOVAL/INSTALLATION

**1. General**

- A. This procedure has these tasks:
  - (1) A removal of the air inlet door
  - (2) An installation of the air inlet door.
- B. The hinge assembly is removed with the air inlet door. You can remove the hinge assembly after you remove the air inlet door.

**TASK 49-15-22-000-801**

**2. Air Inlet Door Removal**

(Figure 401)

**A. References**

<b>Reference</b>	<b>Title</b>
51-31-00-160-801	Prepare For Sealing (P/B 201)

**B. Tools/Equipment**

<b>Reference</b>	<b>Description</b>
STD-858	Tag - DO NOT OPERATE

**C. Location Zones**

<b>Zone</b>	<b>Area</b>
211	Flight Compartment - Left
314	Stabilizer Torsion Box Compartment - Right

**D. Access Panels**

<b>Number</b>	<b>Name/Location</b>
311BL	Stabilizer Trim Access Door

**E. Prepare for the Removal**

SUBTASK 49-15-22-860-001

- (1) Make sure that the APU master switch, on the P5 forward overhead panel, is in the OFF position and install a DO NOT OPERATE tag, STD-858.

SUBTASK 49-15-22-860-002

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

**F/O Electrical System Panel, P6-2**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-15-22-010-001

- (3) Open this access door:

**Number      Name/Location**

311BL	Stabilizer Trim Access Door
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**F. Air Inlet Door Removal**

SUBTASK 49-15-22-020-001

- (1) Do these steps to remove the air inlet door [7] and hinge assembly [12]:
  - (a) Remove the nuts [2], washers [3], washers [6], and bolts [5] that attach the pushrod bearings [1] to the actuator arms.
  - (b) Loosen the locknuts [17] at each end of the pushrods [4] on the actuator side and remove the pushrod bearings [1].
  - (c) Remove the lockwire that attaches the nut [10] to the nut [11].
  - (d) Remove the nut [11] from the pushrod [9].

**LOM ALL; AIRPLANES WITH A CURVED AFT PRESSURE BULKHEAD**

- (e) Remove the sealant that attaches the hinge assembly [12] to the airplane.

NOTE: Use the sealant removal tools from this task: Prepare For Sealing, TASK 51-31-00-160-801, to remove the sealant.

- (f) Remove the bolts and washers that attach the hinge assembly [12].

NOTE: You can get access to the screws from the outer side of the airplane.

**LOM ALL**

- (g) While you carefully remove the air inlet door [7] and hinge assembly [12], remove the nut [10] from the pushrod [9].

NOTE: You must remove the nut from the pushrod before the nut touches the grommet.  
You remove the pushrod from the barrel fitting and grommet.

SUBTASK 49-15-22-020-002

- (2) Do these steps to remove the hinge assembly [12] from the air inlet door [7]:

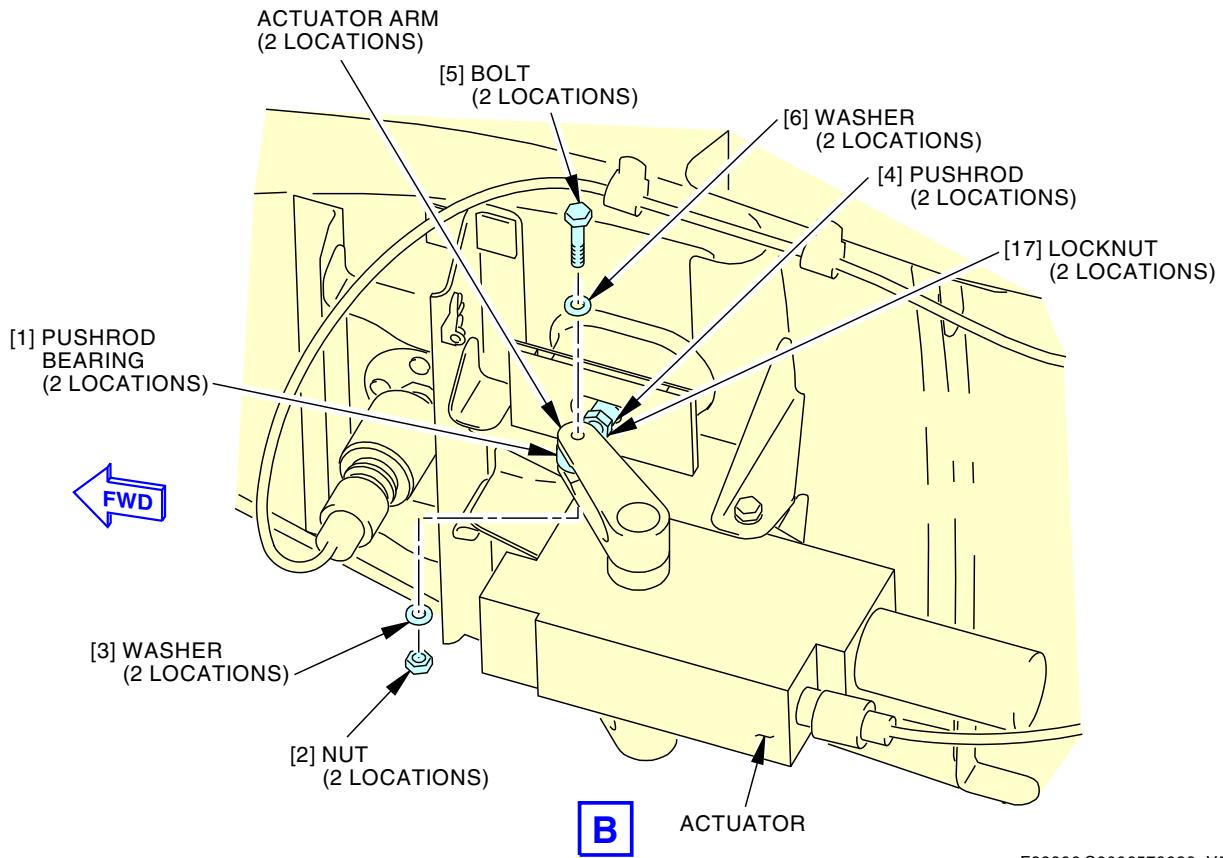
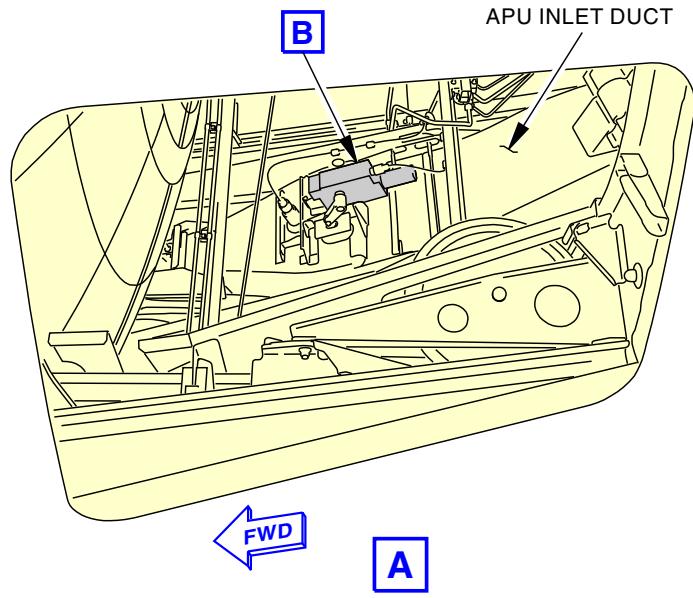
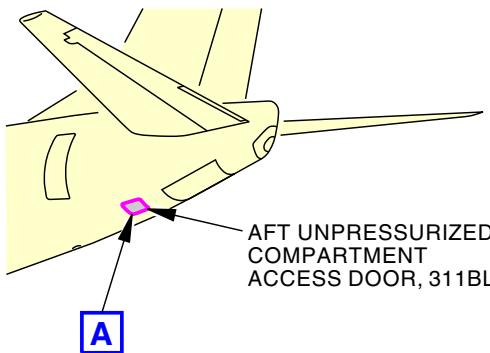
- (a) Remove the cotter pin [16], washers [14], washers [15], and hinge pin [13].
    - 1) Discard the cotter pin [16].

- (b) Remove the hinge assembly [12] from the air inlet door [7].

———— END OF TASK ————

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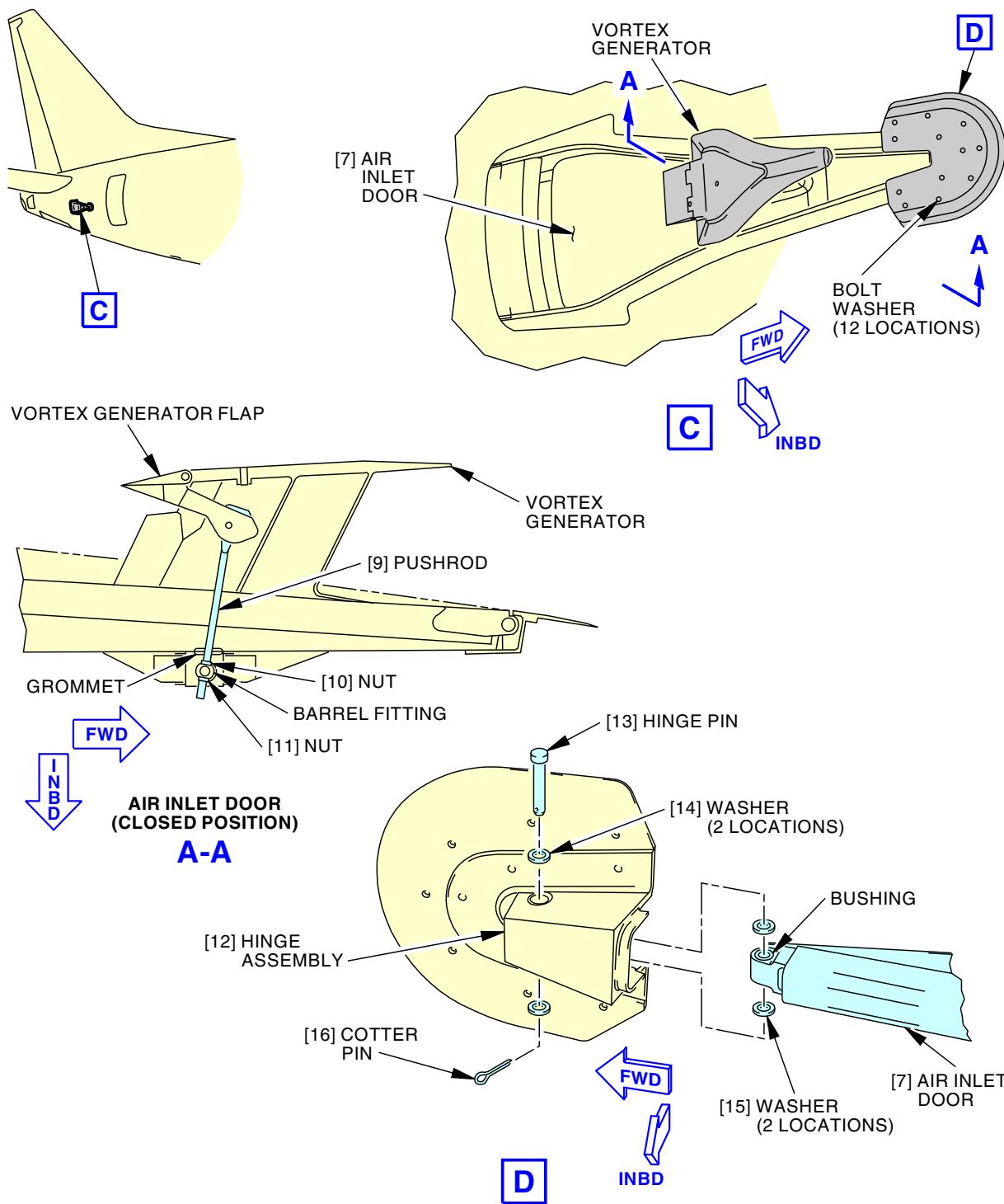
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**Air Inlet Door Installation**  
**Figure 401/49-15-22-990-801 (Sheet 1 of 2)**

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**Air Inlet Door Installation**  
**Figure 401/49-15-22-990-801 (Sheet 2 of 2)**

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**TASK 49-15-22-400-801**

**3. Air Inlet Door Installation**

(Figure 401)

**A. References**

Reference	Title
49-15-00-800-801	Air Inlet Door Adjustment (P/B 501)
49-15-00-800-803	Vortex Generator Flap Adjustment (P/B 501)
49-15-22-600-801	Vortex Generator Lubrication (P/B 301)
51-31-00-160-801	Prepare For Sealing (P/B 201)
51-31-00-390-806	Aerodynamic Smoother Application (P/B 201)
51-31-00-390-810	Removable Faying (Mated) Surface Seal Application (P/B 201)

**B. Consumable Materials**

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
D00633	Grease - Aircraft General Purpose	BMS3-33

**C. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
7	Air inlet door	49-15-00-02A-075	LOM ALL
16	Cotter pin	49-15-00-02A-025	LOM ALL

**D. Location Zones**

Zone	Area
211	Flight Compartment - Left
314	Stabilizer Torsion Box Compartment - Right

**E. Access Panels**

Number	Name/Location
311BL	Stabilizer Trim Access Door

**F. Air Inlet Door Installation**

SUBTASK 49-15-22-420-001

- (1) Do these steps to install the hinge assembly [12] to the air inlet door [7]:

- (a) If you see remaining sealant on the parts of the hinge assembly [12] and airplane surfaces, do this task: Prepare For Sealing, TASK 51-31-00-160-801.
- (b) Lubricate the hinge pin [13] and inner diameter of the bushing with a light coat of grease, D00633.
- (c) Install the hinge assembly [12] on the air inlet door [7] with the hinge pin [13], washers [14], and washers [15].  
*NOTE:* The hinge pin must be installed with the head up.
- (d) Install the new cotter pin [16] on the hinge pin [13].

SUBTASK 49-15-22-420-002

- (2) Do these steps to install the air inlet door [7] and hinge assembly [12]:

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**LOM ALL; AIRPLANES WITH A CURVED AFT PRESSURE BULKHEAD**

- (a) Apply a faying seal with sealant, A00247, between the hinge assembly [12] and airplane surfaces, do these tasks: Removable Faying (Mated) Surface Seal Application, TASK 51-31-00-390-810.
- (b) Carefully install the air inlet door [7] and hinge assembly [12] on the airplane with the bolts and washers.

NOTE: Do not tighten the screws at this time. You tighten the screws after you install the pushrods.

**LOM ALL**

- (c) Make sure that the vortex generator flap moves freely.
  - 1) If the vortex generator flap does not move freely, do this task: Vortex Generator Lubrication, TASK 49-15-22-600-801.
- (d) Connect the pushrod [9] to the barrel fitting:
  - 1) Carefully put the pushrod [9] through the grommet in the air inlet duct.
  - 2) Before you put the pushrod [9] into the barrel fitting, install the nut [10] on the pushrod.

NOTE: The nut goes on the end of the pushrod that has the threads.
  - 3) While you install the nut [10], put the pushrod [9] through the barrel fitting.

NOTE: The nut will stop at the top end of the threads.
  - 4) Install the nut [11] on the pushrod [9].

NOTE: Do not tighten the nut at this time. You tighten the nut and install the lockwire after you do the task to adjust the vortex generator flap.
- (e) Connect the pushrods [4] to the actuator arms:
  - 1) Install the pushrod bearings [1] in the pushrods [4] on the actuator side and tighten the locknuts [17].
  - 2) Put the pushrods [4] into the two actuator arms.
  - 3) Align the holes of the pushrod bearings [1] with the actuator arms.

NOTE: If it is necessary to align the holes of the pushrod bearings with the actuator arms, loosen the locknuts, adjust the pushrod bearings and tighten the locknuts.
  - 4) Install the bolts [5], washers [3], washers [6], and nuts [2] that attach the pushrod bearings [1] to the actuator arms.
    - a) Tighten the nuts [2] to 63 in-lb (7.1 N·m) - 67 in-lb (7.6 N·m).

**LOM ALL; AIRPLANES WITH A CURVED AFT PRESSURE BULKHEAD**

- (f) Tighten the bolts on the hinge assembly [12].
- (g) Fill the gaps with sealant, A00247, between the hinge assembly [12] and airplane surfaces, do these tasks: Aerodynamic Smoother Application, TASK 51-31-00-390-806.

**LOM ALL**

SUBTASK 49-15-22-410-001

- (3) Close this access door:

**Number      Name/Location**

311BL      Stabilizer Trim Access Door

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**G. Air Inlet Door Installation Test**

SUBTASK 49-15-22-860-003

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-15-22-860-004

- (2) Remove the DO-NOT-OPERATE tag from the APU master switch, on the P5 forward overhead panel.

SUBTASK 49-15-22-820-001

- (3) Do this task: Air Inlet Door Adjustment, TASK 49-15-00-800-801.

**LOM ALL; AIRPLANES WITH A CURVED AFT PRESSURE BULKHEAD**

SUBTASK 49-15-22-820-002

- (4) Do this task: Vortex Generator Flap Adjustment, TASK 49-15-00-800-803.

———— END OF TASK ————

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VORTEX GENERATOR - REMOVAL/INSTALLATION

**1. General**

- A. This procedure has these tasks:
  - (1) A removal of the vortex generator
  - (2) An installation of the vortex generator
  - (3) A removal of the Vortex Generator Flap and Control Rod Assembly
  - (4) An installation of the Vortex Generator Flap and Control Rod Assembly.
- B. The vortex generator is installed on the air inlet door. You must remove the air inlet door from the airplane for the removal of the vortex generator.
- C. The vortex generator flap and control rod assembly can be removed and installed without removing the vortex generator and air inlet door.

**TASK 49-15-23-000-801**

**2. Vortex Generator Removal**

(Figure 401)

**A. References**

Reference	Title
49-15-22-000-801	Air Inlet Door Removal (P/B 401)

**B. Location Zones**

Zone	Area
211	Flight Compartment - Left
314	Stabilizer Torsion Box Compartment - Right

**C. Vortex Generator Removal**

SUBTASK 49-15-23-020-001

- (1) Do this task: Air Inlet Door Removal, TASK 49-15-22-000-801.

SUBTASK 49-15-23-020-002

- (2) Do these steps to remove the vortex generator [1]:
  - (a) Remove the six nuts [7], six washers [10] and six bolts [11] that attach the vortex generator [1] to the air inlet door [8].
  - (b) Remove the four nuts [6], four tapered fillers [5], four washers [3] and four bolts [2] that attach the vortex generator [1] to the air inlet door [8].
  - (c) Remove the two radius fillers [4], two shims [9] and vortex generator [1] from the air inlet door [8].

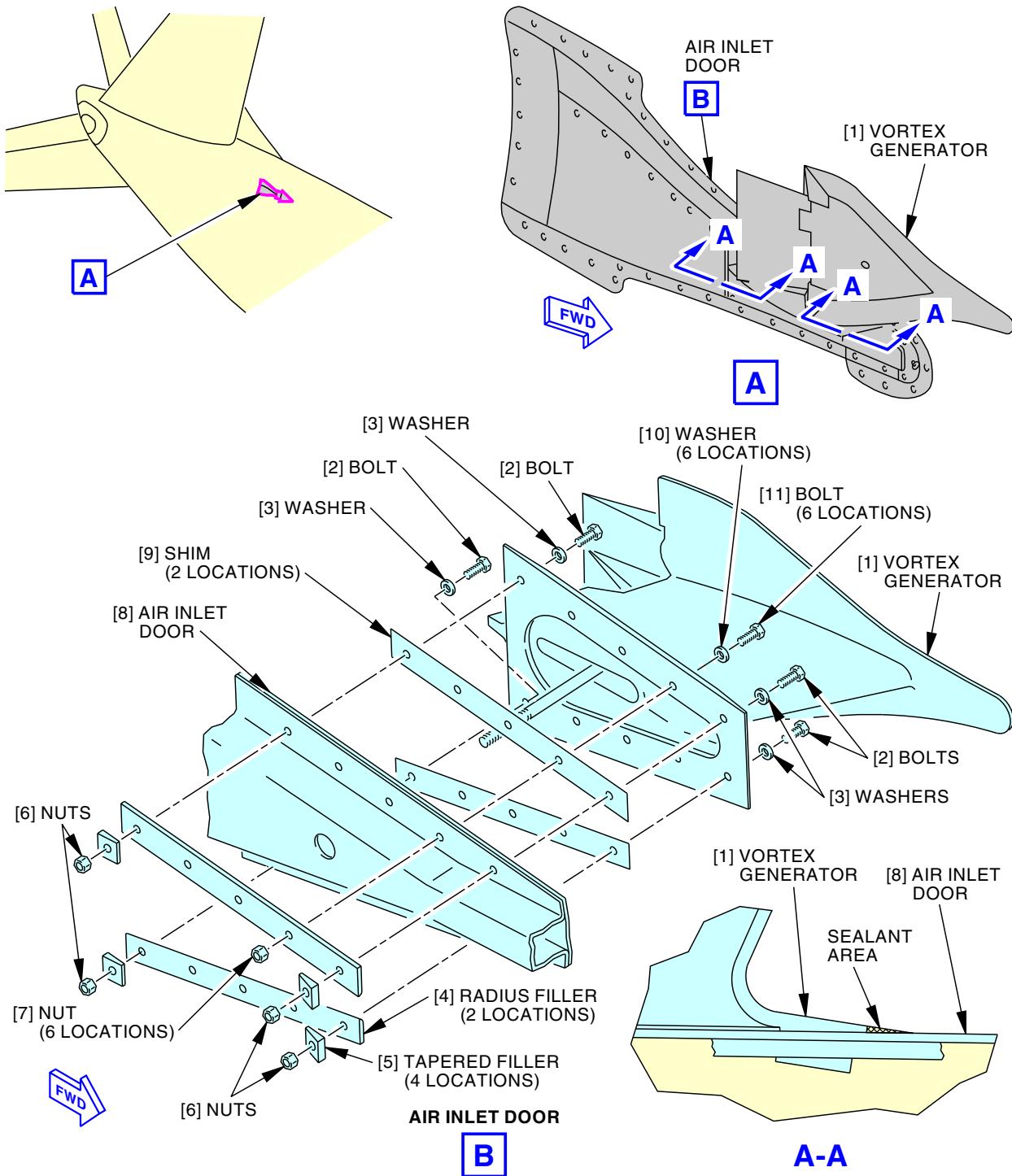
— END OF TASK —





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## **AIRCRAFT MAINTENANCE MANUAL**



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**Vortex Generator Installation  
Figure 401/49-15-23-990-801**

EFFECTIVITY  
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**TASK 49-15-23-400-801**

**3. Vortex Generator Installation**

(Figure 401)

**A. References**

Reference	Title
49-15-22-400-801	Air Inlet Door Installation (P/B 401)

**B. Tools/Equipment**

Reference	Description
STD-1057	Air Source - Regulated, Dry Filtered, Compressed 60-105 PSIG (414-723.9 kPa)(22 SCFM)
STD-1064	Scraper - Phenolic, Hard Resin

**C. Consumable Materials**

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
A00435	Adhesive - Epoxy Polyamide, 2 Component, Natural Color	BMS5-126 Type III Class 1
B00130	Alcohol - Isopropyl	TT-I-735
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)
G01659	Swab - Cotton Or Rayon, (Disposable)	

**D. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Generator assembly	49-15-22-01A-080	LOM ALL

**E. Location Zones**

Zone	Area
211	Flight Compartment - Left
314	Stabilizer Torsion Box Compartment - Right

**F. Procedure**

SUBTASK 49-15-23-420-001

(1) Do these steps to install the generator assembly [1]:

- (a) If you see sealant and/or adhesive on the mating surfaces of the air inlet door [8], vortex generator [1] and two shims [9], then do these steps:
- 1) Remove the remaining sealant and/or adhesive from the mating surfaces of the air inlet door [8], vortex generator [1] and two shims [9] with a hard resin phenolic scraper, STD-1064 or an equivalent tool.
  - 2) Clean the surface with alcohol, B00130 and a cotton wiper, G00034.
  - 3) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057 to dry the surfaces of the air inlet door [8], vortex generator [1] and two shims [9].

NOTE: It is recommended that you use a pressure of 60-90 psig (414-620 kPa) of air or nitrogen to dry the surfaces.

- (b) Put the generator assembly [1] without the two shims [9] on the air inlet door [8].

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LOM ALL

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- (c) If there is a clearance of more than 0.005 inch (0.13 mm) between the generator assembly [1] and air inlet door [8], then do these steps to install the two shims [9]:
- 1) Clean the mating surfaces of the vortex generator [1] and two shims [9] with alcohol, B00130 and a cotton wiper, G00034.
  - 2) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057 to dry the surfaces of the vortex generator [1] and two shims [9].  
NOTE: It is recommended that you use a pressure of 60-90 psig (414-620 kPa) of air or nitrogen to dry the surfaces of the vortex generator and two shims.
  - 3) Mix the adhesive, A00435 per the manufacturer's instructions.  
NOTE: The pot life of the mixed adhesive is approximately two hours at 68°F-80°F (20°C-26.7°C).
  - 4) Apply a thin and continuous layer of mixed adhesive to the mating surfaces of the two shims [9].
  - 5) Install the two shims [9] on the vortex generator [1].
  - 6) Remove the unwanted mixed adhesive from the two shims [9] and vortex generator [1] with a cotton wiper, G00034 or swab, G01659.
  - 7) Use rubber-tipped clamps or wood strips or equivalent tools to hold the two shims [9] tightly to the vortex generator [1] during the cure time.  
NOTE: The cure time for the mixed adhesive is approximately 15-24 hours at 68°F-80°F (20°C-26.7°C).
  - 8) Remove the rubber-tipped clamps, wood strips or equivalent tools from the two shims [9] and vortex generator [1].
- (d) Apply a thin layer of sealant, A00247 to the mating surface of the generator assembly [1].
- (e) Put the generator assembly [1] on the air inlet door [8].
- (f) Install the six bolts [11], six washers [10], two radius fillers [4] and six nuts [7] that attach the generator assembly [1] to the air inlet door [8].
- (g) Install the four bolts [2], four washers [3], four tapered fillers [5] and four nuts [6] that attach the generator assembly [1] to the air inlet door [8].
- (h) Remove the unwanted sealant from the generator assembly [1] and air inlet door [8] with a cotton wiper, G00034 or swab, G01659.
- (i) Use a plastic or metal fairing tool to apply a fillet seal between the forward and aft edges of the generator assembly [1] and air inlet door [8] (view A-A).

SUBTASK 49-15-23-420-002

- (2) Do this task: Air Inlet Door Installation, TASK 49-15-22-400-801.

———— END OF TASK ———

**TASK 49-15-23-000-802**

**4. Vortex Generator Flap and Control Rod Assembly Removal**

(Figure 402)

**A. General**

- (1) This task includes the steps to remove the generator flap and control rod assembly.

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**B. Location Zones**

<b>Zone</b>	<b>Area</b>
211	Flight Compartment - Left

**C. Prepare for the task**

SUBTASK 49-15-23-860-001

- (1) Make sure the APU master switch on the P5 forward overhead panel is OFF and install a DO-NOT-OPERATE tag.

SUBTASK 49-15-23-860-002

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

**F/O Electrical System Panel, P6-2**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
A	14	C00033	AUX POWER UNIT CONT

**D. Vortex Generator Flap and Control Rod Assembly Removal**

SUBTASK 49-15-23-420-003

- (1) Do these steps to remove the vortex generator flap and control rod assembly:
  - (a) Remove the nut [10], washer [11], two bushings [7], two washers [12], washer [8] and bolt [9] that attaches the vortex generator flap [5] to the vortex generator.
- (2) Remove the nut [2], barrel fitting [4], and nut [3] that hold the control rod to [1] the inlet door.
- (3) Remove the vortex generator flap and control rod assembly.

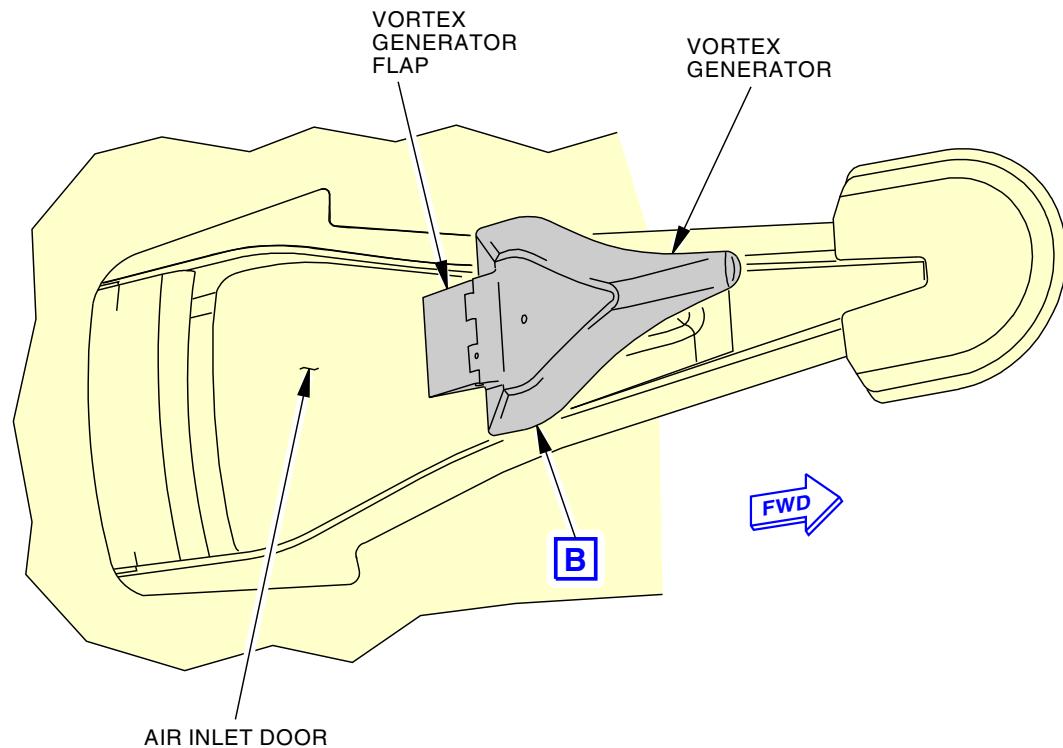
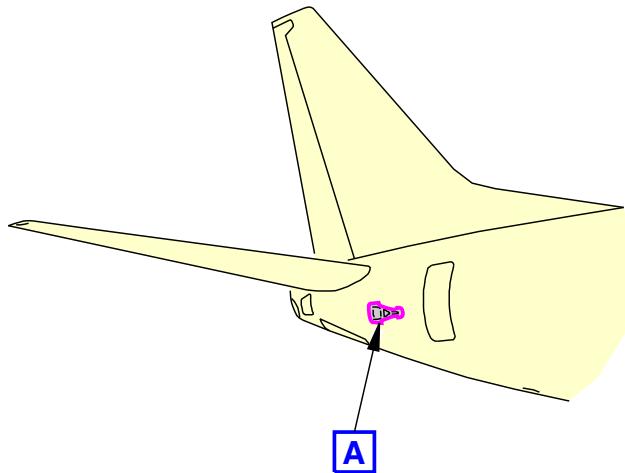
———— END OF TASK ————

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A

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Vortex Generator Flap and Control Rod Assembly Installation  
Figure 402/49-15-23-990-802 (Sheet 1 of 3)

EFFECTIVITY  
LOM ALL

**49-15-23**

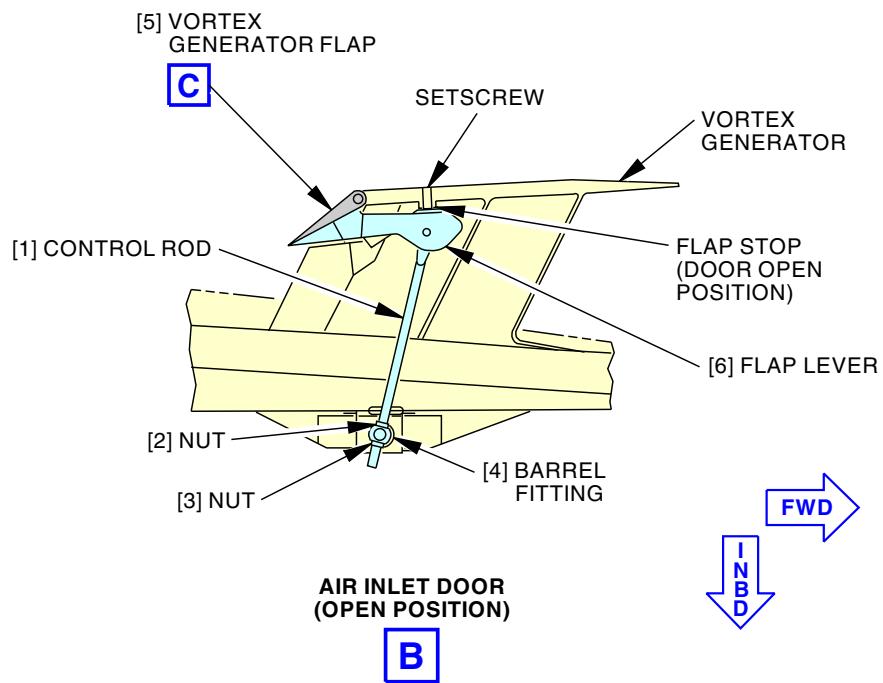
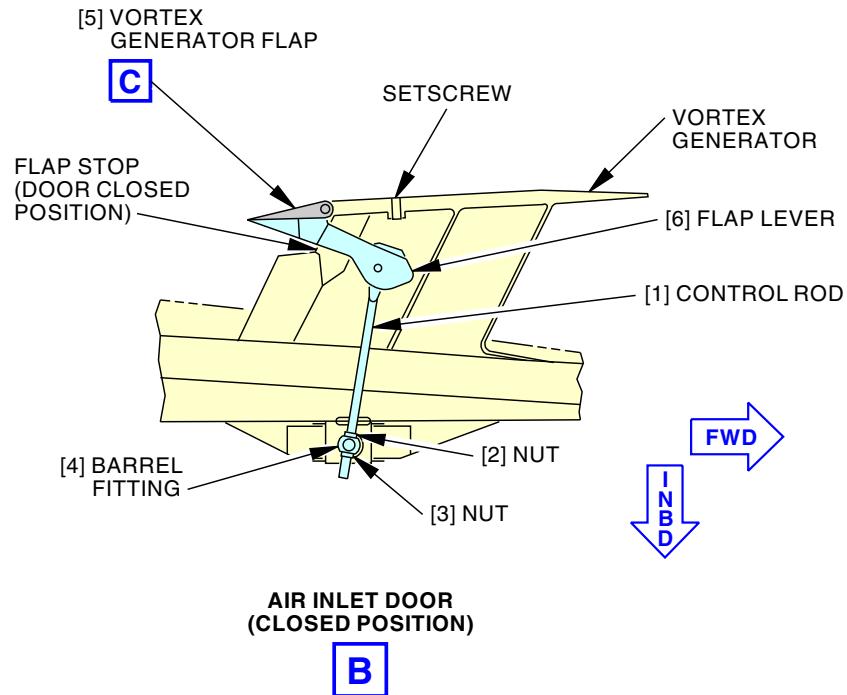
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Vortex Generator Flap and Control Rod Assembly Installation  
Figure 402/49-15-23-990-802 (Sheet 2 of 3)

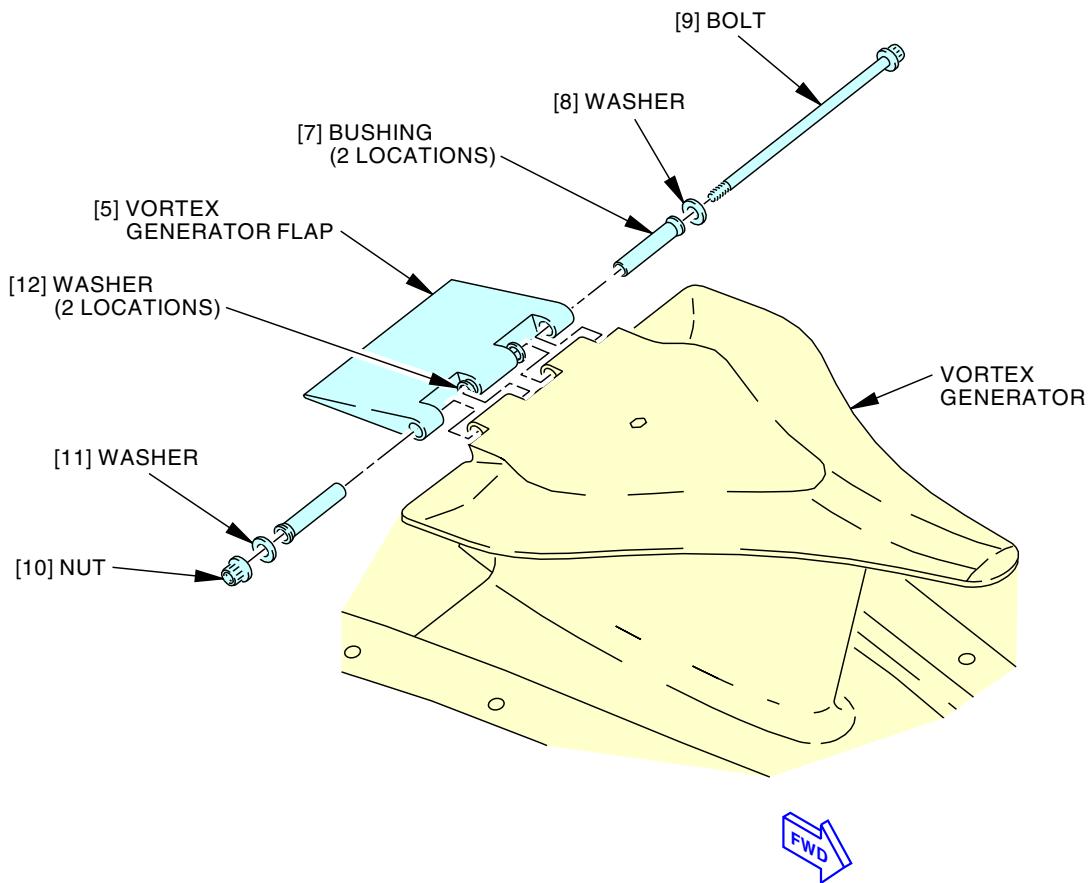
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C

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**Vortex Generator Flap and Control Rod Assembly Installation**  
 Figure 402/49-15-23-990-802 (Sheet 3 of 3)

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**TASK 49-15-23-400-802**

**5. Vortex Generator Flap and Control Rod Assembly Installation**

(Figure 402)

**A. General**

- (1) This task includes the steps to install the vortex generator flap and control rod assembly.

**B. References**

Reference	Title
49-15-00-800-803	Vortex Generator Flap Adjustment (P/B 501)

**C. Consumable Materials**

Reference	Description	Specification
B00184	Solvent - Presealing, Cleaning Solvent	BMS11-7
D00633	Grease - Aircraft General Purpose	BMS3-33

**D. Location Zones**

Zone	Area
211	Flight Compartment - Left

**E. Prepare for the task**

**SUBTASK 49-15-23-860-005**

- (1) Make sure the APU master switch on the P5 forward overhead panel is OFF and install a DO-NOT-OPERATE tag.

**SUBTASK 49-15-23-860-006**

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

**F/O Electrical System Panel, P6-2**

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT

**F. Install the Vortex Generator Flap and Control Rod Assembly**

**SUBTASK 49-15-23-420-004**

- (1) Do these steps to lubricate and install the parts on the vortex generator flap assembly:
- Examine the nut [10], washer [11], two bushings [7], two washers [12], washer [8] and bolt [9] that attaches the vortex generator flap [5] to the vortex generator.
    - If there is wear damage on the two bushings [7], replace the two bushings.
  - Clean the bolt [9] and the bolt holes with solvent, B00184 to remove all the old grease.
  - Fully lubricate the surfaces of the bolt [9] with a light coat of grease, D00633.
  - Lubricate the inner diameter of the vortex generator flap [5] with a light coat of grease, D00633.
  - Lubricate the inner and outer diameter of the two bushings [7] with a light coat of grease, D00633.



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- (f) Install the nut [2] in the barrel fitting [4] that holds control rod to the air inlet door.  
NOTE: The nut [3] will be installed when the task to adjust the vortex generator flap is done.
- (g) Align the vortex generator flap [5] to the vortex generator and install the bushing [7], washer [8], bolt [9], two washers [12], bushing [7], washer [11] and nut [10].  
1) Tighten the nut [10] to 15-20 inch-pounds (1.7-2.3 newton-meters).

SUBTASK 49-15-23-420-005

- (2) Connect the control rod [1] to the air inlet door as follows:
- Move the air inlet door to the closed position (pull out on the trailing edge of the air inlet door).
  - Install the nut [3] on the barrel fitting [4].
  - Do this task: Vortex Generator Flap Adjustment, TASK 49-15-00-800-803.

**G. Put the Airplane Back to Its Usual Condition**

SUBTASK 49-15-23-860-003

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-15-23-860-004

- (2) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.

———— END OF TASK ————

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AIR INLET DOOR ACTUATOR - MAINTENANCE PRACTICES

**1. General**

- A. This procedure has these tasks:
- (1) Air inlet door actuator - deactivation.
  - (2) Air inlet door actuator - activation.

**TASK 49-15-31-040-801**

**2. Air Inlet Door Actuator - Deactivation**

**A. General**

- (1) This task will deactivate the APU air inlet door actuator.

**B. Location Zones**

Zone	Area
211	Flight Compartment - Left
314	Stabilizer Torsion Box Compartment - Right

**C. Procedure**

SUBTASK 49-15-31-020-003

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

**F/O Electrical System Panel, P6-2**

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT

**D. Air Inlet Door Actuator - Tryout**

NOTE: This tryout is to make sure that the air inlet door actuator is in a zero energy state.

NOTE: Make sure that the APU is clear of all blockage and unwanted material.

SUBTASK 49-15-31-210-002

- (1) Make sure that the BAT switch on the P5 forward overhead panel is in the ON position.

SUBTASK 49-15-31-210-003

- (2) Set the APU master switch on the P5 forward overhead panel to the ON position.

SUBTASK 49-15-31-210-004

- (3) Make sure that the air inlet door stays in the closed position.

NOTE: There is a space of 1.35 in. (3.43 cm) with the door in the closed position.

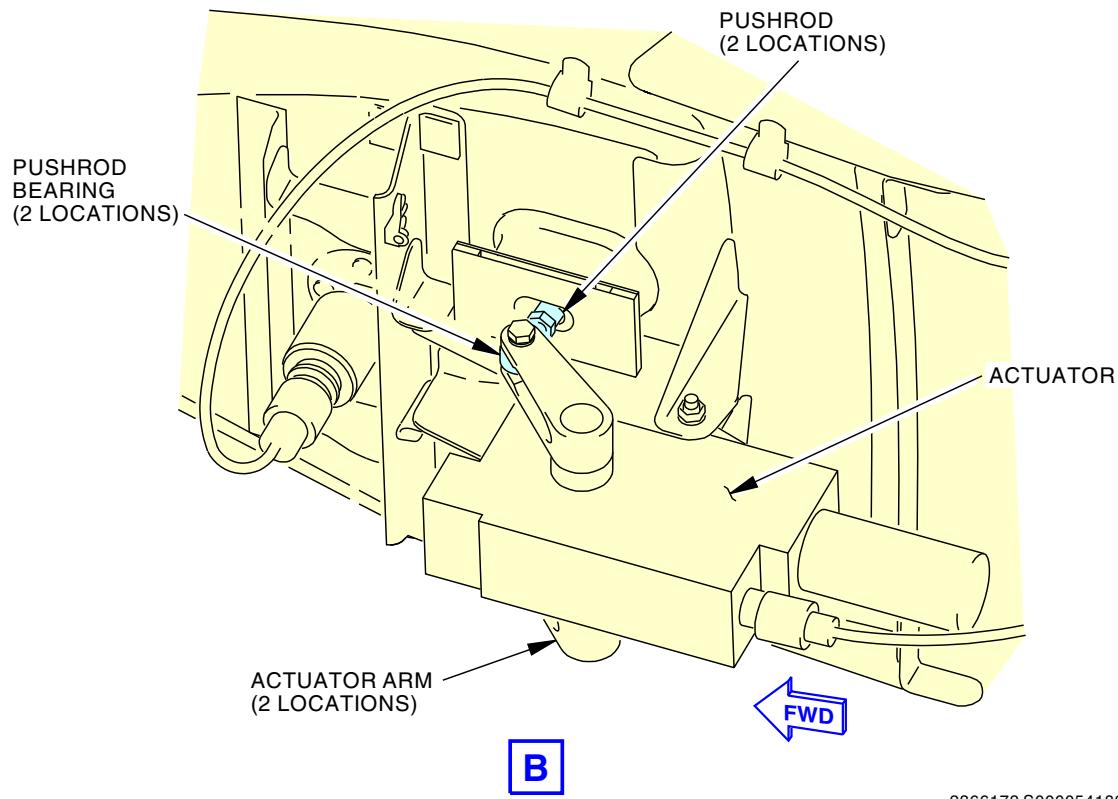
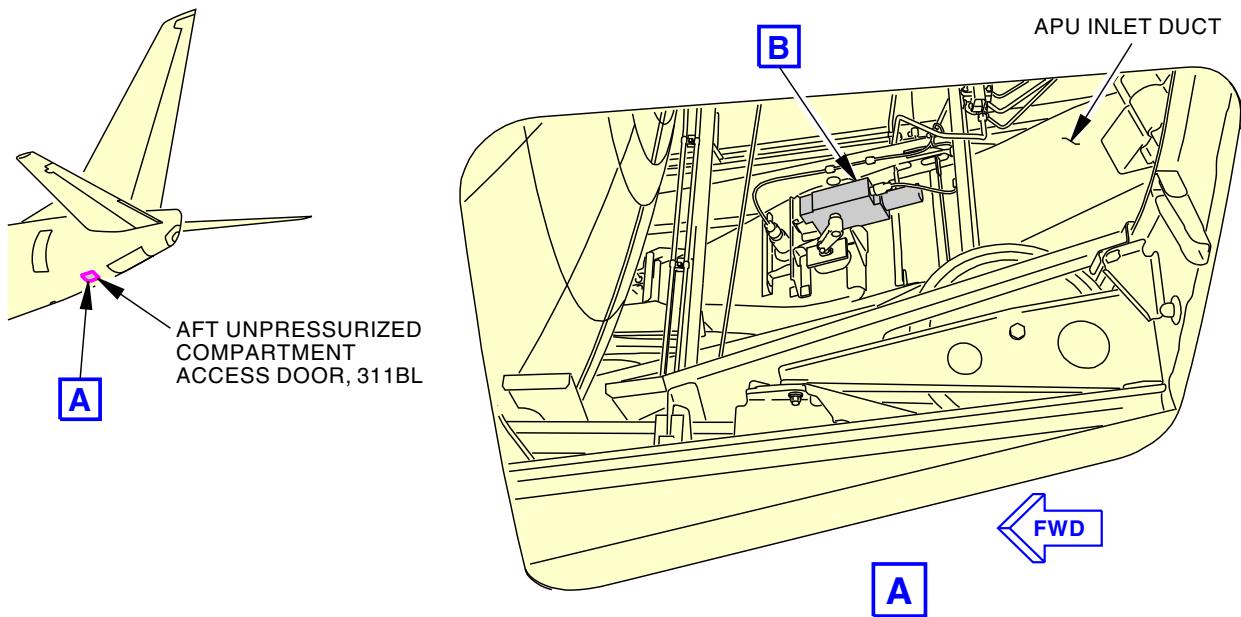
SUBTASK 49-15-31-210-005

- (4) Set the APU master switch on the P5 forward overhead panel to the OFF position.

———— END OF TASK ————

EFFECTIVITY  
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**APU Air Inlet Door Actuator**  
**Figure 201/49-15-31-990-802 (Sheet 1 of 2)**

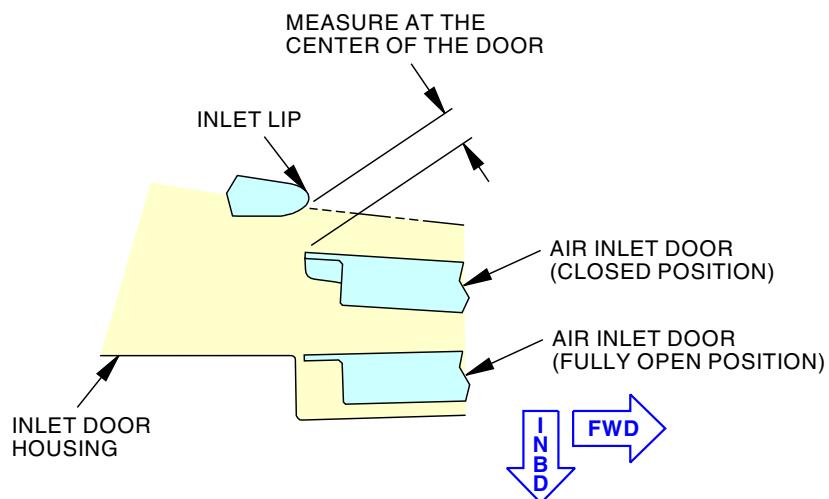
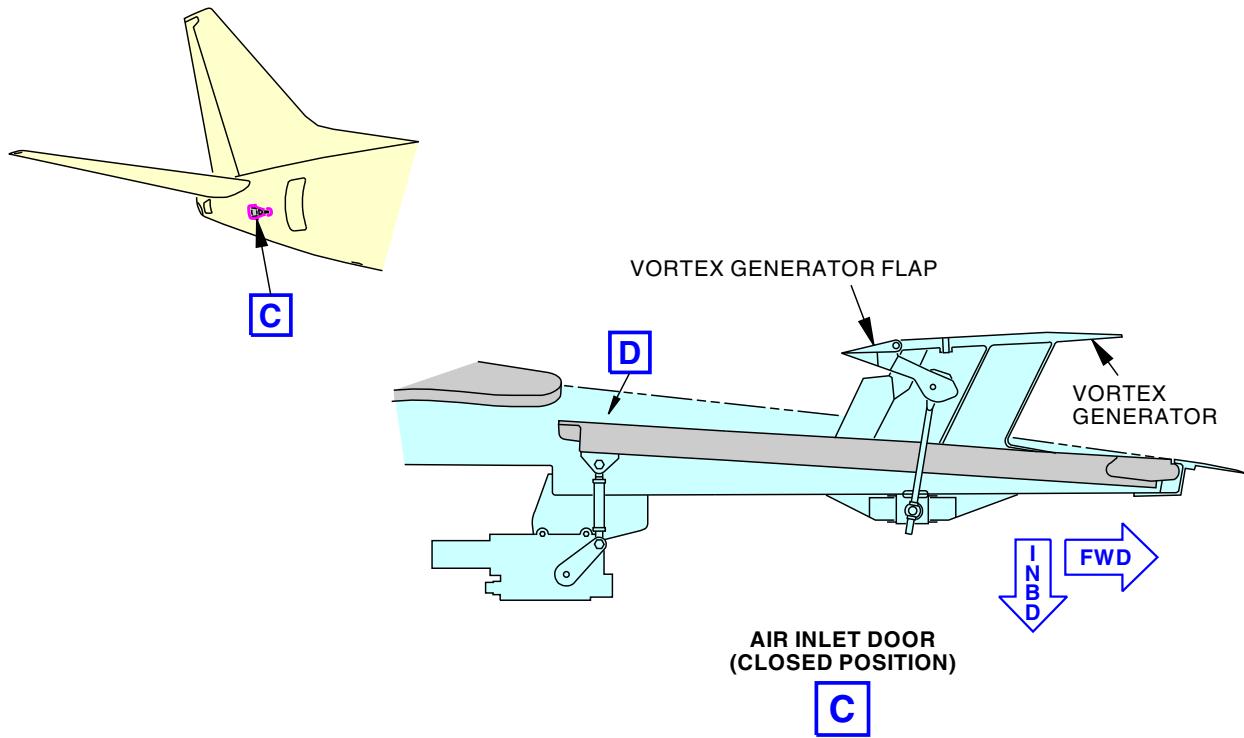
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FLUSHNESS ALIGNMENT OF AIR INLET DOOR

2382792 S0000546084\_V1

APU Air Inlet Door Actuator  
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**TASK 49-15-31-440-801**

**3. Air Inlet Door Actuator - Activation**

(Figure 201)

**A. General**

- (1) This task will activate the APU air inlet door actuator.

**B. Location Zones**

<b>Zone</b>	<b>Area</b>
211	Flight Compartment - Left
314	Stabilizer Torsion Box Compartment - Right

**C. Procedure**

SUBTASK 49-15-31-420-003

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

**F/O Electrical System Panel, P6-2**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
A	14	C00033	AUX POWER UNIT CONT

———— END OF TASK ————

EFFECTIVITY  
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AIR INLET DOOR ACTUATOR - REMOVAL/INSTALLATION

**1. General**

- A. This procedure has these tasks:
  - (1) A removal of the air inlet door actuator
  - (2) An installation of the air inlet door actuator.
- B. The air inlet door actuator is referred to as the actuator.
- C. The actuator is installed aft of the rear pressure bulkhead on the inner side of the air inlet door.

**TASK 49-15-31-000-801**

**2. Air Inlet Door Actuator Removal**

(Figure 401)

**A. References**

Reference	Title
24-22-00-860-813	Supply External Power (P/B 201)

**B. Location Zones**

Zone	Area
211	Flight Compartment - Left
314	Stabilizer Torsion Box Compartment - Right

**C. Access Panels**

Number	Name/Location
311BL	Stabilizer Trim Access Door

**D. Prepare for the Removal**

SUBTASK 49-15-31-860-001

- (1) Do one of the following steps to supply power to the aircraft:
  - (a) Set the BAT switch on the P5 forward overhead panel to the ON position.
  - (b) Do this task: Supply External Power, TASK 24-22-00-860-813.

SUBTASK 49-15-31-860-002

- (2) Set the APU master switch on the P5 forward overhead panel to the ON position and attach a DO-NOT-OPERATE tag.

SUBTASK 49-15-31-860-013

- (3) Make sure the air inlet door opens in approximately 30 seconds.

SUBTASK 49-15-31-860-003

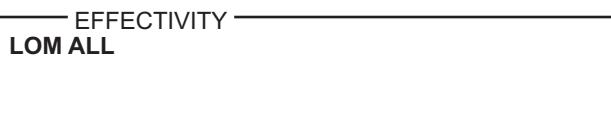
- (4) Open these circuit breakers and install safety tags:

**F/O Electrical System Panel, P6-2**

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT



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SUBTASK 49-15-31-010-001

- (5) Open this access panel:

**Number      Name/Location**

311BL      Stabilizer Trim Access Door

**E. Air Inlet Door Actuator Removal**

SUBTASK 49-15-31-020-001

- (1) Do these steps to remove the actuator [11]:

- (a) Disconnect the electrical connector D922 [6] from the actuator [11].
- (b) Remove the two nuts [15], four washers [13], washers [14] and two bolts [12] that attach the two pushrod bearings to the two actuator arms [10].
- (c) Remove the two nuts [4], four washers [5], washers [8] and two bolts [9] that attach the actuator [11] to the bracket.
- (d) Remove the actuator [11] and the laminated shims [7], if installed.

SUBTASK 49-15-31-020-002

- (2) Do these steps to remove the two actuator arms [10]:

- (a) Remove the two bolts [1], two lockwashers [2] and two washers [3] from the two actuator arms [10].
- (b) Remove the two actuator arms [10] from the actuator output shaft.
- (c) Keep the two actuator arms [10] for the installation.

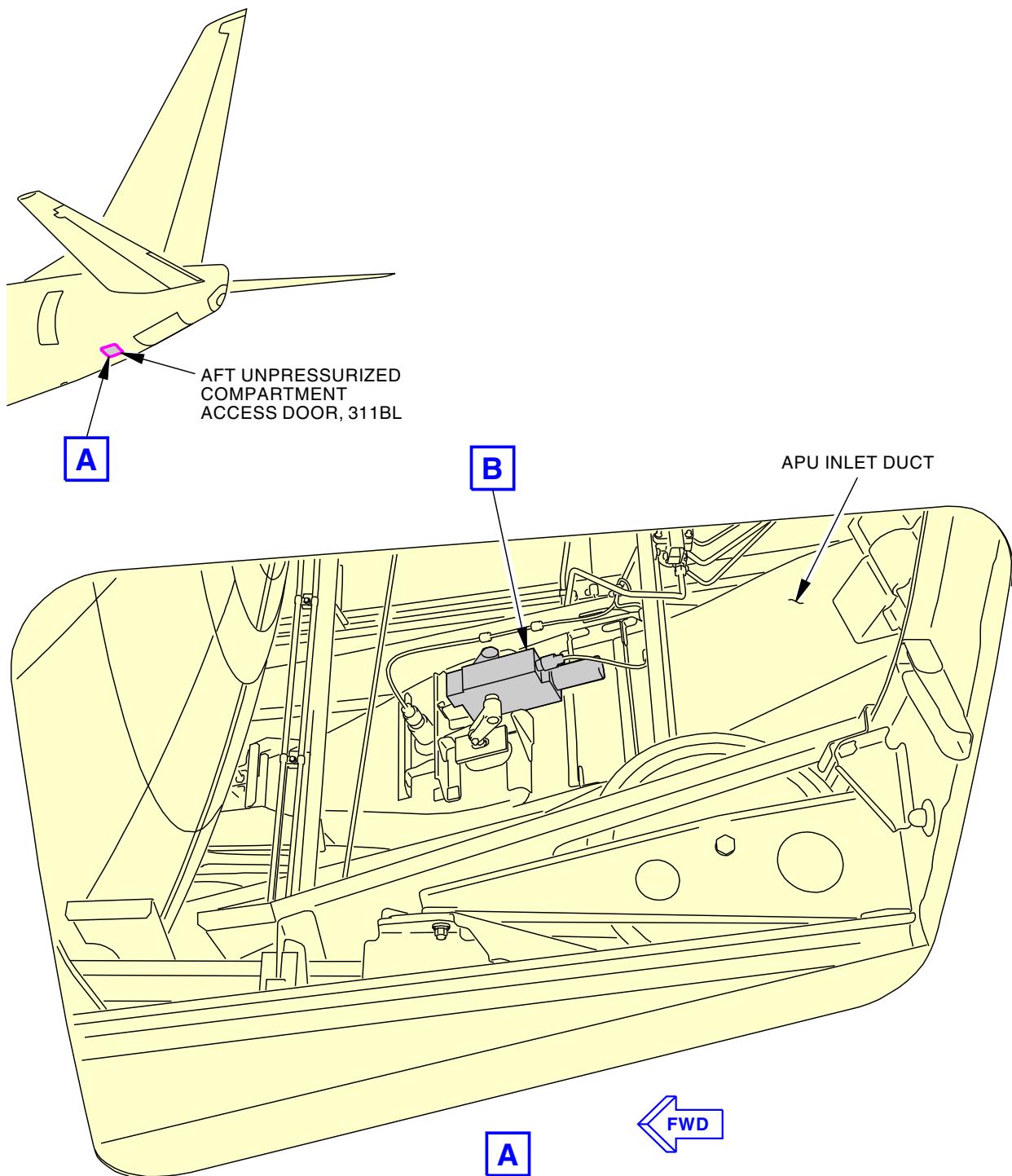
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Air Inlet Door Actuator Installation  
Figure 401/49-15-31-990-801 (Sheet 1 of 2)

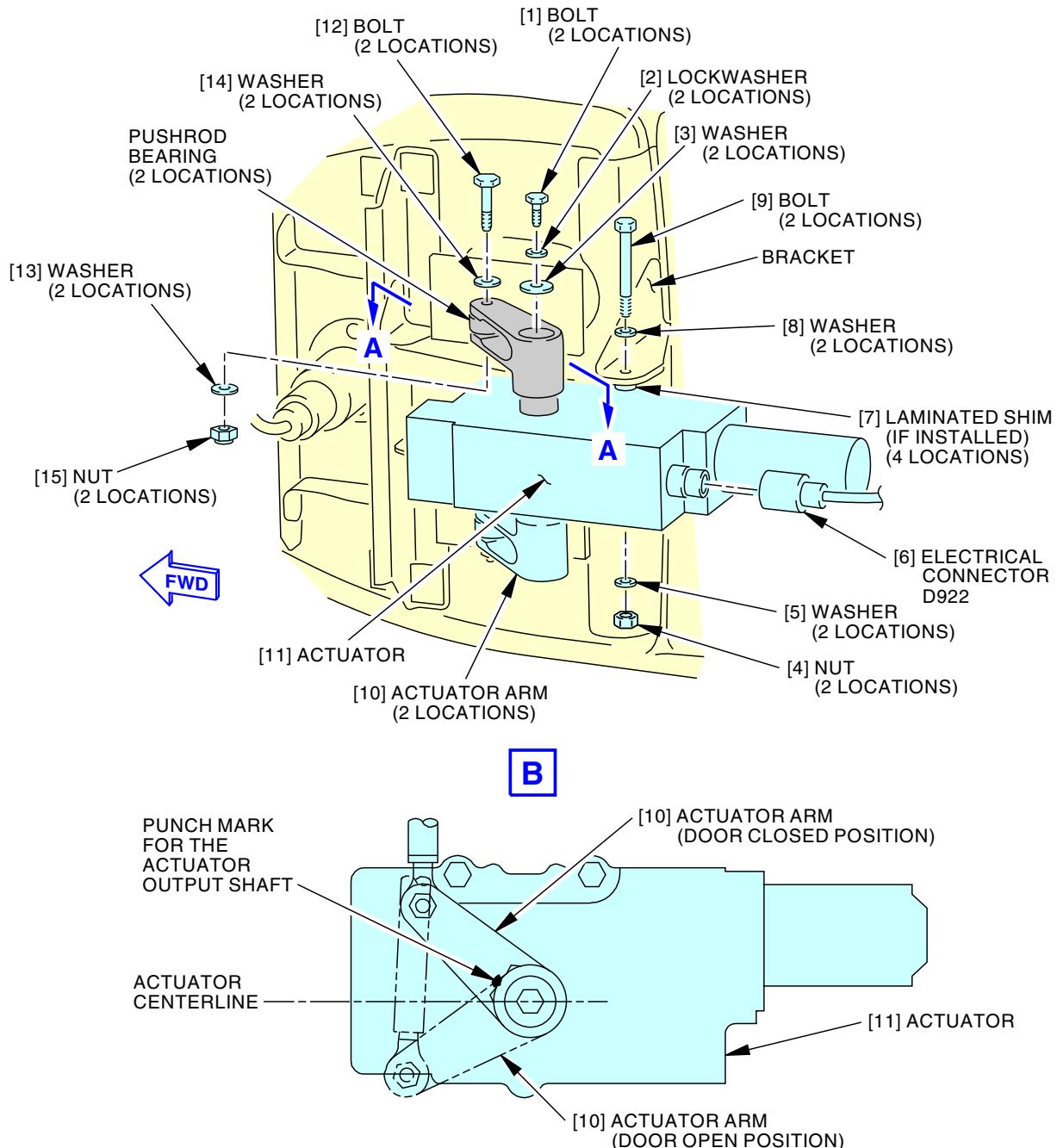
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**A-A**

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**Air Inlet Door Actuator Installation**  
**Figure 401/49-15-31-990-801 (Sheet 2 of 2)**

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**TASK 49-15-31-400-801**

**3. Air Inlet Door Actuator Installation**

(Figure 401)

**A. References**

Reference	Title
24-22-00-860-814	Remove External Power (P/B 201)
49-15-00-700-801	Air Inlet Door Test (P/B 501)

**B. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
11	Actuator	49-15-31-01A-055	LOM ALL

**C. Location Zones**

Zone	Area
211	Flight Compartment - Left
314	Stabilizer Torsion Box Compartment - Right

**D. Access Panels**

Number	Name/Location
311BL	Stabilizer Trim Access Door

**E. Procedure**

SUBTASK 49-15-31-420-001

- (1) Do these steps to install the two actuator arms [10] on the actuator [11]:
  - (a) Align the punch mark for the actuator output shaft with the centerline of the two actuator arms [10].
  - (b) Put the two actuator arms [10] on the actuator output shaft.
  - (c) Install the two washers [3], two lockwashers [2] and two bolts [1].
    - 1) Tighten the two bolts [1] to 22 in-lb (2.5 N·m) - 28 in-lb (3.2 N·m).

SUBTASK 49-15-31-420-002

- (2) Do these steps to install the actuator [11]:
  - (a) Put the actuator [11] on the bracket.
  - (b) If the actuator [11] and the bracket do not touch, add the laminated shims [7] to the actuator as necessary.
    - 1) Install equal thickness at each side of the actuator.
  - (c) Install the actuator [11] on the bracket with the two bolts [9], four washers [5], washers [8] and two nuts [4].
    - 1) Tighten the two nuts [4] to 63 in-lb (7.1 N·m) - 67 in-lb (7.6 N·m).
  - (d) Put the two pushrod bearings in the two actuator arms [10].
  - (e) Install the two bolts [12], four washers [13], washers [14] and two nuts [15] that attach the two pushrod bearings to the two actuator arms [10].
    - 1) Tighten the two nuts [15] to 63 in-lb (7.1 N·m) - 67 in-lb (7.6 N·m).
  - (f) Connect the electrical connector D922 [6] to the actuator [11].



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SUBTASK 49-15-31-410-002

- (3) Make sure this access panel is closed:

Number    Name/Location

311BL      Stabilizer Trim Access Door

**F. Air Inlet Door Actuator Installation Test**

SUBTASK 49-15-31-860-007

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-15-31-860-010

- (2) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.

SUBTASK 49-15-31-860-011

- (3) Set the APU master switch to the OFF position.

NOTE: The air inlet door closes in approximately 30 seconds.

SUBTASK 49-15-31-860-014

- (4) Do one of the following tasks to remove power from the aircraft:

- (a) Set the BAT switch on the P5 forward overhead panel to the OFF position.  
(b) Do this task: Remove External Power, TASK 24-22-00-860-814.

SUBTASK 49-15-31-700-001

- (5) Do this task: Air Inlet Door Test, TASK 49-15-00-700-801.

———— END OF TASK ————

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AIR INLET DOOR POSITION SWITCH - REMOVAL/INSTALLATION

**1. General**

- A. This procedure has these tasks:
  - (1) A removal of the air inlet door position switch
  - (2) An installation of the air inlet door position switch.
- B. The air inlet door position switch is referred to as the door position switch.
- C. The door position switch is installed aft of the rear pressure bulkhead on the inner side of the air inlet door.

**TASK 49-15-41-000-801**

**2. Air Inlet Door Position Switch Removal**

(Figure 401)

**A. Tools/Equipment**

Reference	Description
STD-858	Tag - DO NOT OPERATE

**B. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Door position switch	49-15-41-01A-010	LOM ALL

**C. Location Zones**

Zone	Area
211	Flight Compartment - Left
314	Stabilizer Torsion Box Compartment - Right

**D. Access Panels**

Number	Name/Location
311BL	Stabilizer Trim Access Door

**E. Prepare for the Removal**

SUBTASK 49-15-41-860-001

- (1) Make sure that the BAT switch, on the P5 forward overhead panel, is in the ON position.

SUBTASK 49-15-41-860-002

- (2) Set the APU master switch, on the P5 forward overhead panel, to the ON position.

SUBTASK 49-15-41-860-013

- (3) Install a DO NOT OPERATE tag, STD-858, to the APU master switch on the P5 forward overhead panel.

SUBTASK 49-15-41-860-011

- (4) Make sure that the air inlet door opens in approximately 30 seconds.

SUBTASK 49-15-41-860-003

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

**F/O Electrical System Panel, P6-2**

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

EFFECTIVITY  
LOM ALL

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**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-15-41-010-001

- (6) Open this access door:

<u>Number</u>	<u>Name/Location</u>
311BL	Stabilizer Trim Access Door

**F. Air Inlet Door Position Switch Removal**

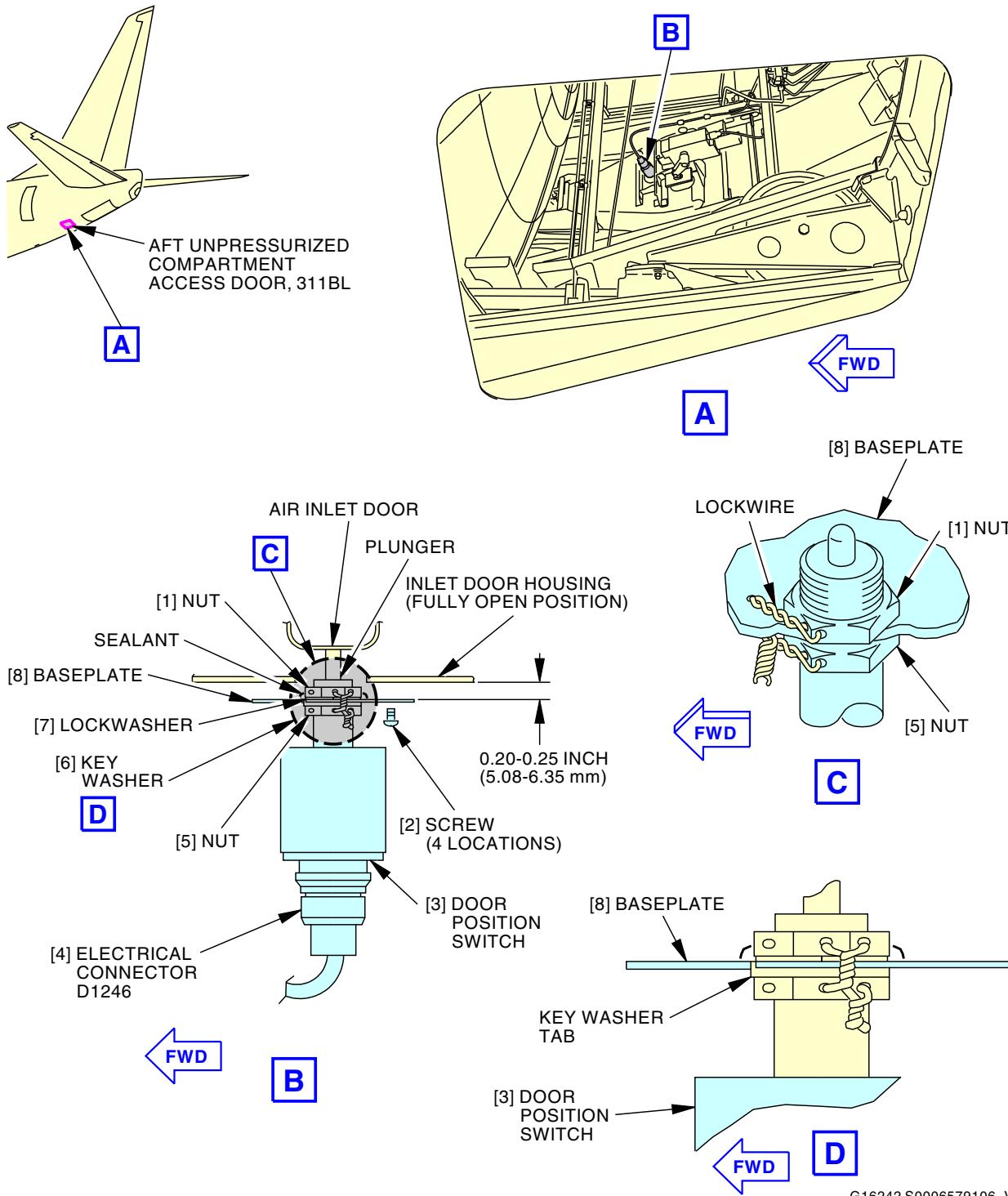
SUBTASK 49-15-41-020-001

- (1) Do these steps to remove the door position switch [3]:
- Disconnect the electrical connector D1246 [4] from the door position switch [3].
  - Remove the screws [2] that attach the baseplate [8] to the inlet door housing.
  - Remove the door position switch [3] and baseplate [8] from the inlet door housing.
  - Remove the lockwire, nut [1], and lockwasher [7] that attach the door position switch [3] to the baseplate [8].
  - Remove the door position switch [3] from the baseplate [8].
  - If it is necessary to replace the door position switch [3], remove the key washer [6] and nut [5].
- NOTE: Keep the key washer and nut for the new or serviceable door position switch.
- (g) Make sure that all necessary protective covers are installed.

———— END OF TASK ————

EFFECTIVITY  
LOM ALL

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**Air Inlet Door Position Switch Installation**  
**Figure 401/49-15-41-990-801**

EFFECTIVITY  
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**TASK 49-15-41-400-801**

**3. Air Inlet Door Position Switch Installation**

(Figure 401)

**A. Tools/Equipment**

Reference	Description
STD-1057	Air Source - Regulated, Dry Filtered, Compressed 60-105 PSIG (414-723.9 KPa)(22 SCFM)
STD-1064	Scraper - Phenolic, Hard Resin

**B. Consumable Materials**

Reference	Description	Specification
A00142	Sealant - Temperature Resistant, Fuel Pressure, And Weather Sealant	BMS5-44
A50110	Sealant - Fuel Tank	BMS5-45 Class B-2
B00130	Alcohol - Isopropyl	TT-I-735
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)
G01912	Lockwire - MS20995NC32, Monel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

**C. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Door position switch	49-15-41-01A-010	LOM ALL

**D. Location Zones**

Zone	Area
211	Flight Compartment - Left
314	Stabilizer Torsion Box Compartment - Right

**E. Access Panels**

Number	Name/Location
311BL	Stabilizer Trim Access Door

**F. Air Inlet Door Position Switch Installation**

SUBTASK 49-15-41-420-001

- (1) Do these steps to install the door position switch [3]:

- (a) If there is remaining sealant on the baseplate [8], lockwasher [7], and nut [1], then do these steps:
- 1) Remove the remaining sealant from the surface with a hard resin phenolic scraper, STD-1064, or an equivalent tool.
  - 2) Clean the surface with alcohol, B00130, and cotton wiper, G00034.
  - 3) Use the a compressed 60-105 PSIG dry filtered regulated air source, STD-1057, to dry the surface.
- NOTE: It is recommended that you use a pressure of 60 psig (414 kPa) – 90 psig (621 kPa) of air or nitrogen to dry the surface.

- (b) If the door position switch [3] was replaced, then do these steps to install the nut [5] and key washer [6] on the new or serviceable door position switch:

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- 1) Install the nut [5] on the new or serviceable door position switch [3] with the flat side of the nut on the top side.
- 2) Put the key washer [6] on the nut [5] with the key washer tab on the top side.
- (c) Loosely install the door position switch [3] on the baseplate [8] with the lockwasher [7] and nut [1].
- (d) Make sure the key washer tab of the key washer [6] is installed in the hole of the baseplate [8] to keep the door position switch [3] in position. See detail D.
- (e) Put the door position switch [3] and baseplate [8] on the inlet door housing.  
**NOTE:** The plunger for the door position switch must touch the air inlet door. Do not compress the plunger to the air inlet door.
- (f) Tighten the nut [1] and nut [5] to adjust the position of the door position switch [3].
  - 1) The clearance between the bottom of the inlet door housing and the top of the baseplate [8] should be 0.20 in. (5.08 mm) - 0.25 in. (6.35 mm).
- (g) Tighten the nut [1] to 30 in-lb (3.4 N·m) – 40 in-lb (4.5 N·m).
- (h) Apply a bead of sealant, A00142, or sealant, A50110, around the lockwasher [7].
- (i) Install the MS20995NC32 lockwire, G01912, on nut [1] and nut [5].
- (j) Install the baseplate [8] on the inlet door housing with the four screws [2].
- (k) Connect the electrical connector D1246 [4] to the door position switch [3].

#### **G. Air Inlet Door Position Switch Installation Test**

SUBTASK 49-15-41-860-005

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-15-41-860-008

- (2) Remove the DO NOT OPERATE tag from the APU master switch on the P5 forward overhead panel.

SUBTASK 49-15-41-860-009

- (3) Set the APU master switch to the OFF position.

SUBTASK 49-15-41-860-010

- (4) Make sure that the air inlet door closes in approximately 30 seconds.

SUBTASK 49-15-41-860-012

- (5) If it is not necessary to do other tasks, set the BAT switch to the OFF position.

#### **H. Put the Airplane Back to Its Usual Condition**

SUBTASK 49-15-41-410-001

- (1) Close this access door:

<u>Number</u>	<u>Name/Location</u>
311BL	Stabilizer Trim Access Door



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———— END OF TASK ————

———— EFFECTIVITY ————  
**LOM ALL**

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ECCN 9E991 BOEING PROPRIETARY - See title page for details



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**DRAIN MAST - SERVICING**

**1. General**

- A. This procedure has the task to do the servicing of the drain mast on the APU cowl door.

**LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-424 PRE HONEYWELL SB 131-49-8023**

- B. There are three witness drain tees to isolate the fuel leakage to the surge control valve, fuel control unit or inlet guide vane (IGV) actuator. The witness drain tee is installed between the drain tube of the component and the forward drain on the APU drain seal.

**LOM ALL**

**TASK 49-16-11-680-801**

**2. Drain Mast Servicing**

(Figure 301)

**A. References**

<b>Reference</b>	<b>Title</b>
49-31-11-000-801	Fuel Control Unit Removal (P/B 401)
49-31-11-400-801	Fuel Control Unit Installation (P/B 401)
49-52-12-000-801	Inlet Guide Vane (IGV) Actuator Removal (P/B 401)
49-52-12-400-801	Inlet Guide Vane (IGV) Actuator Installation (P/B 401)
49-52-41-000-801	Surge Control Valve Removal (P/B 401)
49-52-41-400-801	Surge Control Valve Installation (P/B 401)

**B. Tools/Equipment**

<b>Reference</b>	<b>Description</b>
STD-4049	Container - Fuel Resistant, 1 Gallon (4 Liter)

**C. Location Zones**

<b>Zone</b>	<b>Area</b>
315	APU Compartment - Left
316	APU Compartment - Right

**D. Access Panels**

<b>Number</b>	<b>Name/Location</b>
315A	APU Cowl Door

**E. Prepare for the Servicing of the Drain Mast**

SUBTASK 49-16-11-010-003

- (1) To open the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

(a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.

(b) Open the three latches.

NOTE: Use this sequence: forward latch, aft latch, middle latch.

(c) Open the APU Cowl Door, 315A.

(d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.

(e) Remove the retainer pin from the spring clip on the aft hold-open rod.

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LOM ALL

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**AIRCRAFT MAINTENANCE MANUAL**

- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

**F. Procedure**

**LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-424 PRE HONEYWELL SB 131-49-8023**

SUBTASK 49-16-11-680-001



**WARNING**

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

- (1) Do the servicing of the drain mast [1] on the APU cowl door:

NOTE: A fuel leakage rate of 1 drop for each minute (0.04 cc for each minute) is permitted during an APU operation from the forward drain on the APU drain seal.

- (a) Do these steps to isolate the fuel leakage to the surge control valve:

- 1) Put the 1 gallon (4 l) fuel resistant container, STD-4049 below the witness drain tee [2].
    - 2) Remove the cap from the witness drain tee [2].
    - 3) If you find fuel in the witness drain tee [2], install the cap on the witness drain tee and replace the surge control valve. These are the tasks:
      - Surge Control Valve Removal, TASK 49-52-41-000-801,
      - Surge Control Valve Installation, TASK 49-52-41-400-801.
    - 4) If you did not find fuel in the witness drain tee [2], install the cap on the witness drain tee.

- (b) Do these steps to isolate the fuel leakage to the fuel control unit:

- 1) Put the 1 gallon (4 l) fuel resistant container, STD-4049 below the witness drain tee [3].
    - 2) Remove the cap from the witness drain tee [3].
    - 3) If you find fuel in the witness drain tee [3], install the cap on the witness drain tee and replace the fuel control unit. These are the tasks:
      - Fuel Control Unit Removal, TASK 49-31-11-000-801,
      - Fuel Control Unit Installation, TASK 49-31-11-400-801.
    - 4) If you did not find fuel in the witness drain tee [3], install the cap on the witness drain tee.

- (c) Do these steps to isolate the fuel leakage to the IGV actuator:

- 1) Put the 1 gallon (4 l) fuel resistant container, STD-4049 below the witness drain tee [4].
    - 2) Remove the cap from the witness drain tee [4].
    - 3) If you find fuel in the witness drain tee [4], install the cap on the witness drain tee and replace the IGV actuator. These are the tasks:
      - Inlet Guide Vane (IGV) Actuator Removal, TASK 49-52-12-000-801,

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LOM ALL

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**LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-424 PRE HONEYWELL SB 131-49-8023 (Continued)**

- Inlet Guide Vane (IGV) Actuator Installation, TASK 49-52-12-400-801.
- 4) If you did not find fuel in the witness drain tee [4], install the cap on the witness drain tee.
- 5) Remove the 1 gallon (4 l) fuel resistant container, STD-4049.

**LOM 425-434, 437-447, 450-999; LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-424 POST HONEYWELL SB 131-49-8023**

SUBTASK 49-16-11-680-002



**WARNING**

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

- (2) Do the servicing of the drain mast [1] on the APU cowl door:

NOTE: A fuel leakage rate of 1 drop for each minute (0.04 cc for each minute) is permitted during an APU operation from the forward drain on the APU drain seal.

- (a) Do these steps to isolate the fuel leakage to the surge control valve:

- 1) Put the 1 gallon (4 l) fuel resistant container, STD-4049 below the SCV (surge control valve) drain tube.
- 2) Disconnect both tees (MS21905J6) from the APU fuel drain tube assembly.
- 3) If you find fuel, replace the surge control valve. These are the tasks:
  - Surge Control Valve Removal, TASK 49-52-41-000-801,
  - Surge Control Valve Installation, TASK 49-52-41-400-801.

- (b) Do these steps to isolate the fuel leakage to the fuel control unit:

- 1) Put the 1 gallon (4 l) fuel resistant container, STD-4049 below the FCU (fuel control unit) drain tube.
- 2) Disconnect both tees (MS21905J6) from the APU fuel drain tube assembly.
- 3) If you find fuel, replace the fuel control unit. These are the tasks:
  - Fuel Control Unit Removal, TASK 49-31-11-000-801,
  - Fuel Control Unit Installation, TASK 49-31-11-400-801.

- (c) Do these steps to isolate the fuel leakage to the IGV actuator:

- 1) Put the 1 gallon (4 l) fuel resistant container, STD-4049 below the IGV drain tube.
- 2) Disconnect both tees (MS21905J6) from the APU fuel drain tube assembly.
- 3) If you find fuel, replace the IGV actuator. These are the tasks:
  - Inlet Guide Vane (IGV) Actuator Removal, TASK 49-52-12-000-801,
  - Inlet Guide Vane (IGV) Actuator Installation, TASK 49-52-12-400-801.

- 4) Remove the 1 gallon (4 l) fuel resistant container, STD-4049.

**LOM ALL**

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**LOM ALL**

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SUBTASK 49-16-11-410-003

- (3) To close the access panel, do these steps:

**Number**    **Name/Location**

315A      APU Cowl Door

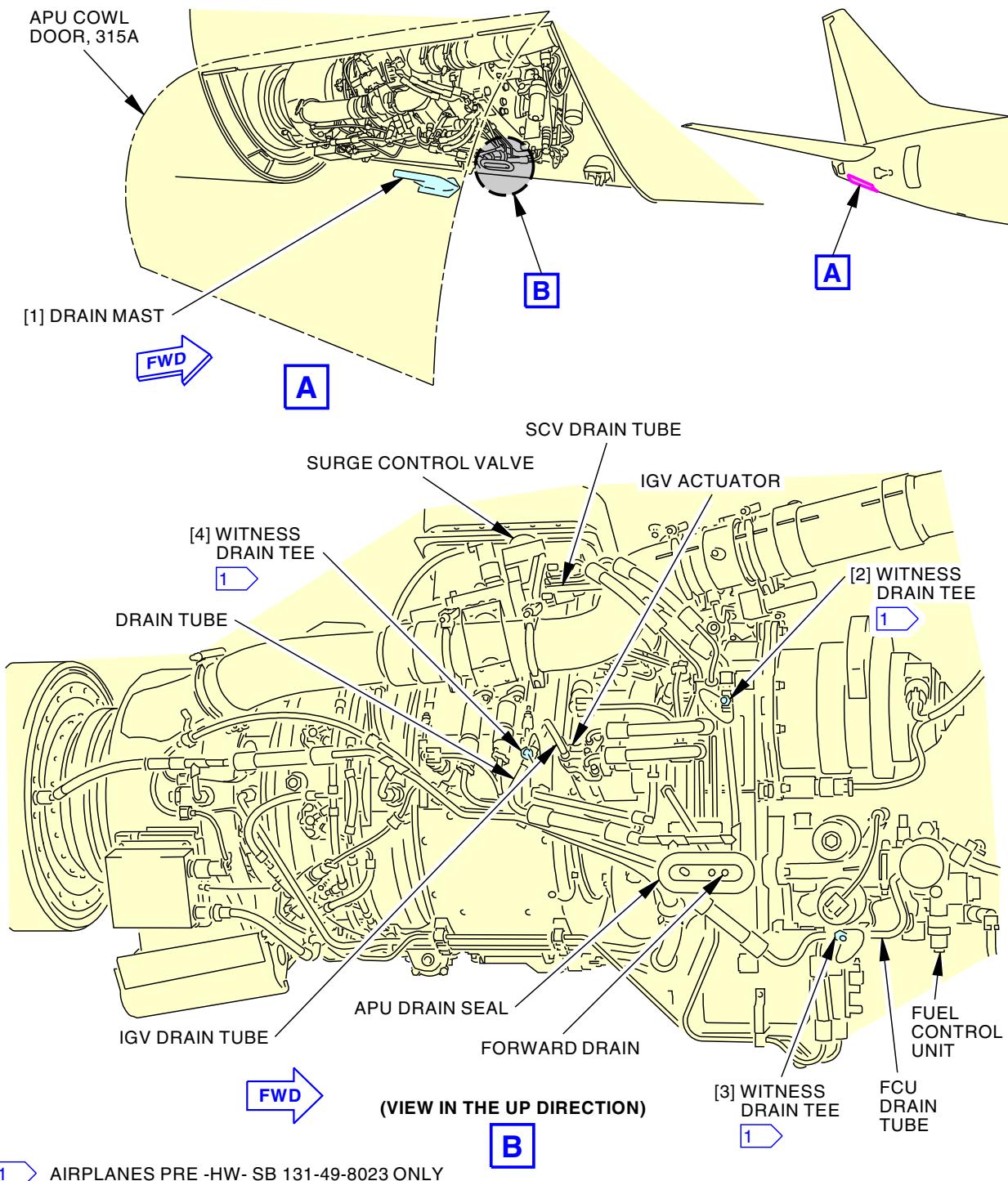
- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

**NOTE:** Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

EFFECTIVITY  
LOM ALL

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### Drain Mast Servicing

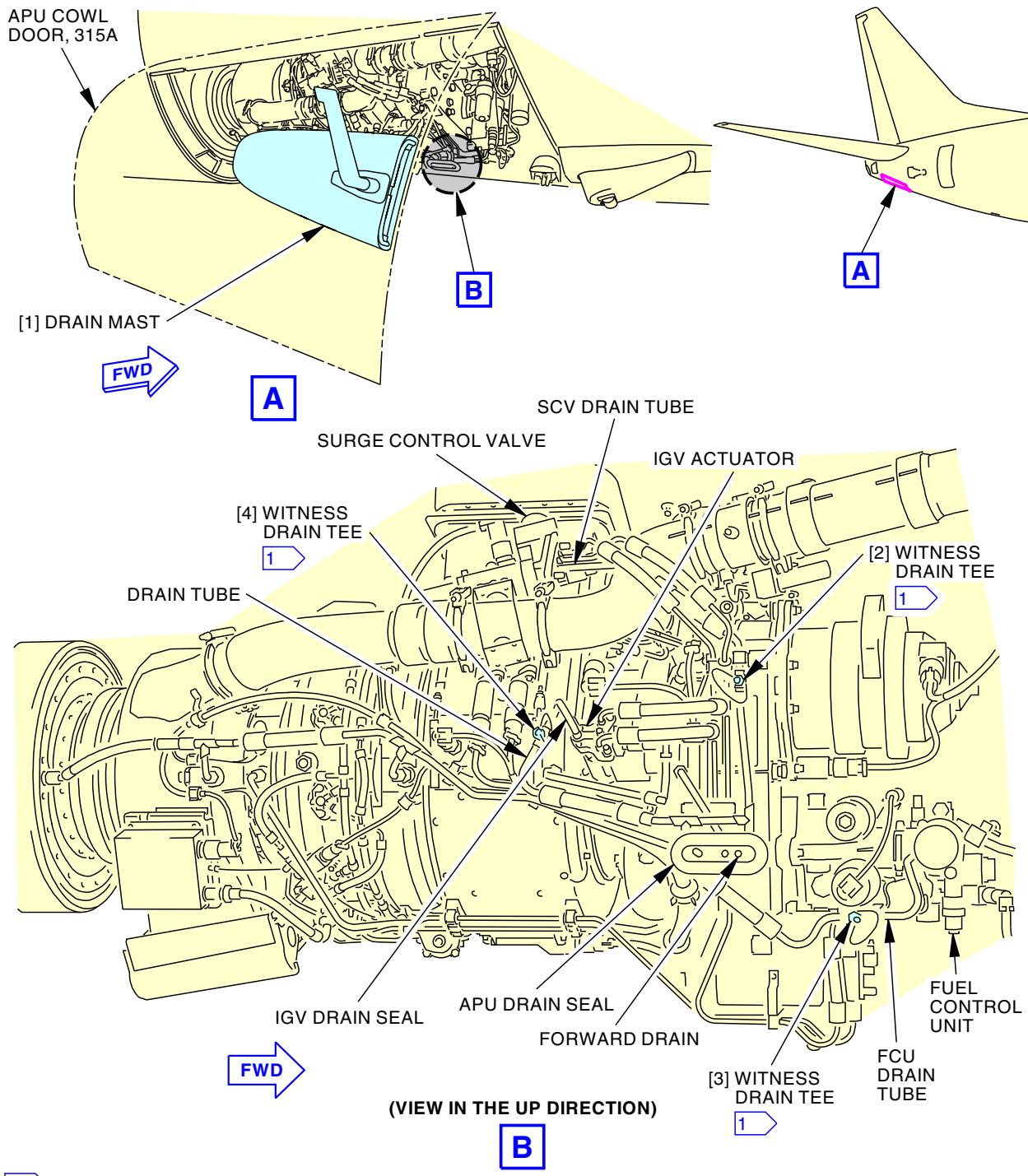
Figure 301/49-16-11-990-803 (Sheet 1 of 2)

EFFECTIVITY  
 LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,  
 422-434, 437-447, 450-464

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**Drain Mast Servicing  
Figure 301/49-16-11-990-803 (Sheet 2 of 2)**

EFFECTIVITY  
LOM 465-999

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DRAIN MAST - INSPECTION/CHECK

**1. General**

- A. This procedure contains scheduled maintenance task data.
- B. This procedure has the task to do an inspection of the drain mast on the APU cowl door.

**TASK 49-16-11-200-801**

**2. Drain Mast Inspection Procedure**

(Figure 601)

**A. References**

Reference	Title
49-11-00-710-802	APU Operation Limits (P/B 201)
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)
49-16-11-680-801	Drain Mast Servicing (P/B 301)

**B. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**C. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**D. Procedure - Inspect the drain mast on the APU cowl door**

SUBTASK 49-16-11-210-004

- (1) Do these steps to inspect the drain mast [1] on the APU cowl door:
  - (a) Visually examine the drain mast [1] for fuel, oil and other fluid leakage.  
*NOTE:* Fuel, oil and other fluids from the APU and the APU compartment will come out of the drain mast hole.
  - (b) If there is no fuel, oil or other fluid leakage, the APU is satisfactory.
  - (c) If there is fuel, oil or other fluid leakage, then do the steps that follow:

SUBTASK 49-16-11-010-004

- (2) To open the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.
- (b) Open the three latches.  
*NOTE:* Use this sequence: forward latch, aft latch, middle latch.
- (c) Open the APU Cowl Door, 315A.
- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.



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- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

SUBTASK 49-16-11-210-003

- (3) Do these steps that follow to find the leak:

- (a) Do these steps:

- 1) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
    - 2) Operate the APU for a minimum of five minutes.
    - 3) During the APU operation, examine the forward drain [5], middle drain [4] and aft drain [3] of the APU drain seal [2] on the APU for fuel, oil or other fluid leakage.

NOTE: Fuel leakage from the fuel control unit, inlet guide vane actuator or surge control valve will drain from the forward drain [5]. Oil leakage from the load compressor seal will drain from the middle drain [4]. Fuel, oil or water leakage from the exhaust duct muffler, eductor housing or combustor will drain from the aft drain [3].

NOTE: A fuel leakage rate of 1 drop for each minute (0.04 cc for each minute) is permitted during an APU operation from the forward drain [5]. If the oil consumption is within the Oil Consumption Limits (APU Operation Limits, TASK 49-11-00-710-802), oil leakage from the forward drain is permitted during APU operation.

NOTE: There is no oil leakage limit from the middle drain [4]. If you find oil leakage, clean the drain and operate the APU for a minimum of 5 minutes, if the leakage continues, you must repair the oil leakage and make sure that the APU oil consumption limit is satisfactory. See figure 201 (APU Operation Limits, TASK 49-11-00-710-802).

- 4) Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.
- 5) If there is more than the fuel leakage rate, do this task: Drain Mast Servicing, TASK 49-16-11-680-801.
- 6) If there is less than the fuel leakage rate, the APU is satisfactory.

SUBTASK 49-16-11-410-004

- (4) To close the access panel, do these steps:

**Number**      **Name/Location**

315A      APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.

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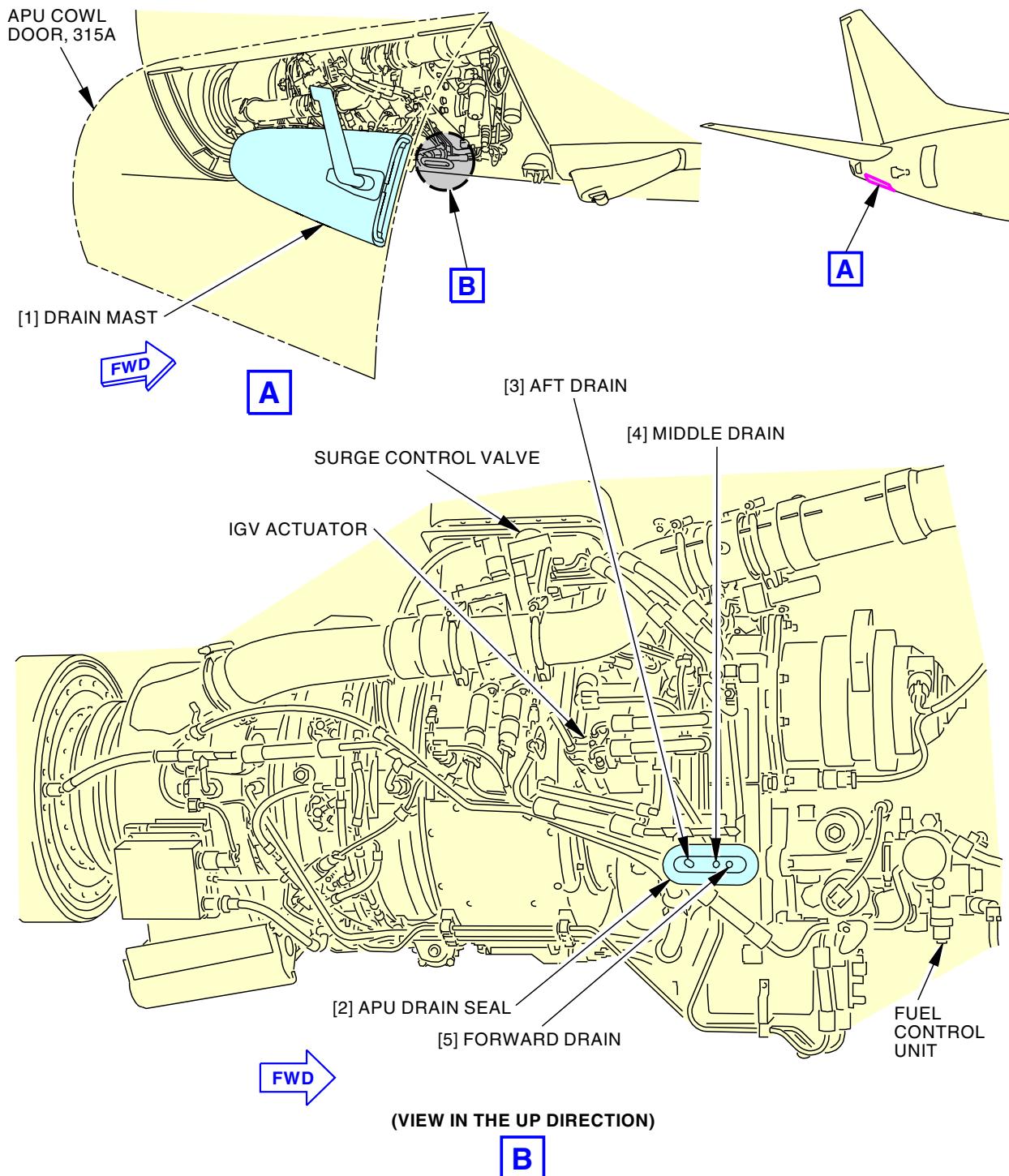
(h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

— EFFECTIVITY —  
**LOM ALL**

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**Drain Mast Inspection  
Figure 601/49-16-11-990-804**

EFFECTIVITY  
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APU DRAINS - CLEANING/PAINTING

**1. General**

- A. This procedure gives the task to clean the APU drains.
- B. The drain tubes and APU drain seal are installed on the bottom of the APU. The drain mast is installed on the APU cowl door.

**TASK 49-16-11-100-801**

**2. Clean the APU Drains**

(Figure 701)

**A. References**

Reference	Title
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)
49-16-12-000-801	Combustor Drain Removal (P/B 401)
49-16-12-400-801	Combustor Drain Installation (P/B 401)
49-17-11-000-801	Insulation Panel Removal (P/B 401)
49-17-11-400-801	Insulation Panel Installation (P/B 401)

**B. Tools/Equipment**

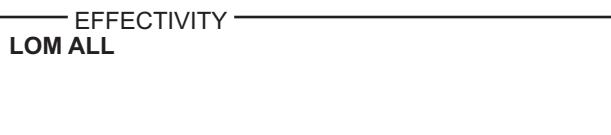
Reference	Description
STD-858	Tag - DO NOT OPERATE
STD-1057	Air Source - Regulated, Dry Filtered, Compressed 60-105 PSIG (414-723.9 KPa)(22 SCFM)
STD-1249	Bit - Drill, Size 54 (0.0550 Inch Diameter)
STD-4049	Container - Fuel Resistant, 1 Gallon (4 Liter)

**C. Consumable Materials**

Reference	Description	Specification
B00130	Alcohol - Isopropyl	TT-I-735
D00006	Compound - Antiseize, Pure Nickel Special - Never-Seez NSBT-8N/-16N	
D00341	Lubricant - Polyphenyl Ether, Vacuum Pump - Santovac 5	
D00504	Grease - Petrolatum	VV-P-236
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)

**D. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
22	Packing	49-52-12-02-025	LOM ALL
		49-52-12-02-030	LOM ALL
		49-52-12-02-035	LOM ALL
25	Packing	49-31-11-02-025	LOM ALL
28	Packing	49-52-12-02-025	LOM ALL
		49-52-12-02-030	LOM ALL



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(Continued)

AMM Item	Description	AIPC Reference	AIPC Effectivity
28 (cont.)		49-52-12-02-035	LOM ALL

**E. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**F. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**G. Prepare for the Cleaning**

SUBTASK 49-16-11-860-001

- (1) Make sure that the Auxiliary Power Unit (APU) master switch, on the P5 forward overhead panel, is OFF.
  - (a) Attach a DO NOT OPERATE tag, STD-858.

SUBTASK 49-16-11-860-002

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

**F/O Electrical System Panel, P6-2**

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-16-11-010-005

- (3) To open the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Support the APU panel (cowl door) under the center latch.

- (b) Open the three latches.

NOTE: Use this sequence: forward latch, aft latch, middle latch.

- (c) Open the APU Cowl Door, 315A.

- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.

- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.

- (f) Disconnect the two hold-open rods from the two spring clips.

- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.

- (h) Install the two retainer pins in the two rod ends.

EFFECTIVITY	
LOM ALL	

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## H. APU Drains Cleaning

SUBTASK 49-16-11-210-001

- (1) Do these steps to inspect the APU drains:
  - (a) Examine the drain tubes, APU drain seal and drain mast for cracks, worn areas and corrosion.
  - (b) Examine the drain tube fittings for damaged threads and cracks.

SUBTASK 49-16-11-160-001

- (2) Do these steps to clean the APU drain tubes:
  - (a) Clean the drain tube [11] for the exhaust duct muffler, drain tube [14] for the eductor housing, drain tube [15] for the combustor drain and duct drain tube [19] for the compressor inlet plenum:
    - 1) Put the 1 gallon (4 l) fuel resistant container, STD-4049, below the exhaust duct muffler.
    - 2) Disconnect the drain tube [11] from the fitting [12] on the exhaust duct muffler.
    - 3) Drain the water and fuel from the drain tube [11] and exhaust duct muffler into the 1 gallon (4 l) fuel resistant container, STD-4049.
    - 4) Put the 1 gallon (4 l) fuel resistant container, STD-4049, below the eductor housing.
    - 5) Disconnect the drain tube [14] from the fitting [13] on the eductor housing.
    - 6) Drain the water and oil from the drain tube [14] and eductor housing into the 1 gallon (4 l) fuel resistant container, STD-4049.
    - 7) Put the 1 gallon (4 l) fuel resistant container, STD-4049, below the diffuser housing.



**WARNING**

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

- 8) Disconnect the drain tube [15] from the combustor drain.
- 9) Drain the fuel from the drain tube [15] and combustor drain into the 1 gallon (4 l) fuel resistant container, STD-4049.
- 10) Put the 1 gallon (4 l) fuel resistant container, STD-4049, below the compressor inlet plenum.
- 11) Disconnect the duct drain tube [19] from the fitting [16] on the compressor inlet plenum.
- 12) Drain the water and other fluids from the duct drain tube [19] and compressor inlet plenum into the 1 gallon (4 l) fuel resistant container, STD-4049.
- 13) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057, to blow the air through the drain tube [11], drain tube [14], drain tube [15], and duct drain tube [19].  
NOTE: It is recommended that you use a pressure of 60 psig (413.7 kPa) - 90 psig (620.5 kPa) of air or nitrogen to blow the air through the four drain tubes.
- 14) Make sure that the air flows through the drain tube [11], drain tube [14], and drain tube [15] to the aft drain [8] on the APU drain seal [9].

EFFECTIVITY  
LOM ALL

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- 15) Make sure that the air flows through the duct drain tube [19] to the APU compartment.
  - 16) Do this task: Combustor Drain Removal, TASK 49-16-12-000-801.
  - 17) Use a drill bit, STD-1249, to clear the combustor drain hole for blockage.  
NOTE: The inner diameter of the combustor drain hole is 0.060 in. (1.5 mm).
  - 18) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057, to blow the air through the four drain holes of the exhaust duct muffler, eductor housing, diffuser housing boss and compressor inlet plenum.  
NOTE: You will hear a different noise from the diffuser housing boss when you blow air through the drain hole. The noise you hear is satisfactory.
  - 19) Do this task: Combustor Drain Installation, TASK 49-16-12-400-801.  
NOTE: The drain tube is connected to the combustor drain during the combustor drain installation.
  - 20) Apply a thin layer of Pure Nickel Special compound, D00006, on the threads of the fitting [16].
  - 21) Connect the duct drain tube [19] to the fitting [16] on the compressor inlet plenum.
    - a) Tighten the fitting [16] to 95 in-lb (10.7 N·m).
  - 22) Apply a thin layer of Pure Nickel Special compound, D00006, on the threads of the fitting [13].
  - 23) Connect the drain tube [14] to the fitting [13] on the eductor housing.
    - a) Tighten the fitting [13] to 160 in-lb (18.1 N·m).
  - 24) Apply a thin layer of Pure Nickel Special compound, D00006, on the threads of the fitting [12].
  - 25) Connect the drain tube [11] to the fitting [12] on the exhaust duct muffler.
    - a) Tighten the fitting [12] to 230 in-lb (26.0 N·m).
  - 26) Remove the 1 gallon (4 l) fuel resistant container, STD-4049.
- (b) Clean the drain tube [10] for the APU engine:
- 1) Put the 1 gallon (4 l) fuel resistant container, STD-4049, below the APU engine.
  - 2) Disconnect the drain tube [10] from the APU engine.
  - 3) Drain the oil from the drain tube [10] and APU engine into the 1 gallon (4 l) fuel resistant container, STD-4049.
  - 4) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057, to blow the air through the drain tube [10].
  - 5) Make sure that the air flows through the drain tube [10] to the middle drain [7] on the APU drain seal [9].
  - 6) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057, to blow the air through the drain hole of the APU engine.
  - 7) If you find blockage in the drain tube [10] or the drain hole of the APU engine, do a visual inspection of the compressor inlet plenum:
    - a) Loosen the captive screws [24] that attach the access door [23] to the compressor inlet plenum.

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- b) Remove the access door [23] from the compressor inlet plenum.

NOTE: A lanyard is attached to the access door to keep the access door with the APU.

- c) Visually examine the compressor inlet plenum for blockage of unwanted materials.  
d) If you find blockage of unwanted materials, remove all the unwanted materials from the area.  
e) Install the access door [23] to the compressor inlet plenum with the captive screws [24].

8) Connect the drain tube [10] to the APU engine.

9) Remove the 1 gallon (4 l) fuel resistant container, STD-4049.

- (c) Clean the drain tube [2] for the surge control valve, drain tube [4] for the fuel control unit and drain tube [18] for the inlet guide vane (IGV) actuator:

- 1) Put the 1 gallon (4 l) fuel resistant container, STD-4049, below the surge control valve.
- 2) Loosen the bolts [21] that attach the bracket [20] to the surge control valve.
- 3) Disconnect the drain tube [2] from the surge control valve.
- 4) Remove the two packings [22] from the drain tube [2].
  - a) Discard the two packings [22].
- 5) Drain the fuel from the drain tube [2] and surge control valve into the 1 gallon (4 l) fuel resistant container, STD-4049.
- 6) Put the 1 gallon (4 l) fuel resistant container, STD-4049, below the IGV actuator.
- 7) Loosen the bolts [29] that attach the bracket [30] to the IGV actuator.
- 8) Disconnect the drain tube [18] from the IGV actuator.
- 9) Remove the two packings [28] from the drain tube [18].
  - a) Discard the two packings [28].
- 10) Drain the fuel from the drain tube [18] and IGV actuator into the 1 gallon (4 l) fuel resistant container, STD-4049.
- 11) Put the 1 gallon (4 l) fuel resistant container, STD-4049, below the fuel control unit.
- 12) Loosen the bolts [26] that attach the bracket [27] to the fuel control unit.
- 13) Disconnect the drain tube [4] from the fuel control unit.
- 14) Remove the two packings [25] from the drain tube [4].
  - a) Discard the two packings [25].
- 15) Drain the fuel from the drain tube [4] and fuel control unit into the 1 gallon (4 l) fuel resistant container, STD-4049.

**LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-424 PRE HONEYWELL SB 131-49-8023**

- 16) Remove the caps on the three witness drain tees [3], [17], [5], located between the three drain tubes and the forward drain.

**LOM ALL**

EFFECTIVITY  
**LOM ALL**

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**CAUTION**

DO NOT BLOW THE AIR THROUGH THE SUPPLY, RETURN AND DRAIN HOLES OF THE SURGE CONTROL VALVE, IGV ACTUATOR AND FUEL CONTROL UNIT. DAMAGE TO THE EQUIPMENT CAN OCCUR.

- 17) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057, to blow the air through the drain tube [2], drain tube [4], and drain tube [18].
- 18) Make sure that the air flows through the drain tube [2], drain tube [4], and drain tube [18] to the forward drain [6] on the APU drain seal [9].

**LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-424 PRE HONEYWELL SB 131-49-8023**

- 19) Install the caps on the three witness drain tees [3], [17], [5].

**LOM ALL**

- 20) Lubricate the two new packings [22] with a light coat of Santovac 5 lubricant, D00341, or grease, D00504.
- 21) Install the two packings [22] on the drain tube [2].
- 22) Connect the drain tube [2] with the bracket [20] to the surge control valve.
- 23) Tighten the bolts [21] that attach the bracket [20] to the surge control valve to 50 in-lb (5.6 N·m).
- 24) Lubricate the two new packings [28] with a light coat of Santovac 5 lubricant, D00341, or grease, D00504.
- 25) Install the two packings [28] on the drain tube [18].
- 26) Connect the drain tube [18] with the bracket [30] to the IGV actuator.
- 27) Tighten the bolts [29] that attach the bracket [30] to the IGV actuator to 50 in-lb (5.6 N·m).
- 28) Lubricate the two new packings [25] with a light coat of Santovac 5 lubricant, D00341, or grease, D00504.
- 29) Install the two packings [25] on the drain tube [4].
- 30) Connect the drain tube [4] with the bracket [27] to the fuel control unit.
- 31) Tighten the bolts [26] that attach the bracket [27] to the fuel control unit to 50 in-lb (5.6 N·m).
- 32) Remove the 1 gallon (4 l) fuel resistant container, STD-4049.

**SUBTASK 49-16-11-110-001**

- (3) Do these steps to clean the APU drain seal [9]:
  - (a) Clean the APU drain seal [9] with alcohol, B00130, and a cotton wiper, G00034.
  - (b) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057, to dry the APU drain seal [9].

**NOTE:** It is recommended that you use a pressure of 60 psig (413.7 kPa) - 90 psig (620.5 kPa) of air or nitrogen to dry the surfaces of the APU drain seal and drain mast.

**SUBTASK 49-16-11-110-002**

- (4) Do these steps to clean the drain mast [1] and drain cup [31] on the APU cowl door:
  - (a) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057, to blow the air through the drain hole on the drain mast [1] or the drain hole in the drain cup [31].

EFFECTIVITY  
**LOM ALL**

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- (b) Make sure that the air flows through the drain tube [33] to the drain mast [1] or drain cup [31].
- (c) If the air does not flow through the drain tube [33] or the drain mast [1], do these steps to clean the drain tube or drain mast [1]:

**NOTE:** It is not necessary to remove the insulation panel from the APU cowl door or to disconnect the two clamps from the drain tube if you can gain access to the unwanted materials or the blockage in the drain tube.

  - 1) To remove the insulation panel from the APU cowl door, do this task: Insulation Panel Removal, TASK 49-17-11-000-801.
  - 2) Disconnect the clamps [32] and remove the drain tube from the drain cup [31].
  - 3) Remove the unwanted materials or blockage from the drain tube [33].
  - 4) Use a plastic or nylon-coated wire, flexible non-metal brush or equivalent tool to clear the inner tube of the drain mast [1].
  - 5) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057, to clear the drain tube [33] and drain mast [1].
  - 6) If the clamps [32] were disconnected during the drain tube removal, install the drain tube [33] to the drain cup [31] and connect the two clamps.
  - 7) If the insulation panel was removed from the APU cowl door, install the insulation panel, do this task: Insulation Panel Installation, TASK 49-17-11-400-801.
- (d) Clean the drain cup [31] with alcohol, B00130, and a cotton wiper, G00034.
- (e) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057, to dry the drain cup [31].

**SUBTASK 49-16-11-210-002**

- (5) Make sure that the APU drain seal [9] aligns with the drain cup [31] on the APU cowl door, do these steps:
  - (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
  - (b) Disconnect the two hold-open rods from the two brackets.
  - (c) Put the two hold-open rods in the two spring clips on the APU cowl door.
  - (d) Make sure the APU drain seal [9] correctly engages the drain cup [31] while you close the APU cowl door.
  - (e) Open the APU cowl door.
  - (f) Disconnect the two hold-open rods from the two spring clips.
  - (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
  - (h) Install the two retainer pins in the two rod ends.

**I. APU Drains Installation Test**

**SUBTASK 49-16-11-860-003**

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-16-11-860-004

- (2) Remove the DO-NOT-OPERATE tag from the APU master switch, on the P5 forward overhead panel.

SUBTASK 49-16-11-790-001

- (3) Do the installation test for the APU drains:
  - (a) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
  - (b) Operate the APU for a minimum of five minutes.
  - (c) During the APU operation, examine the fuel supply, return and drain tube connections for the surge control valve, IGV actuator and fuel control unit for signs of fuel leakage.

NOTE: A fuel leakage rate of 1 drop for each minute (0.04 cc for each minute) is permitted during an APU operation from the forward drain on the APU drain seal.
  - (d) Examine the APU drain tubes, drain tube fittings and APU drain seal for signs of fuel leakage.
  - (e) If you find fuel leakage in the tube connections, tubes and APU drain seal or more than the fuel leakage rate from the forward drain, do these steps to repair the leakage:
    - 1) Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.
    - 2) Install a DO NOT OPERATE tag, STD-858, to the APU master switch, on the P5 forward overhead panel.
    - 3) Repair the cause of the fuel leakage.
    - 4) Remove the DO-NOT-OPERATE tag from the APU master switch, on the P5 forward overhead panel.
    - 5) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
    - 6) During the APU operation, examine the fuel leakage area(s) that you found before for signs of leakage.
    - 7) If you find fuel leakage or more than the fuel leakage rate, do the leakage repair again.
  - (f) If it is not necessary to do other tasks, do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

**J. Put the Airplane Back to Its Usual Condition**

SUBTASK 49-16-11-410-005

- (1) To close the access panel, do these steps:

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

315A	APU Cowl Door
------	---------------

- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
  - (b) Disconnect the two hold-open rods from the two brackets.
  - (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
  - (d) Install the retainer pin in the rod end of the forward hold-open rod.
  - (e) Install the retainer pin to the spring clip on the aft hold-open rod.

EFFECTIVITY  
LOM ALL

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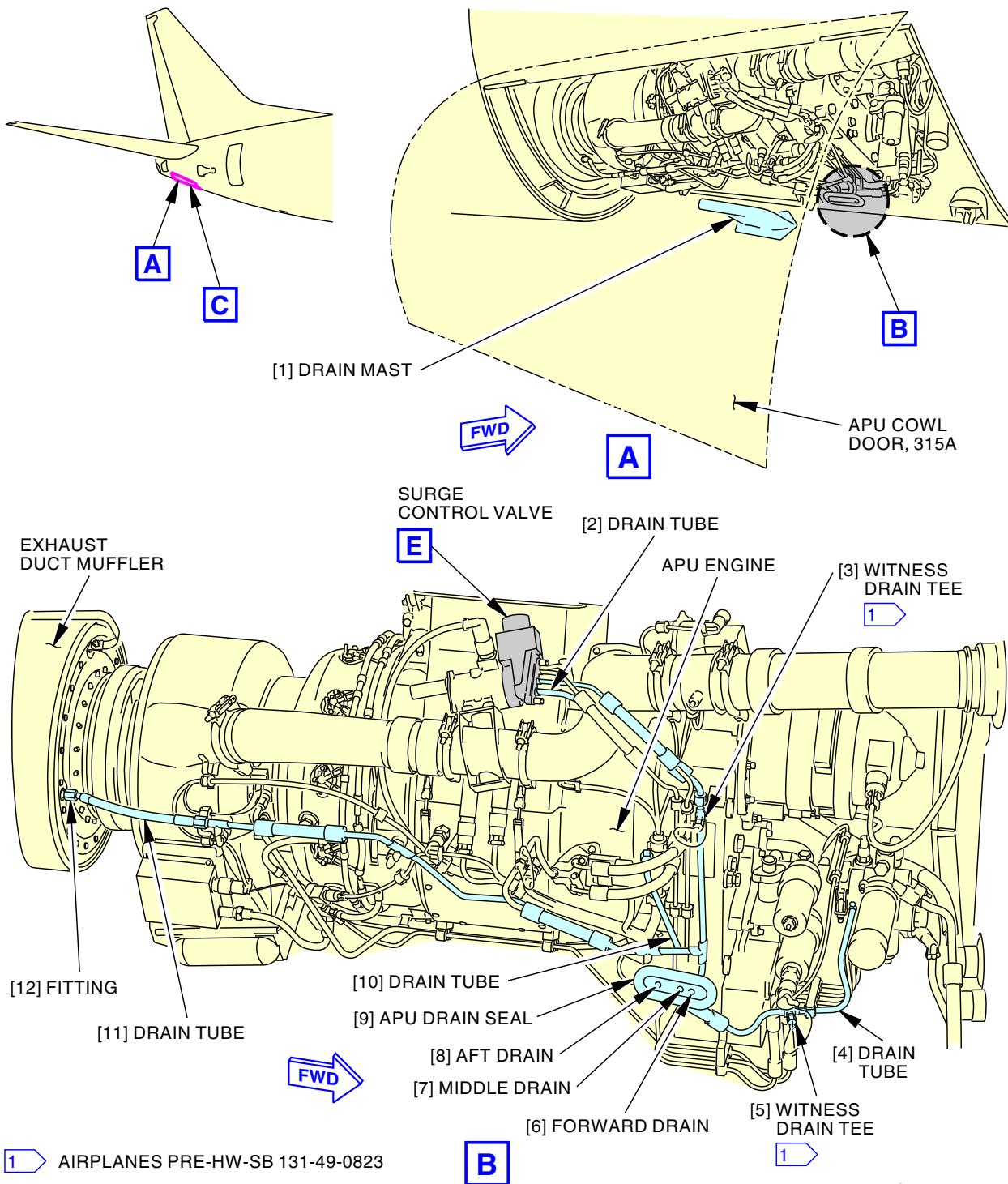
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

EFFECTIVITY  
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**49-16-11**



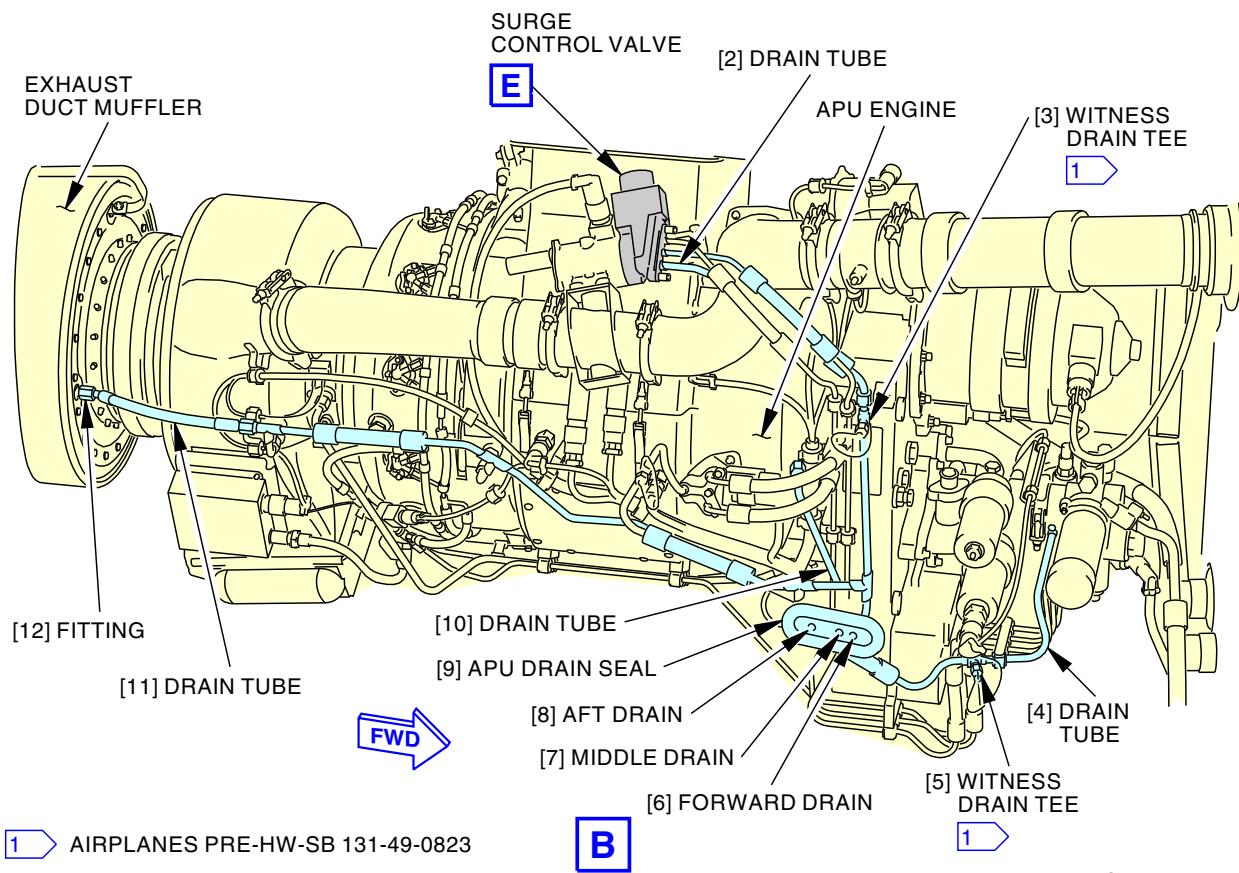
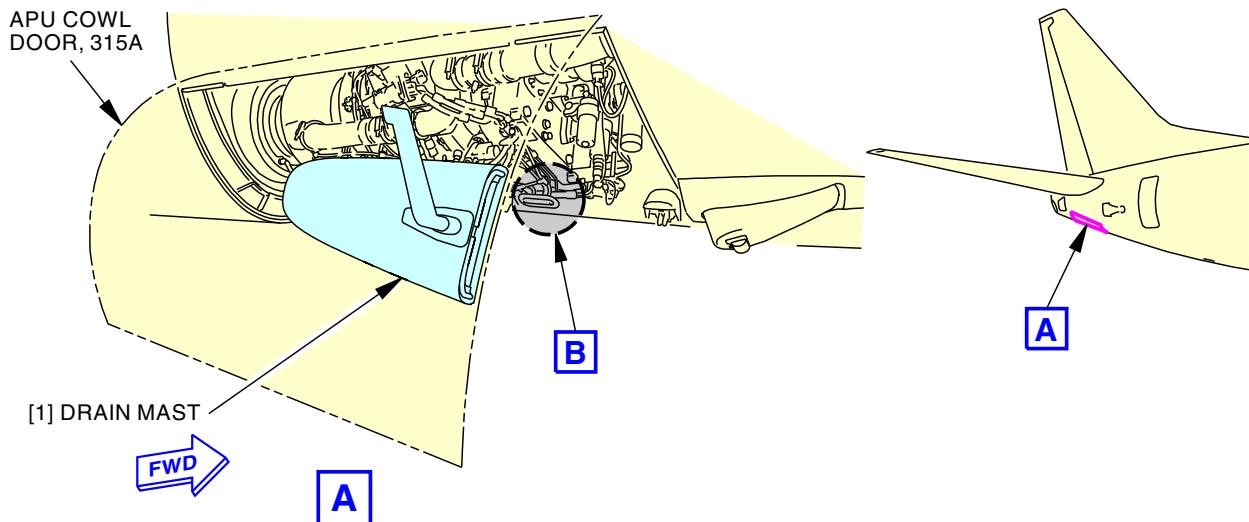
**APU Drains Cleaning**  
**Figure 701/49-16-11-990-801 (Sheet 1 of 5)**

EFFECTIVITY  
LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,  
422-434, 437-447, 450-464

**49-16-11**

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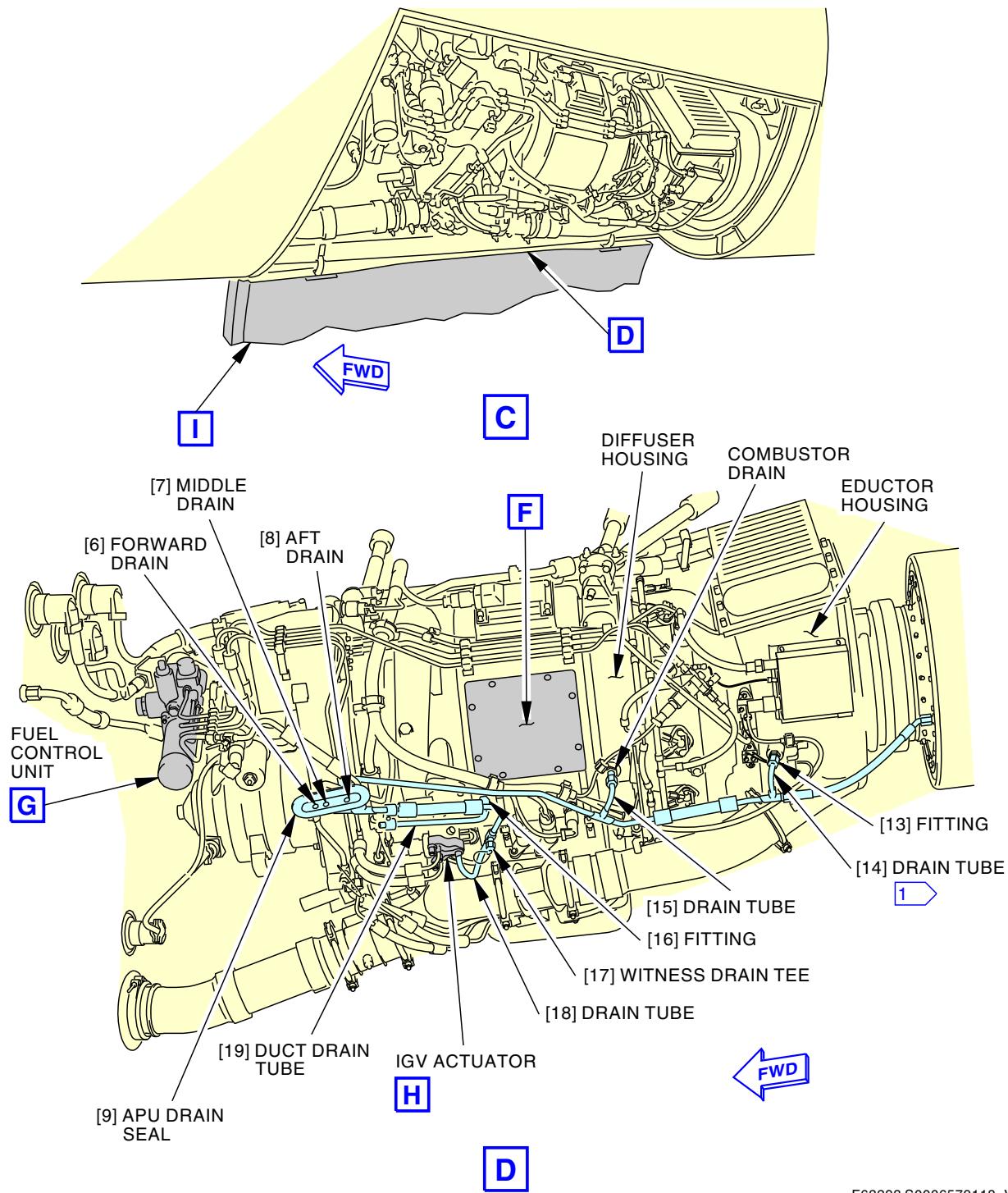
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**APU Drains Cleaning**  
Figure 701/49-16-11-990-801 (Sheet 2 of 5)

EFFECTIVITY  
LOM 465-999

**49-16-11**

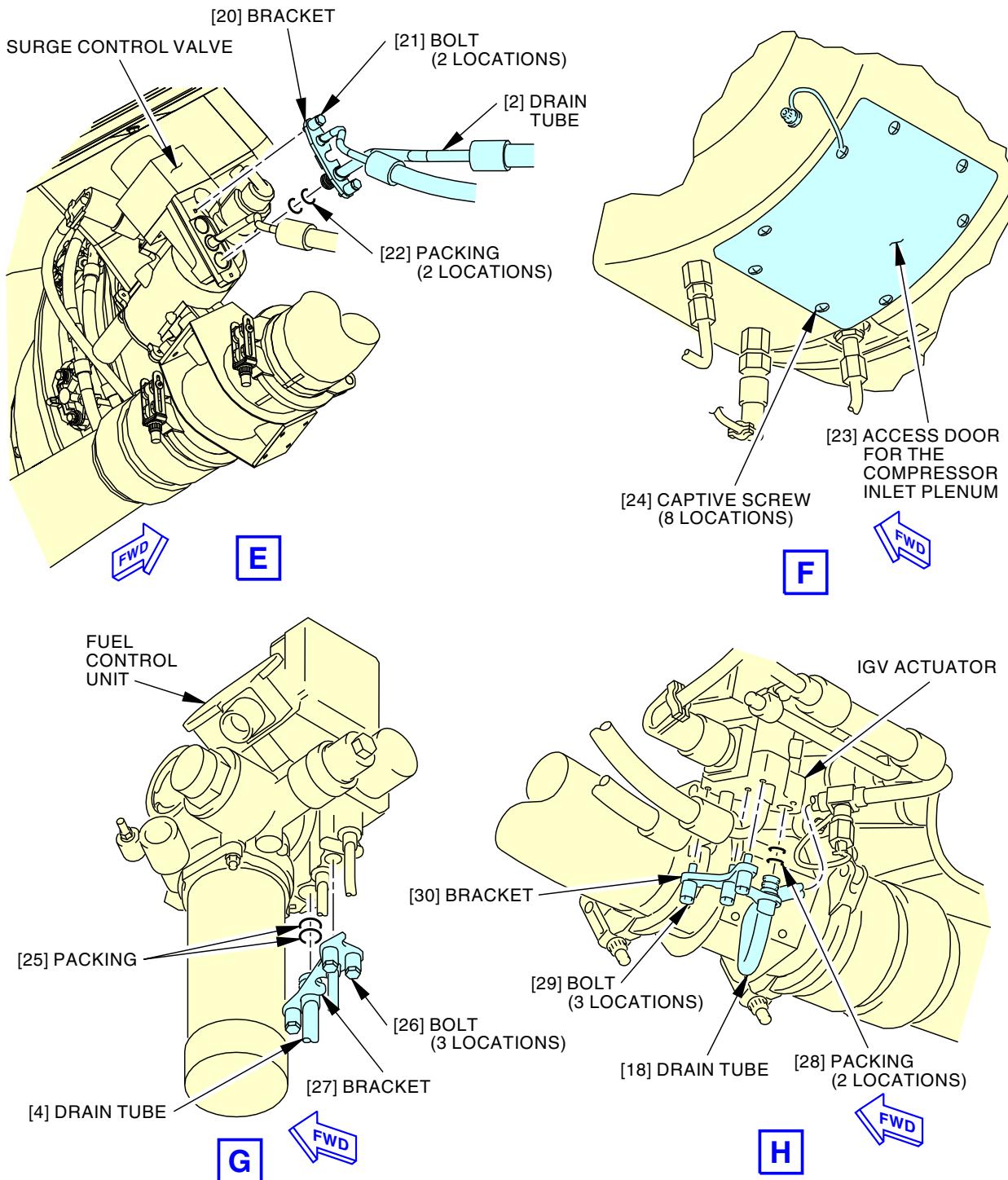


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**APU Drains Cleaning**  
**Figure 701/49-16-11-990-801 (Sheet 3 of 5)**

EFFECTIVITY  
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**49-16-11**

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AIRCRAFT MAINTENANCE MANUAL**


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**APU Drains Cleaning**  
**Figure 701/49-16-11-990-801 (Sheet 4 of 5)**

EFFECTIVITY  
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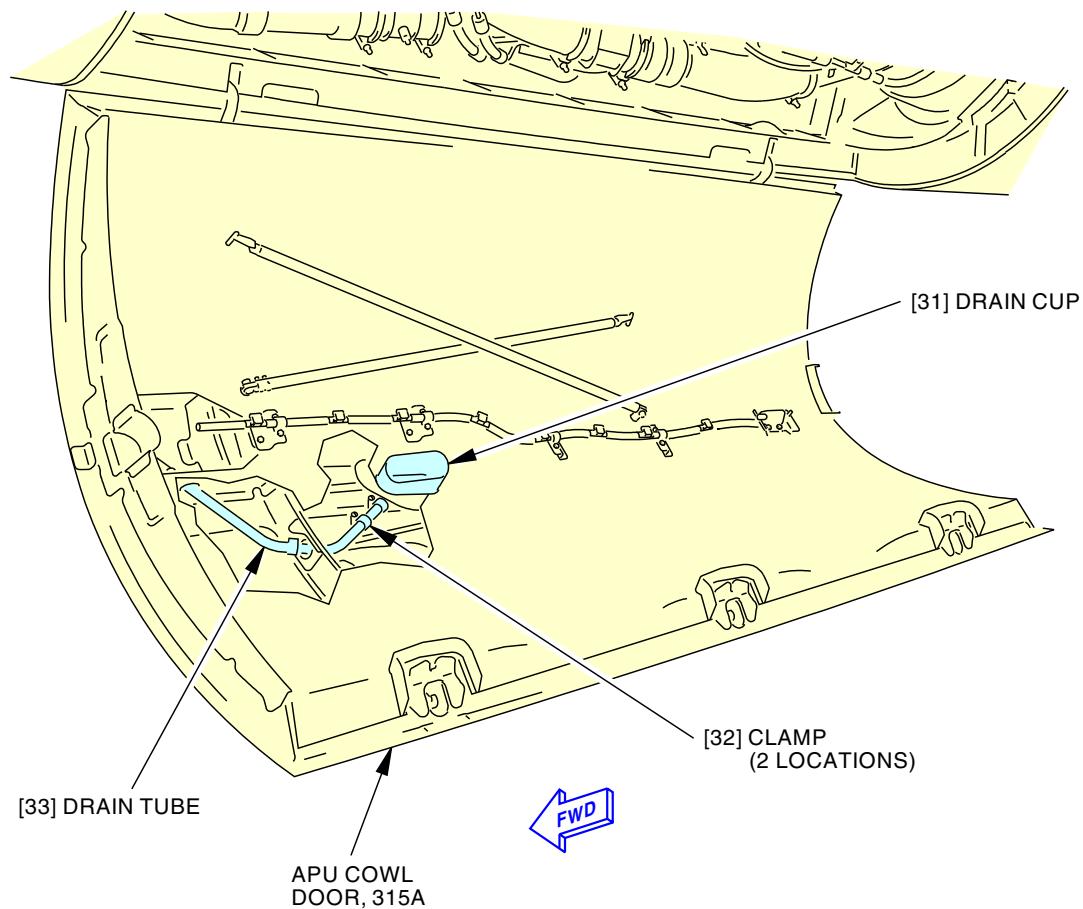
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**APU Drains Cleaning**  
Figure 701/49-16-11-990-801 (Sheet 5 of 5)

EFFECTIVITY  
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**COMBUSTOR DRAIN - REMOVAL/INSTALLATION**

**1. General**

- A. This procedure has these tasks:
  - (1) A removal of the combustor drain
  - (2) An installation of the combustor drain.
- B. The combustor drain is also referred to as the orificed tube adapter.
- C. The combustor drain is installed on the bottom of the diffuser housing.

**TASK 49-16-12-000-801**

**2. Combustor Drain Removal**

(Figure 401)

**A. Tools/Equipment**

<b>Reference</b>	<b>Description</b>
STD-4049	Container - Fuel Resistant, 1 Gallon (4 Liter)

**B. Location Zones**

<b>Zone</b>	<b>Area</b>
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**C. Access Panels**

<b>Number</b>	<b>Name/Location</b>
315A	APU Cowl Door

**D. Prepare for the Removal**

**SUBTASK 49-16-12-860-001**

- (1) Make sure the APU master switch on the P5 forward overhead panel is OFF and install a DO-NOT-OPERATE tag.

**SUBTASK 49-16-12-860-002**

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

**F/O Electrical System Panel, P6-2**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
A	14	C00033	AUX POWER UNIT CONT

**SUBTASK 49-16-12-010-002**

- (3) To open the access panel, do these steps:

**Number**      **Name/Location**

315A      APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.
- (b) Open the three latches.

**NOTE:** Use this sequence: forward latch, aft latch, middle latch.

EFFECTIVITY  
LOM ALL

**49-16-12**



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- (c) Open the APU Cowl Door, 315A.
- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

**E. Combustor Drain Removal**

SUBTASK 49-16-12-020-001

- (1) Do these steps to remove the combustor drain [3]:
  - (a) Put the 1 gallon (4 l) fuel resistant container, STD-4049 below the diffuser housing.



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

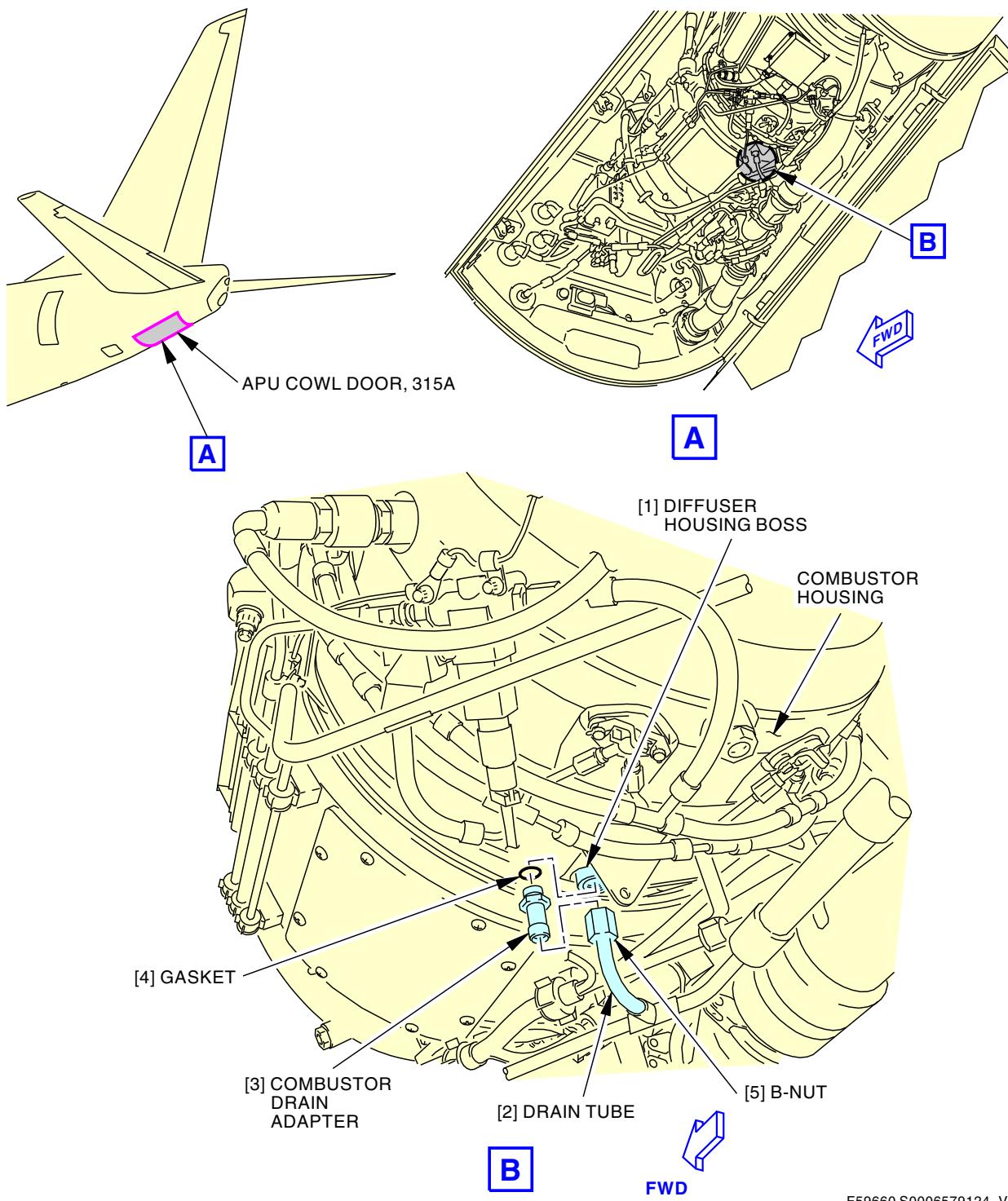
- (b) Disconnect the drain tube [2] from the combustor drain [3].
- (c) Drain the fuel from the drain tube [2] and combustor drain [3] into the 1 gallon (4 l) fuel resistant container, STD-4049.

NOTE: Fuel is usually not found in the combustor drain [3]. Fuel in the combustor drain shows that there is a problem with the fuel system.
- (d) Remove the combustor drain [3] from the diffuser housing boss [1].
- (e) Remove the gasket [4] from the combustor drain [3].
  - 1) Discard the gasket [4].
- (f) Install the caps on the drain tube [2] and diffuser housing boss [1].
- (g) Make sure you install all necessary protection covers.
- (h) Remove the 1 gallon (4 l) fuel resistant container, STD-4049.

———— END OF TASK ————

EFFECTIVITY  
LOM ALL

**49-16-12**



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**Combustor Drain Installation**  
**Figure 401/49-16-12-990-801**

 EFFECTIVITY  
 LOM ALL

**49-16-12**



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**TASK 49-16-12-400-801**

**3. Combustor Drain Installation**

(Figure 401)

**A. References**

Reference	Title
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)

**B. Tools/Equipment**

Reference	Description
STD-1057	Air Source - Regulated, Dry Filtered, Compressed 60-105 PSIG (414-723.9 KPa)(22 SCFM)

**C. Consumable Materials**

Reference	Description	Specification
D00006	Compound - Antiseize, Pure Nickel Special - Never-Seez NSBT-8N/-16N	

**D. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Combustor drain	49-16-12-02-050	LOM ALL
4	Gasket	49-16-12-02-055	LOM ALL

**E. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**F. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**G. Procedure**

SUBTASK 49-16-12-160-001



**CAUTION** REMOVE THE PROTECTION COVERS FROM THE OPENINGS AS NECESSARY. IF YOU DO NOT REMOVE THE PROTECTION COVERS, DAMAGE TO THE APU CAN OCCUR.

- (1) Do these steps to clean the combustor drain [3]:

- Remove the caps from the drain tube [2] and diffuser housing boss [1].
- Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057 to blow the air through the drain tube [2] and the drain hole of the diffuser housing boss [1].

**NOTE:** It is recommended that you use a pressure of 60-90 psig (414-620 kPa) of air or nitrogen to blow the air through the drain tube and drain hole.

**NOTE:** You will hear a different noise from the diffuser housing boss when you blow air through the drain hole. The noise you hear is satisfactory.

- Make sure the air flows through the drain tube [2] to the aft drain on the APU drain seal.

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SUBTASK 49-16-12-420-001

- (2) Do these steps to install the combustor drain [3]:

- (a) Apply a thin layer of Pure Nickel Special compound, D00006 on the threads of the combustor drain [3].

NOTE: There are two threaded ends on the combustor drain [3]. You apply the Pure Nickel Special compound, D00006 on the two threaded ends.

- (b) Install the gasket [4] on the combustor drain [3].

- (c) Install the combustor drain [3] adapter in the diffuser housing boss [1].

- 1) Tighten the combustor drain [3] adapter B-nut to 125 in-lb (14.1 N·m).

- (d) Connect the drain tube [2] to the combustor drain [3].

- 1) Tighten the B-nut [5] to 215 in-lb (24 N·m) - 280 in-lb (32 N·m).

- (e) Make sure there is no air leakage from the drain tube.

## H. Combustor Drain Installation Test

SUBTASK 49-16-12-860-003

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-16-12-860-004

- (2) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.

SUBTASK 49-16-12-790-001

- (3) Do the installation test for the combustor drain [3]:

- (a) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.

- (b) Operate the APU for a minimum of five minutes.

- (c) During the APU operation, examine the combustor drain [3] for signs of air leakage.

- (d) If you find air leakage, do these steps to repair the leakage:

- 1) Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

- 2) Install a DO-NOT-OPERATE tag to the APU master switch on the P5 forward overhead panel.

- 3) Repair the cause of the air leakage.

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.

- 5) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.

- 6) During the APU operation, examine the combustor drain [3] for signs of air leakage.

- 7) If you find air leakage, do the leakage repair again.

- (e) If it is not necessary to do other tasks, do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

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

SUBTASK 49-16-12-410-002

- (1) To close the access panel, do these steps:

**Number**      **Name/Location**

315A      APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the Auxiliary Power Unit (APU) compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

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COMBUSTOR DRAIN - CLEANING/PAINTING

1. General

- A. This procedure contains scheduled maintenance task data.
- B. This procedure has the task to clean the combustor drain. The combustor drain is installed on the bottom of the diffuser housing.

**TASK 49-16-12-100-801**

2. Combustor Drain Cleaning

A. References

Reference	Title
49-16-12-000-801	Combustor Drain Removal (P/B 401)
49-16-12-400-801	Combustor Drain Installation (P/B 401)

B. Tools/Equipment

Reference	Description
STD-1057	Air Source - Regulated, Dry Filtered, Compressed 60-105 PSIG (414-723.9 KPa)(22 SCFM)
STD-1249	Bit - Drill, Size 54 (0.0550 Inch Diameter)

C. Location Zones

Zone	Area
315	APU Compartment - Left
316	APU Compartment - Right

D. Procedure

SUBTASK 49-16-12-160-002

- (1) Do these steps to clean the combustor drain:

NOTE: There is no operational checkout for the combustor drain. You must clean the combustor drain to make sure there is no blockage of unwanted materials in the diffuser housing.

- (a) Do this task: Combustor Drain Removal, TASK 49-16-12-000-801.
  - (b) Examine the combustor drain and the drain tube for damaged threads and cracks.
  - (c) Use a drill bit, STD-1249 or equivalent tool to clear the combustor drain hole for blockage.
- NOTE: The inner diameter of the combustor drain hole is 0.060 inch (1.5 mm).
- (d) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057 to blow the air through the drain hole of the diffuser housing boss.

NOTE: It is recommended that you use a pressure of 60-90 psig (414-620 kPa) of air or nitrogen to blow the air through the drain hole of the diffuser housing boss.

NOTE: You will hear a different noise from the diffuser housing boss when you blow air through the drain hole. The noise you hear is satisfactory.

- (e) Do this task: Combustor Drain Installation, TASK 49-16-12-400-801.

———— END OF TASK ————

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INSULATION PANEL - REMOVAL/INSTALLATION

**1. General**

- A. This procedure has these tasks:
  - (1) Removal of the insulation panel
  - (2) Installation of the insulation panel.
- B. There are seven insulation panels installed on the Auxiliary Power Unit (APU) cowl door and on the APU compartment walls.
- C. You can replace the insulation panel on the APU cowl door with the APU cowl door removed or installed on the airplane.
- D. You must remove the APU to replace the other six insulation panels on the APU compartment walls.

**TASK 49-17-11-000-801**

**2. Insulation Panel Removal**

(Figure 401)

**A. References**

Reference	Title
49-11-00-000-801	APU Power Plant Removal (P/B 401)
49-13-11-000-802	APU Mounts Removal (P/B 401)
52-48-21-000-801	Auxiliary Power Unit (APU) Cowl Door - Removal (P/B 401)

**B. Tools/Equipment**

Reference	Description
STD-858	Tag - DO NOT OPERATE

**C. Consumable Materials**

Reference	Description	Specification
G00472	Twine - Impregnated Fibrous, Lacing And Tying	MIL-T-713

**D. Location Zones**

Zone	Area
315	APU Compartment - Left
316	APU Compartment - Right

**E. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**F. Prepare for the Removal**

SUBTASK 49-17-11-020-001

- (1) If it is necessary, do this task: APU Power Plant Removal, TASK 49-11-00-000-801.

NOTE: It is not necessary to remove the Auxiliary Power Unit (APU) for the removal of the insulation panel from the APU Cowl Door, 315A. If you will replace the insulation panels in the APU compartment walls, you must first remove the APU.

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SUBTASK 49-17-11-860-005

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	23	C00403	FIRE PROTECTION DETECTION APU

SUBTASK 49-17-11-010-005

- (3) To open the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Support the APU panel (cowl door) under the center latch.

- (b) Open the three latches.

NOTE: Use this sequence: forward latch, aft latch, middle latch.

- (c) Open the APU Cowl Door, 315A.

- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.

- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.

- (f) Disconnect the two hold-open rods from the two spring clips.

- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.

- (h) Install the two retainer pins in the two rod ends.

SUBTASK 49-17-11-010-003

- (4) If it is necessary to remove the insulation panel [13] from the APU Cowl Door, 315A, do these steps to get access to the insulation panel:

- (a) Make sure that the APU master switch, on the P5 forward overhead panel, is OFF and attach a DO NOT OPERATE tag, STD-858.

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) If it is necessary, remove the access panel:

**Number      Name/Location**

315A      APU Cowl Door

- 1) Do this task: Auxiliary Power Unit (APU) Cowl Door - Removal, TASK 52-48-21-000-801.

- 2) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.

- 3) Remove the retainer pin from the spring clip on the aft hold-open rod.

- 4) Disconnect the two hold-open rods from the two spring clips.

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**G. Insulation Panel Removal**

SUBTASK 49-17-11-020-002

- (1) Do these steps to remove the insulation panel [13] from the APU Cowl Door, 315A:
  - (a) Remove the two cotter pins [22], two nuts [23], four washers [24], and two bolts [25] from the two hold-open rods [3].
  - (b) Remove the two hold-open rods [3].
  - (c) Remove the two screws [19] and two washers [20] from the two spring clips [21].
  - (d) Remove the spring clips [21].
  - (e) If the APU Cowl Door, 315A, was not removed from the airplane, disconnect the electrical connector D40062 [10] from the APU fire detector [14].
  - (f) Remove the two screws [6] and four washers [7] from the two clamps [5].  
NOTE: The quantity of washers can be different to adjust wire bundle clearances in a high vibration area.
  - (g) Remove the two clamps [5] from the wire harness [4] for the APU fire detector.
  - (h) Remove the two screws [150] and the two washers [151] that attach bracket [152] to the APU Cowl Door, 315A (View B).
  - (i) Remove the six screws [11] and six washers [12] that attach the APU fire detector [14] to the APU Cowl Door, 315A.
  - (j) Remove the two screws [15], two washers [16], and spacer [17] that attach the APU fire detector [14] to the APU Cowl Door, 315A.
  - (k) Remove the two bolts [8] and two washers [9] that attach the APU fire detector [14] to the APU Cowl Door, 315A.
  - (l) Remove the APU fire detector [14] from the APU Cowl Door, 315A.
  - (m) Remove the 30 screws [1] and 30 washers [2] that attach the insulation panel [13] to the APU Cowl Door, 315A.



**CAUTION** BE CAREFUL WHEN YOU REMOVE THE INSULATION PANEL. USE TWO PERSONS TO REMOVE THE INSULATION PANEL. DAMAGE OR A BEND TO THE INSULATION PANEL CAN OCCUR.

- (n) Remove the insulation panel [13].

SUBTASK 49-17-11-020-003

- (2) Do these steps to remove the forward insulation panel [43]:
  - (a) Disconnect the electrical connector D40060 [50] from the APU firewall receptacle on the 1088 bulkhead.
  - (b) Remove the three screws [54] and six washers [55] from the three clamps [53].
  - (c) Remove the three clamps [53] from the wire harness.
  - (d) Remove the fanning strip [58] from the four wire harnesses [49].  
NOTE: The fanning strip show the identification of the terminal lugs (T1), (T2), (T3) and (T4) for the four wire harnesses.
  - (e) Apply four identification tags to the four terminal lugs on the four wire harnesses for the correct installation to the four hole locations on the starter-generator firewall cover [44].
  - (f) Remove the five screws [71], five washers [72] and five washers [144] that attach the bracket [69] to the forward insulation panel [43].

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- (g) Use a twine, G00472, or equivalent to temporarily attach the forward compartment light [70] and bracket [69] to the support structure.
- (h) Remove the two screws [65] and two washers [66] that attach the bracket [64] to the forward insulation panel [43].
- (i) Remove the bracket [64].
- (j) Remove the lockwire from the screw [67] and the fire extinguisher nozzle [75].
- (k) Remove the screw [67] and washer [68].
- (l) Remove the fire extinguisher nozzle [75] from the union.  
NOTE: You turn the fire extinguisher nozzle counterclockwise to remove the nozzle.
- (m) Remove the three screws [59] and three washers [60] from the bottom forward corner of the forward drip shield and right forward drip shield.
- (n) Remove the 39 screws [59] and 39 washers [60] that attach the forward insulation panel [43] to the 1088 bulkhead.



BE CAREFUL WHEN YOU REMOVE THE INSULATION PANEL. USE TWO PERSONS TO REMOVE THE INSULATION PANEL. DAMAGE OR A BEND TO THE INSULATION PANEL CAN OCCUR.

- (o) Carefully remove the forward insulation panel [43].  
NOTE: Put the four wire harnesses through the starter-generator firewall cover [44] while you remove the forward insulation panel.
- (p) Remove the four nuts [47], eight washers [46], and four screws [45] that attach the starter-generator bracket [48] to the forward insulation panel [43].
- (q) Remove the starter-generator bracket [48].
- (r) If it is necessary, remove the starter-generator firewall cover [44], right bracket firewall cover [52], left bracket firewall cover [63], forward rod firewall cover [73], and/or fuel fitting firewall cover [78] from the forward insulation panel [43]:  
NOTE: It is necessary to remove the firewall cover(s) if there is damage to the firewall cover(s) or to install these five firewall covers to a new or serviceable forward insulation panel.
  - 1) Remove the two screws [61] and two washers [62] that attach the starter-generator firewall cover [44] to the forward insulation panel [43].
  - 2) Remove the starter-generator firewall cover [44].
  - 3) Remove the forward rod firewall cover [73].
  - 4) Remove the four screws [76] and four washers [77] that attach the fuel fitting firewall cover [78] to the forward insulation panel [43].
  - 5) Remove the fuel fitting firewall cover [78].
  - 6) Remove the four screws [80] and four washers [81] that attach the left bracket firewall cover [63] to the forward insulation panel [43].
  - 7) Remove the left bracket firewall cover [63].
  - 8) Remove the two screws [56] and two washers [57] that attach the right bracket firewall cover [52] to the forward insulation panel [43].
  - 9) Remove the right bracket firewall cover [52].

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SUBTASK 49-17-11-020-004

- (3) Do these steps to remove the top insulation panel [32]:

- (a) Do the procedure in this task to remove the forward insulation panel [43].

NOTE: You must remove the forward insulation panel before you can remove the top insulation panel.

- (b) Do this task: APU Mounts Removal, TASK 49-13-11-000-802.

NOTE: It is necessary to remove the firewall covers and the forward flameshield [84] for the removal of the top insulation panel.

- (c) Remove the three screws [97] and six washers [98] from the three clamps [96].

- (d) Remove the three clamps [96] from the wire harness [4] for the APU fire detector.

- (e) Remove the six screws [88] and six washers [89] that attach the APU fire detector [87] and the three brackets to the top insulation panel [32].

- (f) Remove the two bolts [82] and two washers [83] that attach the APU fire detector [87] to the top insulation panel [32].

- (g) Use a twine, G00472, or equivalent to temporarily attach the APU fire detector [87] and the wire harness [4] to the support structure.

- (h) Remove the two screws [93] and two washers [94] that attach the starter-generator flameshield [95] to the top insulation panel [32].

- (i) Remove the starter-generator flameshield [95].

- (j) Remove the two screws [90] and two washers [91] that attach the aft flameshield [92] to the top insulation panel [32].

- (k) Remove the aft flameshield [92].

- (l) Remove the 31 screws [85] and 31 washers [86] that attach the top insulation panel [32] to the APU compartment wall.



BE CAREFUL WHEN YOU REMOVE THE INSULATION PANEL. USE TWO PERSONS TO REMOVE THE INSULATION PANEL. DAMAGE OR A BEND TO THE INSULATION PANEL CAN OCCUR.

- (m) Carefully remove the top insulation panel [32].

SUBTASK 49-17-11-020-010

- (4) Do these steps to remove the left insulation panel [40]:

- (a) If the top insulation panel [32] has not been removed, remove the aft firewall cover [28], forward firewall cover [31] and the firewall cover [35]:

- 1) Remove the seven screws [33] and seven washers [34] that attach the firewall cover [35] to the left forward mount for the APU.

- 2) Remove the five screws [29] and five washers [30] that attach the forward firewall cover [31] to the left aft mount for the APU.

- 3) Remove the five screws [26] and five washers [27] that attach the aft firewall cover [28] to the left aft mount for the APU.

- 4) Move the aft firewall cover [28], forward firewall cover [31] and firewall cover [35] down on the APU mounts.

- (b) Remove the two alignment screws [36] and two washers [37].

- (c) Remove the screw [38] and washer [39].

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- (d) Remove the two screws [41] and two washers [42] from the bottom forward corner of the left drip shield and forward drip shield.
- (e) Remove the 37 screws [41] and 37 washers [42] that attach the left insulation panel [40] to the APU compartment wall.



**CAUTION**

BE CAREFUL WHEN YOU REMOVE THE INSULATION PANEL. USE TWO PERSONS TO REMOVE THE INSULATION PANEL. DAMAGE OR A BEND TO THE INSULATION PANEL CAN OCCUR.

- (f) Carefully remove the left insulation panel [40].

SUBTASK 49-17-11-020-006

- (5) Do these steps to remove the right forward insulation panel [107]:

- (a) If the forward insulation panel [43] was not removed, disengage the forward insulation panel from the right forward insulation panel [107]:
  - 1) Remove the five screws [59] and five washers [60] that attach the forward insulation panel [43] to the right forward insulation panel [107].
  - 2) Remove the three screws [59] and three washers [60] from the bottom forward corner of the forward drip shield and right forward drip shield.
- (b) If the top insulation panel [32] was not removed, disengage the top insulation panel from the right forward insulation panel [107]:
  - 1) Remove the four screws [85] and four washers [86] that attach the top insulation panel [32] to the right forward insulation panel [107].
  - 2) Remove the screw [97] and two washers [98] that attach the clamp [96] on the top insulation panel [32] and the right forward insulation panel [107].
  - 3) Remove the five screws [101] and five washers [102] that attach the right firewall cover [103] to the right forward mount for the APU.
  - 4) Move the right firewall cover [103] down on the right forward mount for the APU.
- (c) Remove the five screws [109] and 10 washers [110] from the five clamps [108].
- (d) Remove the five clamps [108] from the wire harness [4] for the APU fire detector.
- (e) Use a twine, G00472, or equivalent to temporarily attach the wire harness [4] to the support structure.
- (f) Remove the four screws [104] and four washers [105] that attach the forward link flameshield [106] to the right forward insulation panel [107].
- (g) Remove the forward link flameshield [106].
- (h) Remove the 12 screws [99] and 12 washers [100] that attach the right forward insulation panel [107] to the APU compartment wall.



**CAUTION**

BE CAREFUL WHEN YOU REMOVE THE INSULATION PANEL. USE TWO PERSONS TO REMOVE THE INSULATION PANEL. DAMAGE OR A BEND TO THE INSULATION PANEL CAN OCCUR.

- (i) Carefully remove the right forward insulation panel [107].

SUBTASK 49-17-11-020-007

- (6) Do these steps to remove the right aft insulation panel [123]:

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- (a) Do the procedure in this task to remove the right forward insulation panel [107].  
NOTE: You must remove the right forward insulation panel before you can remove the right aft insulation panel.
- (b) If the top insulation panel [32] was not removed, disengage the top insulation panel from the right aft insulation panel [123]:
  - 1) Remove the five screws [85] and five washers [86] that attach the top insulation panel [32] to the right aft insulation panel [123].
  - 2) Remove the five screws [111] and five washers [112] that attach the forward firewall cover [113] to the right aft mount for the APU.
  - 3) Remove the five screws [117] and five washers [118] that attach the aft firewall cover [116] to the right aft mount for the APU.
  - 4) Move the forward firewall cover [113] and aft firewall cover [116] down on the right aft mount for the APU.
- (c) Disconnect the electrical connector [120] for the APU fire detector from the bracket [119].
- (d) Remove the two screws [121] and four washers [122] from the bracket [119].
- (e) Remove the bracket [119].
- (f) Remove the four screws [128] and eight washers [129] from the four clamps [127].
- (g) Remove the four clamps [127] from the wire harness [4] for the APU fire detector.
- (h) Remove the four screws [125], four washers [126] and four washers [145] that attach the bracket [124] to the right aft insulation panel [123].
- (i) Use a twine, G00472, or equivalent to temporarily attach the aft compartment light and bracket [124] to the support structure.
- (j) Remove the three screws [114] and three washers [115] that attach the aft link flameshield [130] to the right aft insulation panel [123].
- (k) Remove the aft link flameshield [130].
- (l) Remove the two screws [131] and two washers [132] from the bottom aft corner of the right aft drip shield and aft drip shield.
- (m) Remove the 16 screws [131] and 16 washers [132] that attach the right aft insulation panel [123] to the APU compartment wall.



**CAUTION** BE CAREFUL WHEN YOU REMOVE THE INSULATION PANEL. USE TWO PERSONS TO REMOVE THE INSULATION PANEL. DAMAGE OR A BEND TO THE INSULATION PANEL CAN OCCUR.

- (n) Carefully remove the right aft insulation panel [123].

SUBTASK 49-17-11-020-008

- (7) Do these steps to remove the aft insulation panel [133]:
  - (a) Do the procedure in this task to remove the top insulation panel [32].  
NOTE: You must remove the top insulation panel before you can remove the aft insulation panel.
  - (b) Do the procedure in this task to remove the right aft insulation panel [123].  
NOTE: You must remove the right aft insulation panel before you can remove the aft insulation panel.

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- (c) Remove the 11 screws [137] and 11 washers [138] that attach the eductor sleeve [139] to the eductor inlet duct.
- (d) Remove the eductor sleeve [139].
- (e) Remove the 16 bolts [140] and 16 washers [141] that attach the support ring bracket [134] to the aft insulation panel [133].
- (f) Remove the four screws [135] and four washers [136] that attach the support ring bracket [134] to the aft insulation panel [133].
- (g) Remove the support ring bracket [134].
- (h) Remove the 13 screws [142] and 13 washers [143] that attach the aft insulation panel [133] to the 1156 bulkhead.



**CAUTION**

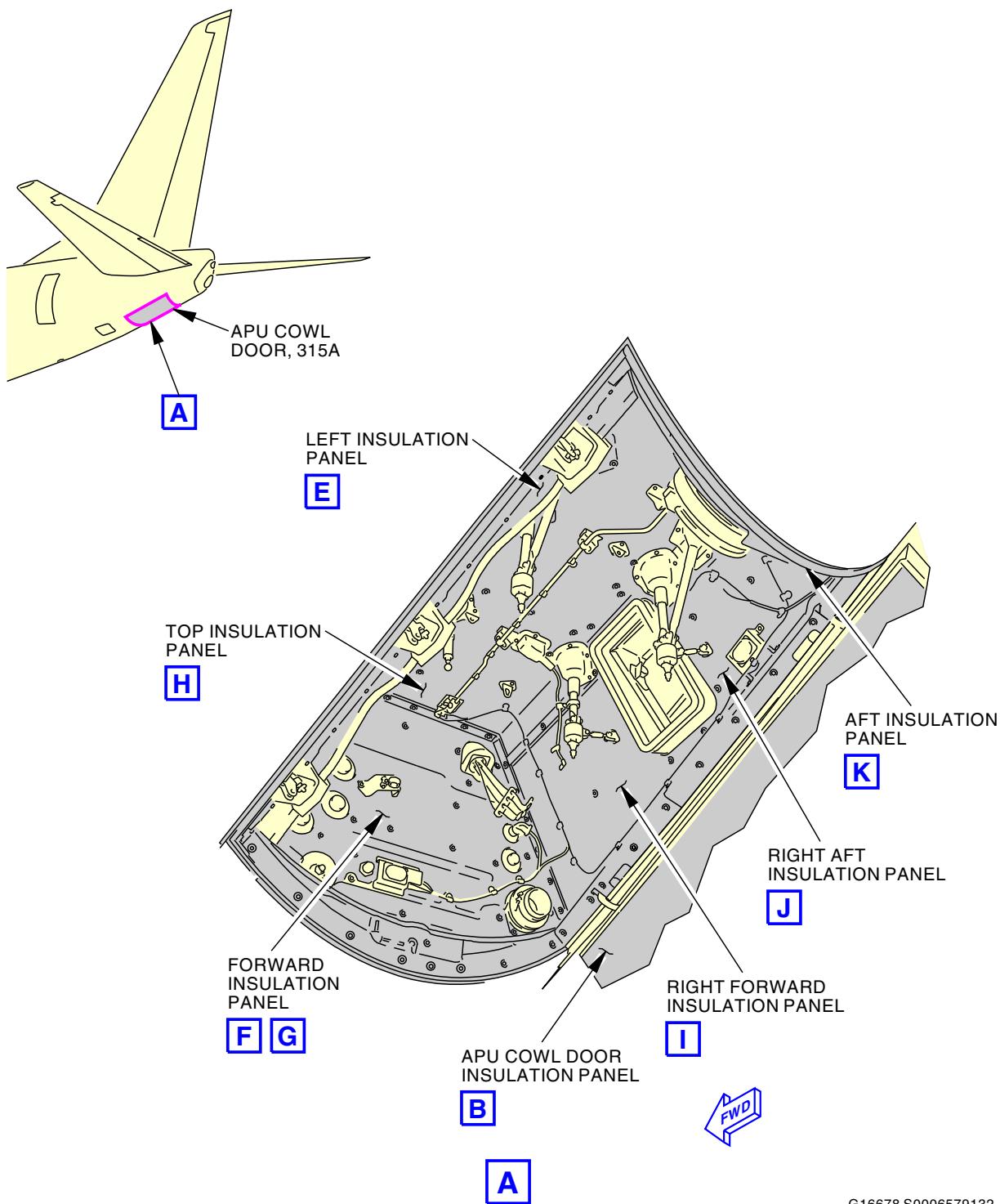
BE CAREFUL WHEN YOU REMOVE THE INSULATION PANEL. USE TWO PERSONS TO REMOVE THE INSULATION PANEL. DAMAGE OR A BEND TO THE INSULATION PANEL CAN OCCUR.

- (i) Carefully remove the aft insulation panel [133].

———— END OF TASK ————

EFFECTIVITY  
LOM ALL

**49-17-11**



G16678 S0006579132\_V3

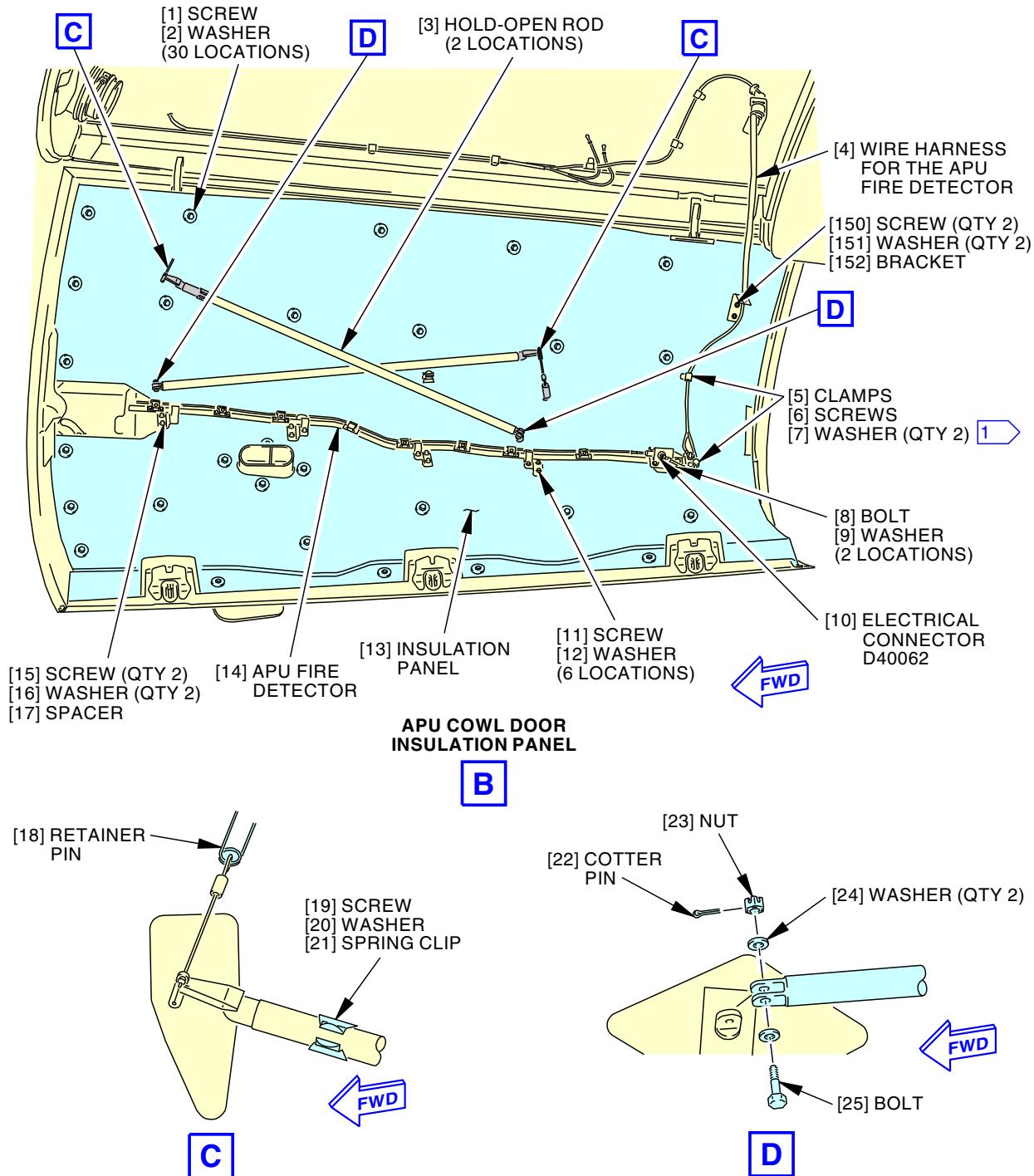
**Insulation Panel Installation**  
Figure 401/49-17-11-990-801 (Sheet 1 of 10)

EFFECTIVITY  
LOM ALL

**49-17-11**

D633A101-LOM

ECCN 9E991 BOEING PROPRIETARY - See title page for details

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


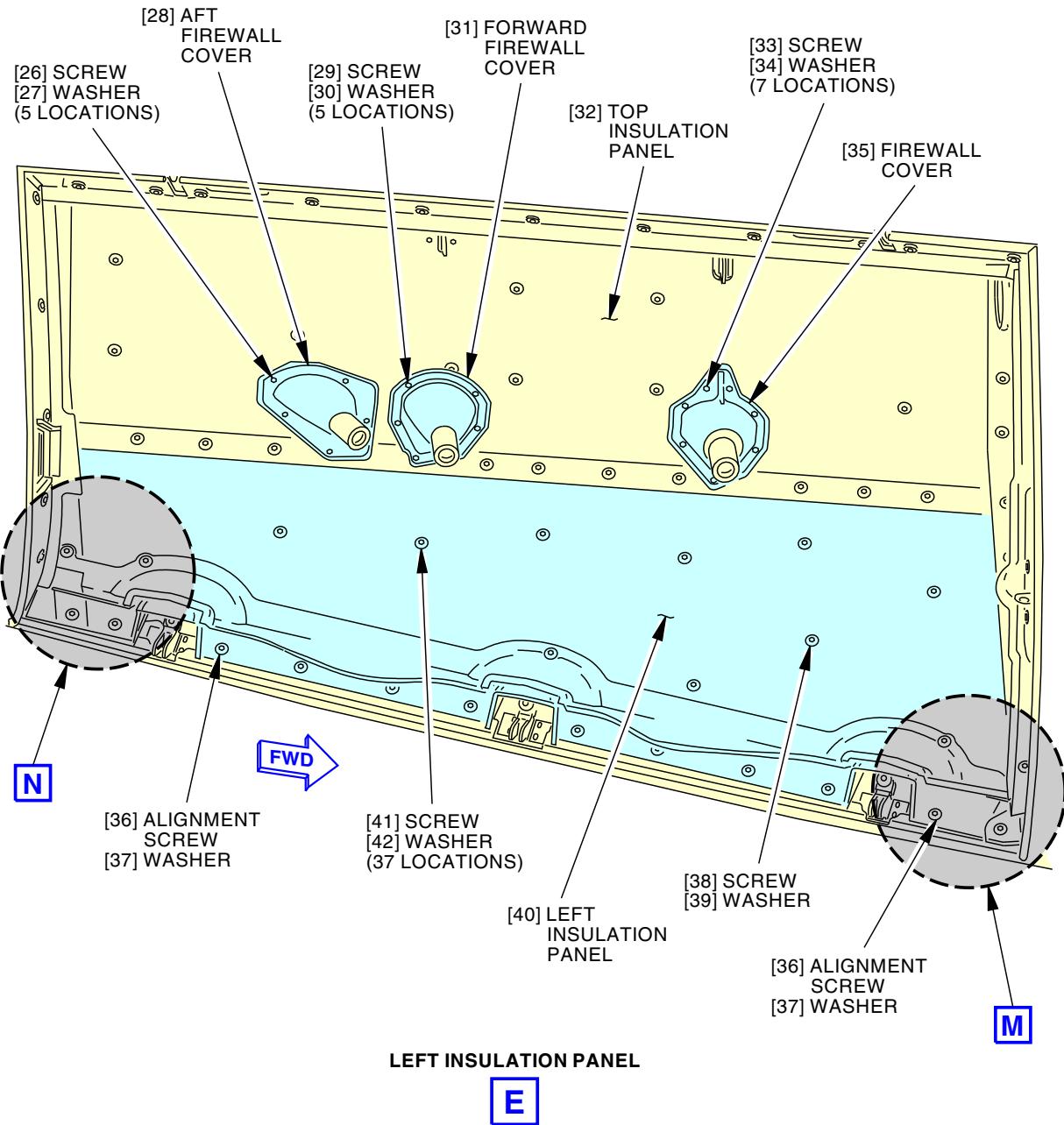
**1** THE QUANTITY OF WASHERS CAN BE DIFFERENT TO ADJUST WIRE CLEARANCE.

G18240 S0006579133\_V4

**Insulation Panel Installation**  
**Figure 401/49-17-11-990-801 (Sheet 2 of 10)**

EFFECTIVITY	LOM ALL
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**49-17-11**

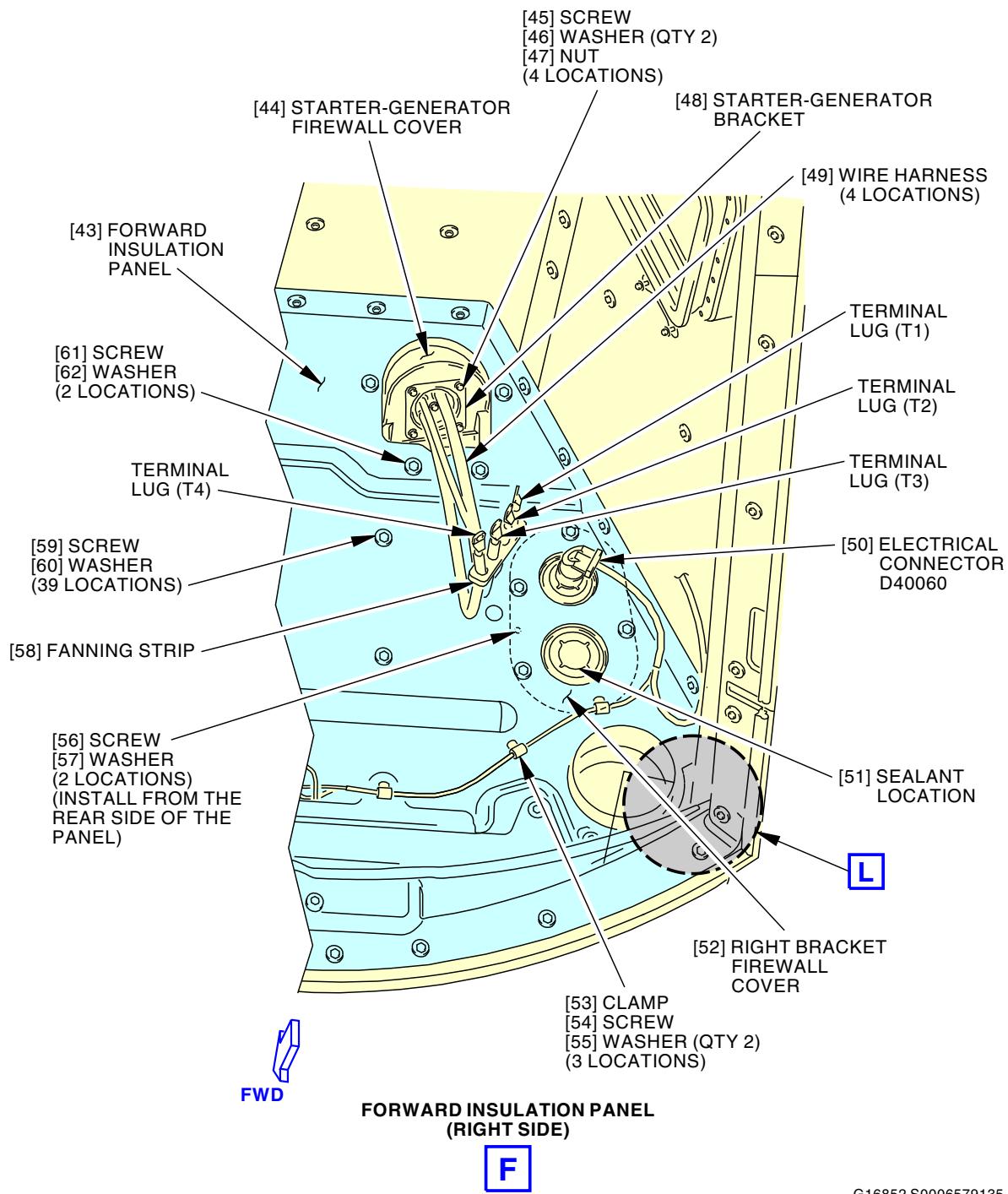


G17400 S0006579134\_V3

**Insulation Panel Installation**  
**Figure 401/49-17-11-990-801 (Sheet 3 of 10)**

EFFECTIVITY  
**LOM ALL**

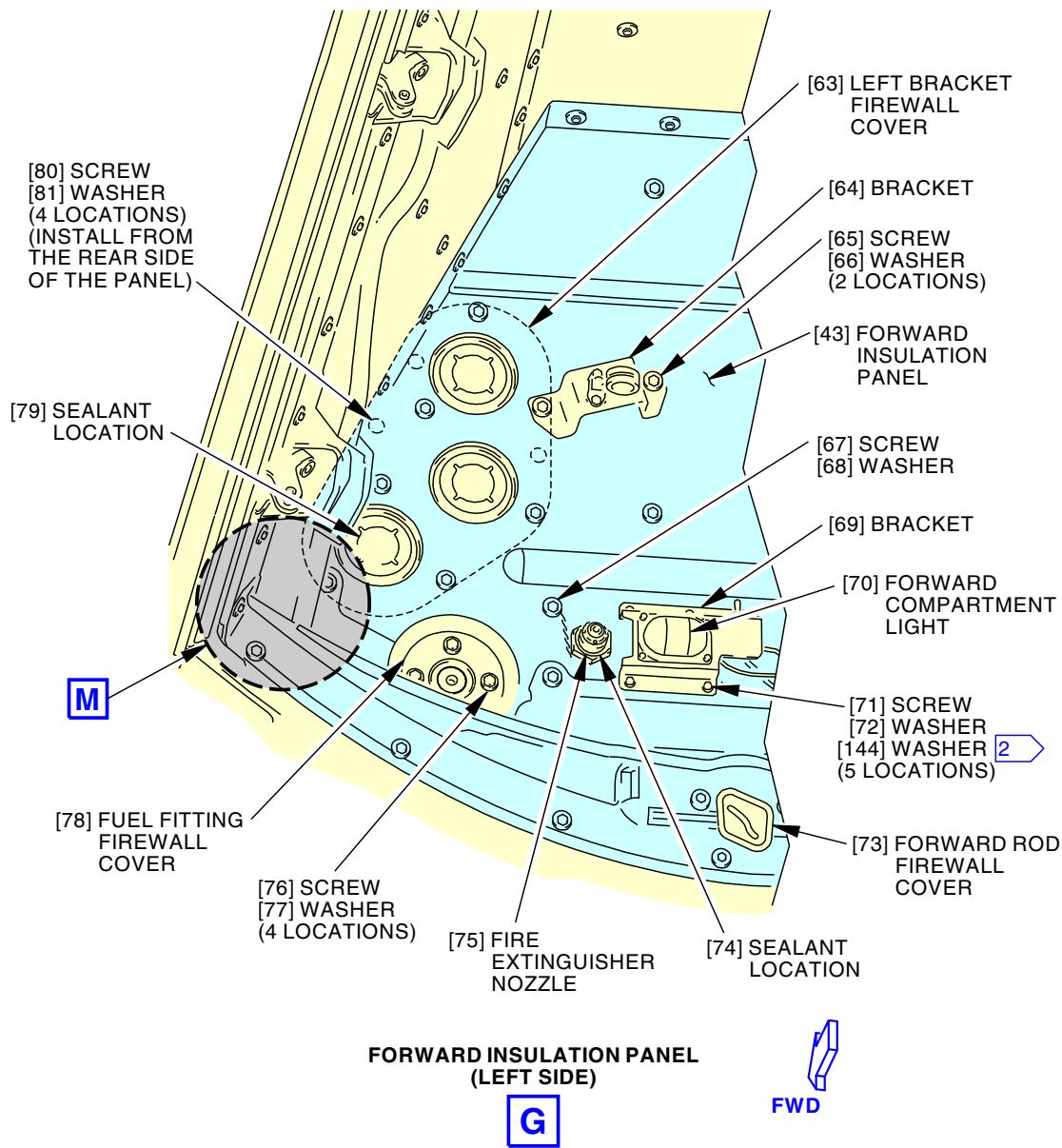
**49-17-11**



**Insulation Panel Installation**  
Figure 401/49-17-11-990-801 (Sheet 4 of 10)

EFFECTIVITY  
LOM ALL

**49-17-11**



**2** THE [144] WASHER IS INSTALLED  
BETWEEN THE [43] FORWARD INSULATION  
PANEL AND THE [69] BRACKET.

G18172 S0006579136\_V5

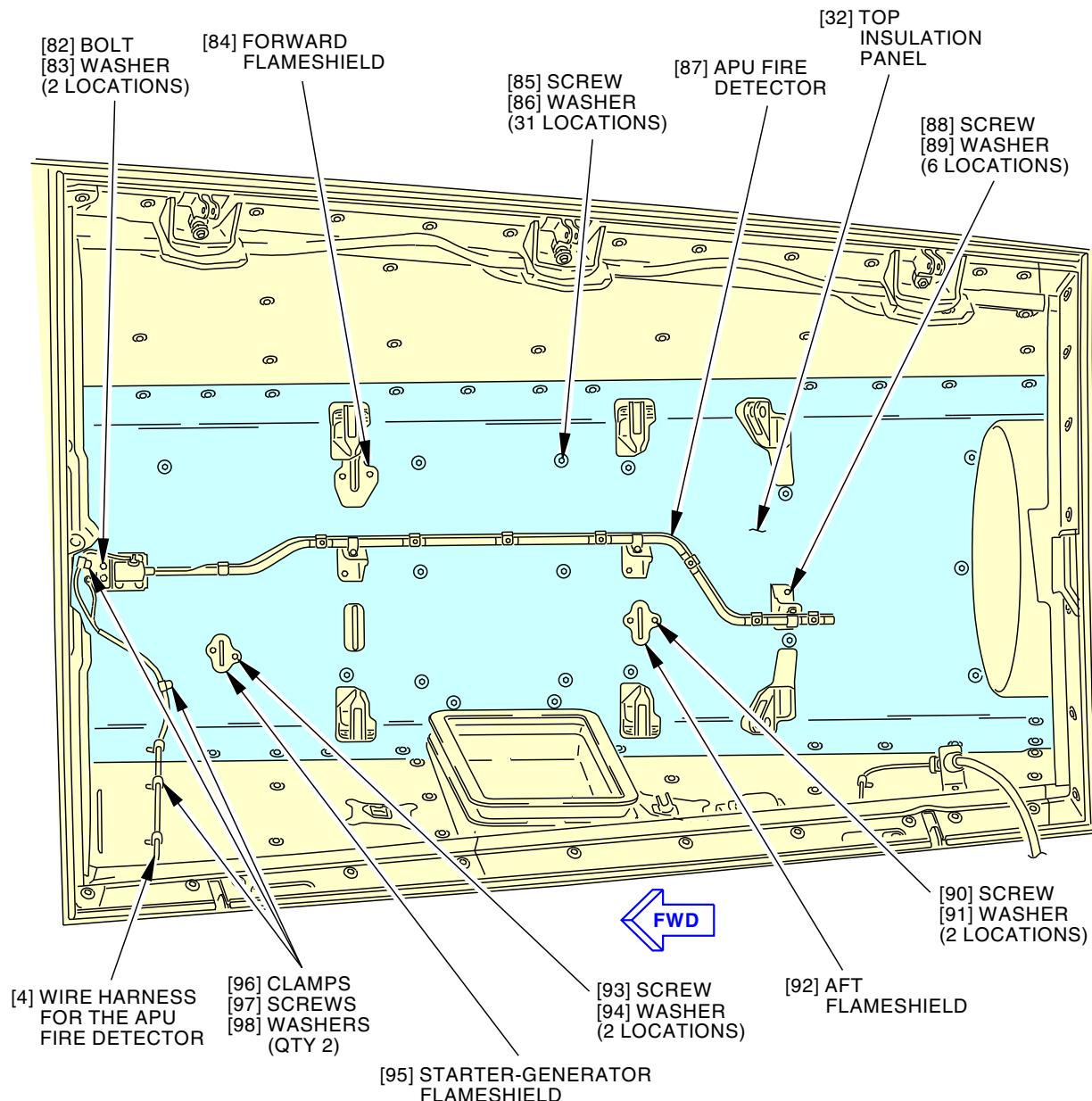
**Insulation Panel Installation**  
**Figure 401/49-17-11-990-801 (Sheet 5 of 10)**

EFFECTIVITY  
LOM ALL

**49-17-11**

D633A101-LOM

ECCN 9E991 BOEING PROPRIETARY - See title page for details

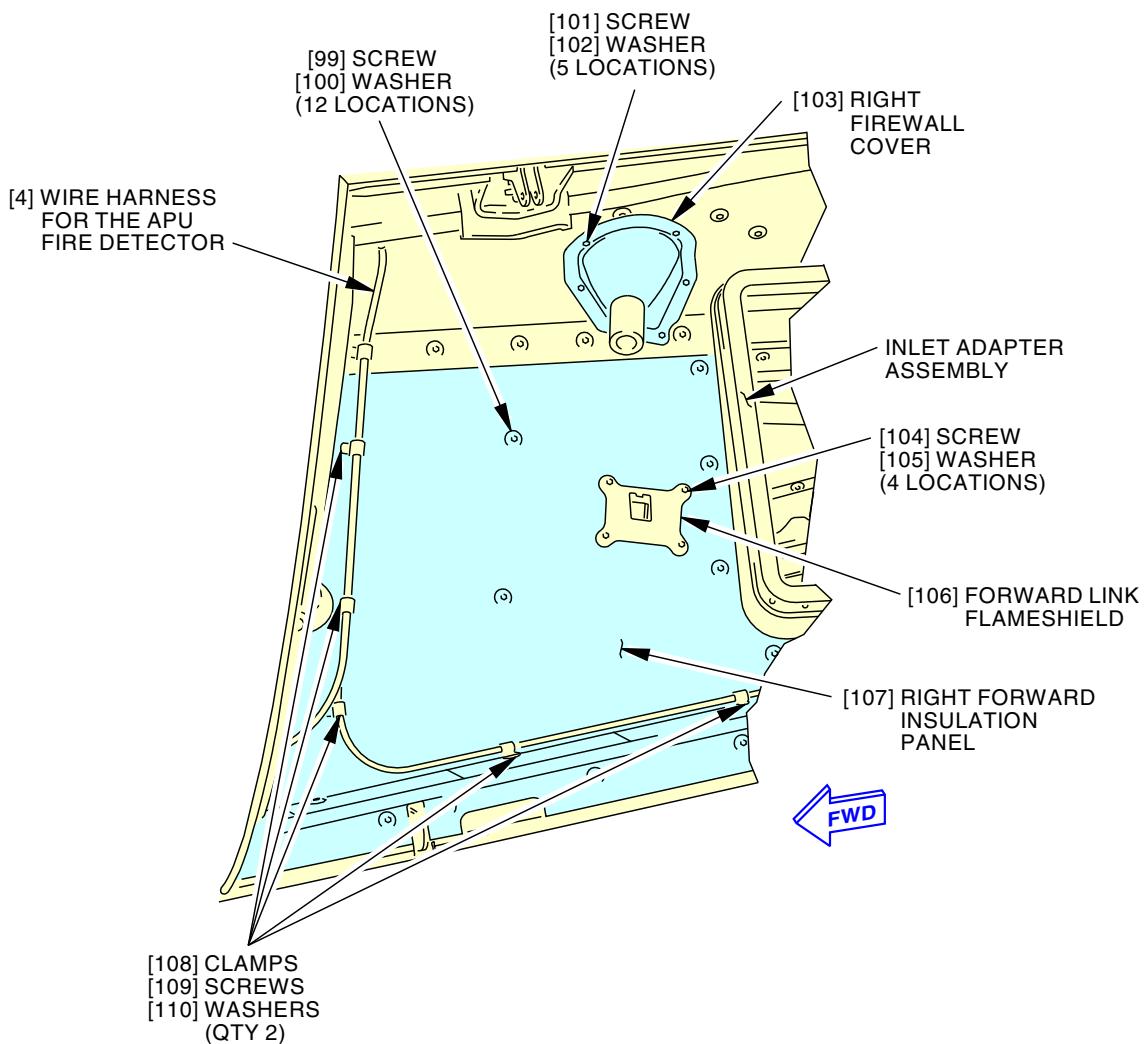

**TOP INSULATION PANEL**
**H**

G17372 S0006579137\_V3

**Insulation Panel Installation  
Figure 401/49-17-11-990-801 (Sheet 6 of 10)**

EFFECTIVITY  
LOM ALL

**49-17-11**



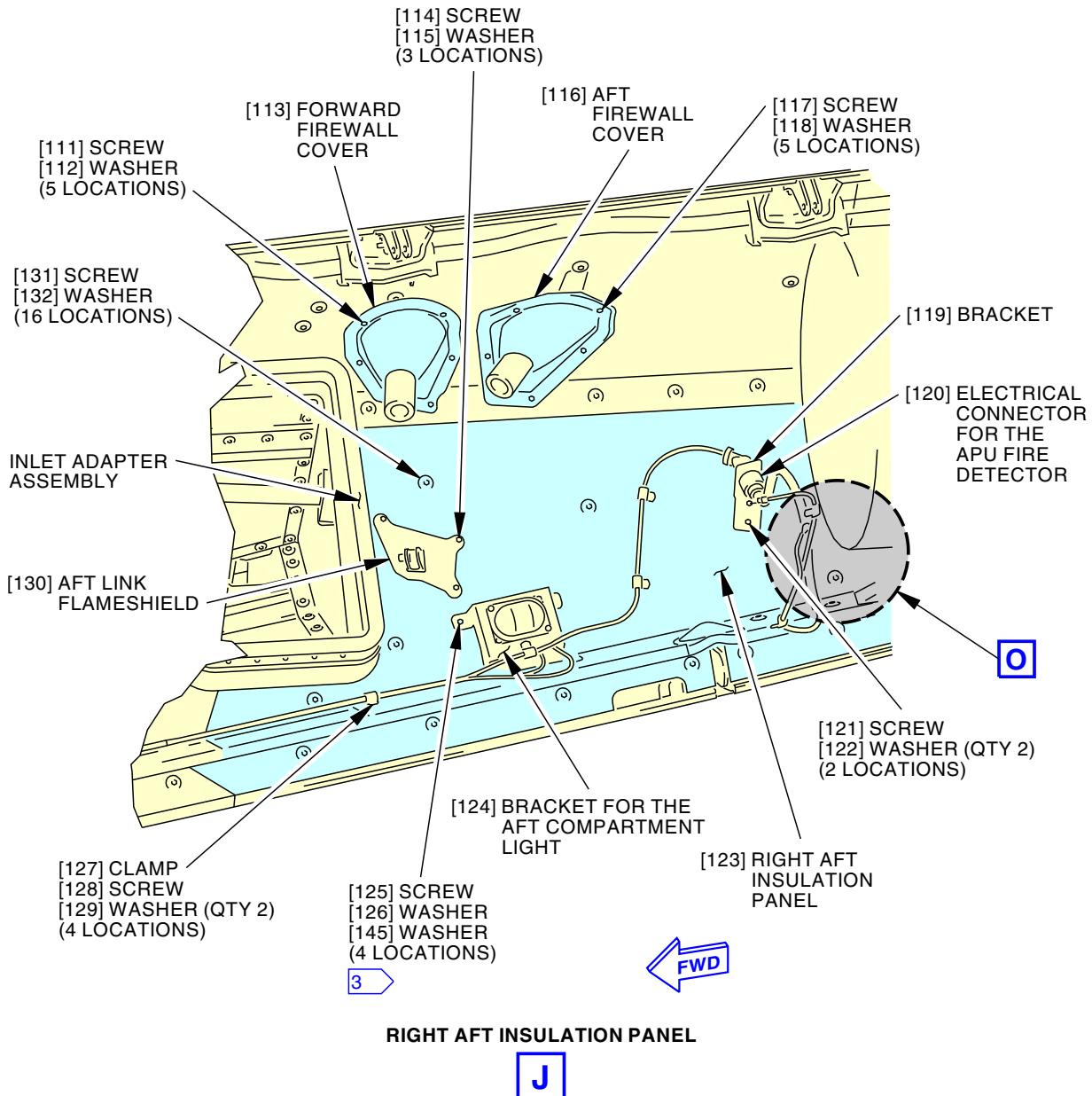
I

G17419 S0006579138\_V3

**Insulation Panel Installation**  
**Figure 401/49-17-11-990-801 (Sheet 7 of 10)**

EFFECTIVITY  
LOM ALL

**49-17-11**



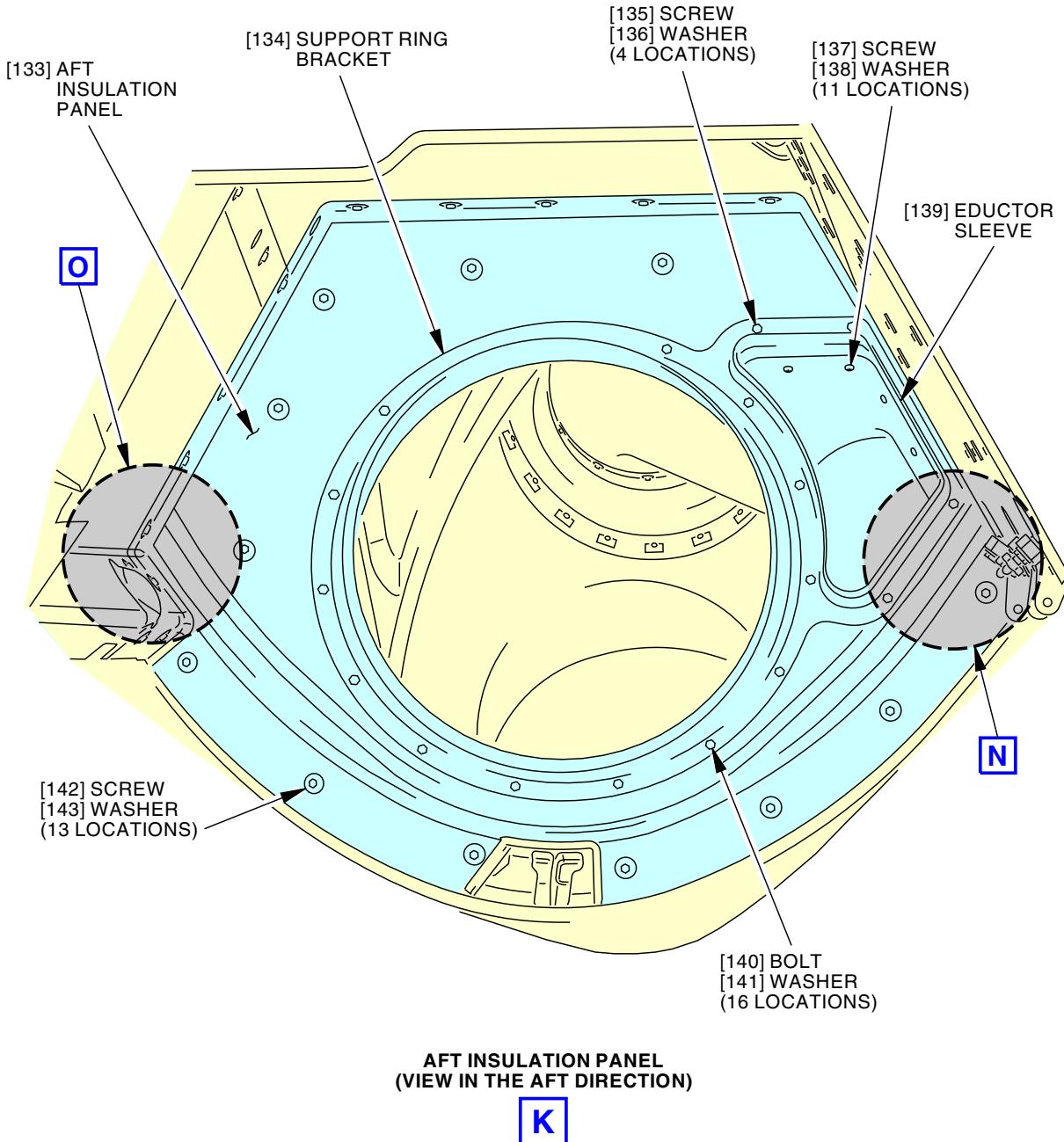
- 3 THE [145] WASHER IS INSTALLED BETWEEN THE [123] RIGHT AFT INSULATION PANEL AND THE [124] BRACKET.

G20276 S0006579139\_V4

**Insulation Panel Installation**  
**Figure 401/49-17-11-990-801 (Sheet 8 of 10)**

EFFECTIVITY  
LOM ALL

**49-17-11**



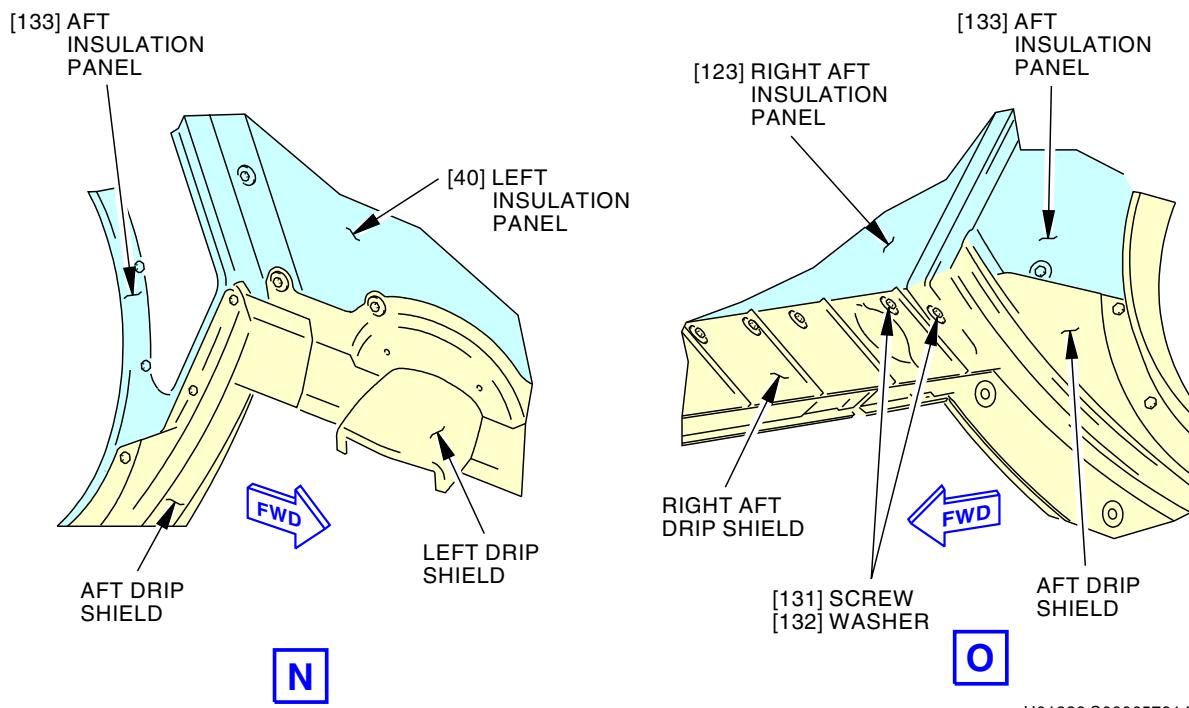
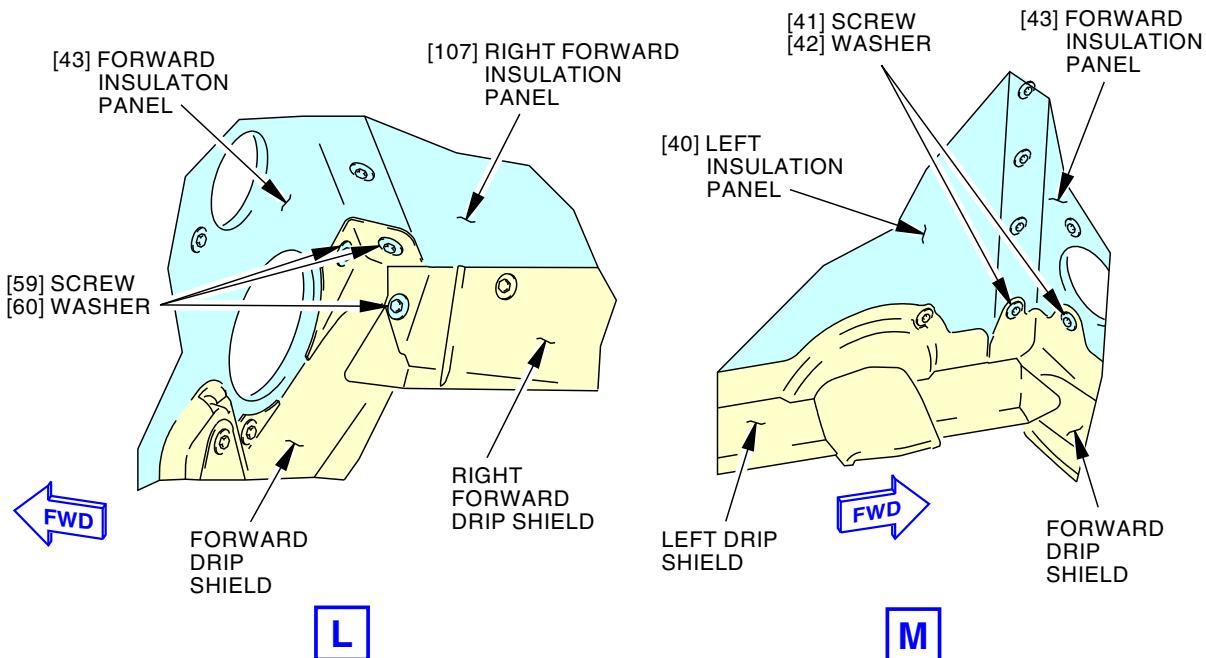
G17554 S0006579140\_V3

**Insulation Panel Installation**  
**Figure 401/49-17-11-990-801 (Sheet 9 of 10)**

 EFFECTIVITY  
 LOM ALL

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H01239 S0006579141\_V2

**Insulation Panel Installation**  
**Figure 401/49-17-11-990-801 (Sheet 10 of 10)**

EFFECTIVITY  
LOM ALL

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**TASK 49-17-11-400-801**

**3. Insulation Panel Installation**

(Figure 401)

**A. References**

Reference	Title
20-10-44-400-801	Lockwire, Cotter Pins, and Lockrings - Installation (P/B 401)
26-15-01-400-802	APU Overheat Detector Assembly Installation (P/B 401)
49-11-00-400-801	APU Power Plant Installation (P/B 401)
49-13-11-400-802	APU Mounts Installation (P/B 401)
52-48-21-400-801	Auxiliary Power Unit (APU) Cowl Door Installation (P/B 401)

**B. Tools/Equipment**

Reference	Description
STD-858	Tag - DO NOT OPERATE
STD-1057	Air Source - Regulated, Dry Filtered, Compressed 60-105 PSIG (414-723.9 KPa)(22 SCFM)
STD-1064	Scraper - Phenolic, Hard Resin

**C. Consumable Materials**

Reference	Description	Specification
A00160	Sealant - Firewall - Hydraulic Fluid Resistant	BMS5-63
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
B00130	Alcohol - Isopropyl	TT-I-735
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)
G01048	Lockwire - MS20995C32, Corrosion Resistant Steel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

**D. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
13	Insulation panel	52-48-21-09-005	LOM ALL
22	Cotter pin	52-48-21-08-130	LOM ALL
		52-48-21-08-210	LOM ALL
32	Top insulation panel	49-17-11-03A-280	LOM ALL
43	Forward insulation panel	49-17-11-03A-085	LOM ALL
107	Insulation panel	49-17-11-03A-335	LOM ALL
123	Right aft insulation panel	49-17-11-03A-340	LOM ALL
133	Aft insulation panel	49-17-11-03A-400	LOM ALL

**E. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right



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F. Access Panels

Number	Name/Location
315A	APU Cowl Door

G. Procedure

SUBTASK 49-17-11-420-001

- (1) Do these steps to install the aft insulation panel [133]:

NOTE: You must install the aft insulation panel [133] before you can install the other insulation panels on the Auxiliary Power Unit (APU) compartment walls.

- (a) If you see remaining sealant on the parts of the aft insulation panel [133], then do these steps:

- 1) Remove the remaining sealant from the surface with a hard resin phenolic scraper, STD-1064 or an equivalent tool.
- 2) Clean the surface with alcohol, B00130 and a cotton wiper, G00034.
- 3) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057 to dry the surface.

NOTE: It is recommended that you use a pressure of 60 psig (414 kPa) - 90 psig (621 kPa) of air or nitrogen to dry the surface.



BE CAREFUL WHEN YOU INSTALL THE INSULATION PANEL. USE TWO PERSONS TO INSTALL THE INSULATION PANEL. DAMAGE OR A BEND TO THE INSULATION PANEL CAN OCCUR.

- (b) Carefully put the aft insulation panel [133] on the 1156 bulkhead.
- (c) Use leather or thick cotton gloves to bend the bottom edge of the aft insulation panel [133] until there is a maximum clearance of 0.075 in. (1.9 mm) between the aft insulation panel and the aeroseal support bracket.
- NOTE: The bottom edge of the aft insulation panel [133] must not touch the APU Cowl Door, 315A in the open and close positions.
- (d) Install the 13 washers [143] and 13 screws [142] that attach the aft insulation panel [133] to the 1156 bulkhead.
- (e) Put the support ring bracket [134] on the aft insulation panel [133].
- (f) Install the four washers [136] and four screws [135] that attach the support ring bracket [134] to the aft insulation panel [133].
- (g) Install the 16 washers [141] and 16 bolts [140] that attach the support ring bracket [134] to the aft insulation panel [133].
- (h) Install the eductor sleeve [139] to the eductor inlet duct with the 11 washers [138] and 11 screws [137].

SUBTASK 49-17-11-420-002

- (2) Do these steps to install the right aft insulation panel [123]:

- (a) If you see remaining sealant on the parts of the right aft insulation panel [123] and the inlet adapter assembly, then do these steps:
- 1) Remove the remaining sealant from the surface with a hard resin phenolic scraper, STD-1064 or an equivalent tool.
  - 2) Clean the surface with alcohol, B00130 and a cotton wiper, G00034.

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- 3) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057 to dry the surface.

NOTE: It is recommended that you use a pressure of 60 psig (414 kPa) - 90 psig (621 kPa) of air or nitrogen to dry the surface.

- (b) Do the procedure in this task to install the aft insulation panel [133].

NOTE: You must install the aft insulation panel [133] before you can install the right aft insulation panel [123].



**CAUTION**  
BE CAREFUL WHEN YOU INSTALL THE INSULATION PANEL. USE TWO PERSONS TO INSTALL THE INSULATION PANEL. DAMAGE OR A BEND TO THE INSULATION PANEL CAN OCCUR.

- (c) Carefully put the right aft insulation panel [123] on the APU compartment wall.
- (d) Install the 16 washers [132] and 16 screws [131] that attach the right aft insulation panel [123] to the APU compartment wall.
- (e) Install the two washers [132] and two screws [131] on the bottom aft corner of the right aft drip shield and aft drip shield.
- (f) Install the aft link flameshield [130] with the three washers [115] and three screws [114].
- (g) Clean the surfaces of the bracket [119], the bracket [124] for the aft compartment light, the washers [112], the four washers [126] and four washers [145]:
- 1) Remove the remaining sealant from the surfaces with a hard resin phenolic scraper, STD-1064 or an equivalent tool.
  - 2) Clean the surfaces with alcohol, B00130 and a cotton wiper, G00034.
  - 3) Dry the surfaces with a cotton wiper, G00034.
- (h) Apply the sealant, A00247 to the four washers [126] and four washers [145].
- (i) Remove the temporary materials (cord or equivalent) that attach the aft compartment light and bracket [124] to the support structure.
- (j) Install the aft compartment light and bracket [124] with the four washers [126], four washers [145] and four screws [125].
- 1) Make sure that the four washers [145] are installed between the right aft insulation panel [123] and the bracket [124].
- (k) Install the four clamps [127] on the wire harness [4] for the APU fire detector with the eight washers [129] and four screws [128].
- (l) Apply the sealant, A00247 to the four washers [122].
- (m) Install the bracket [119] with the four washers [122] and two screws [121].
- (n) Connect the electrical connector [120] for the APU fire detector to the bracket [119].
- (o) If the top insulation panel [32] was not removed, engage the top insulation panel to the right aft insulation panel [123]:
- 1) If you see remaining sealant on the aft firewall cover [116], forward firewall cover [113] and the top insulation panel [32], then do these steps:
    - a) Remove the remaining sealant from the surface with a hard resin phenolic scraper, STD-1064 or an equivalent tool.
    - b) Clean the surface with alcohol, B00130 and a cotton wiper, G00034.

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- c) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057 to dry the surface.

NOTE: It is recommended that you use a pressure of 60 psig (414 kPa) - 90 psig (621 kPa) of air or nitrogen to dry the surface.

- 2) Install the aft firewall cover [116] to the right aft mount for the APU with the five washers [118] and five screws [117].
  - 3) Install the forward firewall cover [113] to the right aft mount for the APU with the five washers [112] and five screws [111].
  - 4) Install the five washers [86] and five screws [85] that attach the top insulation panel [32] to the right aft insulation panel [123].
  - 5) Apply a fillet seal of sealant, A00160 between the forward firewall cover [113], aft firewall cover [116] and the top insulation panel [32].
  - 6) Apply a fillet seal of sealant, A00160 between the top insulation panel [32] and the right aft insulation panel [123].
  - 7) Remove the unwanted sealant from the surfaces with a cotton wiper, G00034.
- (p) Apply a fillet seal of sealant, A00160 between the inlet adapter assembly and the right aft insulation panel [123].
- (q) Apply a fillet seal of sealant, A00160 between the right aft insulation panel [123], aft insulation panel [133], right aft drip shield and aft drip shield.
- (r) Remove the unwanted sealant from the surfaces with a cotton wiper, G00034.

SUBTASK 49-17-11-420-003

- (3) Do these steps to install the right forward insulation panel [107]:

- (a) If you see remaining sealant on the parts of the right forward insulation panel [107] and the inlet adapter assembly, then do these steps:
  - 1) Remove the remaining sealant from the surface with a hard resin phenolic scraper, STD-1064 or an equivalent tool.
  - 2) Clean the surface with alcohol, B00130 and a cotton wiper, G00034.
  - 3) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057 to dry the surface.

NOTE: It is recommended that you use a pressure of 60 psig (414 kPa) - 90 psig (621 kPa) of air or nitrogen to dry the surface.

- (b) Do the procedure in this task to install the right aft insulation panel [123].

NOTE: You must install the right aft insulation panel [123] before you can install the right forward insulation panel [107].



**CAUTION**

BE CAREFUL WHEN YOU INSTALL THE INSULATION PANEL. USE TWO PERSONS TO INSTALL THE INSULATION PANEL. DAMAGE OR A BEND TO THE INSULATION PANEL CAN OCCUR.

- (c) Carefully put the right forward insulation panel [107] on the APU compartment wall.
- (d) Install the 12 washers [100] and 12 screws [99] that attach the right forward insulation panel [107] to the APU compartment wall.
- (e) Install the forward link flameshield [106] with the four washers [105] and four screws [104].

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- (f) Remove the temporary materials (cord or equivalent) that attach the wire harness [4] to the support structure.
- (g) Install the five clamps [108] on the wire harness [4] for the APU fire detector with the 10 washers [110] and five screws [109].
- (h) If the top insulation panel [32] was not removed, engage the top insulation panel to the right forward insulation panel [107]:
  - 1) If you see remaining sealant on the right firewall cover [103] and the top insulation panel [32], then do these steps:
    - a) Remove the remaining sealant from the surface with a hard resin phenolic scraper, STD-1064 or an equivalent tool.
    - b) Clean the surface with alcohol, B00130 and a cotton wiper, G00034.
    - c) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057 to dry the surface.
  - NOTE: It is recommended that you use a pressure of 60 psig (414 kPa) - 90 psig (621 kPa) of air or nitrogen to dry the surface.
  - 2) Install the right firewall cover [103] to the right forward mount for the APU with the five washers [102] and five screws [101].
  - 3) Install the clamps [96] on the top insulation panel [32] and the right forward insulation panel [107] with the two washers [98] and screw [97].
  - 4) Install the four washers [86] and four screws [85] that attach the top insulation panel [32] to the right forward insulation panel [107].
  - 5) Apply a fillet seal of sealant, A00160 between the right firewall cover [103] and the top insulation panel [32].
  - 6) Apply a fillet seal of sealant, A00160 between the top insulation panel [32] and the right forward insulation panel [107].
  - 7) Remove the unwanted sealant from the surfaces with a cotton wiper, G00034.
- (i) If the forward insulation panel [43] was not removed, engage the forward insulation panel to the right forward insulation panel [107]:
  - 1) If you see remaining sealant on the right firewall cover [103] and the forward insulation panel [43], then do these steps:
    - a) Remove the remaining sealant from the surface with a hard resin phenolic scraper, STD-1064 or an equivalent tool.
    - b) Clean the surface with alcohol, B00130 and a cotton wiper, G00034.
    - c) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057 to dry the surface.
  - NOTE: It is recommended that you use a pressure of 60 psig (414 kPa) - 90 psig (621 kPa) of air or nitrogen to dry the surface.
  - 2) Install the five washers [60] and five screws [59] that attach the forward insulation panel [43] to the right forward insulation panel [107].
  - 3) Install the three washers [60] and three screws [59] on the bottom forward corner of the forward drip shield and right forward drip shield.
  - 4) Apply a fillet seal of sealant, A00160 between the forward insulation panel [43] and the right forward insulation panel [107].
  - 5) Remove the unwanted sealant from the surfaces with a cotton wiper, G00034.

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- (j) Apply a fillet seal of sealant, A00160 between the inlet adapter assembly and the right forward insulation panel [107].
- (k) Apply a fillet seal of sealant, A00160 between the right forward insulation panel [107], right aft insulation panel [123] and right forward drip shield.
- (l) Remove the unwanted sealant from the surfaces with a cotton wiper, G00034.

SUBTASK 49-17-11-020-011

- (4) Do these steps to install the left insulation panel [40]:
  - (a) If you see remaining sealant on the parts of the left insulation panel [40], then do these steps:
    - 1) Remove the remaining sealant from the surface with a hard resin phenolic scraper, STD-1064 or an equivalent tool.
    - 2) Clean the surface with alcohol, B00130 and a cotton wiper, G00034.
    - 3) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057 to dry the surface.

NOTE: It is recommended that you use a pressure of 60 psig (414 kPa) - 90 psig (621 kPa) of air or nitrogen to dry the surface.



**CAUTION** BE CAREFUL WHEN YOU INSTALL THE INSULATION PANEL. USE TWO PERSONS TO INSTALL THE INSULATION PANEL. DAMAGE OR A BEND TO THE INSULATION PANEL CAN OCCUR.

- (b) Carefully put the left insulation panel [40] on the APU compartment wall.
- (c) Install the two washers [37] and two alignment screws [36] that attach the left insulation panel [40] to the APU compartment wall.

NOTE: It is necessary to align the left insulation panel [40] with the two alignment screws because of the small clearance between the lower edge of the left insulation panel and the APU Cowl Door, 315A.
- (d) Install the 37 washers [42] and 37 screws [41] that attach the left insulation panel [40] to the APU compartment wall.
- (e) Install the two washers [42] and two screws [41] on the bottom forward corner of the left drip shield and forward drip shield.
- (f) Install the washers [39] and screws [38] to the left insulation panel [40].
- (g) If you see remaining sealant on the aft firewall cover [28], forward firewall cover [31], firewall cover [35] and the top insulation panel [32], then do these steps:
  - 1) Remove the remaining sealant from the surface with a hard resin phenolic scraper, STD-1064 or an equivalent tool.
  - 2) Clean the surface with alcohol, B00130 and a cotton wiper, G00034.
  - 3) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057 to dry the surface.

NOTE: It is recommended that you use a pressure of 60 psig (414 kPa) - 90 psig (621 kPa) of air or nitrogen to dry the surface.
- (h) If the top insulation panel [32] is installed, install the aft firewall cover [28], forward firewall cover [31] and the firewall cover [35].
  - 1) Install the aft firewall cover [28] to the left aft mount for the APU with the five washers [27] and five screws [26].

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- 2) Install the forward firewall cover [31] to the left aft mount for the APU with the five washers [30] and five screws [29].
- 3) Install the firewall cover [35] to the left forward mount for the APU with the seven washers [34] and seven screws [33].
- 4) Apply a fillet seal of sealant, A00160 between the aft firewall cover [28], forward firewall cover [31], firewall cover [35] and the top insulation panel [32].
- 5) Remove the unwanted sealant from the surface with a cotton wiper, G00034.
  - (i) Apply the fillet seal of sealant, A00160 between the left insulation panel [40], aft insulation panel [133], top insulation panel [32], forward insulation panel [43], aft drip shield, forward drip shield and left drip shield.
  - (j) Remove the unwanted sealant from the surface with a cotton wiper, G00034.

SUBTASK 49-17-11-420-005

- (5) Do these steps to install the top insulation panel [32]:
  - (a) If you see remaining sealant on the parts of the top insulation panel [32], then do these steps:
    - 1) Remove the remaining sealant from the surface with a hard resin phenolic scraper, STD-1064 or an equivalent tool.
    - 2) Clean the surface with alcohol, B00130 and a cotton wiper, G00034.
    - 3) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057 to dry the surface.

NOTE: It is recommended that you use a pressure of 60 psig (414 kPa) - 90 psig (621 kPa) of air or nitrogen to dry the surface.
  - (b) Do the procedure in this task to install the right aft insulation panel [123].

NOTE: You must install the right aft insulation panel [123] before you can install the top insulation panel [32]. The aft insulation panel [133] is installed in the right aft insulation panel installation.



**CAUTION**  
BE CAREFUL WHEN YOU INSTALL THE INSULATION PANEL. USE TWO PERSONS TO INSTALL THE INSULATION PANEL. DAMAGE OR A BEND TO THE INSULATION PANEL CAN OCCUR.

- (c) Carefully put the top insulation panel [32] on the APU compartment wall.
- (d) Install the 31 washers [86] and 31 screws [85] that attach the top insulation panel [32] to the APU compartment wall.
- (e) Install the aft flameshield [92] with the two washers [91] and two screws [90].
- (f) Install the starter-generator flameshield [95] with the two washers [94] and two screws [93].
- (g) Remove the temporary materials (cord or equivalent) that attach the APU fire detector [87] and wire harness [4] to the support structure.
- (h) Install the APU fire detector [87] to the top insulation panel [32] with the two washers [83] and two bolts [82].
- (i) Install the APU fire detector [87] and the three brackets to the top insulation panel [32] with the six washers [89] and six screws [88].
- (j) Install the three clamps [96] on the wire harness [4] for the APU fire detector with the six washers [98] and three screws [97].

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- (k) Do this task to apply torque and do a bonding check: APU Overheat Detector Assembly Installation, TASK 26-15-01-400-802.
- (l) Do this task: APU Mounts Installation, TASK 49-13-11-400-802.  
NOTE: The firewall covers and the forward flameshield [84] are installed during the APU mounts installation.
- (m) Apply a fillet seal of sealant, A00160 between the top insulation panel [32] and the adjacent insulation panels.
- (n) Remove the unwanted sealant from the surfaces with a cotton wiper, G00034.

SUBTASK 49-17-11-420-006

- (6) Do these steps to install the forward insulation panel [43]:
  - (a) If you see remaining sealant on the parts of the forward insulation panel [43] and the starter-generator bracket [48], then do these steps:
    - 1) Remove the remaining sealant from the surface with a hard resin phenolic scraper, STD-1064 or an equivalent tool.
    - 2) Clean the surface with alcohol, B00130 and a cotton wiper, G00034.
    - 3) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057 to dry the surface.  
NOTE: It is recommended that you use a pressure of 60 psig (414 kPa) - 90 psig (621 kPa) of air or nitrogen to dry the surface.
  - (b) Do the procedure in this task to install the top insulation panel [32].  
NOTE: You must install the top insulation panel [32] before you can install the forward insulation panel [43].
  - (c) If the starter-generator firewall cover [44], right bracket firewall cover [52], left bracket firewall cover [63], forward rod firewall cover [73] and/or fuel fitting firewall cover [78] were removed from the forward insulation panel [43], install the firewall covers:
    - 1) Clean the surfaces of the right bracket firewall cover [52] and left bracket firewall cover [63]:
      - a) Remove the remaining sealant from the surfaces of the right bracket firewall cover [52] and left bracket firewall cover [63] with a hard resin phenolic scraper, STD-1064 or an equivalent tool.
      - b) Clean the surfaces of the right bracket firewall cover [52] and left bracket firewall cover [63] with alcohol, B00130 and a cotton wiper, G00034.
      - c) Dry the surfaces of the right bracket firewall cover [52] and left bracket firewall cover [63] with a cotton wiper, G00034.
    - 2) Apply the sealant, A00247 to the faying surfaces of the right bracket firewall cover [52].
    - 3) Install the right bracket firewall cover [52] with the two washers [57] and two screws [56].
    - 4) Apply the sealant, A00247 to the faying surfaces of the left bracket firewall cover [63].
    - 5) Install the left bracket firewall cover [63] with the four washers [81] and four screws [80].
    - 6) Install the fuel fitting firewall cover [78] with the four washers [77] and four screws [76].

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- 7) Install the forward rod firewall cover [73].
  - 8) Install the starter-generator firewall cover [44] with the two washers [62] and two screws [61].
  - 9) Fill the space in the rear side of the right bracket firewall cover [52] and left bracket firewall cover [63] with the sealant, A00247 at the sealant location [51] and sealant location [79].

NOTE: It is necessary to fill the space with sealant to prevent fluids from collecting there.
  - 10) Fill the space in the rear side of the union for the fire extinguisher nozzle [75] with the sealant, A00247 at the sealant location [74].
- (d) Apply the sealant, A00247 to the faying surfaces of the starter-generator bracket [48].
  - (e) Install the starter-generator bracket [48] to the starter-generator firewall cover [44] with the four screws [45], eight washers [46], and four nuts [47].
  - (f) Apply a fillet seal of sealant, A00247 on the four nuts [47].



BE CAREFUL WHEN YOU INSTALL THE INSULATION PANEL. USE TWO PERSONS TO INSTALL THE INSULATION PANEL. DAMAGE OR A BEND TO THE INSULATION PANEL CAN OCCUR.

- (g) Carefully put the forward insulation panel [43] on the 1088 bulkhead.

NOTE: You must install the aft, right aft, right forward and top insulation panels before you can install the forward insulation panel [43].
- (h) Put the four wire harnesses [49] through the starter-generator firewall cover [44] while you install the forward insulation panel [43].

NOTE: Use the four identification tags for the correct installation of the four wire harnesses to the four hole locations on the starter-generator firewall cover [44].
- (i) If it is necessary, remove the four identification tags.
- (j) Install the 39 washers [60] and 39 screws [59] that attach the forward insulation panel [43] to the 1088 bulkhead.
- (k) Install the three washers [60] and three screws [59] on the bottom forward corner of the forward drip shield and right forward drip shield.
- (l) Install the fanning strip [58] to the four wire harnesses [49].

NOTE: The fanning strip show the identification of the four terminal lugs (T1), (T2), (T3) and (T4) for the four wire harnesses.
- (m) Make sure you install the four wire harnesses to the correct locations on the fanning strip [58].
- (n) Install the fire extinguisher nozzle [75] on the union.

NOTE: You turn the fire extinguisher nozzle [75] clockwise to install the nozzle.
- (o) Install the washer [68] and screw [67].
- (p) Install the MS20995C32 lockwire, G01048 to the screw [67] and the fire extinguisher nozzle [75]. To install it, do this task: Lockwire, Cotter Pins, and Lockrings - Installation, TASK 20-10-44-400-801.
- (q) Install the bracket [64] with the two washers [66] and two screws [65].
- (r) Clean the surfaces of the bracket [69] for the forward compartment light and the five washers [72] and five washers [144]:

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- 1) Remove the remaining sealant from the surfaces with a hard resin phenolic scraper, STD-1064 or an equivalent tool.
- 2) Clean the surfaces with alcohol, B00130 and a cotton wiper, G00034.
- 3) Dry the surfaces with a cotton wiper, G00034.
- (s) Apply the sealant, A00247 to the five washers [72] and five washers [144].
- (t) Remove the temporary materials (cord or equivalent) that attach the forward compartment light [70] and bracket [69] to the support structure.
- (u) Install the bracket [69] to the forward insulation panel [43] with the five washers [144], five washers [72] and five screws [71].
  - 1) Make sure that the five washers [144] are installed between the forward insulation panel [43] and the bracket [69].
- (v) Install the three clamps [53] on the wire harness with the six washers [55] and three screws [54].
- (w) Connect the electrical connector D40060 [50] to the APU firewall receptacle on the 1088 bulkhead.
- (x) Apply a fillet seal of sealant, A00160 between the forward insulation panel [43], forward drip shield, right forward drip shield and the adjacent insulation panels.
- (y) Remove the unwanted sealant from the surfaces with a cotton wiper, G00034.

SUBTASK 49-17-11-420-007

- (7) Do these steps to install the insulation panel [13] on the APU Cowl Door, 315A:



**BE CAREFUL WHEN YOU INSTALL THE INSULATION PANEL. USE TWO PERSONS TO INSTALL THE INSULATION PANEL. DAMAGE OR A BEND TO THE INSULATION PANEL CAN OCCUR.**

- (a) Carefully put the insulation panel [13] on the APU Cowl Door, 315A.
- (b) Install the 30 washers [2] and 30 screws [1] that attach the insulation panel [13] to the APU Cowl Door, 315A.
- (c) Install the APU fire detector [14] with the two washers [9] and two bolts [8].
- (d) Install the APU fire detector [14] with the six washers [12] and six screws [11].
- (e) Install the APU fire detector [14] with the spacer [17], two washers [16] and two screws [15].
- (f) Install the two clamps [5] on the wire harness [4] for the APU fire detector with the four washers [7] and four screws [6].
- (g) Install the two screws [150] and two washers [151] to attach bracket [152] to the APU Cowl Door, 315A.
- (h) Do this task to apply torque and do a bonding check: APU Overheat Detector Assembly Installation, TASK 26-15-01-400-802.
- (i) If the APU Cowl Door, 315A was not removed from the airplane, connect the electrical connector D40062 [10] to the APU fire detector [14].
- (j) Install the two spring clips [21] with the two washers [20] and two screws [19].
- (k) Install the two hold-open rods [3] with the two bolts [25], four washers [24] and two nuts [23].
- (l) Install the cotter pins [22] in the two nuts [23].

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**H. Put the Airplane Back to Its Usual Condition**

SUBTASK 49-17-11-410-003

- (1) If necessary, do these steps:

- (a) If the access panel was removed from the airplane, install it by the following steps:

**Number      Name/Location**

315A      APU Cowl Door

- 1) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- 2) Install the retainer pin in the rod end of the forward hold-open rod.
- 3) Install the retainer pin to the spring clip on the aft hold-open rod.
- 4) Do this task: Auxiliary Power Unit (APU) Cowl Door Installation, TASK 52-48-21-400-801.

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

**F/O Electrical System Panel, P6-2**

**Row    Col    Number    Name**

B        19     C01344    APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

**Row    Col    Number    Name**

A        14     C00033    AUX POWER UNIT CONT

- (c) Remove the DO NOT OPERATE tag, STD-858 from the APU master switch on the P5 forward overhead panel.

SUBTASK 49-17-11-860-006

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

**F/O Electrical System Panel, P6-2**

**Row    Col    Number    Name**

A        23     C00403    FIRE PROTECTION DETECTION APU

SUBTASK 49-17-11-420-008

- (3) If you replaced one or more insulation panels on the APU compartment walls, install the APU. To install it, do this task: APU Power Plant Installation, TASK 49-11-00-400-801.

SUBTASK 49-17-11-410-004

- (4) To close the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.

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- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

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INSULATION PANEL - INSPECTION/CHECK

**1. General**

- A. This procedure contains scheduled maintenance task data.
- B. This procedure has the task to inspect the insulation panel. Seven insulation panels are installed on the APU cowl door and in the APU compartment.

**TASK 49-17-11-200-801**

**2. Insulation Panel Inspection**

NOTE: This procedure is a scheduled maintenance task.

**A. References**

<u>Reference</u>	<u>Title</u>
49-11-00-000-801	APU Power Plant Removal (P/B 401)
49-11-00-400-801	APU Power Plant Installation (P/B 401)
49-17-11-000-801	Insulation Panel Removal (P/B 401)
49-17-11-300-801	Repair of the APU Insulation Panel (P/B 801)
49-17-11-400-801	Insulation Panel Installation (P/B 401)

**B. Location Zones**

<u>Zone</u>	<u>Area</u>
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**C. Access Panels**

<u>Number</u>	<u>Name/Location</u>
315A	APU Cowl Door

**D. Prepare for the Inspection**

SUBTASK 49-17-11-860-001

- (1) Make sure that the APU master switch on the P5 forward overhead panel is OFF and install a DO-NOT-OPERATE tag.

SUBTASK 49-17-11-860-002

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-17-11-010-006

- (3) To open the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowling door) under the center latch.

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- (b) Open the three latches.  
NOTE: Use this sequence: forward latch, aft latch, middle latch.
- (c) Open the APU Cowl Door, 315A.
- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

**SUBTASK 49-17-11-010-001**

- (4) If you will do a full inspection of the seven insulation panels, do this task: APU Power Plant Removal, TASK 49-11-00-000-801.

NOTE: It is necessary to remove the APU to inspect all the surfaces of the top insulation panel.

NOTE: It is not necessary to remove the APU if you do a general visual inspection of the seven insulation panels.

## **E. Procedure**

**SUBTASK 49-17-11-210-003**

- (1) Do these steps to inspect the insulation panels for fluid contamination and structural damage:
  - (a) Examine the insulation panels for signs of fluid contamination to the core insulation material.
  - (b) Examine the surface of the insulation panels for missing weld stitches, missing metal sheets, ruptured seams or structural metal deterioration.
  - (c) Examine the insulation panels for holes that have gone through the inner and outer metal sheets.
  - (d) If you find any of the above damage, replace the insulation panel(s). These are the tasks:
    - Insulation Panel Removal, TASK 49-17-11-000-801
    - Insulation Panel Installation, TASK 49-17-11-400-801
    - 1) After the insulation panel(s) are removed, do these steps:
      - a) Examine the structure behind the insulation panel(s) for contamination and damage.
      - b) Examine the air inlet scoop for blockage of unwanted materials and damage that can cause a decrease in air flow.  
NOTE: You can find the air inlet scoop behind the forward insulation panel.
      - c) If you find blockage of unwanted materials, remove the blockage.
      - d) If you find contamination or damage, clean and repair the problems that you find.

**SUBTASK 49-17-11-210-004**

- (2) Do these steps to inspect the insulation panels for other structural damage limits:
  - (a) Examine the outer metal sheet on the insulation panel for holes and tears.
    - 1) Holes less than 0.25 inch (6.4 mm) in diameter are permitted.

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- 2) Tears less than 2 in. (51 mm) in length and less than 0.05 in. (1.27 mm) in width are permitted.
- (b) Examine the damaged areas of the insulation panels.
  - 1) If you find more than 0.5 inch (13 mm) of the outer metal sheet around the damaged area(s), you can repair the insulation panel.

NOTE: This limit includes the distance from the damaged area to a grommet, sharp bend, edge of the metal sheet or attaching parts.
- (c) If you find the above damage and the damage is in the limits, do this task: Repair of the APU Insulation Panel, TASK 49-17-11-300-801.

NOTE: CMM 49-17-00 can be used to repair damage less than 6 inches.
- (d) If you find the above damage and the damage is more than the limits, replace the insulation panel(s). These are the tasks:
  - Insulation Panel Removal, TASK 49-17-11-000-801
  - Insulation Panel Installation, TASK 49-17-11-400-801
  - 1) After the insulation panel(s) are removed, do these steps:
    - a) Examine the structure behind the insulation panel(s) for contamination and damage.
    - b) Examine the air inlet scoop for blockage of unwanted materials and damage that can cause a decrease in air flow.

NOTE: You can find the air inlet scoop behind the forward insulation panel.
    - c) If you find blockage of unwanted materials, remove the blockage.
    - d) If you find contamination or damage, clean and repair the problems that you find.

SUBTASK 49-17-11-410-001

- (3) If the APU was removed during the inspection of the insulation panel(s), do this task: APU Power Plant Installation, TASK 49-11-00-400-801.

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

SUBTASK 49-17-11-860-003

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-17-11-860-004

- (2) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.

SUBTASK 49-17-11-410-005

- (3) To close the access panel, do these steps:

<u>Number</u>	<u>Name/Location</u>
315A	APU Cowl Door

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- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

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INSULATION PANEL - REPAIRS

**1. General**

- A. This procedure has the task for a repair to the insulation panel.
- B. There are seven insulation panels installed on the APU cowl door and in the APU compartment.

**TASK 49-17-11-300-801**

**2. Repair of the APU Insulation Panel**

(Figure 801)

**A. References**

Reference	Title
49-17-11-200-801	Insulation Panel Inspection (P/B 601)

**B. Tools/Equipment**

Reference	Description
STD-810	Spatula - Fillet Smoothing, Hardwood or Plastic
STD-858	Tag - DO NOT OPERATE
STD-1080	Brush - Paint

**C. Consumable Materials**

Reference	Description	Specification
A00160	Sealant - Firewall - Hydraulic Fluid Resistant	BMS5-63
A50396	Sealant - Dapco 2200 Primerless Silicone Firewall Sealant	BMS5-63 Type II Class B-1/2
B00130	Alcohol - Isopropyl	TT-I-735
C00944	Primer - Firewall - Dapco No. 1-100	BMS5-63 Type I
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)
G00744	Cloth - Emery	

**D. Location Zones**

Zone	Area
315	APU Compartment - Left
316	APU Compartment - Right

**E. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**F. Prepare for the Repair**

**SUBTASK 49-17-11-860-007**

- (1) Make sure that the APU master switch, on the P5 forward overhead panel, is set to the OFF position.
  - (a) Attach the DO NOT OPERATE tag, STD-858, to the applicable switch.

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SUBTASK 49-17-11-860-008

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-17-11-010-007

- (3) To open the access panel, do these steps:

**Number      Name/Location**

315A	APU Cowl Door
------	---------------

- (a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.
- (b) Open the three latches.  
*NOTE:* Use this sequence: forward latch, aft latch, middle latch.
- (c) Open the APU Cowl Door, 315A.
- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

**G. Damage Limits**

SUBTASK 49-17-11-800-002

- (1) Refer to the task: Insulation Panel Inspection, TASK 49-17-11-200-801, for the damage limits.

**H. Insulation Panel Repair**

SUBTASK 49-17-11-220-001

- (1) Measure the damaged area of the insulation panel.  
(a) Make sure that the damaged area of the insulation panel is in the damage limits above.

SUBTASK 49-17-11-390-001

- (2) Do these steps to apply the sealant to the damaged area of the outer metal sheet:



USE PROTECTION WHEN YOU REMOVE THE SHARP METAL EDGES  
FROM THE DAMAGED AREA OF THE OUTER METAL SHEET. SHARP  
METAL EDGES CAN CAUSE INJURY TO PERSONS.

- (a) Remove the sharp metal edges and loose materials from the damaged area of the outer metal sheet.
  - 1) Deburr the edges of the damaged area of the outer metal sheet with an emery cloth, G00744, or equivalent.

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**CAUTION**  
BE CAREFUL THAT YOU DO NOT LET ALCOHOL TO TOUCH OR GO THROUGH THE CORE INSULATION MATERIAL. ALCOHOL AND OTHER FLUIDS WILL DECREASE THE PERFORMANCE AND MATERIAL PROPERTIES OF THE INSULATION PANEL. THIS CAN CAUSE DAMAGE TO THE INSULATION PANEL.

- (b) Clean the damaged area with alcohol, B00130, and cotton wiper, G00034.
- (c) Dry the surface of the outer metal sheet with cotton wiper, G00034.
  - 1) Apply Dapco No. 1-100 primer, C00944, and sealant, A00160, in four hours after you clean the damaged area.
- (d) Make the surface of the outer metal sheet rough with emery cloth, G00744, or equivalent.  
NOTE: The rough surface of the outer metal sheet must extend a minimum of 0.25 in. (6.35 mm) to 0.50 in. (12.70 mm) around the damaged area.
- (e) Clean the surface of the outer metal sheet again with alcohol, B00130, and cotton wiper, G00034.
- (f) Dry the surface of the outer metal sheet with cotton wiper, G00034.
- (g) Optional (if you will use sealant, A00160), within four hours, use a paint brush, STD-1080, to apply a thin layer of Dapco No. 1-100 primer, C00944, to the rough surface of the outer metal sheet.
  - 1) Let Dapco No. 1-100 primer, C00944, dry for one hour but not longer than two hours.  
NOTE: A chalky color on the outer metal sheet shows when Dapco No. 1-100 primer, C00944, is dry.
- (h) Use a hardwood or plastic fillet smoothing spatula, STD-810, to apply sealant, A00160, or Dapco 2200 firewall sealant, A50396, (that does not require primer) as follows:
  - 1) The sealant must extend a minimum of 0.25 in. (6.35 mm) to 0.50 in. (12.70 mm) from the edge of damaged area.
  - 2) The maximum thickness of the sealant over the damaged area must be approximately 0.1 in. (2.54 mm), tapering at the edges.
  - 3) Make sure that the roughed area is completely covered with sealant.
- (i) Use a hardwood or plastic fillet smoothing spatula, STD-810, to make the sealant area smooth.
- (j) Remove unwanted sealant, A00160, from the outer metal sheet with cotton wiper, G00034.
- (k) Let sealant, A00160, dry for a minimum of 48 hours at  $75 \pm 5^{\circ}\text{F}$  ( $24 \pm 3^{\circ}\text{C}$ ).  
NOTE: You can use a heat lamp to decrease the time for sealant, A00160, to dry. The time to dry with a heat lamp is four hours at  $120^{\circ}\text{F}$  ( $49^{\circ}\text{C}$ ).

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

SUBTASK 49-17-11-860-010

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

### F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

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**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-17-11-860-011

- (2) Remove the DO NOT OPERATE tag, from the APU master switch on the P5 forward overhead panel.

SUBTASK 49-17-11-410-006

- (3) To close the access panel, do these steps:

Number    Name/Location

315A	APU Cowl Door
------	---------------

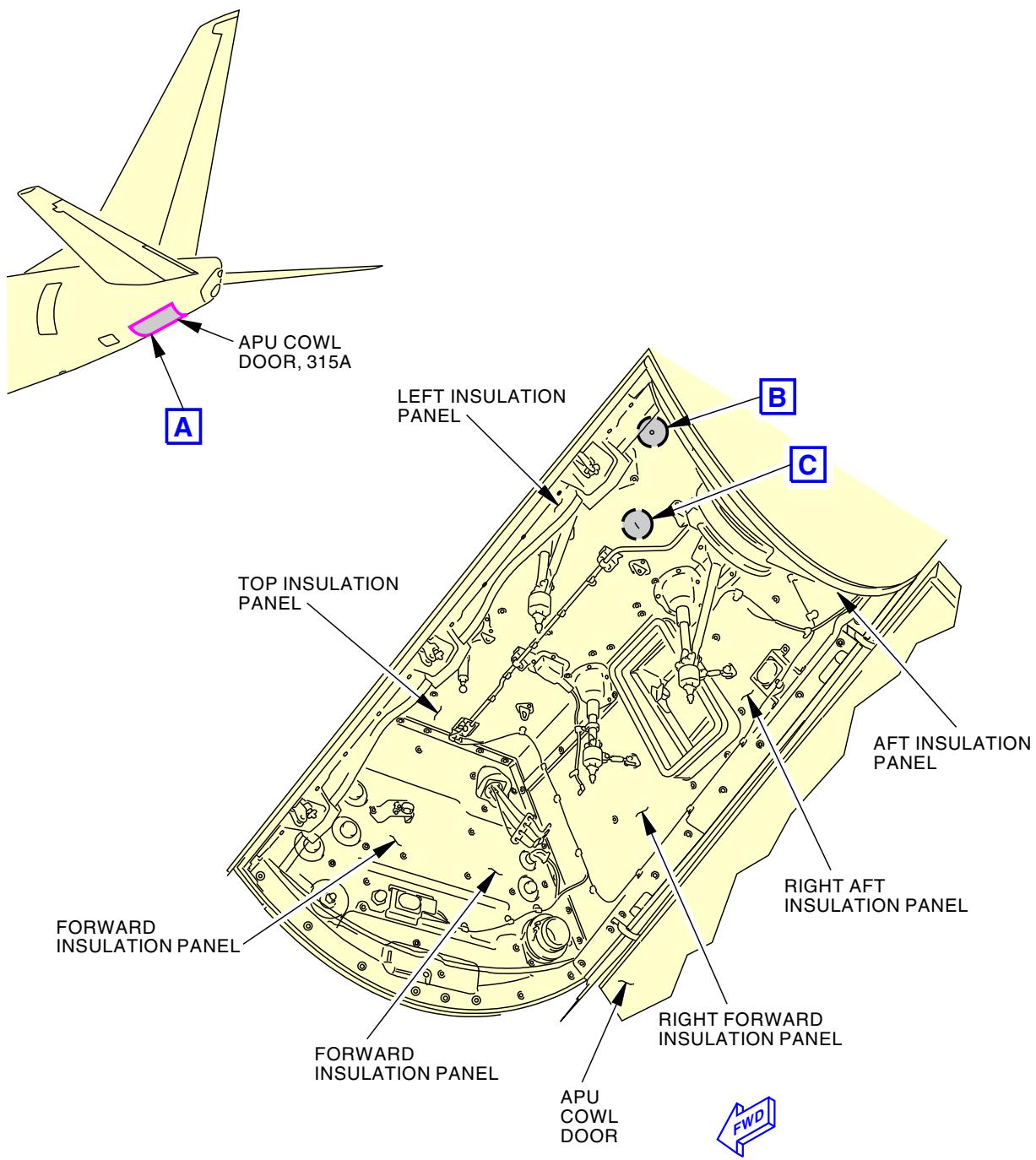
- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

EFFECTIVITY  
LOM ALL

**49-17-11**

**A**

2097469 S0000443678\_V2

**APU Insulation Panel Repair**  
Figure 801/49-17-11-990-802 (Sheet 1 of 2)

EFFECTIVITY  
LOM ALL

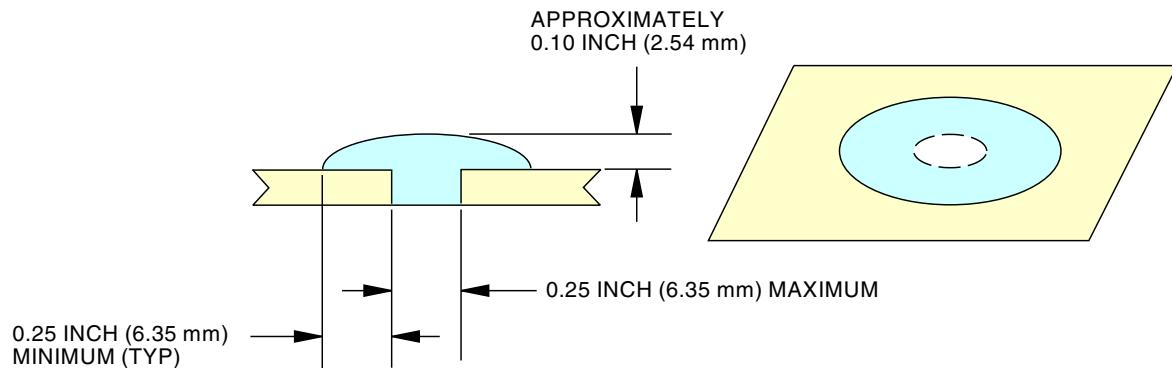
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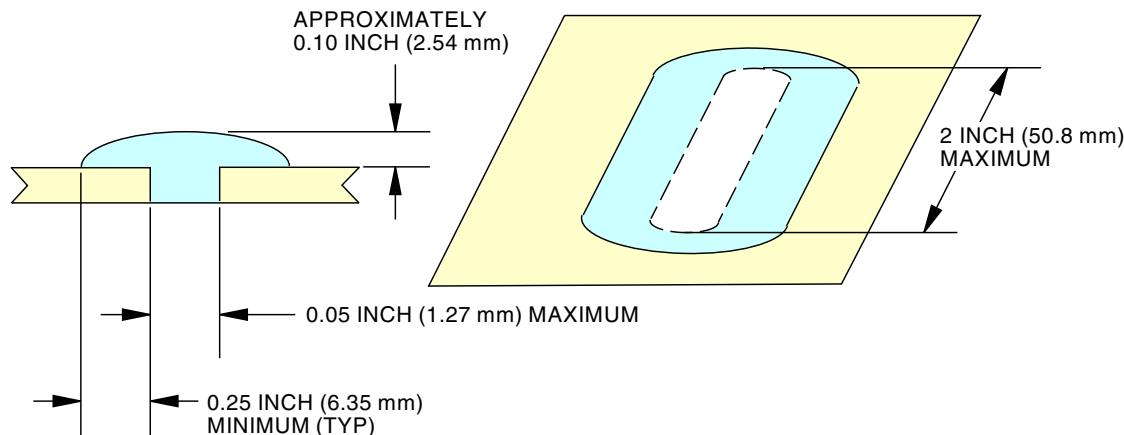


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REPAIR OF A SMALL HOLE IN  
INSULATION PANEL

**B**



REPAIR OF A SMALL CRACK IN  
INSULATION PANEL

**C**

2097574 S0000443680\_V4

APU Insulation Panel Repair  
Figure 801/49-17-11-990-802 (Sheet 2 of 2)

EFFECTIVITY  
LOM ALL

**49-17-11**

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737-600/700/800/900  
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AIR INLET SCOOP - INSPECTION/CHECK

**1. AIR INLET SCOOP - INSPECTION/CHECK**

- A. This procedure has the task to inspect the air inlet scoop.

**TASK 49-17-12-200-802**

**2. Air Inlet Scoop Inspection**

(Figure 601)

**A. Procedure**

SUBTASK 49-17-12-210-003

- (1) Do these steps to inspect the air inlet scoop [1] for blockage of material and structural damage:

- (a) Examine the air inlet scoop [1] for blockage of unwanted materials and damage that can cause a decrease in air flow.

NOTE: You examine the air inlet scoop [1] from the outer surface of the airplane.

- 1) If you find blockage of unwanted materials, remove the blockage.
- 2) If you find contamination or damage, clean and repair the problems that you find.

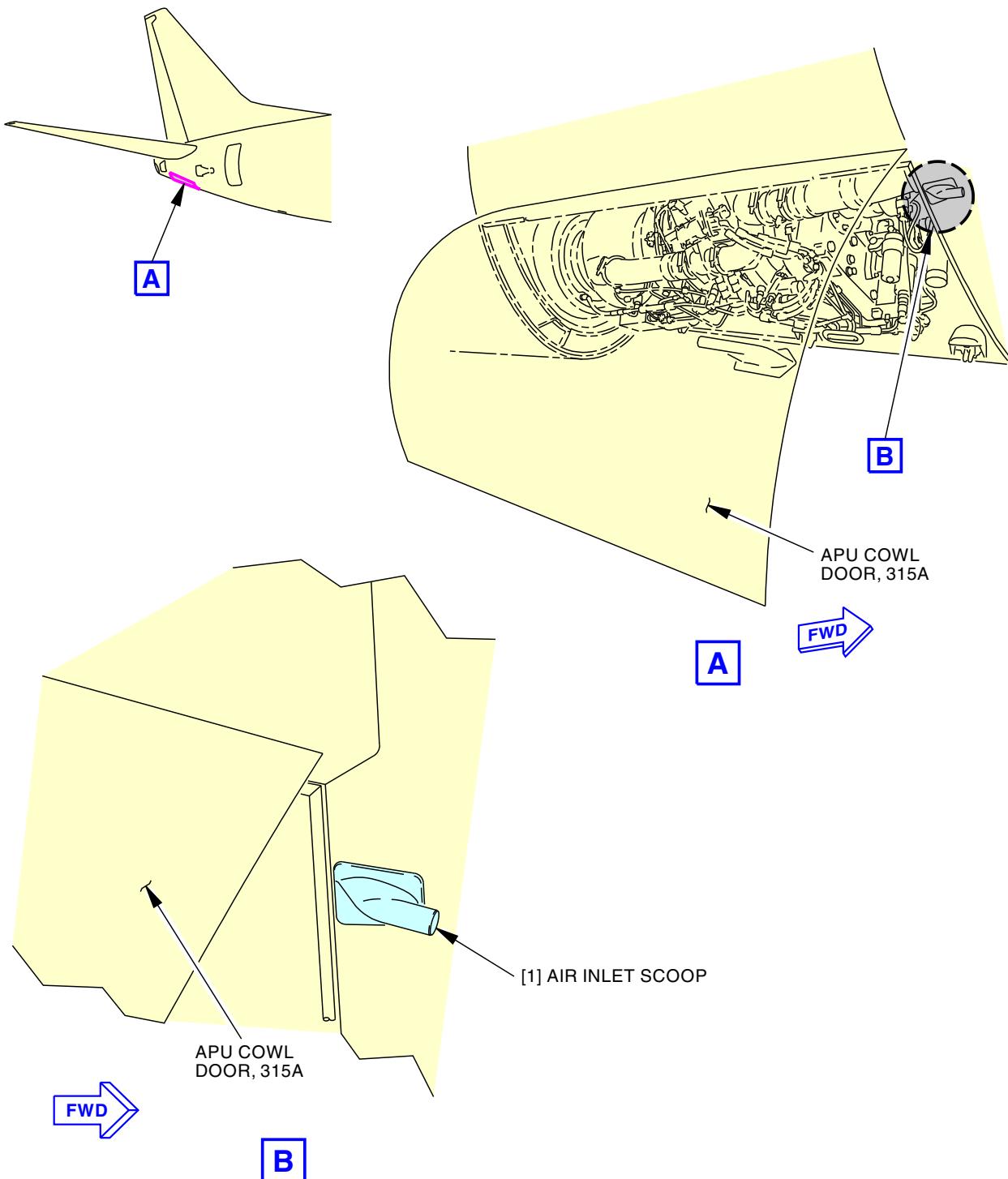
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EFFECTIVITY  
LOM ALL

**49-17-12**



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AIRCRAFT MAINTENANCE MANUAL



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Air Inlet Scoop Inspection  
Figure 601/49-17-12-990-802

EFFECTIVITY  
LOM ALL

49-17-12

D633A101-LOM



737-600/700/800/900  
AIRCRAFT MAINTENANCE MANUAL  
APU ENGINE - MAINTENANCE PRACTICES

**1. General**

- A. This procedure has these tasks:
- (1) A manually turn the Auxiliary Power Unit (APU) engine
  - (2) A removal of the air-oil separator adapter stationary seal
  - (3) An installation of the air-oil separator adapter stationary seal.

**TASK 49-21-00-980-801**

**2. Manually Turn the APU Engine**

(Figure 201)

**A. Tools/Equipment**

Reference	Description
STD-13964	Wrench - Torque, 200 to 1000 in-lb

**B. Consumable Materials**

Reference	Description	Specification
D00341	Lubricant - Polyphenyl Ether, Vacuum Pump - Santovac 5	
D00504	Grease - Petrolatum	VV-P-236
G50225	Lockwire - MS20995C20, Corrosion Resistant Steel - 0.020 Inch (0.508 mm) Diameter	NASM20995

**C. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Plug	49-21-01-02-065	LOM ALL
2	Packing	49-21-01-02-070	LOM ALL

**D. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**E. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**F. Prepare for the Inspection**

SUBTASK 49-21-00-860-001

- (1) Make sure the APU master switch on the P5 forward overhead panel is OFF and install a DO-NOT-OPERATE tag.

SUBTASK 49-21-00-860-002

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

**F/O Electrical System Panel, P6-2**

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

EFFECTIVITY  
LOM ALL

**49-21-00**



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AIRCRAFT MAINTENANCE MANUAL

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-21-00-010-004

- (3) To open the access panel, do these steps:

Number    Name/Location

315A      APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.
- (b) Open the three latches.  
*NOTE:* Use this sequence: forward latch, aft latch, middle latch.
- (c) Open the APU Cowl Door, 315A.
- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

**G. Procedure**

SUBTASK 49-21-00-980-001

- (1) Do these steps to manually turn the APU engine:

- (a) Remove the lockwire that attach the plug [1] to the air/oil separator adapter [3].
- (b) Remove the plug [1] from the air/oil separator adapter [3].
- (c) Remove the packing [2] from the plug [1].
  - 1) Discard the packing [2].
- (d) Use a 1/4 inch hexagonal driver, a six inch extension and a torque wrench, STD-13964 to turn the pinion gear of the air/oil separator adapter clockwise or counterclockwise.

*NOTE:* When you turn the pinion gear of the air/oil separator adapter, the APU will turn in the opposite direction. The torque to rotate the APU should not exceed 372 in-lb (42 N·m).

SUBTASK 49-21-00-420-001

- (2) Do these steps after you complete the procedure to manually turn the APU engine:

- (a) Remove the 1/4 inch hexagonal driver, six inch extension and wrench from the pinion gear of the air/oil separator adapter.
- (b) Lubricate the new packing [2] with a light coat of Santovac 5 lubricant, D00341 or grease, D00504.
- (c) Install the packing [2] on the plug [1].
- (d) Install the plug [1] in the air/oil separator adapter [3].
  - 1) Tighten the plug [1] to 65 in-lb (7.3 N·m).
- (e) Install the MS20995C20 lockwire, G50225 on the plug [1].

EFFECTIVITY  
LOM ALL

**49-21-00**



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

**H. Put the Airplane Back to Its Usual Condition**

SUBTASK 49-21-00-860-003

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-21-00-860-004

- (2) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.

SUBTASK 49-21-00-410-004

- (3) To close the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

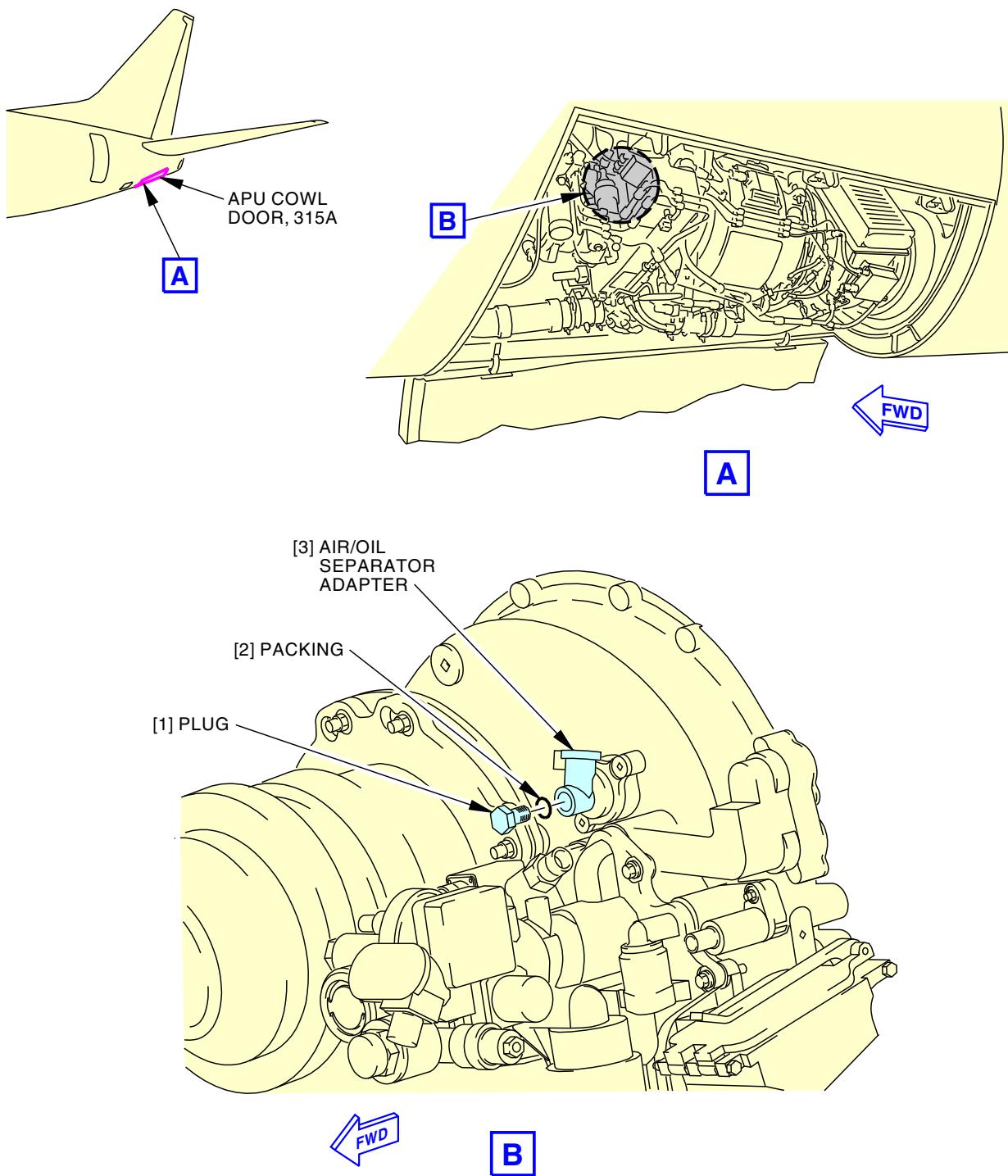
———— END OF TASK ————

EFFECTIVITY  
LOM ALL

**49-21-00**



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G25666 S0006579155\_V3

**Manually Turn the APU Engine**  
Figure 201/49-21-00-990-801

EFFECTIVITY  
LOM ALL

**49-21-00**

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ECCN 9E991 BOEING PROPRIETARY - See title page for details

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**TASK 49-21-00-000-801**

**3. Air-Oil Separator Adapter Stationary Seal - Removal**

(Figure 202)

**A. General**

- (1) This task includes the steps to remove the carbon/stationary air-oil seal of the Auxiliary Power Unit (APU) air-oil separator adapter.

**B. References**

Reference	Title
49-21-00-200-803	APU Engine Compressor Cleaning (P/B 701)

**C. Tools/Equipment**

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

Reference	Description
COM-14878	Puller - Seal Part #: 834829-1 Supplier: 99193
STD-858	Tag - DO NOT OPERATE

**D. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**E. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**F. Prepare for the Removal**

**SUBTASK 49-21-00-840-001**

- (1) Make sure that the APU master switch, on the P5 forward overhead panel, is in the OFF position.  
(a) Install the DO NOT OPERATE tag, STD-858, on the APU master switch.

**SUBTASK 49-21-00-860-022**

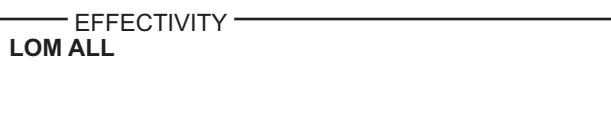
- (2) Open these circuit breakers and install safety tags:

**F/O Electrical System Panel, P6-2**

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT



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SUBTASK 49-21-00-010-007

- (3) To open the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Support the APU panel (cowl door) under the center latch.

- (b) Open the three latches.

NOTE: Use this sequence: forward latch, aft latch, middle latch.

- (c) Open the APU Cowl Door, 315A.

- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.

- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.

- (f) Disconnect the two hold-open rods from the two spring clips.

- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.

- (h) Install the two retainer pins in the two rod ends.

## G. Air-Oil Separator Adapter Stationary Seal Removal

SUBTASK 49-21-00-210-002

- (1) Do a visual inspection of the gearbox surface around the air/oil separator adapter for dirt or debris.
- (a) If you see dirt or debris, clean the gearbox surface area before proceeding (TASK 49-21-00-200-803).

SUBTASK 49-21-00-000-004

- (2) Remove the vent tube [18].
- (a) Remove the bolt [17] from the from the air/oil separator adapter [3].
- (b) Remove the vent tube [18] from the air/oil separator adapter [3].
- 1) Remove and discard the packings [19].

SUBTASK 49-21-00-000-003

- (3) Do these steps to remove the air/oil separator adapter [3]:
- (a) If it is necessary, remove the lockwire that attaches plug [1] to the air/oil separator adapter [3].
- NOTE: Do this step only if it is necessary to replace or repair the air/oil separator adapter.
- 1) Remove the plug [1] and packing [2] from the air/oil separator adapter [3].
- (b) Remove the packing [2] from the plug [1].
- NOTE: Do this step only if it is necessary to replace or repair the air/oil separator adapter.
- 1) Discard the packing [2].
- (c) Remove the bolts [5], washers [6], and air/oil separator adapter [3] from the gearbox assembly [11].
- NOTE: If there is oil loss past the seal and into the vent system, only the carbon seal/stationary air-oil seal and shim pack should be replaced.

EFFECTIVITY  
LOM ALL

**49-21-00**



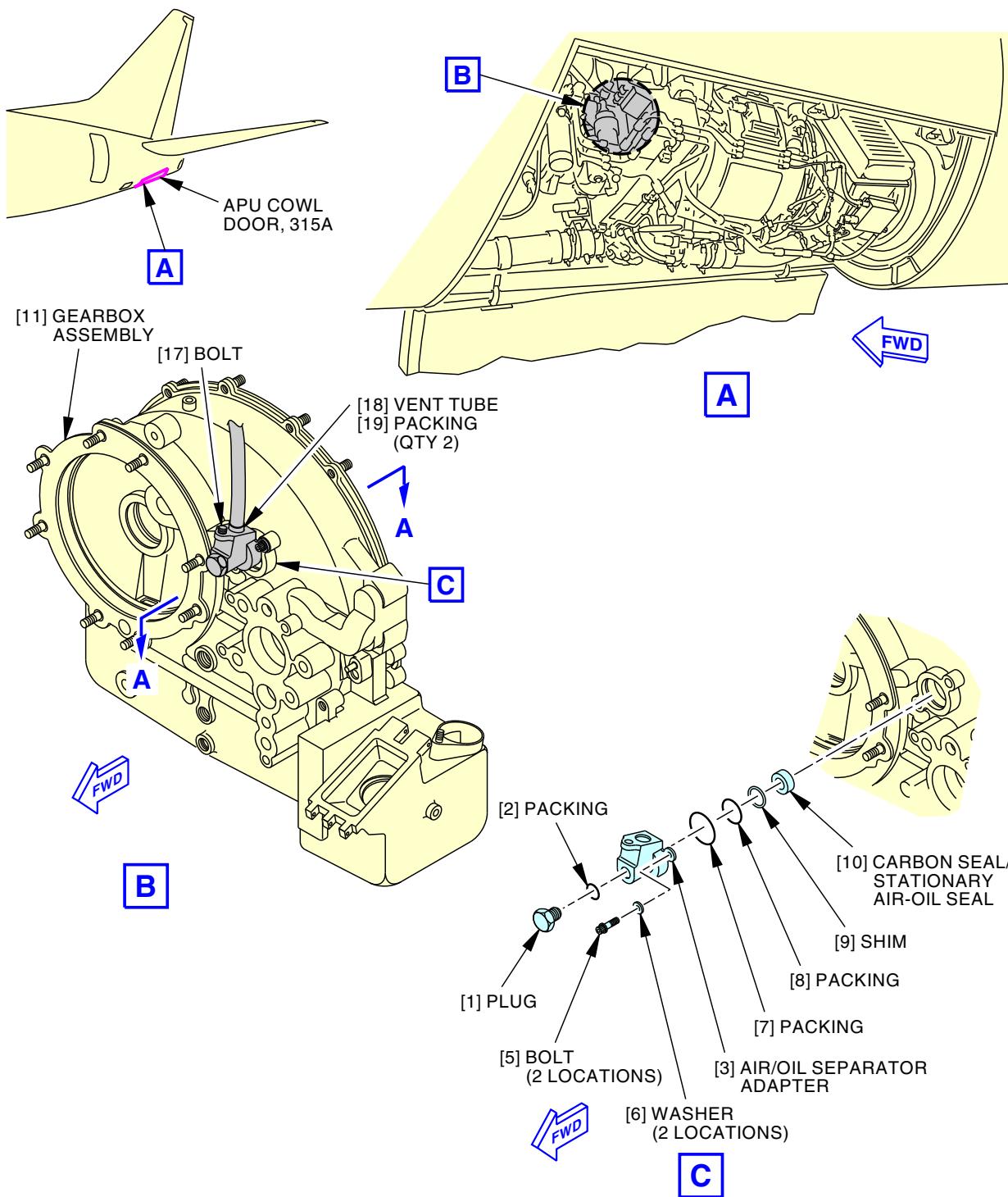
**737-600/700/800/900**  
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- 1) Make sure that dirt or other contamination does not get into the drive adapter mounting pad opening.
- (d) Remove the packing [7] and packing [8].
  - 1) Discard the packing [7] and packing [8].
- (e) Remove the shim [9] and carbon seal/stationary air-oil seal [10].  
NOTE: When removing carbon seal/stationary air-oil seal use seal puller, COM-14878, or an equivalent.
  - 1) Discard the carbon seal/stationary air-oil seal [10].
- (f) Do a visual inspection of the seal disk [12] for signs of damage or excessive rough surface.  
NOTE: If the seal disk is damaged or rough it must be replaced or repaired prior to installation of the carbon seal/stationary air-oil seal.
  - 1) If it is necessary, remove the seal disk [12].
    - a) Discard the seal ring [16].

————— END OF TASK ————

EFFECTIVITY  
LOM ALL

**49-21-00**



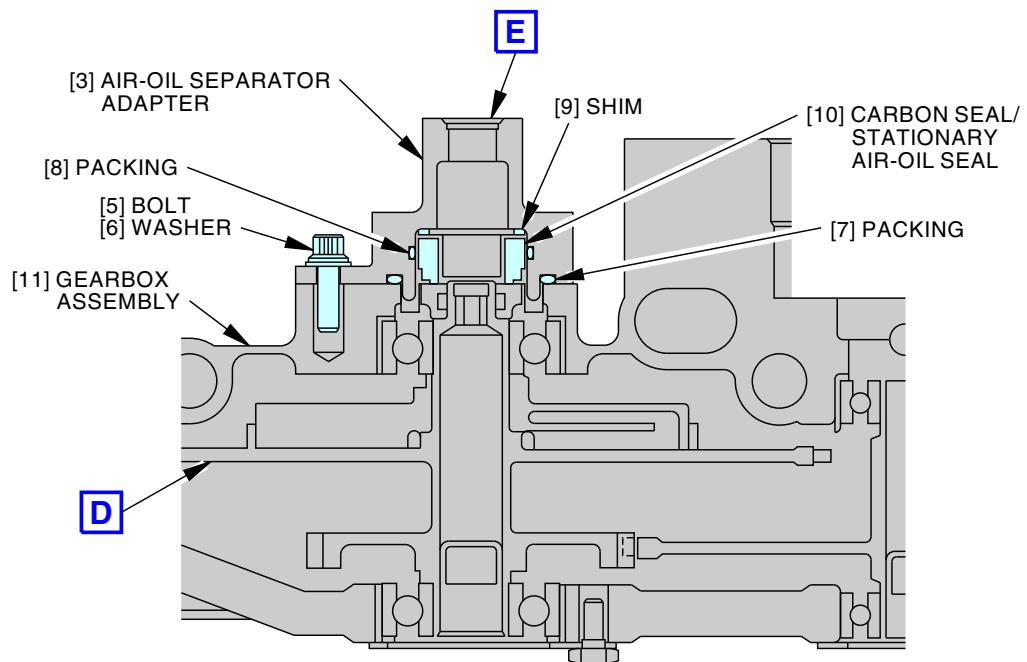
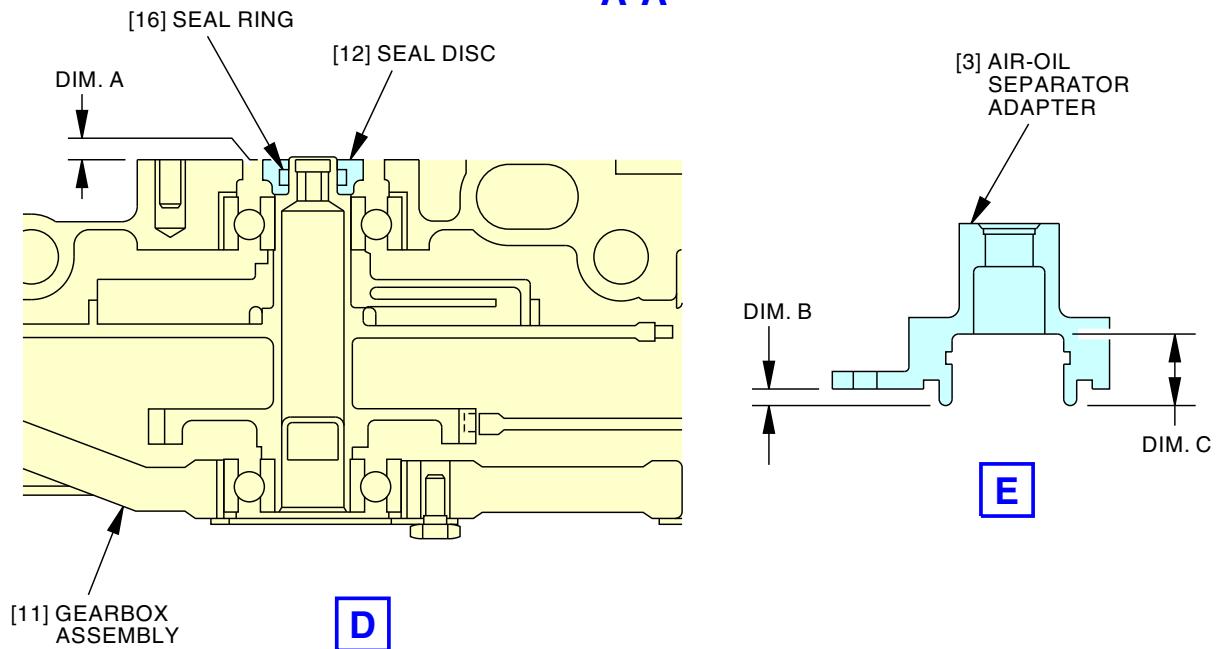
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**Air-Oil Separator Adapter Stationary Seal**  
**Figure 202/49-21-00-990-804 (Sheet 1 of 2)**

EFFECTIVITY  
LOM ALL

**49-21-00**

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**A-A**


2500508 S0000586072\_V3

**Air-Oil Separator Adapter Stationary Seal**  
**Figure 202/49-21-00-990-804 (Sheet 2 of 2)**

EFFECTIVITY  
**LOM ALL**

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TASK 49-21-00-400-801

4. **Air-Oil Separator Adapter Stationary Seal - Installation**

(Figure 202)

**A. General**

- (1) This task includes the steps to install the carbon/stationary air-oil seal of the Auxiliary Power Unit (APU) air-oil separator adapter.

**B. References**

Reference	Title
12-13-31-200-801	APU Oil Level Inspection (P/B 301)
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (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-14877	Driver - Shaft Part #: 834824-1 Supplier: 99193
STD-858	Tag - DO NOT OPERATE

**D. Consumable Materials**

Reference	Description	Specification
C00528	Compound - Corrosion Preventive, Petroleum Hot Application (Soft Film)	MIL-C-11796 Class III
D00068	Oil - Aircraft Turbine Engine, Synthetic Base	MIL-PRF-23699 Class STD (Standard)
D00341	Lubricant - Polyphenyl Ether, Vacuum Pump - Santovac 5	
D00418	Oil - Aircraft Turbine Engine Synthetic Base	MIL-PRF-7808
D00504	Grease - Petrolatum	VV-P-236
G50225	Lockwire - MS20995C20, Corrosion Resistant Steel - 0.020 Inch (0.508 mm) Diameter	NASM20995

**E. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Plug	49-21-01-02-065	LOM ALL
2	Packing	49-21-01-02-070	LOM ALL
3	Air/oil separator adapter	49-21-01-02-105	LOM ALL
7	Packing	49-21-01-02-075	LOM ALL
8	Packing	49-21-01-02-080	LOM ALL
10	Carbon seal/stationary air-oil seal	49-21-01-02-060	LOM ALL
19	Packing	49-11-00-12-090	LOM ALL



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**F. Location Zones**

<b>Zone</b>	<b>Area</b>
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**G. Access Panels**

<b>Number</b>	<b>Name/Location</b>
315A	APU Cowl Door

**H. Air-Oil Separator Adapter Stationary Seal Installation**

SUBTASK 49-21-00-860-029

- (1) Make sure these circuit breakers are open:

**F/O Electrical System Panel, P6-2**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-21-00-400-002

- (2) Do these steps to install the air/oil separator adapter [3]:
  - (a) If the seal disk [12] was removed, do these steps:
    - 1) Apply compound, C00528, on the seal ring [16].
    - 2) Install the seal ring [16] in the seal disk [12].
    - 3) Install the seal disk [12] to the gearbox assembly [11] with the seal ring [16] installed.
  - (b) Determine the shim [9] pack necessary for the carbon seal/stationary air-oil seal [10] as follows:
    - 1) Measure from the face of the gearbox assembly [11] to the face of the seal disk [12], record as Dimension A.
    - 2) Measure from the top of the air/oil separator adapter [3] to the face of the air/oil separator adapter flange, record as Dimension B.
    - 3) Measure from the top of the air/oil separator adapter [3] to the air-oil separator adapter seal land, record as Dimension C.
    - 4) Make sure that all dimensions are measured per inch (mm).
  - (c) Calculate the necessary shims as follows:
    - 1) Necessary shim [9] pack = Dimension A - Dimension B + Dimension C - 0.45 in. (11.43 mm)  $\pm$  0.002 in. (0.05 mm).
  - (d) Lubricate the new packing [7] and new packing [8] with a light coat of Santovac 5 lubricant, D00341, or grease, D00504.
  - (e) Install the packing [7], packing [8], shim [9] pack, and carbon seal/stationary air-oil seal [10] onto the air/oil separator adapter [3].
    - 1) To install the carbon seal/stationary air-oil seal [10] use shaft driver, COM-14877, or an equivalent.

EFFECTIVITY  
LOM ALL

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- (f) Install the bolts [5], washers [6], and air/oil separator adapter [3].
  - 1) Tighten the bolts [5] to 50.0 in-lb (5.6 N·m).
- (g) If the air/oil separator adapter [3] was replaced or repaired, do these steps to install the plug [1] onto the air/oil separator adapter [3]:
  - 1) Lubricate the new packing [2] with Santovac 5 lubricant, D00341, or grease, D00504.
  - 2) Install the packing [2] on the plug [1].
  - 3) Install the plug [1] onto the air/oil separator adapter [3].
    - a) Tighten the plug [1] to 65.0 in-lb (7.3 N·m).
- (h) Install MS20995C20 lockwire, G50225, on the plug [1].

SUBTASK 49-21-00-400-004

- (3) Do these steps to install the vent tube [18]:
  - (a) Lubricate the new packings [19] with oil, D00068, or aircraft turbine engine oil, D00418.
  - (b) Install the packings [19] on the vent tube [18].
  - (c) Connect the vent tube [18] to the air/oil separator adapter [3] with the bolt [17].
    - 1) Tighten the bolt [17] to 26 in-lb (2.9 N·m) - 30 in-lb (3.4 N·m).

SUBTASK 49-21-00-860-027

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-21-00-860-028

- (5) Remove the DO NOT OPERATE tag, from the APU master switch on the P5 forward overhead panel.

SUBTASK 49-21-00-710-001

- (6) Do these steps to start and operate the APU:
  - (a) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
  - (b) Check the APU oil level, do this task: APU Oil Level Inspection, TASK 12-13-31-200-801.
  - (c) During the APU operation, examine the APU for signs of oil leakage.

SUBTASK 49-21-00-360-002

- (7) If you find oil leakage, do these steps to repair the leakage:
  - (a) Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.
  - (b) Install a DO NOT OPERATE tag, STD-858, to the APU master switch on the P5 forward overhead panel.
  - (c) Repair the cause of the oil leakage.
  - (d) Remove the DO NOT OPERATE tag, from the APU master switch on the P5 forward overhead panel.
  - (e) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.

EFFECTIVITY	LOM ALL
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- (f) During the APU operation, examine the APU for signs of oil leakage.
- (g) If you find oil leakage do the leakage repair again.

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

SUBTASK 49-21-00-410-008

- (1) To close the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Close the APU Cowl Door, 315A.
- (g) Close the three latches.

**NOTE:** Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

EFFECTIVITY  
LOM ALL

**49-21-00**





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**APU ENGINE - INSPECTION/CHECK**

**1. General**

- A. This procedure has these tasks to do an inspection of the internal parts of the APU engine. To do these inspections, you use a borescope to see the APU engine. These inspections are recommended when the performance of the APU engine decreases. You can see the performance data of the APU engine on the INPUT MONITORING page for the APU BITE TEST.
- (1) APU Engine Inspection
  - (2) First Stage Stator and First Stage Turbine Inspection.

**TASK 49-21-00-200-801**

**2. APU Engine Inspection**

(Figure 601)

**A. General**

- (1) This borescope inspection is intended for troubleshooting the Auxiliary Power Unit (APU) when recommended by the FIM. If the APU performs well (makes bleed air, electrical power and does not exceed the operational limits identified in the AMM (TASK 49-11-00-710-802)), it is not necessary to do this inspection. If you do this inspection, it can result in the unnecessary removal of the APU.

**B. References**

Reference	Title
49-11-00-000-801	APU Power Plant Removal (P/B 401)
49-11-00-400-801	APU Power Plant Installation (P/B 401)
49-11-00-710-802	APU Operation Limits (P/B 201)
49-21-00-980-801	Manually Turn the APU Engine (P/B 201)
49-31-14-000-801	Fuel Nozzle Removal (P/B 401)
49-31-14-400-801	Fuel Nozzle Installation (P/B 401)
49-41-51-000-801	Igniter Plug Removal (P/B 401)
49-41-51-400-801	Igniter Plug Installation (P/B 401)
49-52-12-000-801	Inlet Guide Vane (IGV) Actuator Removal (P/B 401)
49-52-12-400-801	Inlet Guide Vane (IGV) Actuator Installation (P/B 401)
49-71-21-000-801	Exhaust Gas Temperature Thermocouple Removal (P/B 401)
49-71-21-400-801	Exhaust Gas Temperature Thermocouple 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-4316	Fiberscope - Flexible Borescope Part #: IF2D5 Supplier: 32212 Opt Part #: 7110561 Supplier: 32212 Opt Part #: IF6C5X1-8 Supplier: 32212
COM-4964	Light Source - Borescope Part #: ILH-2A Supplier: 32212 Part #: ILK-7A Supplier: 32212 Opt Part #: 7502152 Supplier: 32212

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(Continued)

Reference	Description
STD-858	Tag - DO NOT OPERATE

**D. Consumable Materials**

Reference	Description	Specification
D00341	Lubricant - Polyphenyl Ether, Vacuum Pump - Santovac 5	
D00504	Grease - Petrolatum	VV-P-236
G01048	Lockwire - MS20995C32, Corrosion Resistant Steel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

**E. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Packing	49-21-01-02-103	LOM ALL

**F. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**G. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**H. Prepare for the Inspection**

SUBTASK 49-21-00-860-005

- (1) Make sure the APU master switch, on the P5 forward overhead panel, is in the OFF position.
  - (a) Install the DO NOT OPERATE tag, STD-858 to the switch.

SUBTASK 49-21-00-860-006

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

**F/O Electrical System Panel, P6-2**

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-21-00-010-005

- (3) To open the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Support the APU panel (cowl door) under the center latch.
- (b) Open the three latches.

NOTE: Use this sequence: forward latch, aft latch, middle latch.

- (c) Open the APU Cowl Door, 315A.

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- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

## I. APU Engine Inspection

SUBTASK 49-21-00-940-001

- (1) Prepare the fiberscope, COM-4316, and light source, COM-4964, or equivalent to examine the internal parts of the APU.

SUBTASK 49-21-00-200-001

- (2) Examine the compressor housing [32] for cracks on the scroll housing situated near the exit duct:
  - (a) Any length crack will not require action unless it is intersecting or has resulted in material loss. See Figure 601 (Sheet 19) for example of acceptable crack.
  - (b) Replace the APU if the damage that was not permitted is found, do these tasks:
    - APU Power Plant Removal, TASK 49-11-00-000-801,
    - APU Power Plant Installation, TASK 49-11-00-400-801.

SUBTASK 49-21-00-290-001

- (3) Examine the vanes [17] of the load compressor diffuser, blades [14] of the load compressor impeller [13], and load compressor shroud housing bridges:

NOTE: It is necessary to examine the trailing edge of each blade on the load compressor impeller through the compressor housing boss. It is necessary to examine the leading edge of each blade on the load compressor impeller through the access door at the bottom of the compressor inlet plenum.

- (a) Do this task: Manually Turn the APU Engine, TASK 49-21-00-980-801.
- (b) Remove the lockwire that attaches the plug [1] to the compressor housing boss [5].
- (c) Remove the plug [1] from the compressor housing boss [5].
- (d) Remove the packing [2] from the plug [1].
  - 1) Discard the packing [2].
- (e) Put the fiberscope, COM-4316, through the compressor housing boss [5] and into the area of the load compressor diffuser [16].
- (f) Examine the compressor scroll housing bridges for damage:
  - 1) Damage, cracks, and/or missing material to the scroll housing bridges is permitted. See Figure 601 (Sheet 18) for example of permitted damage.
- (g) Look at each vane [17] for these inspections:
  - 1) Bucket-shaped erosion damage is not permitted.
  - 2) Nicks and small erosion edge damage on the leading edge are permitted.
  - 3) Cracks in the brazed fillet area and across the vane are permitted.
  - 4) Vane discoloration is permitted.

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- (h) Put the fiberscope, COM-4316, between the vanes [17] of the load compressor diffuser [16] to get access to the blades [14] of the load compressor impeller [13].



**MAKE SURE THAT THE FORWARD END OF THE BORESCOPE IS CLEAR OF THE BLADES OF THE LOAD COMPRESSOR IMPELLER. DAMAGE TO THE BLADES AND THE BORESCOPE CAN OCCUR WHEN YOU TURN THE APU.**

- (i) Look at the trailing edge and surface of each blade [14] for these inspections:
- 1) Missing pieces are not permitted.
  - 2) Cracks on the trailing edge, shroud line or hub are not permitted.
  - 3) Rub damage between the impeller and shroud or blade discoloration is permitted.
  - 4) Shroud abradable material on the trailing edge is permitted.
  - 5) Nicks and small erosion edge damage on the trailing edge are permitted.
- (j) Replace the APU if the damage that was not permitted is found, do these tasks:
- APU Power Plant Removal, TASK 49-11-00-000-801,
  - APU Power Plant Installation, TASK 49-11-00-400-801.
- (k) Slowly remove the fiberscope, COM-4316, from the load compressor diffuser [16] and compressor housing boss [5].
- (l) Lubricate the new packing [2] with a light coat of Santovac 5 lubricant, D00341, or grease, D00504.
- (m) Install the new packing [2] on the plug [1].
- (n) Install the plug [1] in the compressor housing boss [5].
- 1) Tighten the plug [1] to 80 in-lb (9.0 N·m).
- (o) Install the MS20995C32 lockwire, G01048, on the plug [1].
- (p) If it is not necessary to manually turn the APU engine for other inspection tasks, complete the procedure to manually turn the APU engine, do this task: Manually Turn the APU Engine, TASK 49-21-00-980-801.

**SUBTASK 49-21-00-290-002**

- (4) Examine the inlet guide vanes [15] and blades [14] of the load compressor impeller [13]:

NOTE: It is necessary to examine the trailing edge of each blade on the load compressor impeller through the compressor housing boss. It is necessary to examine the leading edge of each blade on the load compressor impeller through the access door at the bottom of the compressor inlet plenum.

- (a) Do this task: Manually Turn the APU Engine, TASK 49-21-00-980-801.
  - (b) Loosen the eight captive screws [3] that attach the access door [4] to the compressor inlet plenum.
  - (c) Remove the access door [4] from the compressor inlet plenum.
- NOTE: A lanyard is attached to the access door to keep the access door with the APU.
- (d) Do this task: Inlet Guide Vane (IGV) Actuator Removal, TASK 49-52-12-000-801.
  - (e) Use hands to pull the linkage for the inlet guide vanes [15] into the APU until the linkage stops and the inlet guide vanes [15] are fully closed.
  - (f) Put the fiberscope, COM-4316, through the compressor inlet duct and inlet housing to the inlet guide vanes [15].

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- (g) Look at each of the closed inlet guide vanes [15] for these inspections:
- 1) Missing vane(s) is not permitted.
  - 2) Bent vane is not permitted.
  - 3) Cracks on the vane are not permitted.
  - 4) Hit damage on all 16 IGV tips is not permitted.
  - 5) Nicks on the leading edge are permitted.
  - 6) Vane discoloration is permitted.
- (h) Use hands to push the linkage for the inlet guide vanes [15] into the APU until the linkage stops and the inlet guide vanes [15] are fully open.
- (i) Look at each of the open inlet guide vanes [15] for these inspections:
- 1) Missing vane(s) is not permitted.
  - 2) Bent vane is not permitted.
  - 3) Cracks on the vane are not permitted.
  - 4) Hit damage on all 16 IGV tips is not permitted.
  - 5) Nicks on the leading edge are permitted.
  - 6) Vane discoloration is permitted.
- (j) Put the fiberscope, COM-4316, through the inlet guide vanes [15] to get access to the blades [14].



**MAKE SURE THAT THE FORWARD END OF THE BORESCOPE IS CLEAR OF THE BLADES OF THE LOAD COMPRESSOR IMPELLER. DAMAGE TO THE BLADES AND THE BORESCOPE CAN OCCUR WHEN YOU TURN THE APU.**

- (k) Look at the leading edge and the surface of each blade [14] for these inspections:
- 1) More than two bent inducer blade tips are not permitted.
  - 2) Missing pieces are not permitted.
  - 3) Cracks on the leading edge, fillets and/or hub are not permitted.
  - 4) Nicks and small erosion edge damage on the leading edge are permitted.
  - 5) Blade discoloration is permitted.
- (l) Replace the APU if the damage that was not permitted is found, do these tasks:
- APU Power Plant Removal, TASK 49-11-00-000-801,
  - APU Power Plant Installation, TASK 49-11-00-400-801.
- (m) Slowly remove the fiberscope, COM-4316, from the compressor inlet plenum and inlet duct.
- (n) Do this task: Inlet Guide Vane (IGV) Actuator Installation, TASK 49-52-12-400-801.
- (o) Install the access door [4] to the compressor inlet plenum with the eight captive screws [3].
- (p) If it is not necessary to manually turn the APU engine for other inspection tasks, complete the procedure to manually turn the APU engine, do this task: Manually Turn the APU Engine, TASK 49-21-00-980-801.

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SUBTASK 49-21-00-290-007

- (5) Examine the blades [19] of the engine compressor impeller [18]:

NOTE: It is necessary to examine the leading edge of each blade of the engine compressor impeller through the access door at the bottom of the compressor inlet plenum.

NOTE: There is no access to the trailing edge of the engine compressor impeller blades with the APU installed in the APU compartment.

- (a) Do this task: Manually Turn the APU Engine, TASK 49-21-00-980-801.
- (b) Loosen the eight captive screws [3] that attach the access door [4] to the compressor inlet plenum.
- (c) Remove the access door [4] from the compressor inlet plenum.  
NOTE: A lanyard is attached to the access door to keep the access door with the APU.
- (d) Put the fiberscope, COM-4316, through the compressor inlet duct access door and perforated inlet housing to examine the blades [19].



MAKE SURE THAT THE FORWARD END OF THE BORESCOPE IS CLEAR OF THE BLADES OF THE ENGINE COMPRESSOR IMPELLER. DAMAGE TO THE BLADES AND THE BORESCOPE CAN OCCUR WHEN YOU TURN THE APU.

- (e) Look at the leading edge and the surface of each blade [19] for these inspections:
  - 1) Cracks on the leading edge, fillets and/or hub are not permitted.
  - 2) Missing pieces are not permitted.
  - 3) Rub damage between the impeller and shroud is permitted.
  - 4) Bent inducer main and/or splitter blade tip for one blade only is permitted.
  - 5) Nicks and small erosion edge damage on the leading edge are permitted.
  - 6) Blade discoloration is permitted.
- (f) Put the fiberscope, COM-4316, through the engine compressor impeller [18] to examine the engine compressor diffuser vanes [17].
- (g) Look at each vane [17] on the engine compressor diffuser for these inspections:
  - 1) Bucket-shaped erosion damage is not permitted.
  - 2) Nicks and small erosion edge damage on the leading edge are permitted.
  - 3) Cracks in the brazed fillet area and across the vane are permitted.
  - 4) Vane discoloration is permitted.
- (h) Replace the APU if the damage that was not permitted is found, do these tasks:
  - APU Power Plant Removal, TASK 49-11-00-000-801,
  - APU Power Plant Installation, TASK 49-11-00-400-801.
- (i) Slowly remove the fiberscope, COM-4316, from the compressor inlet plenum.
- (j) Install the access door [4] to the compressor inlet plenum with the eight captive screws [3].
- (k) If it is not necessary to manually turn the APU engine for other inspection tasks, complete the procedure to manually turn the APU engine, do this task: Manually Turn the APU Engine, TASK 49-21-00-980-801.

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SUBTASK 49-21-00-290-010

- (6) Examine the combustion chamber [25] and 10 fuel nozzles [30]:

NOTE: You can get access to the combustion chamber and the ten fuel nozzles through the igniter plug boss or through the fuel nozzle port on the combustor housing.

- (a) Do these steps to examine the combustion chamber [25] and 10 fuel nozzles [30] through the igniter plug boss [6]:

- 1) Do this task: Igniter Plug Removal, TASK 49-41-51-000-801.



**CAUTION**

MAKE SURE THAT THE INTERNAL TEMPERATURE OF THE APU IS LESS THAN 176°F (80°C) BEFORE YOU PUT THE BORESCOPE INTO THE APU. DAMAGE TO THE BORESCOPE CAN OCCUR.

- 2) Put the fiberscope, COM-4316, through the igniter plug boss [6] to get access to the combustion chamber [25] and 10 fuel nozzles [30].

- 3) Look at the combustion chamber [25] and 10 fuel nozzles [30] for these inspections:

- a) Hot spots with oxidation or erosion damage are not permitted.
- b) Fuel nozzle shrouds [31] with cracks, distortion or burn-through must be replaced with serviceable shrouds, do these tasks:
  - Fuel Nozzle Removal, TASK 49-31-14-000-801,
  - Fuel Nozzle Installation, TASK 49-31-14-400-801.
- c) Missing thermal barrier coating is permitted.
- d) Cracks between holes are permitted.
- e) Panel discoloration is permitted.

- 4) Replace the APU if the damage that was not permitted is found, do these tasks:

- APU Power Plant Removal, TASK 49-11-00-000-801,
- APU Power Plant Installation, TASK 49-11-00-400-801.

- 5) Slowly remove the fiberscope, COM-4316, from the igniter plug boss [6].

- 6) Do this task: Igniter Plug Installation, TASK 49-41-51-400-801.

- (b) Do these steps to examine the combustion chamber [25] and 10 fuel nozzles [30] through the fuel nozzle port [9] on the combustor housing:

NOTE: You can remove more than one fuel nozzle to get access to the combustion chamber. Obey the number of fuel nozzles that you can remove at the same time.

- 1) Do this task: Fuel Nozzle Removal, TASK 49-31-14-000-801.



**CAUTION**

MAKE SURE THAT THE INTERNAL TEMPERATURE OF THE APU IS LESS THAN 176°F (80°C) BEFORE YOU PUT THE BORESCOPE INTO THE APU. DAMAGE TO THE BORESCOPE CAN OCCUR.

- 2) Put the fiberscope, COM-4316, through the fuel nozzle port [9] to get access to the combustion chamber [25] and 10 fuel nozzles [30].

- 3) Look at the combustion chamber [25] and 10 fuel nozzles [30] for these inspections:

- a) Hot spots with oxidation or erosion damage are not permitted.

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- b) Fuel nozzle shrouds [31] with cracks, distortion or burn-through must be replaced with serviceable shrouds, do these tasks:
  - Fuel Nozzle Removal, TASK 49-31-14-000-801,
  - Fuel Nozzle Installation, TASK 49-31-14-400-801.
- c) Missing thermal barrier coating is permitted.
- d) Cracks between holes are permitted.
- e) Panel discoloration is permitted.
- 4) Replace the APU if the damage that was not permitted is found, do these tasks:
  - APU Power Plant Removal, TASK 49-11-00-000-801,
  - APU Power Plant Installation, TASK 49-11-00-400-801.
- 5) Slowly remove the fiberscope, COM-4316, from the fuel nozzle port [9].
- 6) Do this task: Fuel Nozzle Installation, TASK 49-31-14-400-801.

SUBTASK 49-21-00-290-005

- (7) Examine the blades [22] of the second stage turbine [23]:

**NOTE:** You can get access to the blades through the fitting boss on the turbine exhaust port or through the port for the exhaust gas temperature (EGT) thermocouple 1 or EGT thermocouple 2.

**NOTE:** There is no access to the second stage stator vanes with the borescope.

- (a) Do this task: Manually Turn the APU Engine, TASK 49-21-00-980-801.
- (b) Do these steps to examine the blades [22] of the second stage turbine [23] through the fitting boss [12] on the turbine exhaust port:
  - 1) Disconnect the vent tube [10] from the fitting [11] on the turbine exhaust port.
  - 2) Remove the fitting [11].



**CAUTION** MAKE SURE THAT THE INTERNAL TEMPERATURE OF THE APU IS LESS THAN 176°F (80°C) BEFORE YOU PUT THE BORESCOPE INTO THE APU. DAMAGE TO THE BORESCOPE CAN OCCUR.

- 3) Put the fiberscope, COM-4316, through the fitting boss [12] to get access to the blades [22].



**CAUTION** MAKE SURE THAT THE FORWARD END OF THE BORESCOPE IS CLEAR OF THE BLADES OF THE SECOND STAGE TURBINE. DAMAGE TO THE BLADES AND THE BORESCOPE CAN OCCUR WHEN YOU TURN THE APU.

- 4) Look at each blade [22] for these inspections:
  - a) Missing blade is not permitted.
  - b) Cracks that propagate more than 50% of chord length of blade are not permitted.
  - c) Nicks on the leading edge, trailing edge and blade tip are permitted.
  - d) Erosion damage on the blade tip is permitted.
  - e) Fissures along leading or trailing edge of blade is permitted.
  - f) Missing flow discourager on the leading edge is permitted.

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- g) Blade discoloration is permitted.
- 5) Replace the APU if the damage that was not permitted is found, do these tasks:
- APU Power Plant Removal, TASK 49-11-00-000-801,
  - APU Power Plant Installation, TASK 49-11-00-400-801.
- 6) Slowly remove the fiberscope, COM-4316, from the fitting boss [12].
- 7) Install the fitting [11] in the fitting boss [12] on the turbine exhaust port.  
a) Tighten the fitting [11] to 40 in-lb (4.5 N·m).
- 8) Connect the vent tube [10] to the fitting [11].  
a) Tighten the vent tube [10] to 110 in-lb (12.4 N·m) - 125 in-lb (14.1 N·m).
- (c) Do these steps to examine the blades [22] of the second stage turbine [23] through the port for the EGT thermocouple 1 [7] or port for the EGT thermocouple 2 [8]:
- 1) Do this task: Exhaust Gas Temperature Thermocouple Removal, TASK 49-71-21-000-801.
- NOTE: It is necessary to remove only one of the two EGT thermocouples.
- NOTE: There is no access to the second stage stator vanes with the borescope.



**CAUTION**

MAKE SURE THAT THE INTERNAL TEMPERATURE OF THE APU IS LESS THAN 176°F (80°C) BEFORE YOU PUT THE BORESCOPE INTO THE APU. DAMAGE TO THE BORESCOPE CAN OCCUR.

- 2) Put the fiberscope, COM-4316, through the port for the EGT thermocouple 1 [7] or port for the EGT thermocouple 2 [8] to get access to the blades [22].



**CAUTION**

MAKE SURE THAT THE FORWARD END OF THE BORESCOPE IS CLEAR OF THE BLADES OF THE SECOND STAGE TURBINE. DAMAGE TO THE BLADES AND THE BORESCOPE CAN OCCUR WHEN YOU TURN THE APU.

- 3) Look at each blade [22] for these inspections:
- a) Missing blade is not permitted.
  - b) Cracks that propagate more than 50% of chord length of blade are not permitted.
  - c) Nicks on the leading edge, trailing edge, and blade tip are permitted.
  - d) Erosion damage on the blade tip is permitted.
  - e) Fissures along leading or trailing edge of blade is permitted.
  - f) Missing flow discourager on the leading edge is permitted.
  - g) Blade discoloration is permitted.
- 4) Replace the APU if the damage that was not permitted is found, do these tasks:
- APU Power Plant Removal, TASK 49-11-00-000-801,
  - APU Power Plant Installation, TASK 49-11-00-400-801.
- 5) Slowly remove the fiberscope, COM-4316, from the port for the EGT thermocouple 1 [7] or port for the EGT thermocouple 2 [8].
- 6) Do this task: Exhaust Gas Temperature Thermocouple Installation, TASK 49-71-21-400-801.

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- (d) If it is not necessary to manually turn the APU engine for other inspection tasks, complete the procedure to manually turn the APU engine, do this task: Manually Turn the APU Engine, TASK 49-21-00-980-801.

**J. Put the Airplane Back to Its Usual Condition**

SUBTASK 49-21-00-860-007

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-21-00-860-008

- (2) Remove the DO-NOT-OPERATE tag, from the APU master switch on the P5 forward overhead panel.

SUBTASK 49-21-00-410-005

- (3) To close the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.  
(b) Disconnect the two hold-open rods from the two brackets.  
(c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.  
(d) Install the retainer pin in the rod end of the forward hold-open rod.  
(e) Install the retainer pin to the spring clip on the aft hold-open rod.  
(f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.  
    1) Make sure that the installation of fire shield has not shifted.  
    2) If it is necessary, hand form the insulation blanket to obtain a better clearance.  
(g) Close the APU Cowl Door, 315A.  
(h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

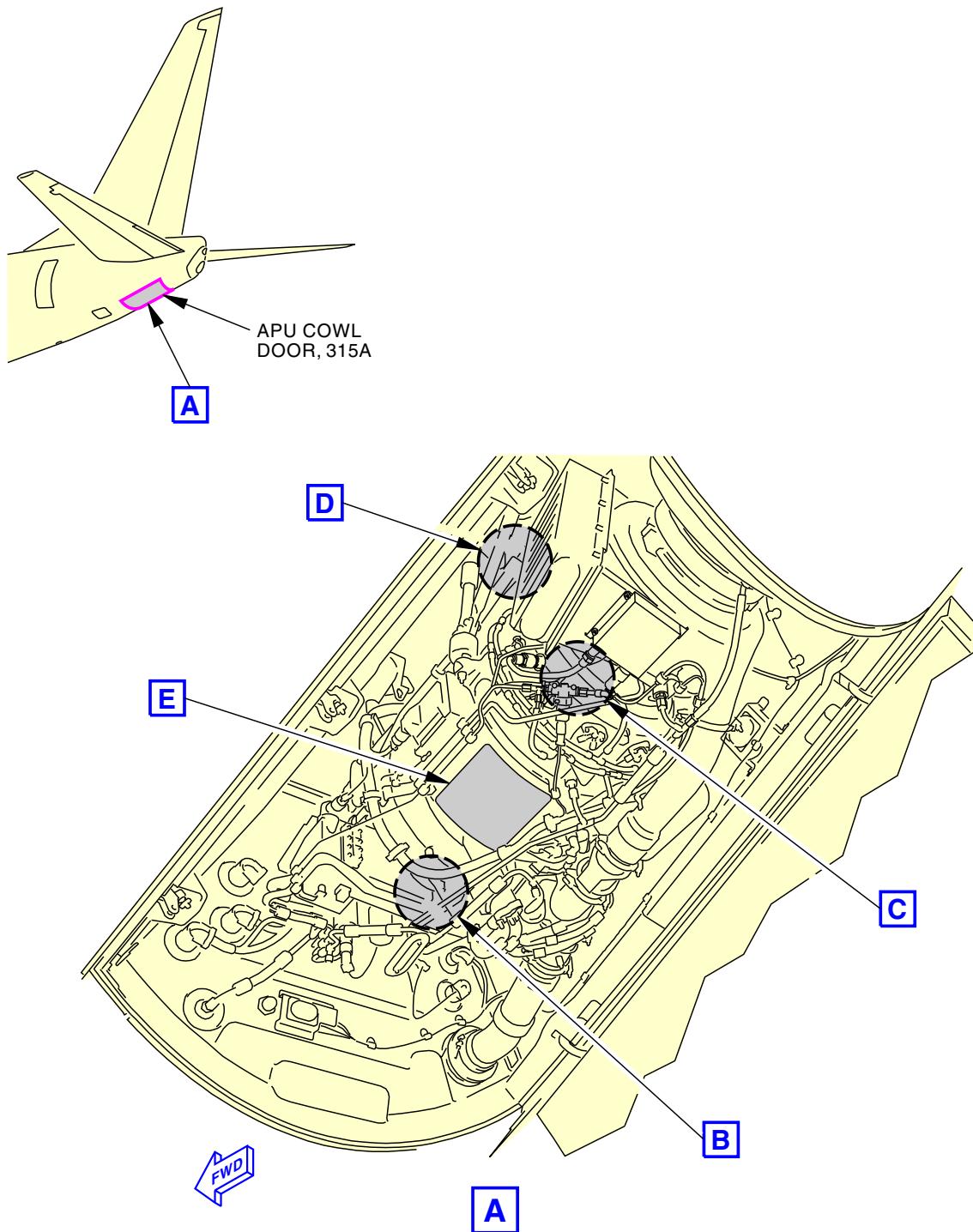
———— END OF TASK ————

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**APU Engine Inspection**  
Figure 601/49-21-00-990-802 (Sheet 1 of 21)

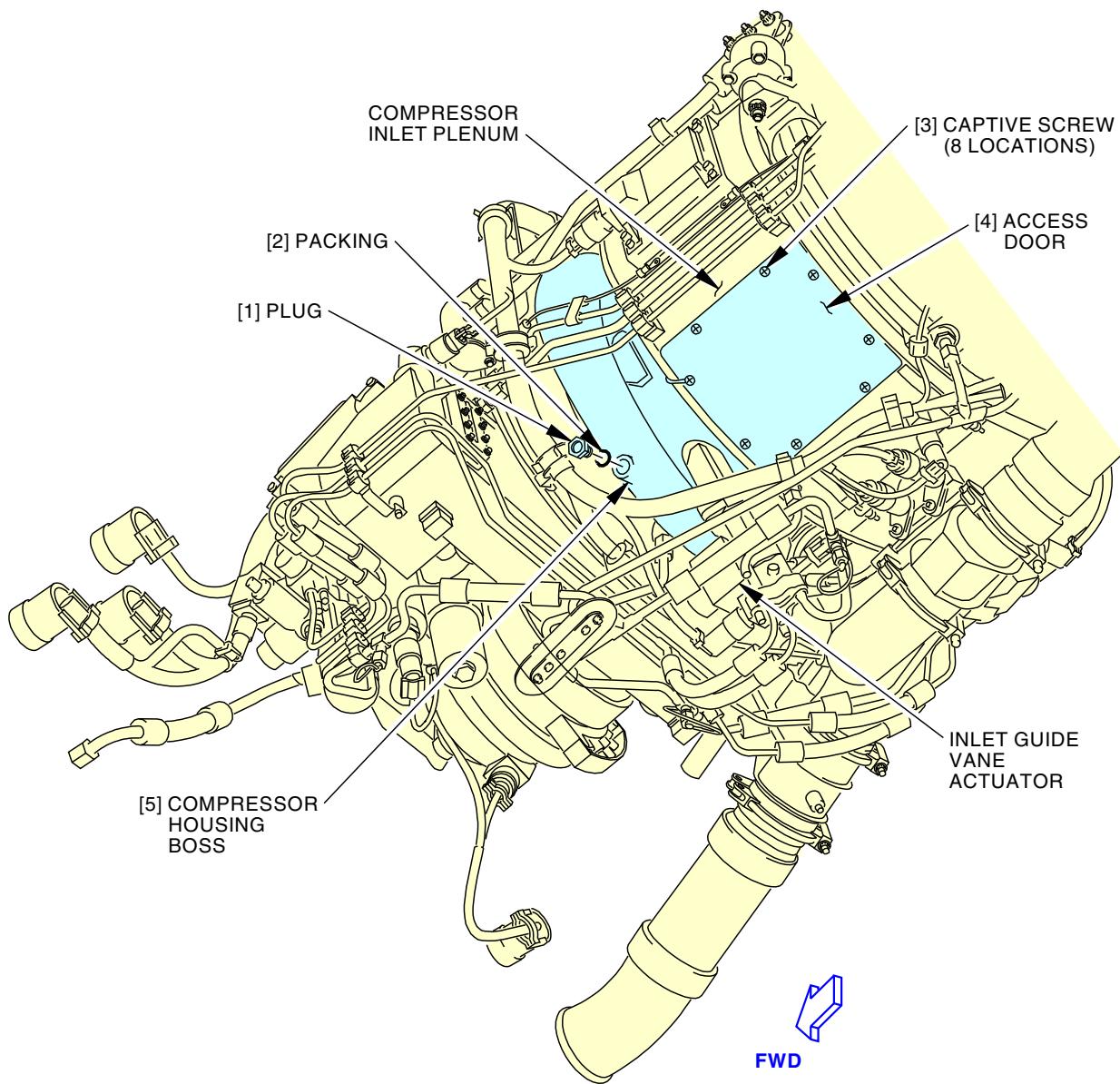
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

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**APU Engine Inspection**  
Figure 601/49-21-00-990-802 (Sheet 2 of 21)

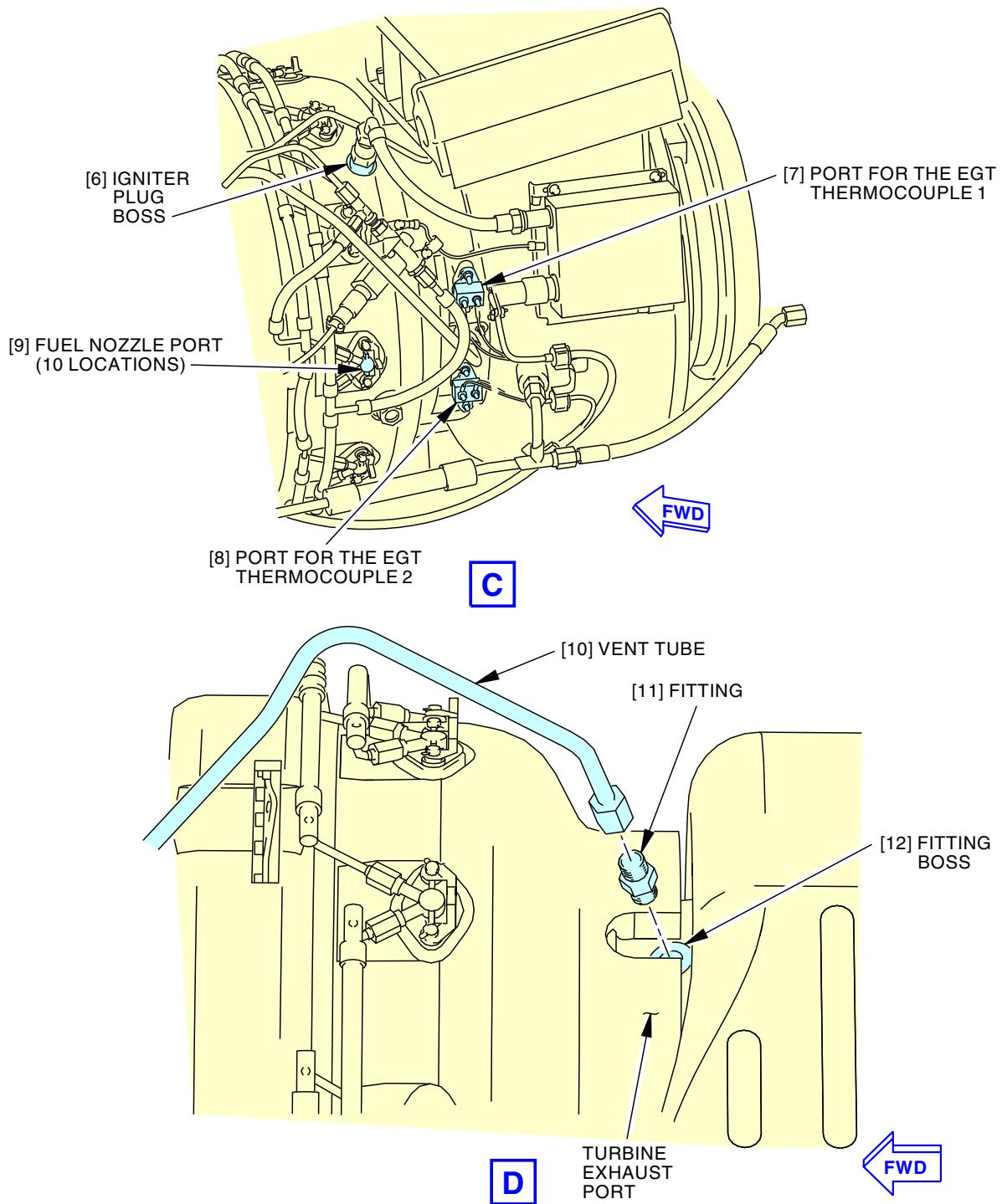
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LOM ALL

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D633A101-LOM

ECCN 9E991 BOEING PROPRIETARY - See title page for details

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G27147 S0006579160\_V2

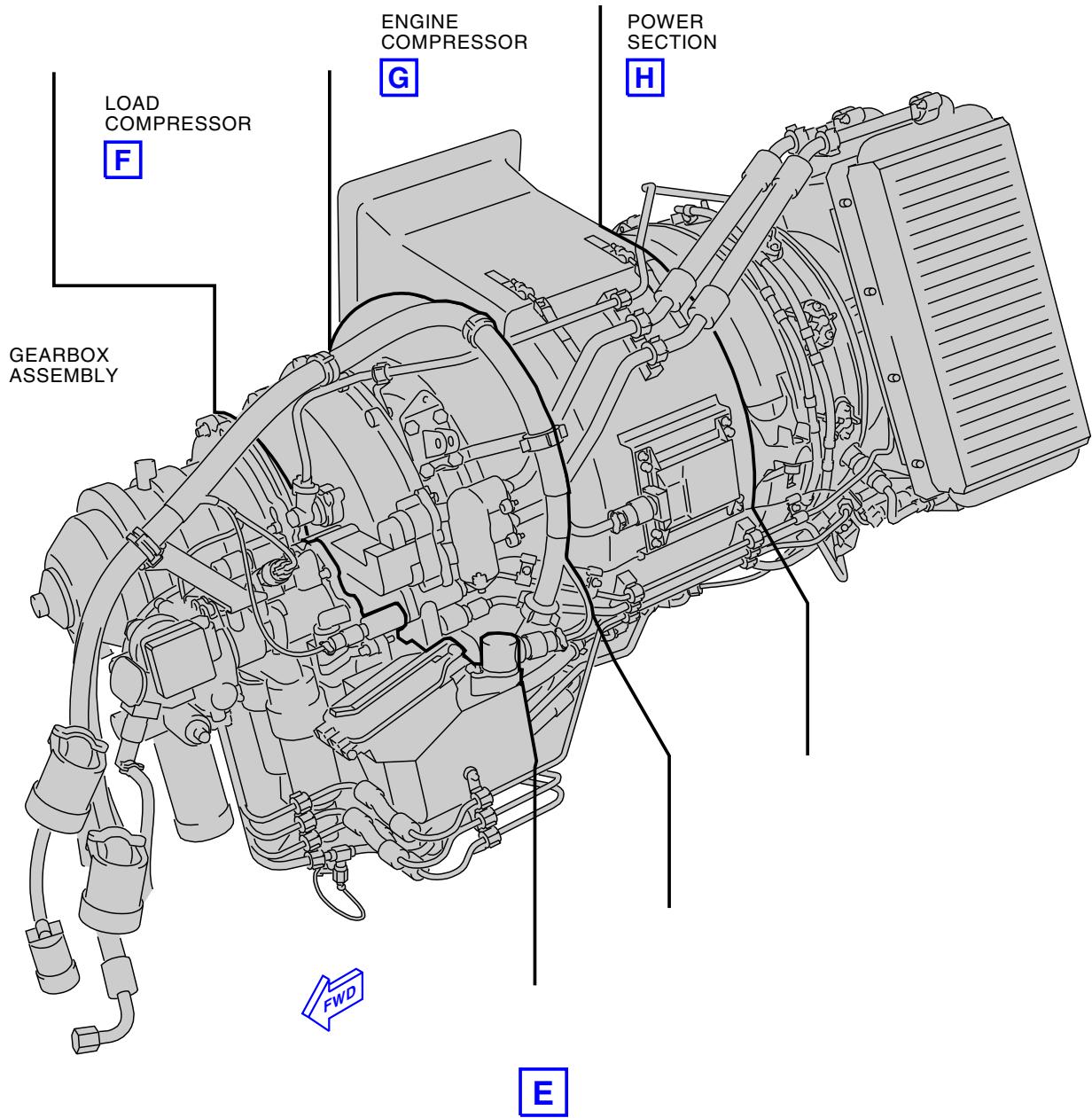
**APU Engine Inspection**  
**Figure 601/49-21-00-990-802 (Sheet 3 of 21)**

EFFECTIVITY  
LOM ALL

**49-21-00**



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



G27118 S0006579161\_V2

APU Engine Inspection  
Figure 601/49-21-00-990-802 (Sheet 4 of 21)

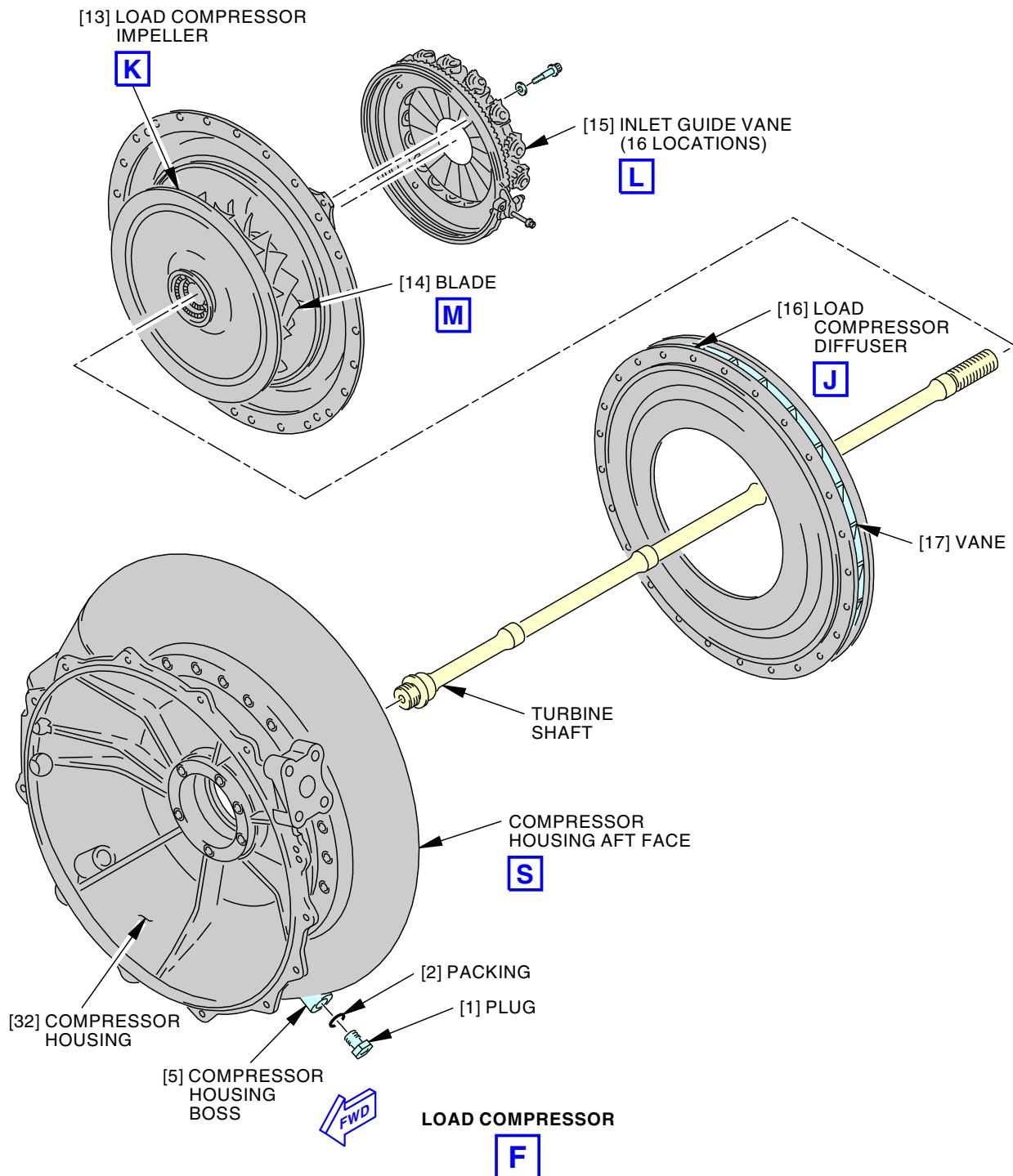
EFFECTIVITY  
LOM ALL

**49-21-00**

D633A101-LOM

ECCN 9E991 BOEING PROPRIETARY - See title page for details

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


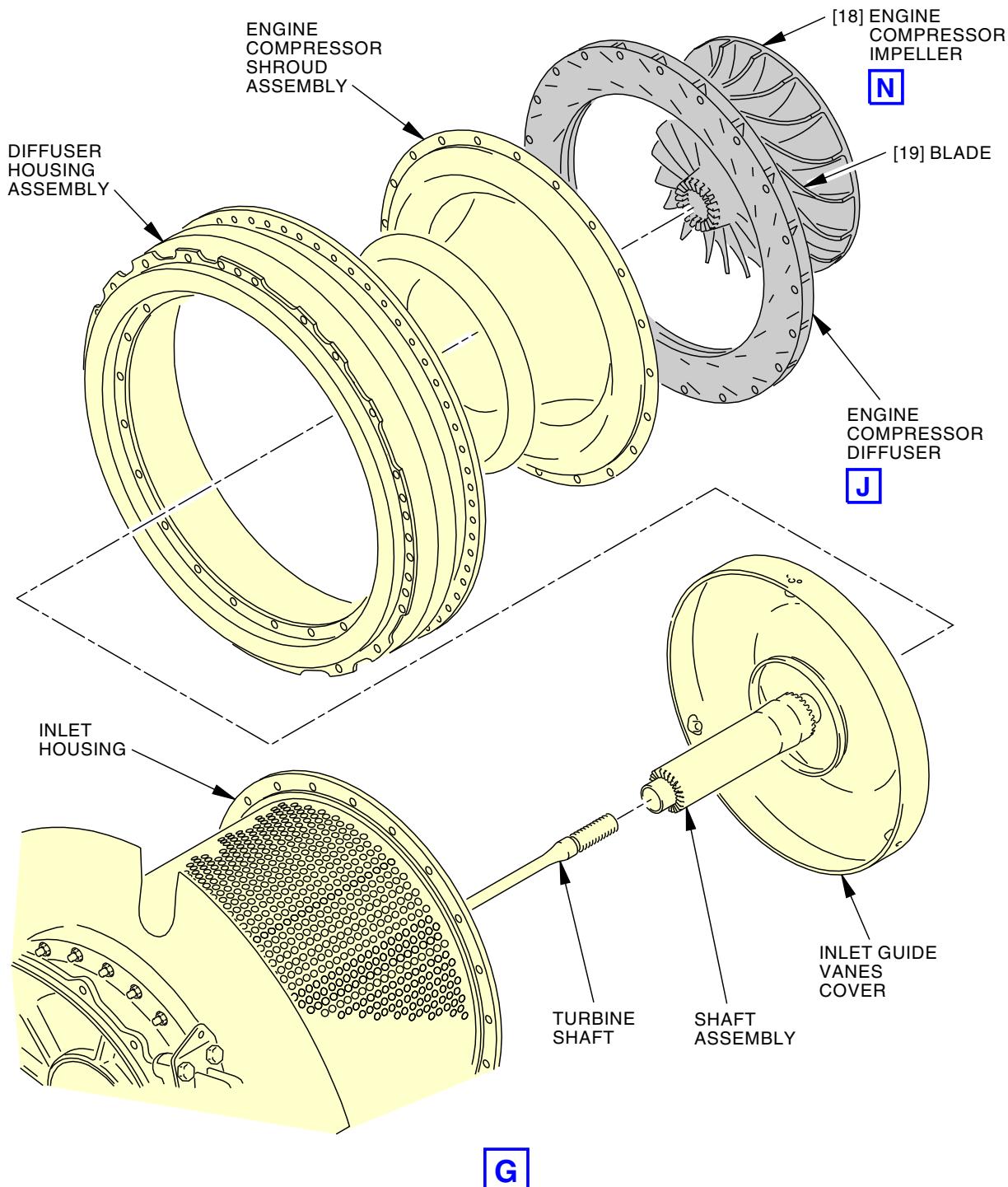
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**APU Engine Inspection**  
Figure 601/49-21-00-990-802 (Sheet 5 of 21)

EFFECTIVITY  
LOM ALL

**49-21-00**

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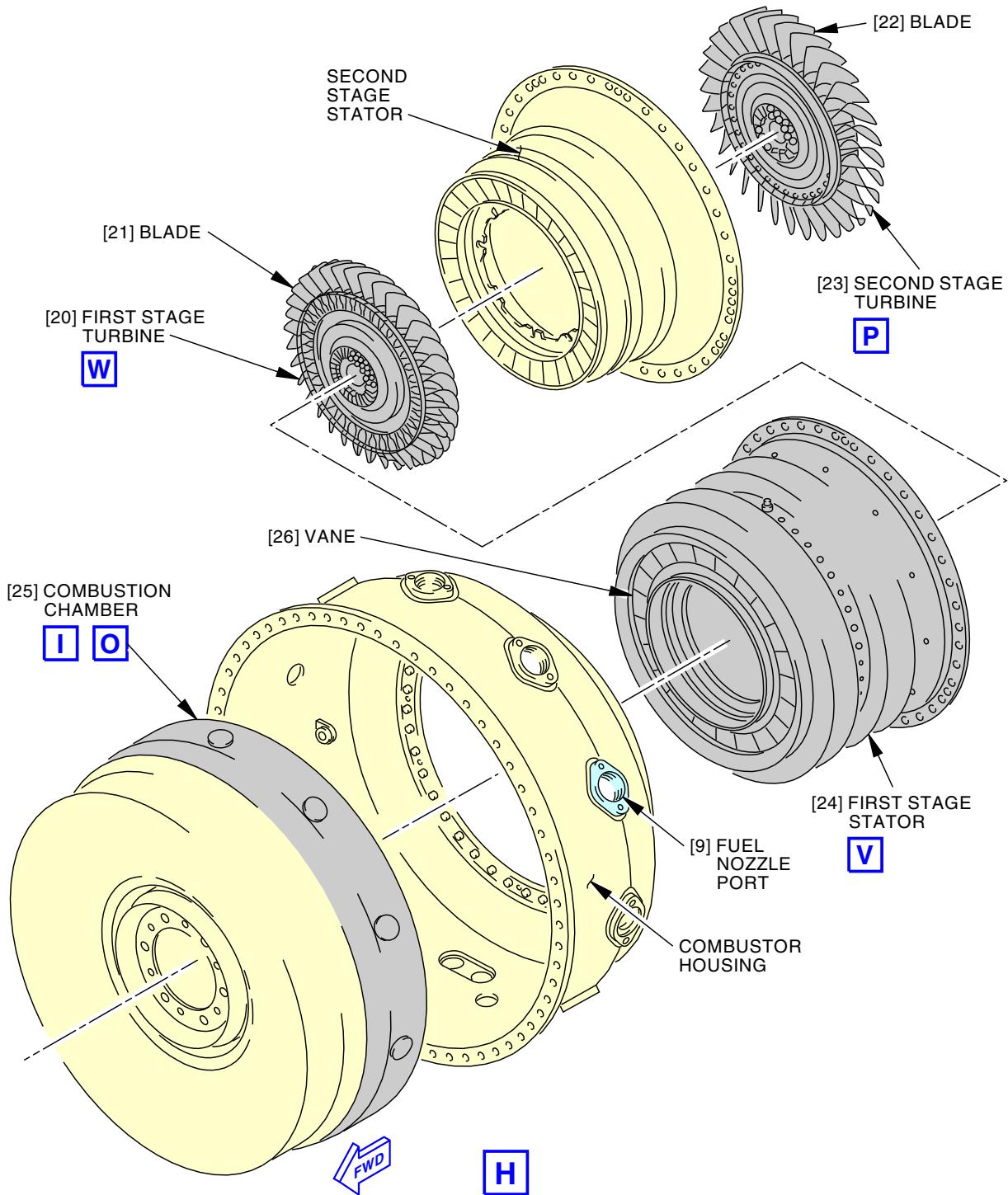


K22115 S0006579163\_V3

**APU Engine Inspection**  
**Figure 601/49-21-00-990-802 (Sheet 6 of 21)**

EFFECTIVITY  
 LOM ALL

**49-21-00**



G28402 S0006579164\_V4

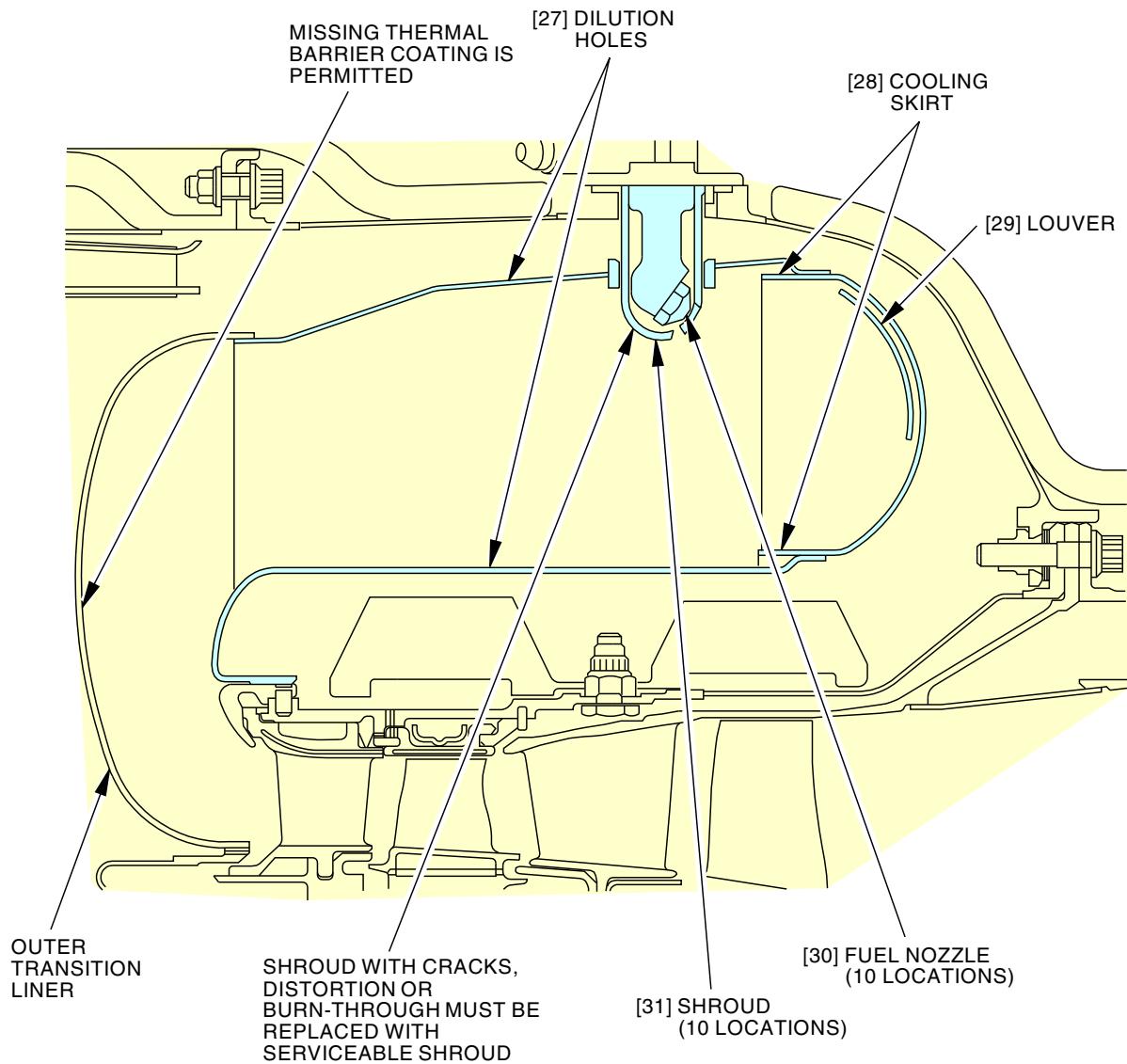
**APU Engine Inspection**  
Figure 601/49-21-00-990-802 (Sheet 7 of 21)

EFFECTIVITY  
LOM ALL

**49-21-00**

D633A101-LOM

ECCN 9E991 BOEING PROPRIETARY - See title page for details



I

G28812 S0006579165\_V3

**APU Engine Inspection**  
Figure 601/49-21-00-990-802 (Sheet 8 of 21)

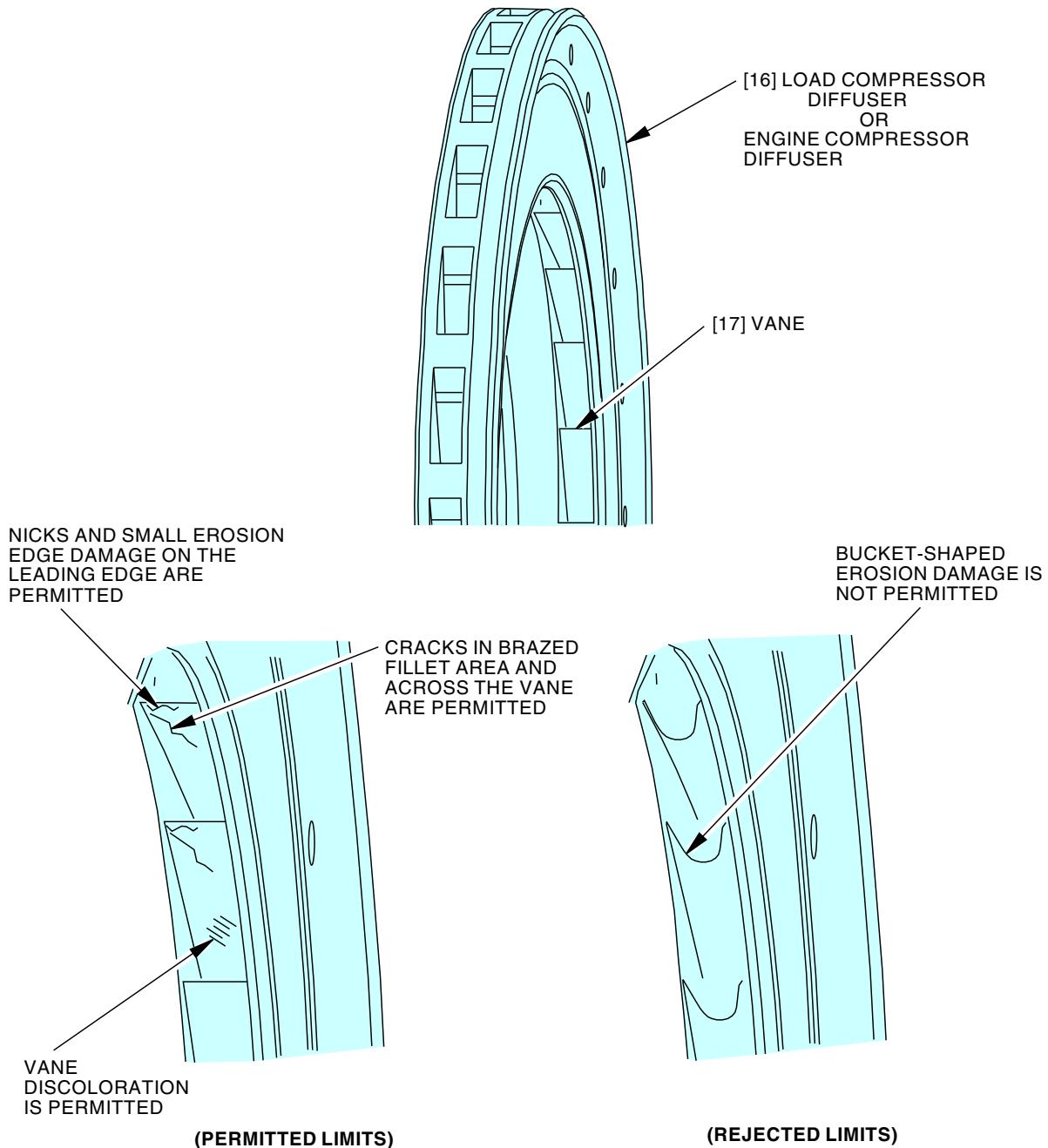
EFFECTIVITY  
LOM ALL

49-21-00

D633A101-LOM

ECCN 9E991 BOEING PROPRIETARY - See title page for details

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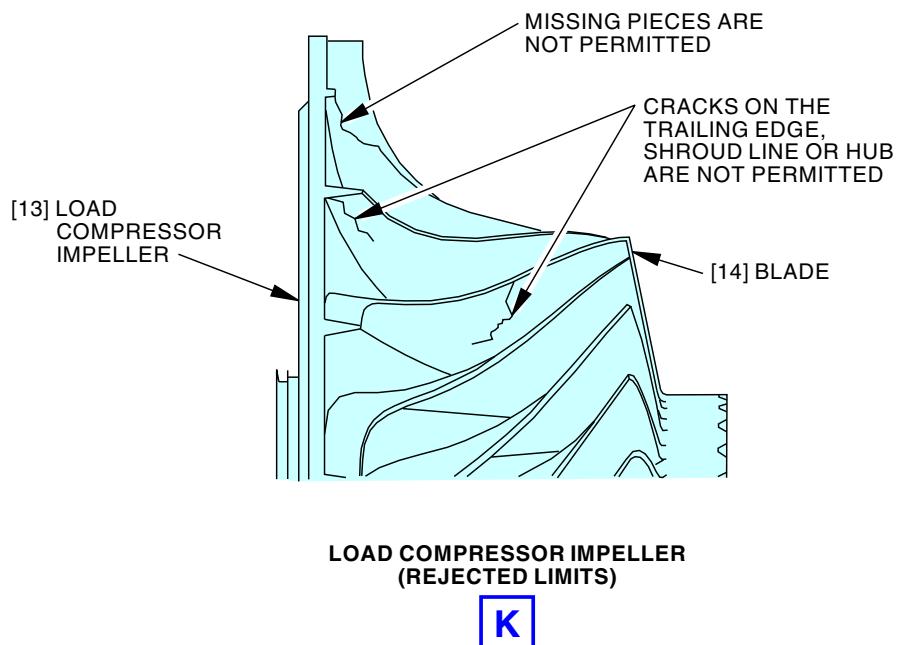
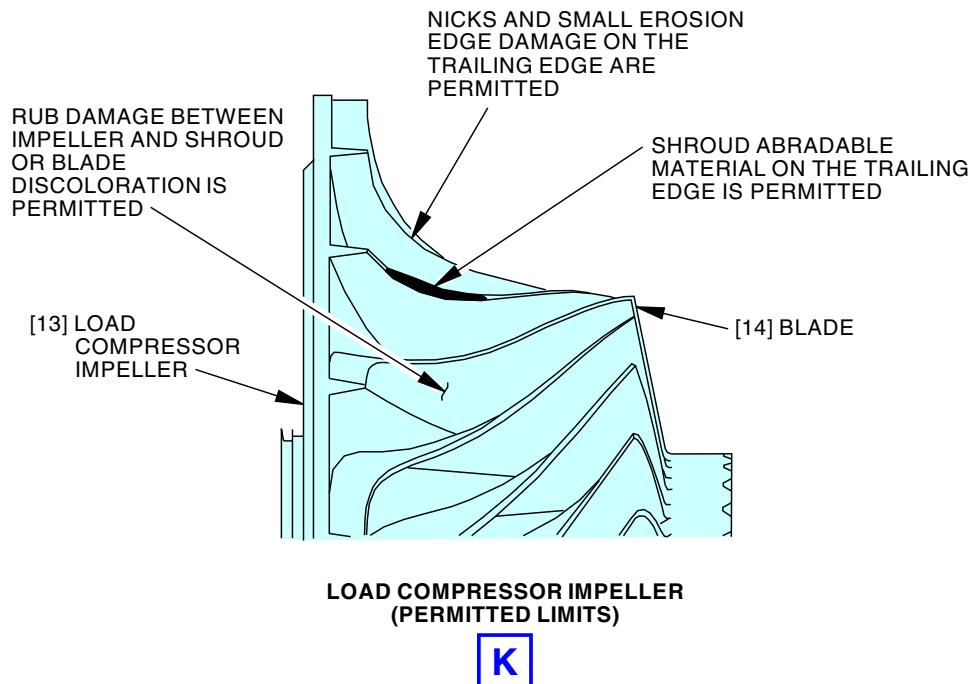

**LOAD COMPRESSOR DIFFUSER/ENGINE COMPRESSOR DIFFUSER**
**J**

J72404 S0000176833\_V2

**APU Engine Inspection**  
**Figure 601/49-21-00-990-802 (Sheet 9 of 21)**

 EFFECTIVITY  
 LOM ALL

**49-21-00**

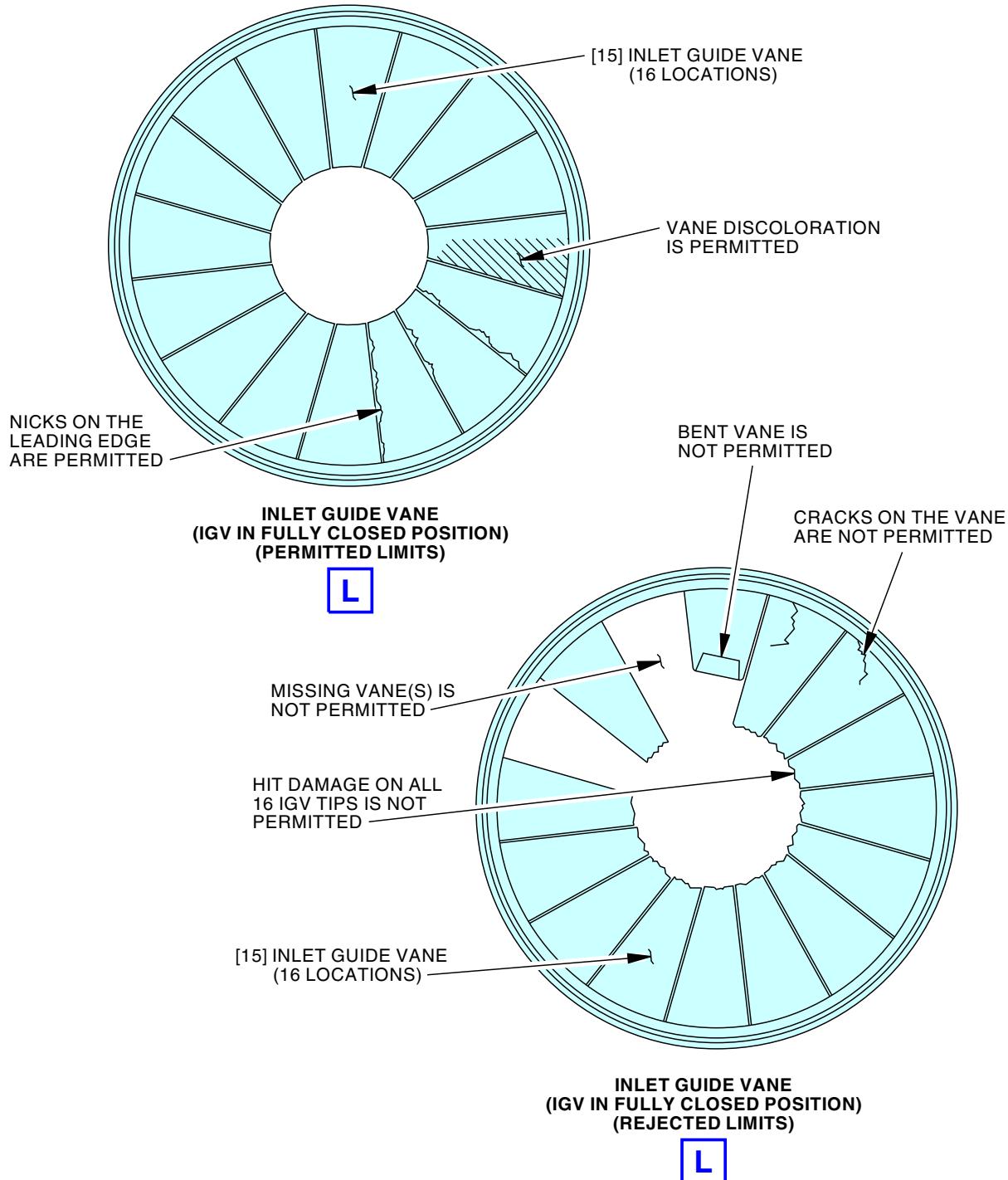
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AIRCRAFT MAINTENANCE MANUAL**


J72406 S0000176835\_V2

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**Figure 601/49-21-00-990-802 (Sheet 10 of 21)**

EFFECTIVITY  
LOM ALL

**49-21-00**



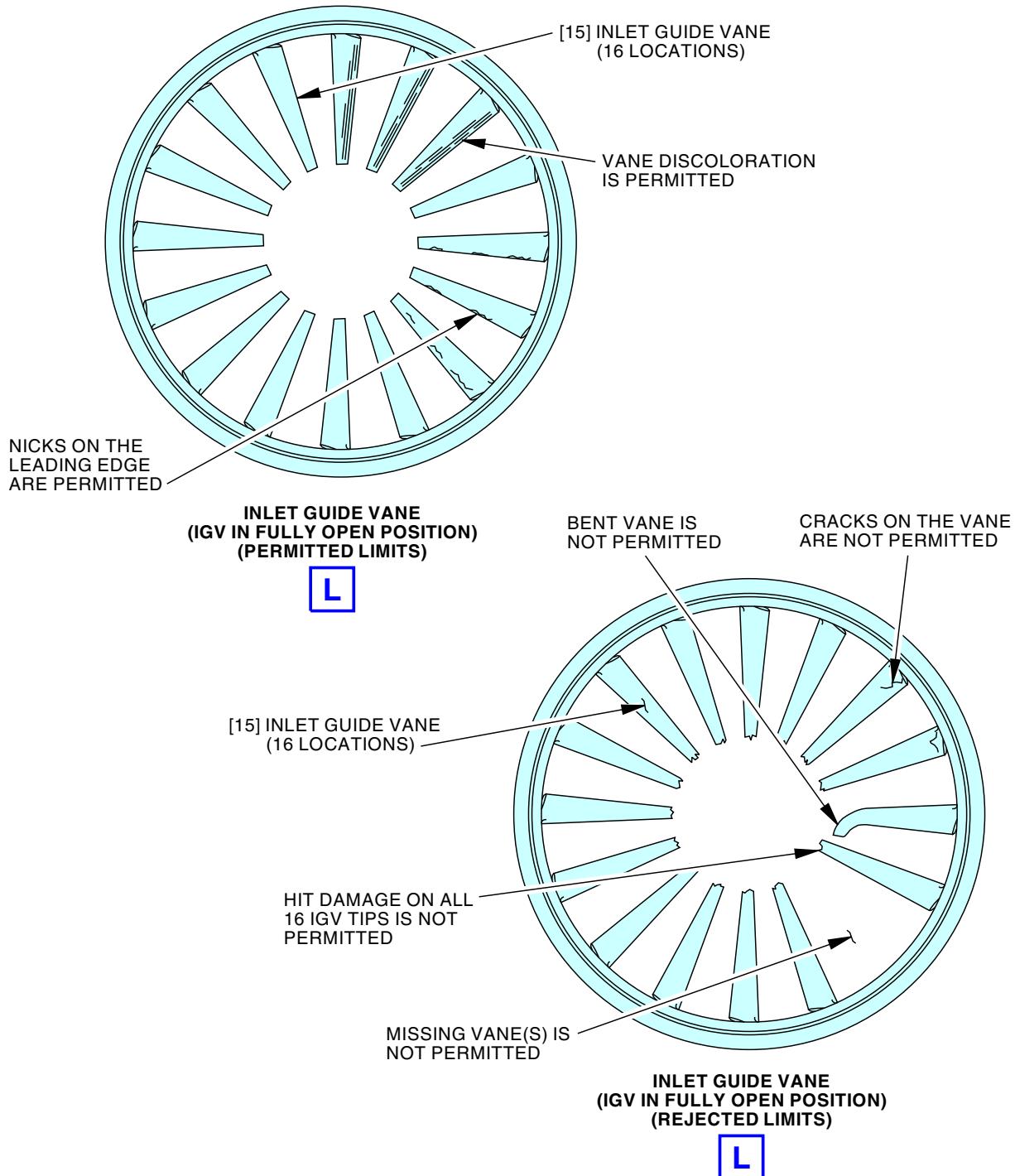
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**APU Engine Inspection**  
**Figure 601/49-21-00-990-802 (Sheet 11 of 21)**

EFFECTIVITY	LOM ALL
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J72705 S0000176838\_V2

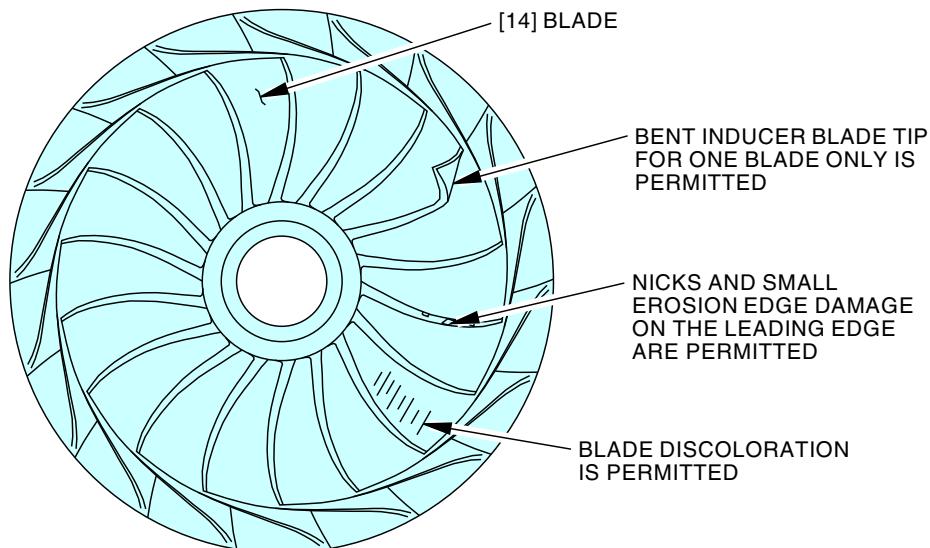
**APU Engine Inspection**  
**Figure 601/49-21-00-990-802 (Sheet 12 of 21)**

 EFFECTIVITY  
 LOM ALL

**49-21-00**



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BLADE  
(LOAD COMPRESSOR IMPELLER)  
(PERMITTED LIMITS)

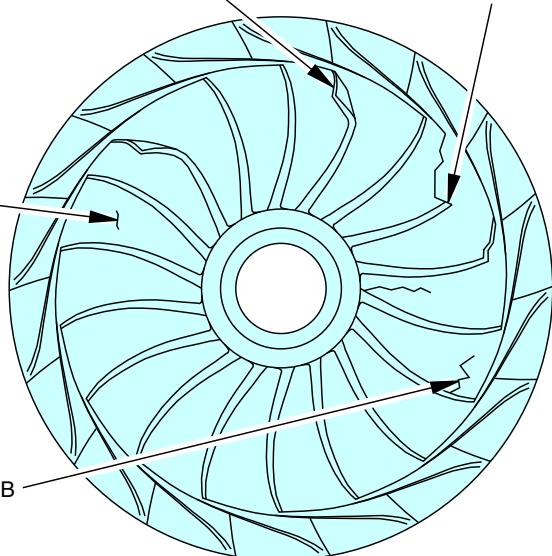
**M**

MORE THAN TWO BENT INDUCER BLADE TIPS ARE NOT PERMITTED

MISSING PIECES ARE NOT PERMITTED

[14] BLADE

CRACKS ON THE LEADING EDGE, FILLETS AND/OR HUB ARE NOT PERMITTED



BLADE  
(LOAD COMPRESSOR IMPELLER)  
(REJECTED LIMITS)

**M**

J73044 S0000176839\_V2

APU Engine Inspection  
Figure 601/49-21-00-990-802 (Sheet 13 of 21)

EFFECTIVITY  
LOM ALL

**49-21-00**

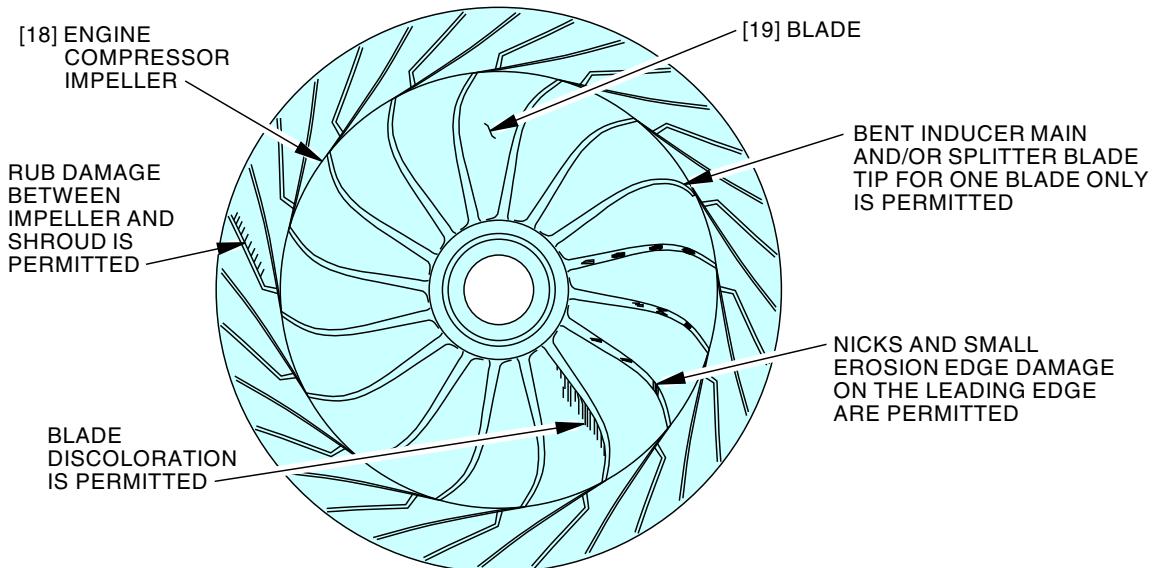
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

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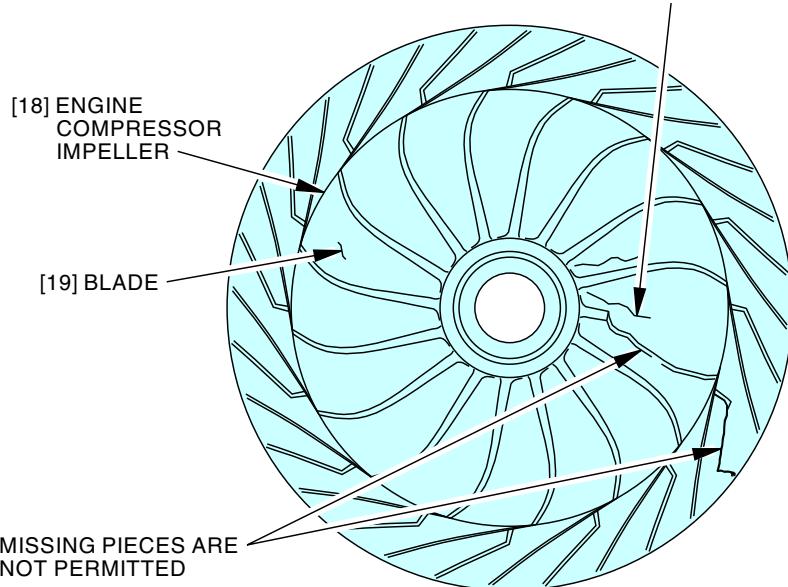
737-600/700/800/900  
AIRCRAFT MAINTENANCE MANUAL



ENGINE COMPRESSOR IMPELLER  
(PERMITTED LIMITS)

N

CRACKS ON THE LEADING EDGE, FILLETS AND/OR HUB ARE NOT PERMITTED



ENGINE COMPRESSOR IMPELLER  
(REJECTED LIMITS)

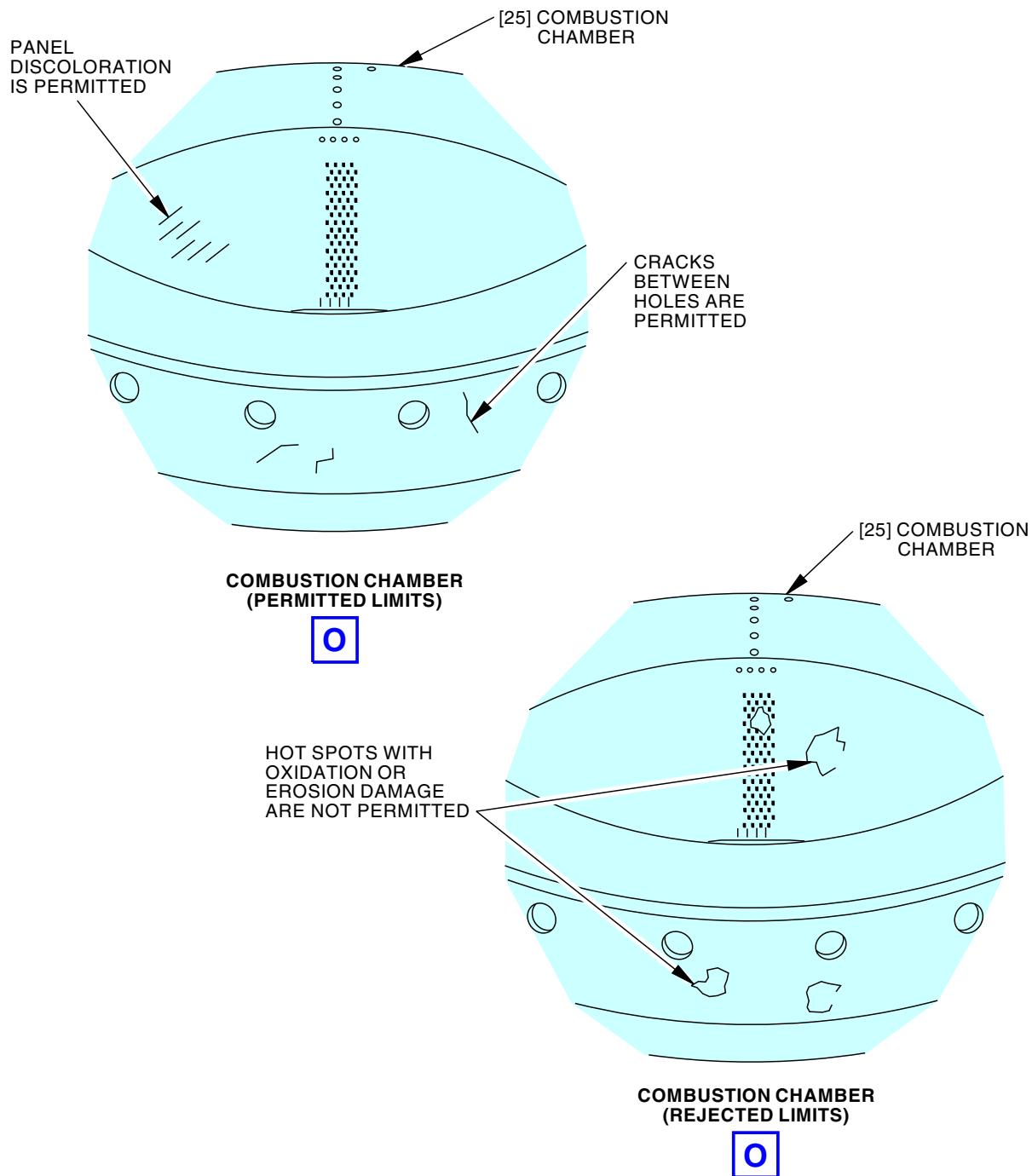
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J73055 S0000176840\_V2

APU Engine Inspection  
Figure 601/49-21-00-990-802 (Sheet 14 of 21)

EFFECTIVITY  
LOM ALL

49-21-00

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J73056 S0000176841\_V2

**APU Engine Inspection**  
**Figure 601/49-21-00-990-802 (Sheet 15 of 21)**

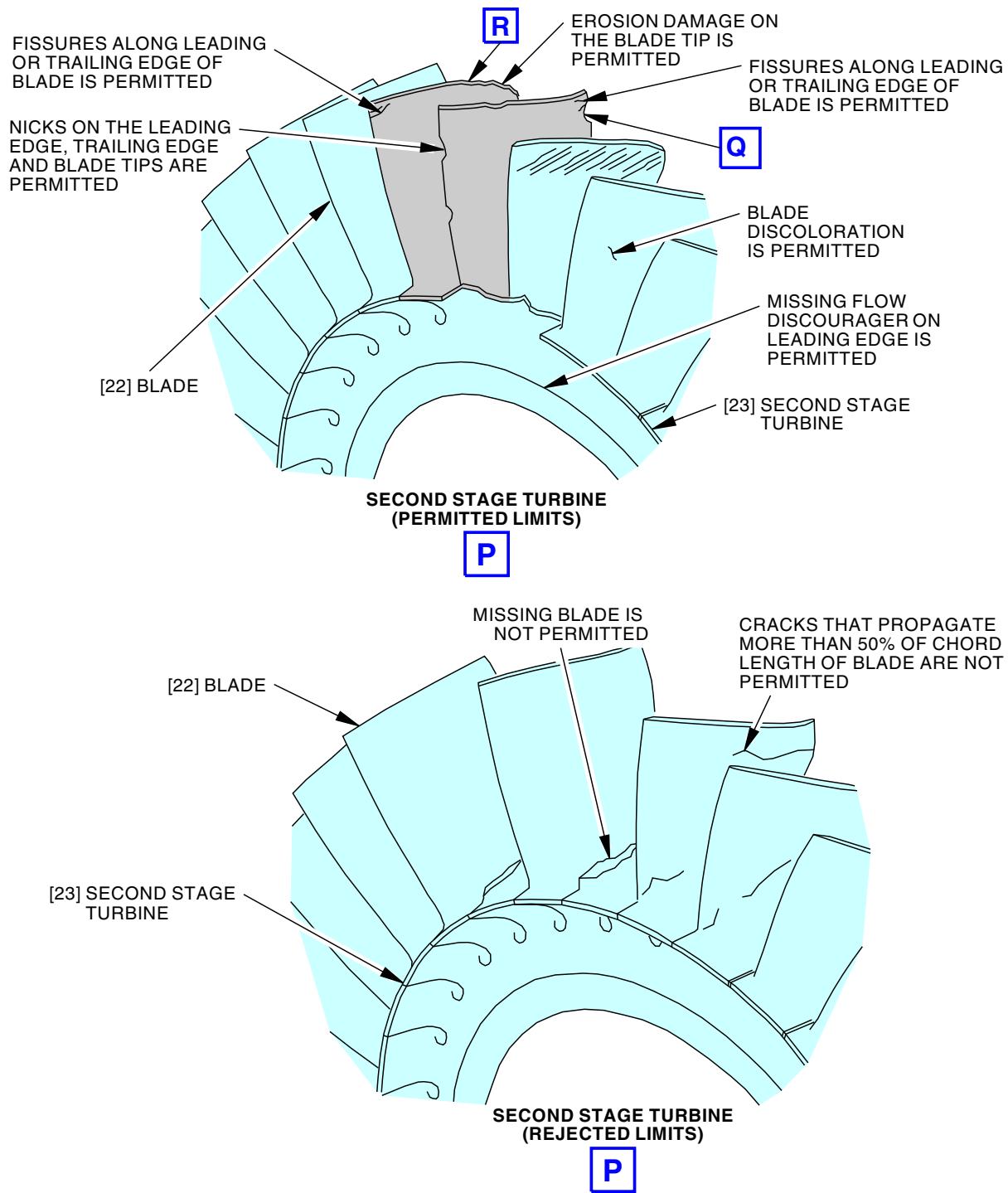
EFFECTIVITY	LOM ALL
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D633A101-LOM

ECCN 9E991 BOEING PROPRIETARY - See title page for details

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J73062 S0000176842\_V3

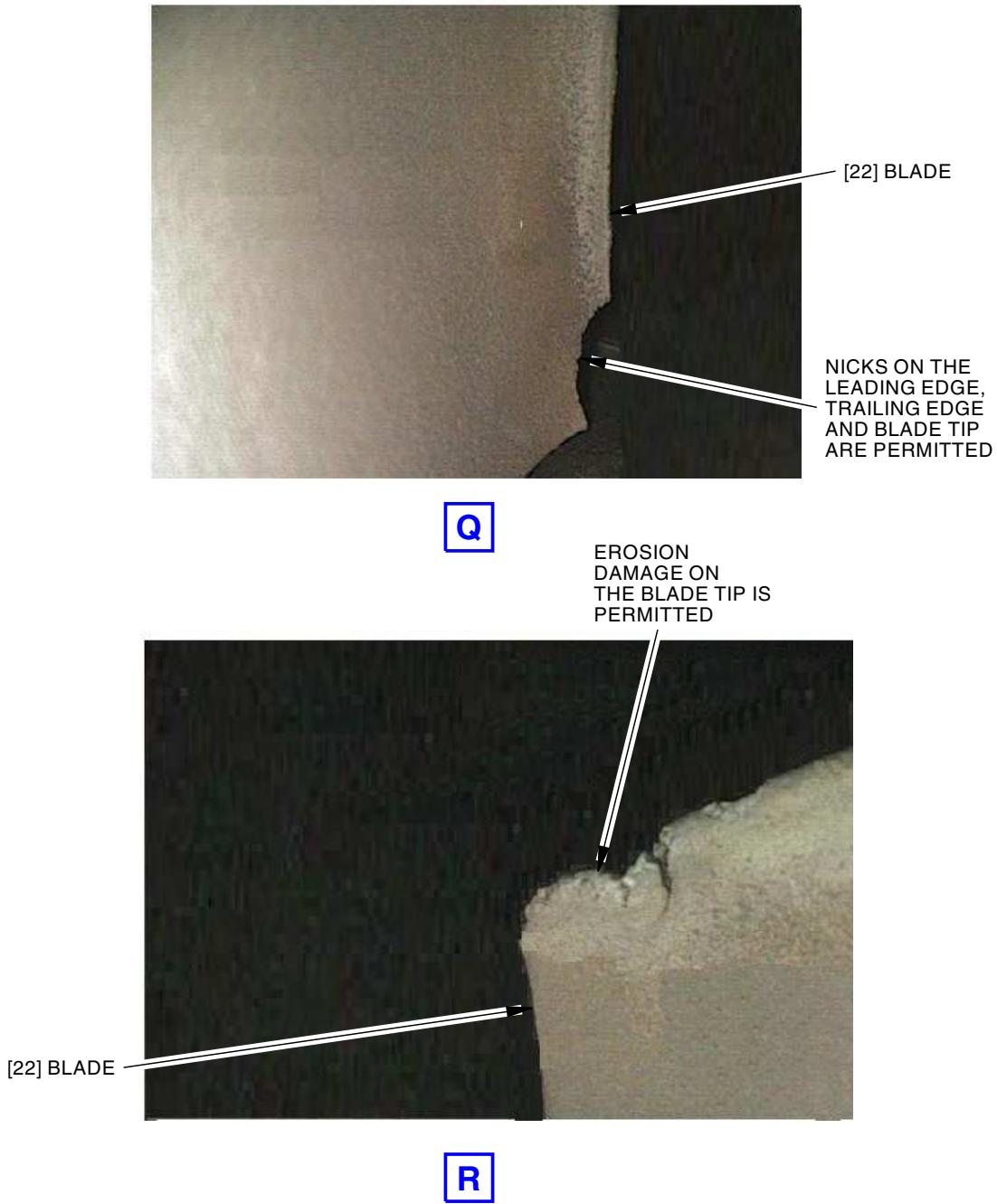
**APU Engine Inspection**  
**Figure 601/49-21-00-990-802 (Sheet 16 of 21)**

EFFECTIVITY  
LOM ALL

**49-21-00**



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2568583 S0000615433\_V1

**APU Engine Inspection**  
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EFFECTIVITY  
LOM ALL

**49-21-00**

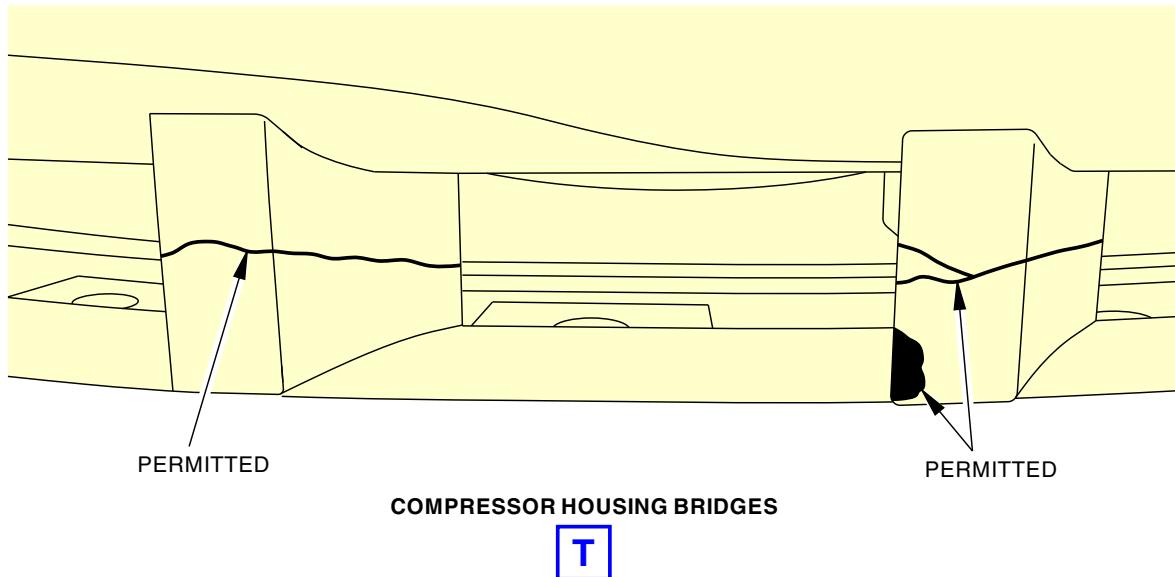
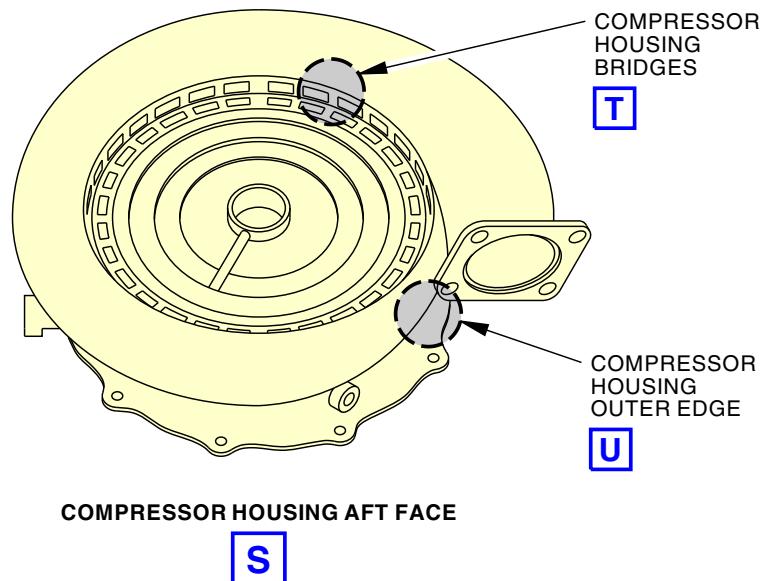
D633A101-LOM

ECCN 9E991 BOEING PROPRIETARY - See title page for details

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NOTE:

DURING BORESCOPE INSPECTION, ANY DAMAGE TO THE LOAD COMPRESSOR SCROLL HOUSING BRIDGES IS PERMITTED, INCLUDING:

- CRACKS AND INTERSECTING CRACKS
- MISSING PORTIONS OF BRIDGE
- MORE THAN ONE CRACK PER VANE

2801674 S0000641693\_V4

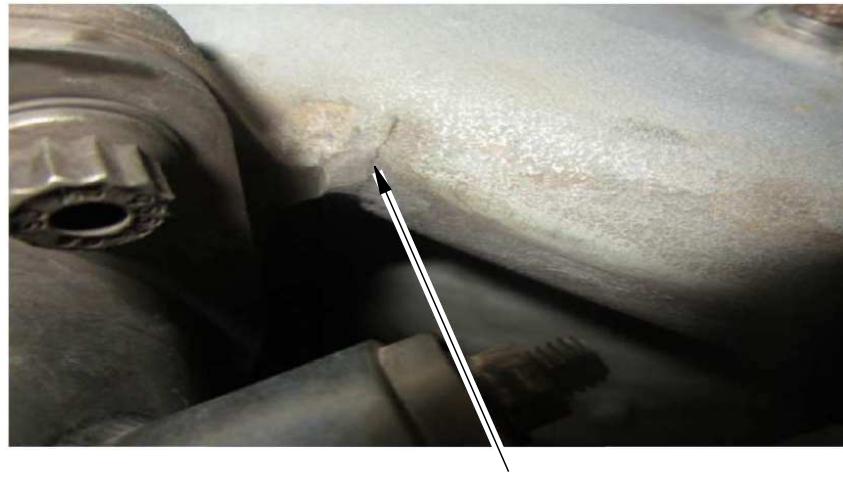
APU Engine Inspection  
Figure 601/49-21-00-990-802 (Sheet 18 of 21)

EFFECTIVITY  
LOM ALL

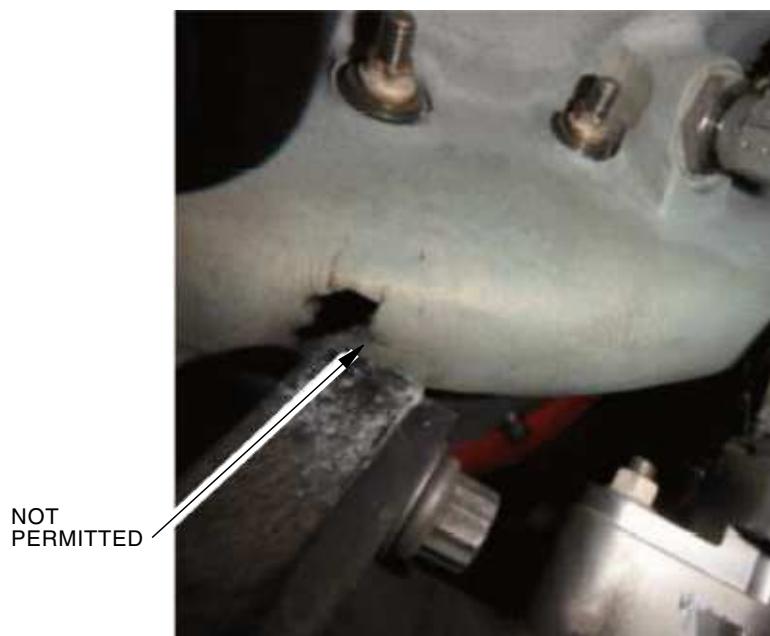
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COMPRESSOR HOUSING OUTER EDGE



COMPRESSOR HOUSING OUTER EDGE



2861088 S0000673760\_V3

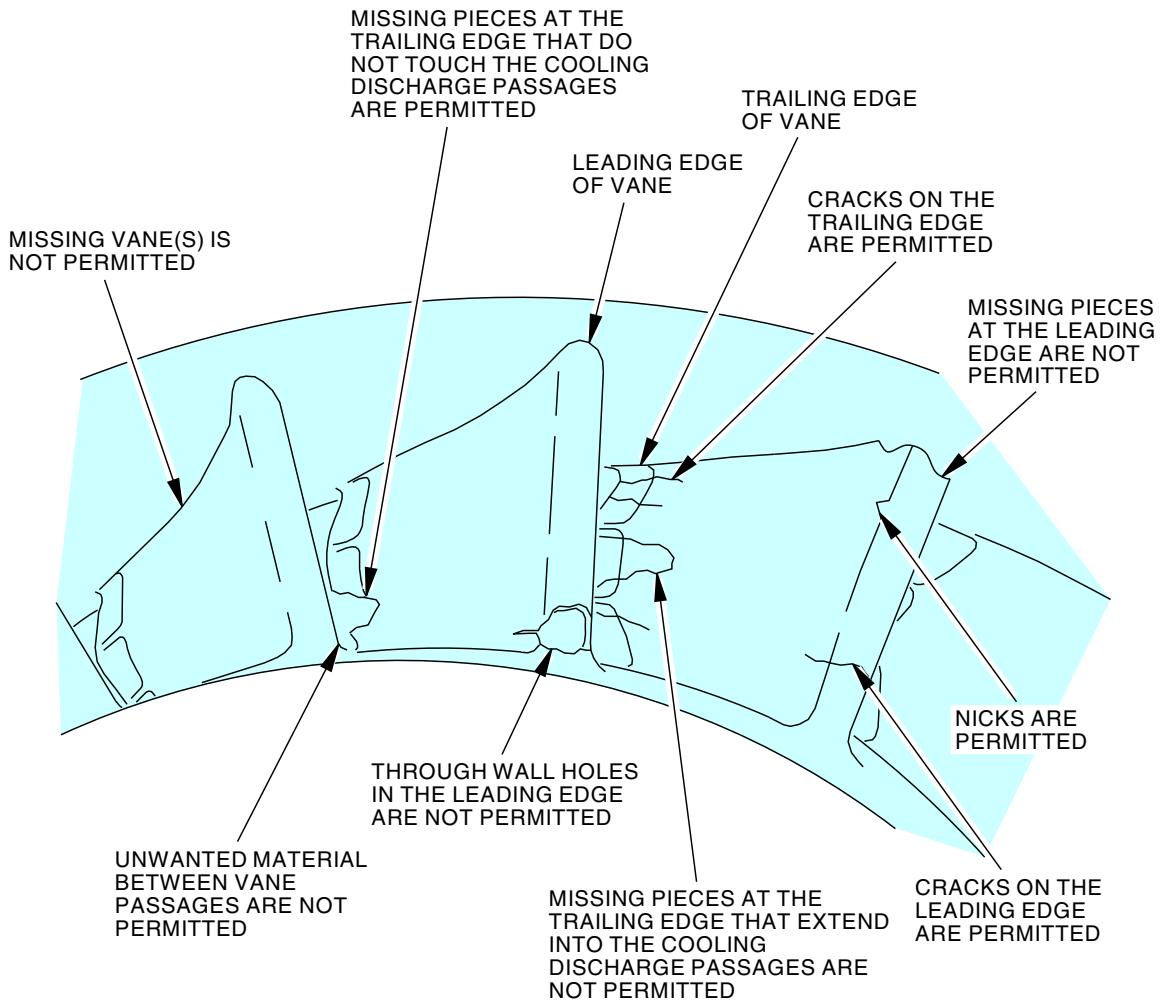
**APU Engine Inspection**  
**Figure 601/49-21-00-990-802 (Sheet 19 of 21)**

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LOM ALL

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D633A101-LOM


**FIRST STAGE STATOR**
V

M56316 S0006579167\_V4

**APU Engine Inspection  
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 EFFECTIVITY  
 LOM ALL

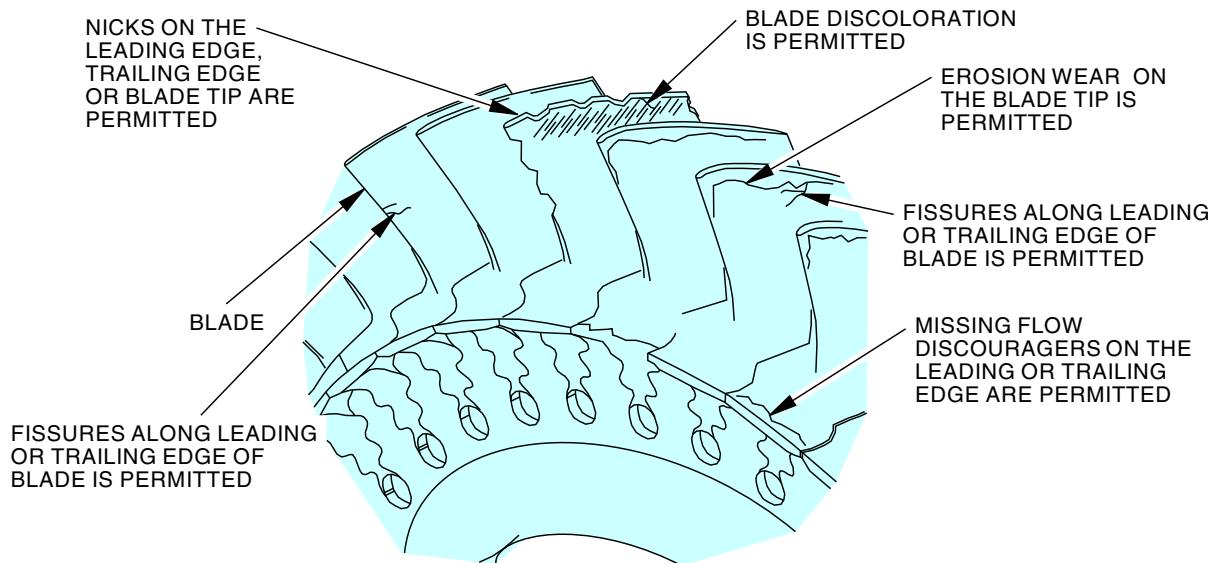
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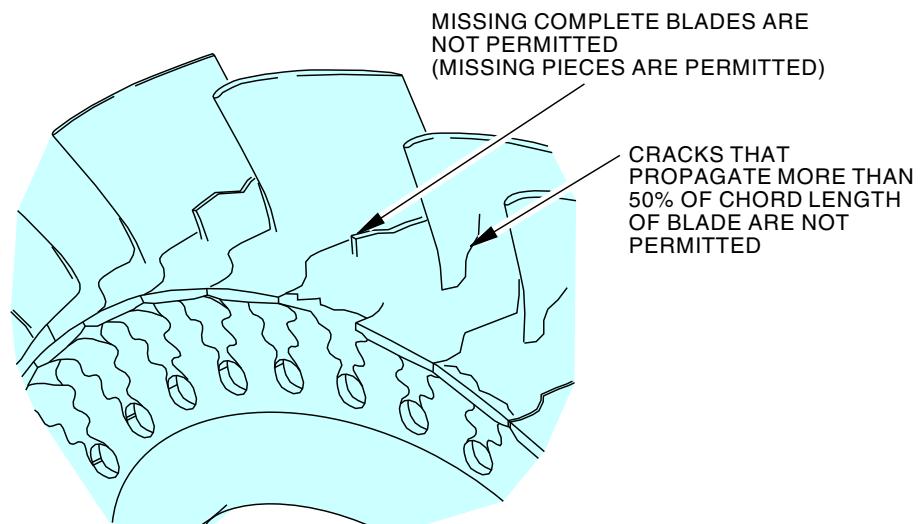


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FIRST STAGE TURBINE  
(PERMITTED LIMITS)

[W]



FIRST STAGE TURBINE  
(REJECTED LIMITS)

[W]

M56363 S0006579168\_V6

APU Engine Inspection  
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LOM ALL

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**TASK 49-21-00-200-802**

**3. First Stage Stator and First Stage Turbine Inspection**

(Figure 601)

**A. References**

Reference	Title
49-11-00-000-801	APU Power Plant Removal (P/B 401)
49-11-00-400-801	APU Power Plant Installation (P/B 401)
49-21-00-980-801	Manually Turn the APU Engine (P/B 201)
49-31-14-000-801	Fuel Nozzle Removal (P/B 401)
49-31-14-400-801	Fuel Nozzle Installation (P/B 401)
49-41-51-000-801	Igniter Plug Removal (P/B 401)
49-41-51-400-801	Igniter Plug 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-4316	Fiberscope - Flexible Borescope Part #: IF2D5 Supplier: 32212 Opt Part #: 7110561 Supplier: 32212 Opt Part #: IF6C5X1-8 Supplier: 32212
COM-4964	Light Source - Borescope Part #: ILH-2A Supplier: 32212 Part #: ILK-7A Supplier: 32212 Opt Part #: 7502152 Supplier: 32212

**C. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**D. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**E. Prepare for the Inspection**

**SUBTASK 49-21-00-860-009**

- (1) Make sure the APU master switch on the P5 forward overhead panel is OFF and install a DO-NOT-OPERATE tag.

**SUBTASK 49-21-00-860-010**

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

**F/O Electrical System Panel, P6-2**

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

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LOM ALL

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**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-21-00-010-006

- (3) To open the access panel, do these steps:

Number    Name/Location

315A      APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.
- (b) Open the three latches.  
NOTE: Use this sequence: forward latch, aft latch, middle latch.
- (c) Open the APU Cowl Door, 315A.
- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

**F. Procedure**

SUBTASK 49-21-00-940-002

- (1) Prepare the fiberscope, COM-4316 and light source, COM-4964 or equivalent to examine the internal parts of the APU.

SUBTASK 49-21-00-290-008

- (2) Examine the vanes [26] of the first stage stator [24]:

NOTE: You can get access to the vanes through the igniter plug boss or through the fuel nozzle port on the combustor housing.

- (a) Do these steps to examine the vanes [26] of the first stage stator [24] through the igniter plug boss [6]:
  - 1) Do this task: Igniter Plug Removal, TASK 49-41-51-000-801.



**CAUTION**

MAKE SURE THAT THE INTERNAL TEMPERATURE OF THE APU IS LESS THAN 176°F (80°C) BEFORE YOU PUT THE BORESCOPE INTO THE APU. DAMAGE TO THE BORESCOPE CAN OCCUR.

- 2) Put the fiberscope, COM-4316 through the igniter plug boss [6] to get access to the vanes [26].
- 3) Look at each vane [26] for these inspections:
  - a) Through wall holes in the leading edge are not permitted.
  - b) Missing vane(s) is not permitted.
  - c) Unwanted material between the vane passages are not permitted.
  - d) Missing pieces at the leading edge are not permitted.
  - e) Missing pieces at the trailing edge that extend into the cooling discharge passages are not permitted.

EFFECTIVITY  
LOM ALL

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- f) Cracks on the leading edge and trailing edge are permitted.
  - g) Missing pieces at the trailing edge that do not touch the cooling discharge passages are permitted.
  - h) Nicks are permitted.
- 4) Replace the APU if you found damage that was not permitted. These are the tasks:
- APU Power Plant Removal, TASK 49-11-00-000-801,
  - APU Power Plant Installation, TASK 49-11-00-400-801.
- 5) Slowly remove the fiberscope, COM-4316 from the igniter plug boss [6].
- 6) Do this task: Igniter Plug Installation, TASK 49-41-51-400-801.
- (b) Do these steps to examine the vanes [26] of the first stage stator [24] through the fuel nozzle port [9] on the combustor housing:
- NOTE: You can remove more than one fuel nozzle to get access to the vanes. Obey the number of fuel nozzles that you can remove at the same time.
- 1) Do this task: Fuel Nozzle Removal, TASK 49-31-14-000-801.



**CAUTION**

MAKE SURE THAT THE INTERNAL TEMPERATURE OF THE APU IS LESS THAN 176°F (80°C) BEFORE YOU PUT THE BORESCOPE INTO THE APU. DAMAGE TO THE BORESCOPE CAN OCCUR.

- 2) Put the fiberscope, COM-4316 through the fuel nozzle port [9] to get access to the vanes [26].
- 3) Look at each vane [26] for these inspections:
- a) Through wall holes in the leading edge are not permitted.
  - b) Missing vane(s) is not permitted.
  - c) Unwanted materials between the vane passages are not permitted.
  - d) Missing pieces at the leading edge are not permitted.
  - e) Missing pieces at the trailing edge that extend into the cooling discharge passages are not permitted.
  - f) Cracks on the leading edge and trailing edge are permitted.
  - g) Missing pieces at the trailing edge that do not touch the cooling discharge passages are permitted.
  - h) Nicks are permitted.
- 4) Replace the APU if you found damage that was not permitted. These are the tasks:
- APU Power Plant Removal, TASK 49-11-00-000-801,
  - APU Power Plant Installation, TASK 49-11-00-400-801.
- 5) Slowly remove the fiberscope, COM-4316 from the fuel nozzle port [9].
- 6) Do this task: Fuel Nozzle Installation, TASK 49-31-14-400-801.

SUBTASK 49-21-00-290-009

- (3) Examine the blades [21] of the first stage turbine [20]:

NOTE: You can get access to the blades through the igniter plug boss or through the fuel nozzle port on the combustor housing.

- (a) Do this task: Manually Turn the APU Engine, TASK 49-21-00-980-801.

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LOM ALL

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- (b) Do these steps to examine the blades [21] of the first stage turbine [20] through the igniter plug boss [6]:

- 1) Do this task: Igniter Plug Removal, TASK 49-41-51-000-801.



**CAUTION**

MAKE SURE THAT THE INTERNAL TEMPERATURE OF THE APU IS LESS THAN 176°F (80°C) BEFORE YOU PUT THE BORESCOPE INTO THE APU. DAMAGE TO THE BORESCOPE CAN OCCUR.

- 2) Put the fiberscope, COM-4316 through the igniter plug boss [6] to get access to the blades [21].



**CAUTION**

MAKE SURE THAT THE FORWARD END OF THE BORESCOPE IS CLEAR OF THE BLADES OF THE FIRST STAGE TURBINE. DAMAGE TO THE BLADES AND THE BORESCOPE CAN OCCUR WHEN YOU TURN THE APU.

- 3) Look at each blade [21] for these inspections:

- a) Cracks that propagate more than 50% of chord length of blade are not permitted.
- b) Missing blades are not permitted.
- c) Missing pieces are permitted.
- d) Nicks on the leading edge, trailing edge or blade tip are permitted.
- e) Blade discoloration is permitted.
- f) Erosion wear on the blade tip is permitted.
- g) Fissures along leading or trailing edge of blade is permitted.
- h) Missing flow discouragers on the leading or the trailing edge are permitted.

- 4) Replace the APU if you found damage that was not permitted. These are the tasks:

- APU Power Plant Removal, TASK 49-11-00-000-801,
- APU Power Plant Installation, TASK 49-11-00-400-801.

- 5) Slowly remove the fiberscope, COM-4316 from the igniter plug boss [6].

- 6) Do this task: Igniter Plug Installation, TASK 49-41-51-400-801.

- (c) Do these steps to examine the blades [21] of the first stage turbine [20] through the fuel nozzle port [9] on the combustor housing:

NOTE: You can remove more than one fuel nozzle to get access to the blades. Obey the number of fuel nozzles that you can remove at the same time.

- 1) Do this task: Fuel Nozzle Removal, TASK 49-31-14-000-801.



**CAUTION**

MAKE SURE THAT THE INTERNAL TEMPERATURE OF THE APU IS LESS THAN 176°F (80°C) BEFORE YOU PUT THE BORESCOPE INTO THE APU. DAMAGE TO THE BORESCOPE CAN OCCUR.

- 2) Put the fiberscope, COM-4316 through the fuel nozzle port [9] to get access to the blades [21].

EFFECTIVITY  
LOM ALL

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**CAUTION**

MAKE SURE THAT THE FORWARD END OF THE BORESCOPE IS CLEAR OF THE BLADES OF THE FIRST STAGE TURBINE. DAMAGE TO THE BLADES AND THE BORESCOPE CAN OCCUR WHEN YOU TURN THE APU.

- 3) Look at each blade [21] for these inspections:
  - a) Cracks that propagate more than 50% of chord length of blade are not permitted.
  - b) Missing blades are not permitted.
  - c) Missing pieces are permitted.
  - d) Nicks on the leading edge, trailing edge or blade tip are permitted.
  - e) Blade discoloration is permitted.
  - f) Erosion wear on the blade tip is permitted.
  - g) Fissures along leading or trailing edge of blade is permitted.
  - h) Missing flow discouragers on the leading or the trailing edge are permitted.
- 4) Replace the APU if you found damage that was not permitted. These are the tasks:
  - APU Power Plant Removal, TASK 49-11-00-000-801,
  - APU Power Plant Installation, TASK 49-11-00-400-801.
- 5) Slowly remove the fiberscope, COM-4316 from the fuel nozzle port [9].
- 6) Do this task: Fuel Nozzle Installation, TASK 49-31-14-400-801.
- (d) If it is not necessary to manually turn the APU engine for other inspection tasks, complete the procedure to manually turn the APU engine. To complete it, do this task: Manually Turn the APU Engine, TASK 49-21-00-980-801.

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

SUBTASK 49-21-00-860-011

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

### F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

### F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-21-00-860-012

- (2) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.

SUBTASK 49-21-00-410-006

- (3) To close the access panel, do these steps:

### Number      Name/Location

315A      APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.

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LOM ALL

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- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

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APU ENGINE - CLEANING/PAINTING

**1. General**

- A. This procedure has the task to clean the power and load compressor sections of the APU engine.
- B. The APU engine must be shutdown for a minimum of sixty (60) minutes before you can do the APU engine compressor cleaning procedure. The sixty (60) minutes are necessary to make sure the APU engine is sufficiently cool and for maximum performance of the cleaning solution.

**TASK 49-21-00-200-803**

**2. APU Engine Compressor Cleaning**

**A. References**

Reference	Title
24-22-00-860-813	Supply External Power (P/B 201)
24-22-00-860-814	Remove External Power (P/B 201)
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)
49-52-13-000-801	Bleed Air Duct Removal (P/B 401)
49-52-13-400-801	Bleed Air Duct 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-3862	Cart - Compressor Washer Part #: 08-4048-0013 Supplier: 59603 Part #: 08-4049-0013 Supplier: 59603 Opt Part #: 08-4048-1012 Supplier: 59603 Opt Part #: 08-4049-1012 Supplier: 59603
STD-1054	Container - Fuel Resistant, 5-Gallon (19-Liter)
STD-1056	Container - Solvent Resistant, 5 Gallon (19 Liter)

**C. Consumable Materials**

Reference	Description	Specification
B50032	Compound - Gas Turbine Compressor Cleaner, Water Based, ZOKmx	
B50033	Compound - Cleaning, Turbine Engine Gas Path (aqueous, no hydrocarbons, for on-line cleaning)	MIL-PRF-85704 Type III
G02418	Water - De-ionized	
G50228	Tape - 3M 436 Vibration Damping Tape (Formerly 3M Y436)	

**D. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

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**E. Prepare for the Cleaning Procedure**

SUBTASK 49-21-00-860-013

- (1) Make sure sixty (60) minutes have gone by since the last APU start.

NOTE: The sixty (60) minutes are necessary to make sure the APU engine is sufficiently cool and for maximum performance of the cleaning solution.

SUBTASK 49-21-00-860-014

- (2) Make sure the APU BLEED switch on the P5 forward overhead panel is OFF and install a DO-NOT-OPERATE tag.

SUBTASK 49-21-00-860-020

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-21-00-020-001

- (4) Remove the bleed air duct. To remove it, do this task: Bleed Air Duct Removal, TASK 49-52-13-000-801.

SUBTASK 49-21-00-860-015

- (5) Make sure there is a protection cover on the bleed duct assembly.

NOTE: No protection cover is necessary on the bleed air valve.

SUBTASK 49-21-00-490-001

- (6) Install a locally-fabricated flexible duct with a clamp on the bleed air valve to change the direction of the steam (cleaning solution or de-ionized water) from the 1088 bulkhead to the ground.

SUBTASK 49-21-00-020-002

- (7) Disconnect the electrical connector P10 from the bleed air valve and install the protection covers on the electrical connector and bleed air valve.

SUBTASK 49-21-00-210-001

- (8) Look at the two indications on the position switch for the bleed air valve.

NOTE: There are two indications on the position switch to show the position of the bleed air valve. You can find the OPEN and CLOSED indications on the top of the bleed air valve.

- (a) Make sure the indication for the bleed air valve shows CLOSED.

SUBTASK 49-21-00-950-001

- (9) Install the 3M 436 Tape, G50228 over the plenum drain hole (location on the right side above the forward end of the APU cowl door).

SUBTASK 49-21-00-110-001

- (10) Do these steps to prepare the cleaning solution and compressor washer cart, COM-3862 or equivalent compressor washer equipment:

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- (a) Prepare approximately three gallons (11.4 liters) of cleaning solution with the ZOKmx compound, B50032 (concentrated) or compound, B50033 per the manufacturer's instructions.

NOTE: The cleaning solution comes in a ready-to-use container or a concentrated compound container.

NOTE: It is recommended that de-ionized water, G02418 must be used if water is a component of the cleaning solution.

NOTE: The manufacturer's instructions for the ZOKmx compound, B50032 (concentrated) is one part of compound to four parts of de-ionized water, G02418.

- (b) Put the cleaning solution in the compressor washer cart, COM-3862 or equivalent compressor washer equipment.

NOTE: The compressor washer equipment must have a wand assembly and supply approximately three gallons (11.4 liters) of cleaning solution at a flow rate of approximately 1 to 1.5 gallons per minute (3.8 to 5.7 liters per minute).



**WARNING**

MAKE SURE YOU WEAR PROTECTIVE SPLASH GOGGLES OR FACE SHIELD, EAR PROTECTION, GLOVES AND OTHER PERSONNEL PROTECTION EQUIPMENT WHEN YOU USE THE COMPRESSOR WASHER EQUIPMENT AND CLEANING SOLUTION. INJURY TO PERSONS CAN OCCUR.

- (c) Use the compressor washer cart, COM-3862 to put the cleaning solution as a spray into the opening of the air inlet door.
- (d) Make sure you have an empty solvent resistant container (5 gal)(19 Liter), STD-1056 and approximately two gallons (7.6 liters) of de-ionized water, G02418 with the compressor washer cart, COM-3862.

## F. APU Engine Compressor Cleaning

SUBTASK 49-21-00-110-002

- (1) Do these steps to do the APU engine cold-wash procedure:

- (a) Put the 5-gallon (19-liter) fuel resistant container, STD-1054 below the APU drain seal.



**WARNING**

DO NOT TOUCH THE IGNITION COMPONENTS UNTIL YOU DO THESE STEPS. THESE STEPS WILL RELEASE THE HIGH VOLTAGE FROM THE IGNITION UNIT. IF YOU DO NOT OBEY THIS PROCEDURE, INJURY TO PERSONS CAN OCCUR.

- (b) Do these steps to release the high voltage from the ignition unit:
- 1) Make sure five minutes have gone by since the last APU start.
  - 2) Disconnect the electrical connector P13 from the ignition unit.
  - 3) Make sure you install all necessary protection covers.
- (c) Do these steps to disconnect the fuel supply tube from the fuel flow divider:
- 1) Disconnect the electrical connector P23 from the flow divider solenoid and install the protection covers on the electrical connector and flow divider solenoid.
  - 2) Put the 5-gallon (19-liter) fuel resistant container, STD-1054 below the fuel flow divider to drain the fuel from the fitting.

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- 3) Disconnect the fitting for the fuel supply tube from the fuel flow divider and install a cap on the fitting.
- (d) Do this task: Supply External Power, TASK 24-22-00-860-813.
- (e) Remove the safety tags and close these circuit breakers:

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

**LOM 412, 415, 423, 424, 450-452**

- (f) 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>
A	12	C00633	AUX POWER UNIT FUEL BOOST PUMP

**LOM ALL**

- (g) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.
- (h) Make sure the BAT switch on the P5 forward overhead panel is ON.



**WARNING** DO NOT OPERATE ANY FUEL PUMP IF THE LOW PRESSURE LIGHT COMES ON AND STAYS ON. FUEL VAPORS IN THE TANK MAY IGNITE AND CAUSE A FIRE OR EXPLOSION.

- (i) Set the No. 1 AFT FUEL PUMP switch or No. 1 FWD FUEL PUMP switch to the ON position.

**NOTE:** If you must use the fuel boost pumps in the center tank, you must have a maintenance person or observer in the flight compartment to continuously monitor the LOW PRESSURE lights. You must set the applicable fuel boost pump to the OFF position if the LOW PRESSURE light for the center tank stays on.



**WARNING** MAKE SURE THAT YOU DO NOT STAND IN FRONT OF THE AIR INLET DOOR AREA OR HAVE ANY LOOSE OBJECTS THAT CAN GO INTO THE AIR INLET PLENUM DURING THE APU OPERATION. INJURY TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (j) Get access to the side of the air inlet door area from the outside of the airplane with the compressor washer cart, COM-3862, solvent resistant container (5 gal)(19 Liter), STD-1056 and approximately two gallons (7.6 liters) of de-ionized water, G02418.

**NOTE:** It is recommended that you use three persons to do the APU engine compressor cleaning. The location of the first person is on the side of the air inlet door area and outside of the airplane. The location of the second person is in the flight compartment to motor the APU and for the APU starting procedure. The location of the third person is at the APU compartment and to help the first person when to start the spray of the cleaning solution.

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- (k) Do these steps to motor the APU engine and to apply the cleaning solution into the opening of the air inlet door:
- 1) Set the APU master switch to the ON position.
  - 2) Make sure the air inlet door opens in approximately 30 seconds.
  - 3) Put the wand assembly in the opening of the air inlet door and make sure the cleaning solution spray will go in the APU inlet duct.
    - a) Make sure you install the wand assembly as far into the opening of the air inlet door as possible to get the maximum amount of cleaning solution into the APU inlet duct.
  - 4) Set the APU master switch to the START position and release it to the ON position.
  - 5) When you hear the APU engine start to rotate, use the compressor washer cart, COM-3862 to apply the cleaning solution into the APU inlet duct until the APU engine has a protective shutdown.
  - 6) Motor the APU engine until the APU has a protective shutdown.  
NOTE: The APU engine will have a protective shutdown between 17-20 seconds.
  - 7) Make sure a fuel fog comes out of the exhaust duct muffler during the APU engine motor operation.
  - 8) Remove the wand assembly from the opening of the air inlet door.
  - 9) Set the APU master switch to the OFF position.  
NOTE: The air inlet door closes in approximately 30 seconds.
  - 10) If it is necessary to motor the APU engine and to apply more cleaning solution again, it is recommended that you obey the start duty cycle.  
NOTE: The start duty cycle for the APU is three times in a 15 minute interval. If you do three successful or unsuccessful start cycles in a 15 minute interval, it is recommended that you wait 15 minutes after the third start cycle for the power electronics to cool. This 15 minute interval is necessary to cool the temperature of the power electronics in the start power unit and/or start converter unit. If the duty cycle is exceeded and the temperature limit is reached, the APU will not start.
- (l) After you motor the APU engine, let the cleaning solution soak on the internal parts of the power and load compressor sections for 15-30 minutes.
- (m) Install a DO-NOT-OPERATE tag on the APU master switch.
- (n) Set the No. 1 AFT FUEL PUMP switch or No. 1 FWD FUEL PUMP switch to the OFF position.
- (o) Open these circuit breakers and install safety tags:
- F/O Electrical System Panel, P6-2**
- | <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u>       |
|------------|------------|---------------|-------------------|
| B          | 19         | C01344        | APU FIRE SW POWER |
- F/O Electrical System Panel, P6-4**
- | <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u>         |
|------------|------------|---------------|---------------------|
| A          | 14         | C00033        | AUX POWER UNIT CONT |
- (p) Remove the 5-gallon (19-liter) fuel resistant container, STD-1054.

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- (q) Remove the protection covers and connect the electrical connector P13 to the ignition unit.
- (r) Remove the protection covers and cap and connect the fitting for the fuel supply tube to the fuel flow divider.
  - 1) Tighten the fitting to 140 in-lb (15.8 N·m).
- (s) Remove the protection covers and connect the electrical connector P23 to the flow divider solenoid.
- (t) Remove the safety tags and close these circuit breakers:

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (u) Remove the DO-NOT-OPERATE tag from the APU master switch.

SUBTASK 49-21-00-110-003

- (2) Do these steps to do the APU engine hot-wash procedure:
  - (a) Make sure you have a minimum of two gallons (7.6 liters) of cleaning solution in the compressor washer cart, COM-3862.
  - (b) Make sure 15-30 minutes have gone by since you completed the APU engine cold-wash procedure.
  - (c) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
  - (d) During the APU starting and operation, put the wand assembly in the opening of the air inlet door and use the compressor washer cart, COM-3862 to apply the cleaning solution into the APU inlet duct until the compressor washer cart, COM-3862 is empty (no remaining cleaning solution).
  - (e) Remove the wand assembly from the opening of the air inlet door.
  - (f) Do these steps to prepare the compressor washer cart, COM-3862 and replace the cleaning solution with de-ionized water, G02418:
    - 1) Remove the remaining cleaning solution from the compressor washer cart, COM-3862 and put it in the solvent resistant container (5 gal)(19 Liter), STD-1056.
    - 2) Put the approximately two gallons (7.6 liters) of de-ionized water, G02418 in the compressor washer cart, COM-3862.
  - (g) During the APU operation, put the wand assembly in the opening of the air inlet door and use the compressor washer cart, COM-3862 to apply the de-ionized water, G02418 into the APU inlet duct until the compressor washer cart, COM-3862 is empty (no remaining de-ionized water, G02418).
  - (h) Remove the wand assembly from the opening of the air inlet door.
  - (i) Remove the compressor washer cart, COM-3862, solvent resistant container (5 gal)(19 Liter), STD-1056 and other equipment from the air inlet door area.
  - (j) Operate the APU for a minimum of 15 minutes after the rinse cycle to dry the APU engine.
  - (k) Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

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**G. Put the Airplane Back to Its Usual Condition**

SUBTASK 49-21-00-860-016

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-21-00-090-001

- (2) Remove the clamp and locally-fabricated flexible duct from the bleed air valve.

SUBTASK 49-21-00-420-002

- (3) Remove the protection covers and connect the electrical connector P10 to the bleed air valve.

SUBTASK 49-21-00-420-003

- (4) Install the bleed air duct. To install it, do this task: Bleed Air Duct Installation, TASK 49-52-13-400-801.

SUBTASK 49-21-00-860-019

- (5) Remove the 3M 436 Tape, G50228 from the plenum drain hole.

SUBTASK 49-21-00-860-017

- (6) Remove the DO-NOT-OPERATE tag from the APU BLEED switch on the P5 forward overhead panel.

SUBTASK 49-21-00-860-021

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

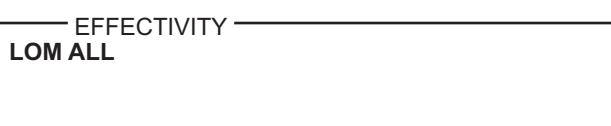
**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-21-00-860-018

- (8) Do this task: Remove External Power, TASK 24-22-00-860-814.

———— END OF TASK ————



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APU FUEL SYSTEM - MAINTENANCE PRACTICES

**1. General**

- A. This procedure has these tasks:
  - (1) Fuel Leakage Check
  - (2) APU Fuel Supply Flow Check.
- B. The fuel leakage check makes sure the APU fuel system is not damaged.
- C. The flow check for the APU fuel supply makes sure the correct quantity of fuel is supplied to the APU.

**TASK 49-31-00-700-801**

**2. Fuel Leakage Check**

(Figure 201)

**A. References**

Reference	Title
24-22-00-860-813	Supply External Power (P/B 201)
24-22-00-860-814	Remove External Power (P/B 201)

**B. Tools/Equipment**

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

Reference	Description
SPL-1973	Equipment - Test, Fuel Feed, Auxiliary Power Unit Part #: C49011-1 Supplier: 81205
STD-4049	Container - Fuel Resistant, 1 Gallon (4 Liter)

**C. Consumable Materials**

Reference	Description	Specification
D50011	Grease - Perfluoropolyether - Christo-lube MCG111	
D50055	Oil - Aircraft Turbine Engine Oil for AE 131-9[B] APU (AMM 12-13-31/301)	

**D. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**E. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**F. Prepare for the Fuel Leakage Check**

**SUBTASK 49-31-00-860-005**

- (1) Make sure that the APU master switch [3] on the P5 forward overhead panel is OFF and install a DO-NOT-OPERATE tag.

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SUBTASK 49-31-00-860-014

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

**LOM 412, 415, 423, 424, 450-452**

SUBTASK 49-31-00-860-027

- (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>
A	12	C00633	AUX POWER UNIT FUEL BOOST PUMP

**LOM ALL**

SUBTASK 49-31-00-010-007

- (4) To open the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.
- (b) Open the three latches.  
*NOTE:* Use this sequence: forward latch, aft latch, middle latch.
- (c) Open the APU Cowl Door, 315A.
- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

**G. Procedure**

SUBTASK 49-31-00-780-001

- (1) Do the fuel leakage check:

*NOTE:* If you must use the fuel boost pumps in the center tank, you must have a maintenance person or observer in the flight compartment to continuously monitor the LOW PRESSURE lights. Turn the applicable fuel boost pump to the OFF position if the LOW PRESSURE light for the center tank stays on.

- (a) Make sure that the CTR L FUEL PUMP switch [1], No. 1 FWD FUEL PUMP switch [4] and No. 1 AFT FUEL PUMP switch [5] are in the OFF position.
- (b) Make sure that the CROSS FEED valve switch [2] is in the CLOSED position.
- (c) Put the 1 gallon (4 l) fuel resistant container, STD-4049 under the fuel supply tube [7].

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**WARNING**

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

- (d) Disconnect the fuel supply tube [7] from the fitting [6] on the 1088 bulkhead.
- (e) Drain the fuel from the fuel supply tube [7] into the 1 gallon (4 l) fuel resistant container, STD-4049.
- (f) Install the test equipment [9] (fuel feed tester, SPL-1973) to the fitting [6] and fuel supply tube [7].
- (g) Make sure that the valve handle [8] is in the OFF position.
- (h) Supply external electrical power to the airplane. To supply it, do this task: Supply External Power, TASK 24-22-00-860-813.
- (i) Remove the safety tags and close these circuit breakers:

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

**LOM 412, 415, 423, 424, 450-452**

- (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>
A	12	C00633	AUX POWER UNIT FUEL BOOST PUMP

**LOM ALL**

- (k) Set the No. 1 AFT FUEL PUMP switch [5] or No. 1 FWD FUEL PUMP switch [4] to the ON position.
- (l) Remove the DO-NOT-OPERATE tag from the APU master switch [3].
- (m) Set the APU master switch [3] to the ON position.  
*NOTE:* Do not set the APU master switch [3] to the START position. It is not necessary to start the APU for this fuel leakage check.
- (n) Make sure that the fuel pressure gage shows 18 psig (124 kPa) to 26 psig (179 kPa).
- (o) Set the No. 1 AFT FUEL PUMP switch [5] or No. 1 FWD FUEL PUMP switch [4] to the OFF position.
- (p) Set the APU master switch [3] to the OFF position and install a DO-NOT-OPERATE tag.
- (q) Open these circuit breakers and install safety tags:

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

**LOM 412, 415, 423, 424, 450-452**

- (r) 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	12	C00633	AUX POWER UNIT FUEL BOOST PUMP

**LOM ALL**

- (s) Make sure that the manual override handle on the APU fuel shutoff valve is in the CLOSED position.

NOTE: The APU fuel shutoff valve is on the rear spar of the left wing in the wheel well.  
The manual override handle on the APU fuel shutoff valve gives an OPEN or CLOSED indication of the shutoff valve position.

- (t) Do these steps to monitor the fuel pressure to make sure that there are no leaks in the APU fuel system:
  - 1) Make sure that the fuel pressure gage shows 15 psig (103 kPa) to 26 psig (179 kPa) for five minutes.
  - 2) If the fuel pressure gage shows less than 15 psig (103 kPa), correct all leaks or damage to the APU fuel system.

NOTE: A fuel leakage rate of 1 drop for each minute (0.04 cc for each minute) is permitted during an APU operation from the forward drain on the APU drain seal.

- 3) If the fuel pressure gage shows 15 psig (103 kPa) to 26 psig (179 kPa), the APU fuel system is satisfactory.
- (u) Set the valve handle [8] to the ON position to bleed the fuel pressure and to drain the fuel into the 1 gallon (4 l) fuel resistant container, STD-4049.
- (v) Remove external electrical power from the airplane, if it is not necessary. To remove it, do this task: Remove External Power, TASK 24-22-00-860-814.
- (w) Disconnect the test equipment [9] (fuel feed tester, SPL-1973) from the fitting [6] and fuel supply tube [7].
- (x) If Christo-lube MCG111 grease, D50011 is not used on the fitting [6], do these steps:
  - 1) Apply a thin layer of aircraft turbine engine oil, D50055 on the threads of the fitting [6].
  - 2) Connect the fuel supply tube [7] to the fitting [6] on the 1088 bulkhead.
    - a) Tighten to 470 in-lb (53 N·m)-510 in-lb (58 N·m).
- (y) If Christo-lube MCG111 grease, D50011 is used on the fitting [6], do these steps:
  - 1) Lubricate the external threads of the fitting [6] with Christo-lube MCG111 grease, D50011.
    - NOTE: The grease should be applied to the external threads only. The grease should not be applied to the internal threads or sealing surface of the fitting [6].
  - 2) Connect the fuel supply tube [7] to the fitting [6] on the 1088 bulkhead.

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- a) Tighten to 266 in-lb (30 N·m)-294 in-lb (33 N·m).
- (z) Remove the 1 gallon (4 l) fuel resistant container, STD-4049 and fuel feed tester, SPL-1973.

**H. Put the Airplane Back to Its Usual Condition**

SUBTASK 49-31-00-410-001

- (1) To close the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

**NOTE:** Use this sequence: middle latch, aft latch, forward latch.

SUBTASK 49-31-00-860-016

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

**F/O Electrical System Panel, P6-2**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
A	14	C00033	AUX POWER UNIT CONT

**LOM 412, 415, 423, 424, 450-452**

SUBTASK 49-31-00-860-042

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

**F/O Electrical System Panel, P6-4**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
A	12	C00633	AUX POWER UNIT FUEL BOOST PUMP

**LOM ALL**

SUBTASK 49-31-00-860-008

- (4) Remove the DO-NOT-OPERATE tag from the APU master switch [3].

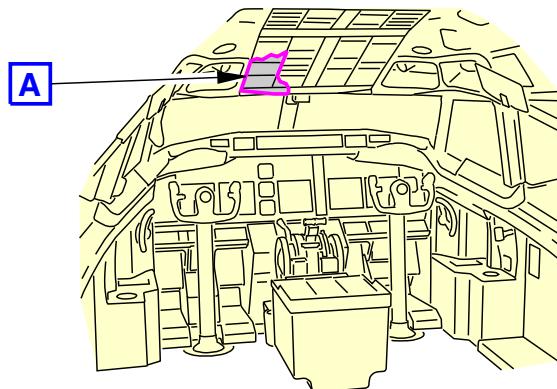
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EFFECTIVITY  
LOM ALL

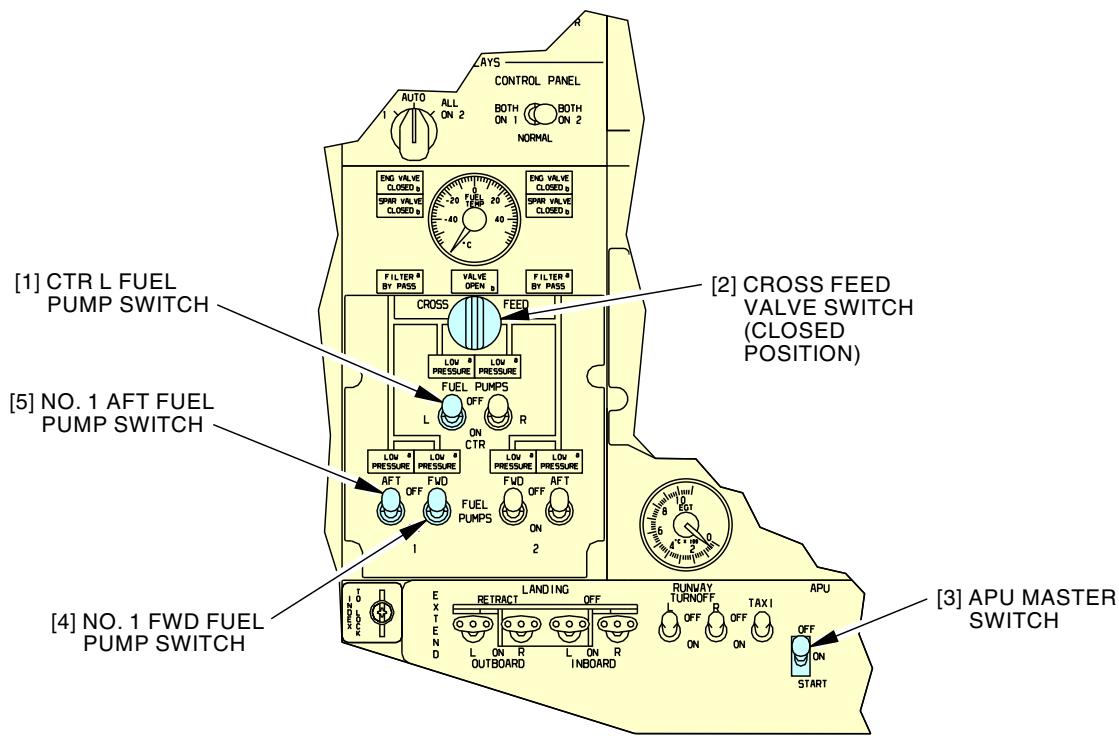
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**FLIGHT COMPARTMENT**



**FORWARD OVERHEAD PANEL, P5**

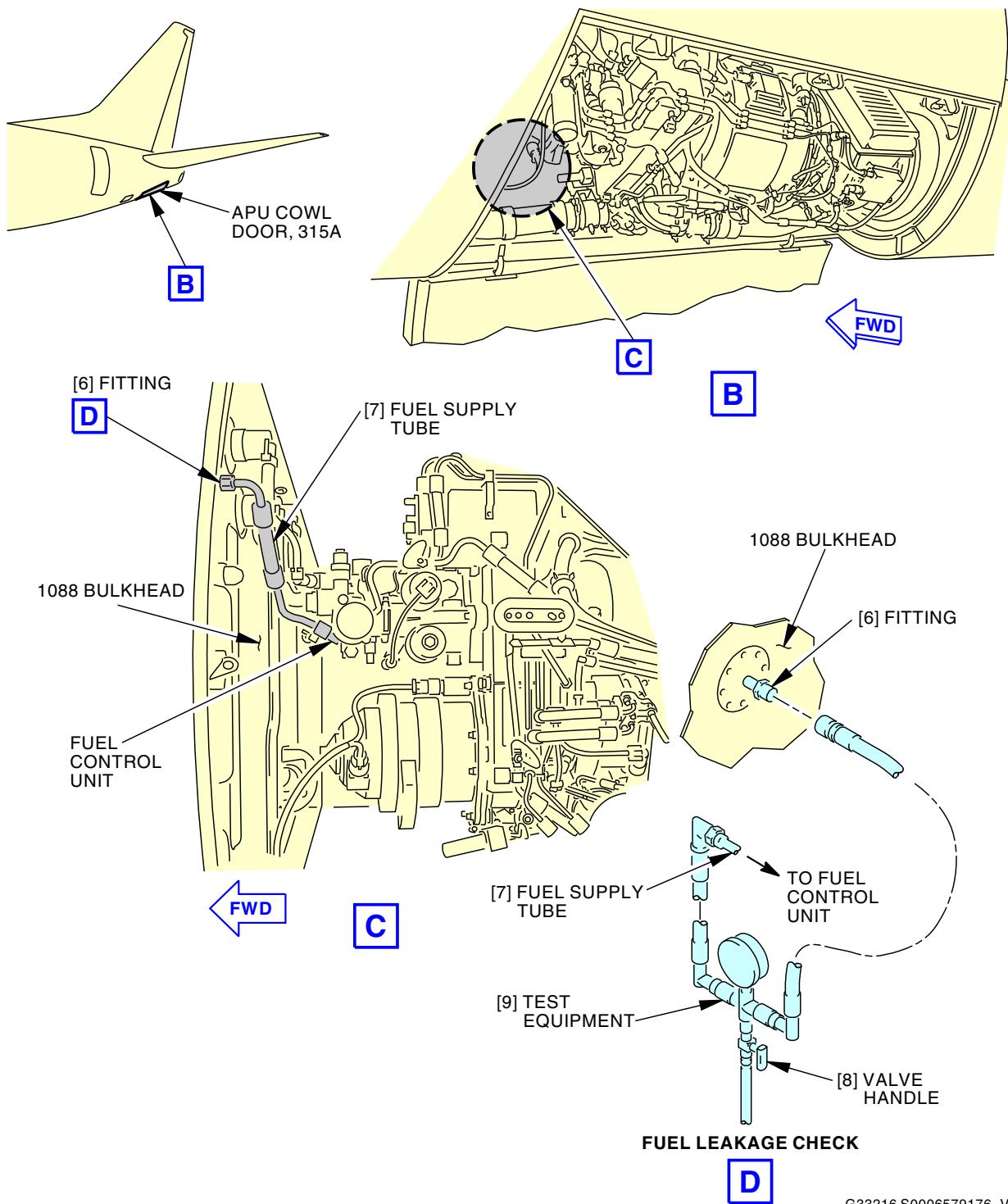
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**APU Fuel System Checks**  
**Figure 201/49-31-00-990-801 (Sheet 1 of 2)**

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**APU Fuel System Checks**  
Figure 201/49-31-00-990-801 (Sheet 2 of 2)

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**TASK 49-31-00-700-802**

**3. APU Fuel Supply Flow Check**

(Figure 201)

**A. References**

Reference	Title
24-22-00-860-813	Supply External Power (P/B 201)
24-22-00-860-814	Remove External Power (P/B 201)
28	FUEL

**B. Tools/Equipment**

Reference	Description
STD-200	Container - Fuel Resistant, 10 gallon (38 l)

**C. Consumable Materials**

Reference	Description	Specification
D50011	Grease - Perfluoropolyether - Christo-lube MCG111	
D50055	Oil - Aircraft Turbine Engine Oil for AE 131-9[B] APU (AMM 12-13-31/301)	

**D. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**E. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**F. Prepare for the Flow Check**

SUBTASK 49-31-00-860-009

- (1) Make sure that the APU master switch [3] on the P5 forward overhead panel is OFF and install a DO-NOT-OPERATE tag.

SUBTASK 49-31-00-860-019

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

**F/O Electrical System Panel, P6-2**

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT



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LOM 412, 415, 423, 424, 450-452

SUBTASK 49-31-00-860-057

- (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>
A	12	C00633	AUX POWER UNIT FUEL BOOST PUMP

**LOM ALL**

SUBTASK 49-31-00-010-008

- (4) To open the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.
- (b) Open the three latches.  
*NOTE:* Use this sequence: forward latch, aft latch, middle latch.
- (c) Open the APU Cowl Door, 315A.
- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

**G. Procedure**

SUBTASK 49-31-00-720-001

- (1) Do the flow check for the APU fuel supply:

*NOTE:* If you must use the fuel boost pumps in the center tank, you must have a maintenance person or observer in the flight compartment to continuously monitor the LOW PRESSURE lights. Turn the applicable fuel boost pump to the OFF position if the LOW PRESSURE light for the center tank stays on.

- (a) Make sure that the CTR L FUEL PUMP switch [1], No. 1 FWD FUEL PUMP switch [4] and No. 1 AFT FUEL PUMP switch [5] are in the OFF position.
- (b) Make sure that the CROSS FEED valve switch [2] is in the CLOSED position.
- (c) Put the 10 gallon (38 l) fuel resistant container, STD-200 under the fuel supply tube [7].



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

- (d) Disconnect the fuel supply tube [7] from the fitting [6] on the 1088 bulkhead.
- (e) Drain the fuel from the fuel supply tube [7] into the 10 gallon (38 l) fuel resistant container, STD-200.
- (f) Install a plug on the fuel supply tube [7].

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- (g) Connect a fuel hose to the fitting [6] on the 1088 bulkhead.
- (h) Put the other end of the fuel hose in the 10 gallon (38 l) fuel resistant container, STD-200.
- (i) Supply external electrical power to the airplane. To supply it, do this task: Supply External Power, TASK 24-22-00-860-813.
- (j) Remove the safety tags and close these circuit breakers:

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

**LOM 412, 415, 423, 424, 450-452**

- (k) 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	12	C00633	AUX POWER UNIT FUEL BOOST PUMP

**LOM ALL**

- (l) Set the No. 1 AFT FUEL PUMP switch [5] or No. 1 FWD FUEL PUMP switch [4] to the ON position.
- (m) Remove the DO-NOT-OPERATE tag from the APU master switch [3].



WHEN YOU SET THE APU MASTER SWITCH TO THE ON POSITION,  
FUEL AND AIR WILL START TO FLOW INTO THE CONTAINER. THE  
FUEL FLOW CAN BE MORE THAN THREE GALLONS FOR EACH  
MINUTE (11.4 LITERS FOR EACH MINUTE). BE CAREFUL THAT YOU DO  
NOT SPILL FUEL FROM THE CONTAINER. DAMAGE TO EQUIPMENT  
CAN OCCUR.

- (n) Set the APU master switch [3] to the ON position.  
**NOTE:** Do not set the APU master switch [3] to the START position. It is not necessary to start the APU for this fuel flow check.
- (o) Do these steps to monitor the fuel flow to make sure that there is sufficient fuel to the APU fuel system:
  - 1) Make sure that the fuel flows into the 10 gallon (38 l) fuel resistant container, STD-200.
  - 2) After two minutes, set the APU master switch [3] to the OFF position.
  - 3) Make sure that the fuel flow stops in less than 10 seconds.
  - 4) If the fuel flow does not stop in less than 10 seconds, refer to the applicable operational test procedure for the APU fuel shutoff valve in the AMM FUEL, CHAPTER 28.
  - 5) If the fuel flow stops in less than 10 seconds, the APU fuel shutoff valve is satisfactory.

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- 6) Open these circuit breakers and install safety tags:

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

**LOM 412, 415, 423, 424, 450-452**

- 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>
A	12	C00633	AUX POWER UNIT FUEL BOOST PUMP

**LOM ALL**

- 8) Set the No. 1 AFT FUEL PUMP switch [5] or No. 1 FWD FUEL PUMP switch [4] to the OFF position.
  - 9) Measure the fuel in the 10 gallon (38 l) fuel resistant container, STD-200.
  - 10) If there is less than three gallons (11.4 liters) in the 10 gallon (38 l) fuel resistant container, STD-200, refer to the applicable troubleshooting procedure for the APU fuel distribution system in the FIM chapter 28.
  - 11) If there is more than three gallons (11.4 liters) in the 10 gallon (38 l) fuel resistant container, STD-200, the APU fuel system is satisfactory.
- (p) Disconnect the fuel hose from the fitting [6] on the 1088 bulkhead.
- (q) Remove the fuel hose and 10 gallon (38 l) fuel resistant container, STD-200.
- (r) Remove the plug from the fuel supply tube [7].
- (s) If Christo-lube MCG111 grease, D50011 is not used on the fitting [6], do these steps:
  - 1) Apply a thin layer of aircraft turbine engine oil, D50055 on the threads of the fitting [6].
  - 2) Connect the fuel supply tube [7] to the fitting [6] on the 1088 bulkhead.
    - a) Tighten to 470 in-lb (53 N·m)-510 in-lb (58 N·m).
- (t) If Christo-lube MCG111 grease, D50011 is used on the fitting [6], do these steps:
  - 1) Lubricate the external threads of the fitting [6] with Christo-lube MCG111 grease, D50011.
- NOTE: The grease should be applied to the external threads only. The grease should not be applied to the internal threads or sealing surface of the fitting [6].
- 2) Connect the fuel supply tube [7] to the fitting [6] on the 1088 bulkhead.
    - a) Tighten to 266 in-lb (30 N·m)-294 in-lb (33 N·m).
- (u) Remove external electrical power from the airplane, if it is not necessary. To remove it, do this task: Remove External Power, TASK 24-22-00-860-814.

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**LOM ALL**

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**H. Put the Airplane Back to Its Usual Condition**

SUBTASK 49-31-00-860-021

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

**LOM 412, 415, 423, 424, 450-452**

SUBTASK 49-31-00-860-072

- (2) 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	12	C00633	AUX POWER UNIT FUEL BOOST PUMP

**LOM ALL**

SUBTASK 49-31-00-860-012

- (3) Remove the DO-NOT-OPERATE tag from the APU master switch [3].

SUBTASK 49-31-00-410-002

- (4) To close the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

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**FUEL CONTROL UNIT - REMOVAL/INSTALLATION**

**1. General**

- A. This procedure has these tasks:
  - (1) A removal of the fuel control unit
  - (2) An installation of the fuel control unit.
- B. The fuel control unit is installed on the lube module. You can get access to the fuel control unit through the APU cowl door.

**TASK 49-31-11-000-801**

**2. Fuel Control Unit Removal**

(Figure 401)

**A. Tools/Equipment**

<b>Reference</b>	<b>Description</b>
STD-858	Tag - DO NOT OPERATE
STD-4049	Container - Fuel Resistant, 1 Gallon (4 Liter)

**B. Location Zones**

<b>Zone</b>	<b>Area</b>
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**C. Access Panels**

<b>Number</b>	<b>Name/Location</b>
315A	APU Cowl Door

**D. Prepare for the Removal**

**SUBTASK 49-31-11-860-001**

- (1) Make sure that the APU master switch, on the P5 forward overhead panel, is in the OFF position and install a DO NOT OPERATE tag, STD-858.

**SUBTASK 49-31-11-860-002**

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

**F/O Electrical System Panel, P6-2**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
A	14	C00033	AUX POWER UNIT CONT

**SUBTASK 49-31-11-010-003**

- (3) To open the access panel, do these steps:

**Number**      **Name/Location**

315A      APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowling) under the center latch.

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- (b) Open the three latches.  
**NOTE:** Use this sequence: forward latch, aft latch, middle latch.
- (c) Open the APU Cowl Door, 315A.
- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

## E. Fuel Control Unit Removal

SUBTASK 49-31-11-020-001

- (1) Disconnect the electrical connector [14] (P22) from the fuel control unit [3].

SUBTASK 49-31-11-020-003

- (2) Do these steps to disconnect the manifold supply tube [7], supply tube for IGV actuator and surge control [8], return tube for IGV actuator and surge control [9], and fuel drain tube [10] from the fuel control unit [3]:



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

- (a) Put the 1 gallon (4 l) fuel resistant container, STD-4049, below the fuel control unit [3].
- (b) Loosen the three bolts [11] that attach the bracket [6] to the fuel control unit [3].
- (c) Disconnect the manifold supply tube [7] from the fuel control unit [3].
  - 1) Remove and discard the two packings [13].
- (d) Disconnect the supply tube for IGV actuator and surge control [8] from the fuel control unit [3].
  - 1) Remove and discard the two packings [13].
- (e) Disconnect the return tube for IGV actuator and surge control [9] from the fuel control unit [3].
  - 1) Remove and discard the two packings [13].
- (f) Disconnect the fuel drain tube [10] from the fuel control unit [3].
  - 1) Remove and discard the two packings [12].
- (g) Drain the fuel from the manifold supply tube [7], supply tube for IGV actuator and surge control [8], return tube for IGV actuator and surge control [9], and fuel drain tube [10] into the 1 gallon (4 l) fuel resistant container, STD-4049.
- (h) Install the caps on the manifold supply tube [7], supply tube for IGV actuator and surge control [8], return tube for IGV actuator and surge control [9], and fuel drain tube [10].

SUBTASK 49-31-11-020-005

- (3) Do these steps to disconnect the fuel supply tube [2]:

- (a) Loosen the nut [15] that attaches the fuel supply tube [2] to the fuel control unit [3].

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- (b) Turn the tube retainer on the fuel supply tube [2] counterclockwise until the flange disengages from the stud.
- (c) Remove the fuel supply tube [2] from the fuel control unit [3].
- (d) Remove the two packings [16] from the fuel control unit [3].
  - 1) Discard the two packings [16].
- (e) Drain the fuel from the fuel supply tube [2] into the 1 gallon (4 l) fuel resistant container, STD-4049.
- (f) Install a cap on the fuel supply tube [2].

SUBTASK 49-31-11-020-004

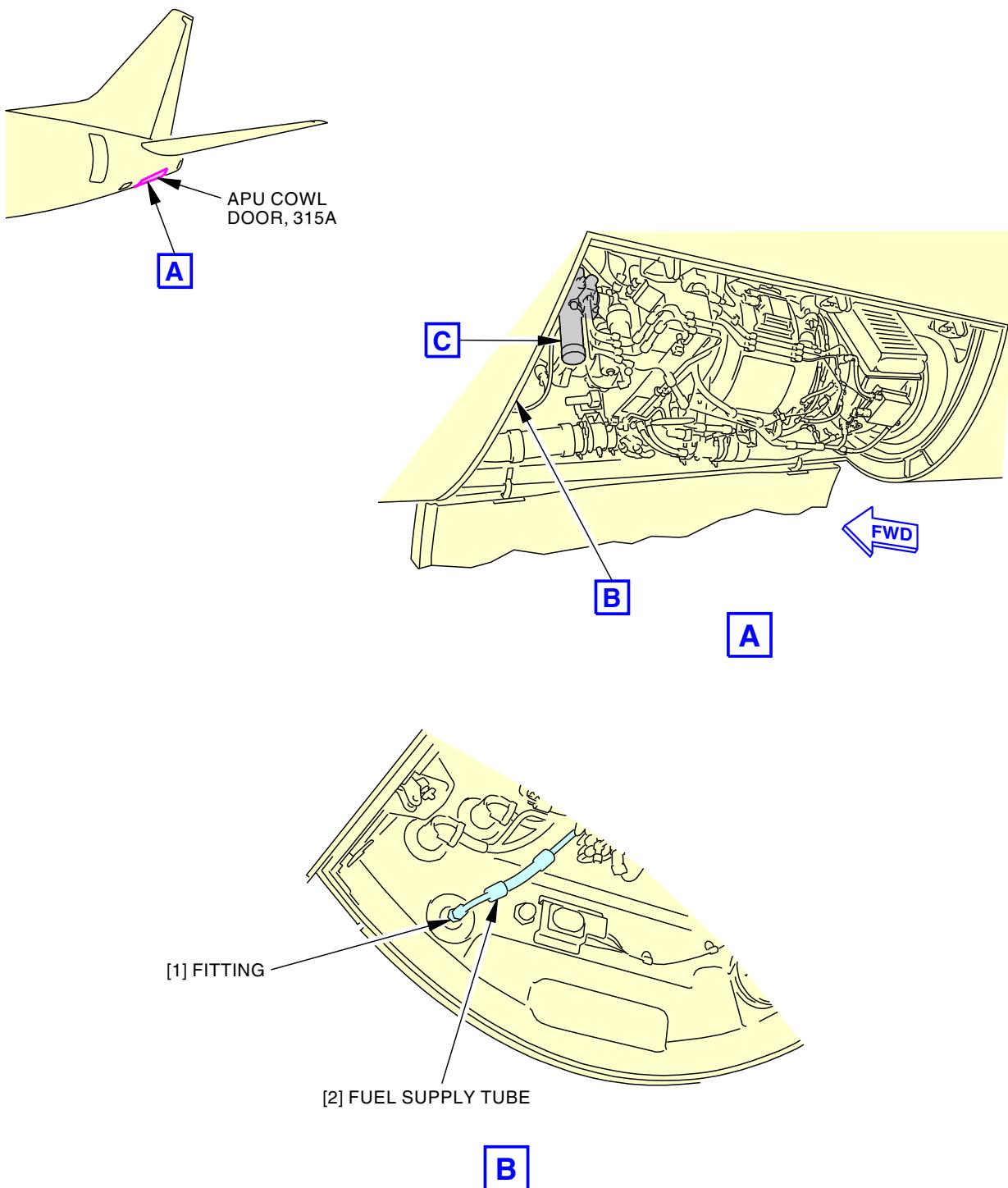
- (4) Do these steps to remove the fuel control unit [3]:
  - (a) Remove the coupling clamp [5] that attaches the fuel control unit [3] to the lube module.
  - (b) Remove the fuel control unit [3].
  - (c) Make sure that the lube module coupling shaft [18] and retainer [19] remain installed with the lube module.
  - (d) Remove the packing [4] from the fuel control unit [3].
    - 1) Discard the packing [4].
  - (e) Make sure that you install all necessary protection covers.
  - (f) Remove the 1 gallon (4 l) fuel resistant container, STD-4049.

———— END OF TASK ————

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**BOEING**  
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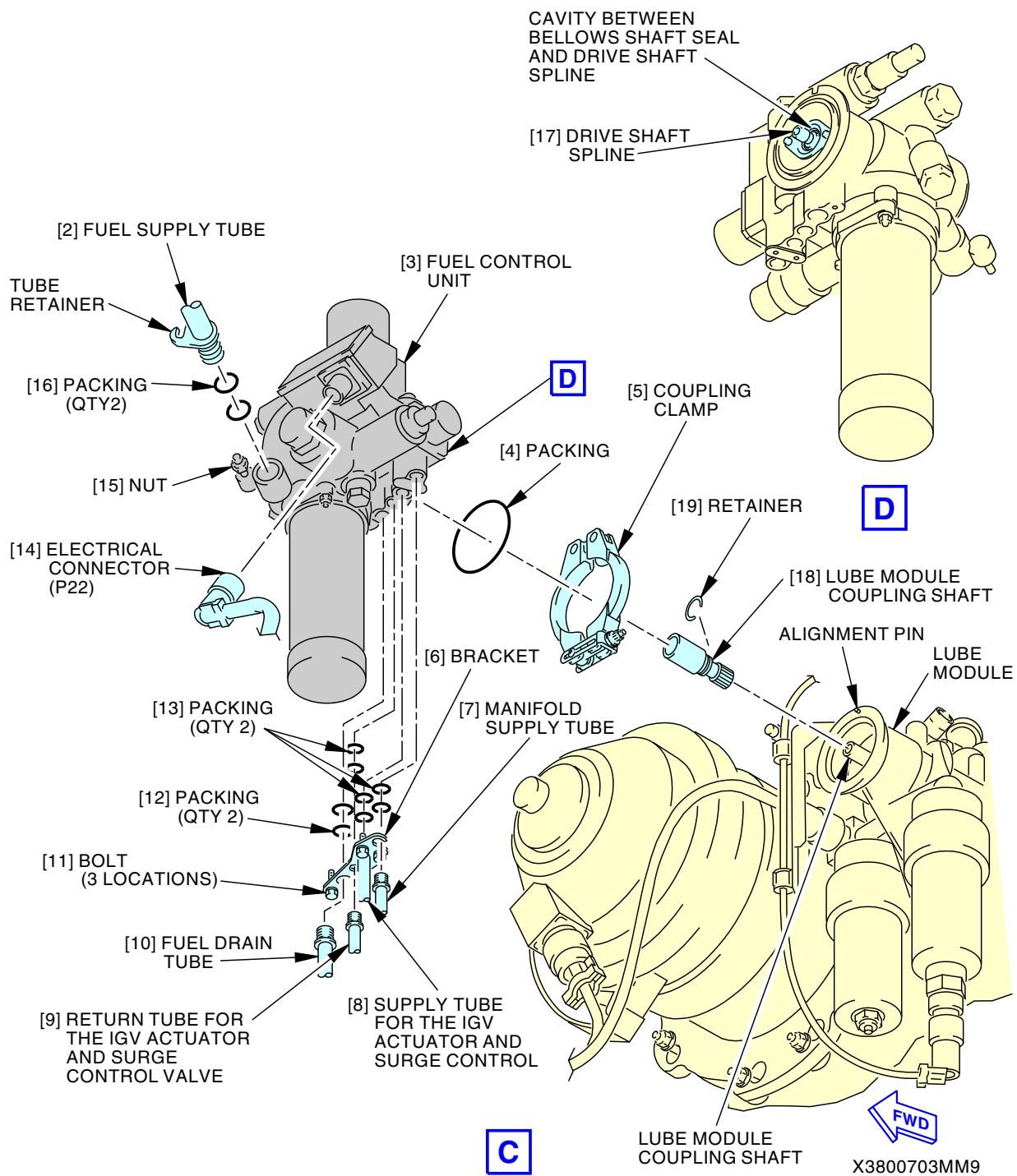


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**Fuel Control Unit Installation**  
**Figure 401/49-31-11-990-801 (Sheet 1 of 2)**

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**Fuel Control Unit Installation**  
**Figure 401/49-31-11-990-801 (Sheet 2 of 2)**

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ECCN 9E991 BOEING PROPRIETARY - See title page for details

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**TASK 49-31-11-400-801**

**3. Fuel Control Unit Installation**

(Figure 401)

**A. References**

Reference	Title
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)
49-61-00-700-801	APU BITE Procedure (P/B 201)

**B. Tools/Equipment**

Reference	Description
STD-858	Tag - DO NOT OPERATE
STD-2616	Dropper - Medicine, Conventional for adding equal drops of catalyst or curing agents to sealants and potting materials

**C. Consumable Materials**

Reference	Description	Specification
D00341	Lubricant - Polyphenyl Ether, Vacuum Pump - Santovac 5	
D00504	Grease - Petrolatum	VV-P-236
D50055	Oil - Aircraft Turbine Engine Oil for AE 131-9[B] APU (AMM 12-13-31/301)	
G02272	Fuel - Turbine, Aviation (Grades JP-4, JP-5, JP-5/JP-8ST)	MIL-DTL-5624
G51056	Fuel - Standard Specification For Aviation Turbine Fuels (Jet A And Jet A-1)	ASTM D1655

**D. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Fuel supply tube	49-31-11-02-030	LOM ALL
3	Fuel control unit	49-31-11-02-035	LOM ALL
4	Packing	49-31-11-02-005	LOM ALL
12	Packing	49-31-11-02-025	LOM ALL
13	Packing	49-31-11-02-020	LOM ALL
15	Nut	49-31-11-02-027	LOM ALL
16	Packing	49-31-11-02-015	LOM ALL

**E. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**F. Access Panels**

Number	Name/Location
315A	APU Cowl Door



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G. Fuel Control Unit Installation

SUBTASK 49-31-11-420-002



**CAUTION**  
REMOVE ANY INSTALLED PROTECTION COVERS FROM THE OPENINGS.  
IF YOU DO NOT REMOVE THE PROTECTION COVERS, DAMAGE TO THE  
APU CAN OCCUR.

- (1) Do these steps to install the fuel control unit [3]:
  - (a) Remove the protective covers from the openings, as necessary.
  - (b) Make sure that the lube module coupling shaft [18] and retainer [19] are installed with the lube module.
  - (c) Lubricate the new packing [4] with a light coat of Santovac 5 lubricant, D00341, or grease, D00504.
  - (d) Install the packing [4] on the fuel control unit [3].
  - (e) Put the coupling clamp [5] on the lube module.
    - 1) Do not tighten the coupling clamp [5].



**WARNING**  
DO NOT LET THE OIL STAY ON YOUR SKIN. YOU CAN ABSORB  
POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.



**CAUTION**  
MAKE SURE THAT YOU LUBRICATE THE BELLows SHAFT SEAL OF  
THE FUEL CONTROL UNIT WITH OIL. THE BELLows SHAFT SEAL LIFE  
CAN DECREASE WITHOUT OIL.

- (f) Lubricate the fuel control unit [3].
  - 1) Make sure that the drive shaft spline [17] of the fuel control unit [3] points up.
  - 2) Use the medicine dropper, STD-2616, to apply 40 drops or 2 cc of the aircraft turbine engine oil, D50055, to the cavity between the drive shaft spline [17] and the bellows shaft seal of the fuel control unit [3].
  - 3) Use the medicine dropper, STD-2616, to apply three or four drops of the aircraft turbine engine oil, D50055, on the drive shaft spline [17] of the fuel control unit [3].



**CAUTION**  
YOU MUST HOLD THE FUEL CONTROL UNIT WHILE YOU INSTALL THE COUPLING CLAMP. IF YOU DO NOT HOLD THE FUEL CONTROL UNIT, IT CAN BEND THE DRIVE SHAFT IN THE LUBE MODULE. IT CAN ALSO FALL AND BECOME DAMAGED.

- (g) Carefully put the fuel control unit [3] in its position on the lube module.

NOTE: The fuel control unit [3] weighs approximately 7 lb (3 kg).

- 1) Open the coupling clamp [5] to permit the hole on the fuel control unit [3] to engage the alignment pin on the lube module flange.
  - 2) Make sure that the alignment pin on the lube module is aligned and engages the hole on the fuel control unit [3].
- (h) Put the coupling clamp [5] over the flanges of the fuel control unit [3] and the lube module.

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LOM ALL

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- 1) Tighten the part number 234-591-3030 coupling clamp [5] to  $60 \pm 5$  in-lb (6.78  $\pm 0.56$  N·m).
- 2) Tighten the part number 234-511-9059 coupling clamp [5] to 20 in-lb (2.26 N·m).

SUBTASK 49-31-11-420-003

- (2) Do these steps to connect the four supply, return and drain tubes manifold supply tube [7], supply tube for IGV actuator and surge control [8], return tube for IGV actuator and surge control [9], and fuel drain tube [10] to the fuel control unit [3]:
  - (a) Remove the caps from the four tubes manifold supply tube [7], supply tube for IGV actuator and surge control [8], return tube for IGV actuator and surge control [9], and fuel drain tube [10].
  - (b) Lubricate the two new packings [12] and six new packings [13] for the two supply and return tubes supply tube for IGV actuator and surge control [8], return tube for IGV actuator and surge control [9] for the IGV actuator and surge control valve, fuel drain tube [10] and manifold supply tube [7] with a light coat of Santovac 5 lubricant, D00341, or grease, D00504.
  - (c) Install the two packings [12] on the fuel drain tube [10].
  - (d) Install the four packings [13] on the two supply and return tubes supply tube for IGV actuator and surge control [8], return tube for IGV actuator and surge control [9] for the IGV actuator and surge control valve.
  - (e) Install the two packings [13] on the manifold supply tube [7].
  - (f) Connect the four tubes manifold supply tube [7], supply tube for IGV actuator and surge control [8], return tube for IGV actuator and surge control [9], fuel drain tube [10] with the bracket [6] to the fuel control unit [3].
  - (g) Tighten the three bolts [11] that attach the bracket [6] to the fuel control unit [3] to 50 in-lb (6 N·m).
  - (h) Make sure that the four tubes manifold supply tube [7], supply tube for IGV actuator and surge control [8], return tube for IGV actuator and surge control [9], and fuel drain tube [10] are installed in the clamps.

SUBTASK 49-31-11-420-001



**CAUTION** MAKE SURE THAT YOU REMOVE THE PROTECTIVE COVERS AND PLUGS IMMEDIATELY BEFORE YOU INSTALL THE COMPONENT. IF YOU DO NOT REMOVE THE COVERS AND PLUGS, DAMAGE TO THE ENGINE AND THE COMPONENT CAN OCCUR.

- (3) Do these steps to connect the fuel supply tube [2] to the fuel control unit [3]:
  - (a) If installed, remove and discard the shipping hardware (nut, washer, plug and packing) from the fuel supply tube [2] port.
  - (b) Lubricate the two new packings [16] with a light coat of fuel, G02272, or aviation turbine fuel, G51056.
  - (c) Install the two packings [16] on the fuel supply tube [2].

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OBEY THESE PRECAUTIONS. IF YOU IGNORE THESE PRECAUTIONS,  
DAMAGE TO EQUIPMENT WILL OCCUR.

- (d) Install the nut [15].

NOTE: Do not reinstall the shipping nut that was discarded. It is a different part number nut and can cause possible fuel leakage.

- (e) Connect the fuel supply tube [2] to the fuel control unit [3].  
(f) Turn the tube retainer on the fuel supply tube [2] clockwise until the flange fully engages the stud.  
(g) Tighten the nut [15] to 40 in-lb (5 N·m).

SUBTASK 49-31-11-420-005

- (4) Connect the electrical connector [14] (P22) to the fuel control unit [3].

## H. Fuel Control Unit Installation Test

SUBTASK 49-31-11-860-003

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

### F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

### F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-31-11-860-004

- (2) Remove the DO NOT OPERATE tag, STD-858, from the APU master switch, on the P5 forward overhead panel.

SUBTASK 49-31-11-740-001

- (3) Do the installation test for the fuel control unit.

- (a) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.

NOTE: It may be necessary to start the APU more than three times after you replace the fuel control unit. If you start the APU again, make sure that you obey the start duty cycle of three times during a 15 minute interval.

- (b) Operate the APU for a minimum of five minutes.

- (c) During the APU operation, examine the fuel control unit for signs of fuel leakage.

NOTE: A fuel leakage rate of 1 drop for each minute (0.04 cc for each minute) is permitted during an APU operation from the forward drain on the APU drain seal.

- (d) If you find more than the fuel leakage rate, then do these steps to repair the leakage:

- 1) Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

- 2) Install the DO NOT OPERATE tag, STD-858, to the APU master switch, on the P5 forward overhead panel.

- 3) Repair the cause of the fuel leakage.

- 4) Remove the DO NOT OPERATE tag, STD-858, from the APU master switch, on the P5 forward overhead panel.

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- 5) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
- 6) During the APU operation, examine the fuel control unit for signs of fuel leakage.
- 7) If you find more than the fuel leakage rate, then do the leakage repair again.
- (e) Do this task: APU BITE Procedure, TASK 49-61-00-700-801.
  - 1) If maintenance message(s) show for the APU fuel system or the fuel control unit, refer to the applicable Maintenance Message Index in the FIM.
- (f) If it is not necessary to do other tasks, do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

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

SUBTASK 49-31-11-410-003

- (1) To close the access panel, do these steps:

**Number      Name/Location**

315A            APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the Auxiliary Power Unit (APU) compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

**NOTE:** Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————



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FUEL CONTROL UNIT - INSPECTION/CHECK

**1. General**

- A. This procedure contains scheduled maintenance task data.
- B. This procedure has the task to do an inspection of the fuel control unit and the five fuel tubes.

**TASK 49-31-11-200-801**

**2. Fuel Control Unit Inspection**

(Figure 601)

**A. References**

Reference	Title
49-31-11-000-801	Fuel Control Unit Removal (P/B 401)
49-31-11-400-801	Fuel Control Unit Installation (P/B 401)

**B. Location Zones**

Zone	Area
315	APU Compartment - Left
316	APU Compartment - Right

**C. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**D. Prepare for the Inspection**

SUBTASK 49-31-11-010-004

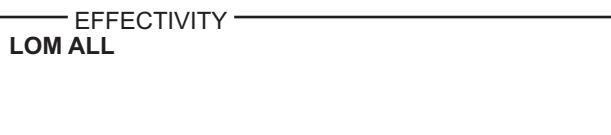
- (1) To open the access panel, do these steps:

Number	Name/Location
315A	APU Cowl Door
(a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.	
(b) Open the three latches.	
NOTE: Use this sequence: forward latch, aft latch, middle latch.	
(c) Open the APU Cowl Door, 315A.	
(d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.	
(e) Remove the retainer pin from the spring clip on the aft hold-open rod.	
(f) Disconnect the two hold-open rods from the two spring clips.	
(g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.	
(h) Install the two retainer pins in the two rod ends.	

**E. Procedure**

SUBTASK 49-31-11-210-001

- (1) Do these steps to inspect the fuel control unit [1] and the five fuel tubes [2]:
  - (a) Visually examine the fuel control unit [1] and the five fuel tubes [2] for tightness and damage.
  - (b) Visually examine the fuel control unit [1] and the five fuel tubes [2] for fuel leakage.



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- (c) Visually examine the fuel lines for general condition and security.
  - (d) If there are signs of fuel leakage from the fuel control unit [1] and/or the five fuel tubes [2], then replace the fuel control unit [1]. These are the tasks:
    - Fuel Control Unit Removal, TASK 49-31-11-000-801
    - Fuel Control Unit Installation, TASK 49-31-11-400-801
- NOTE: It is not necessary to replace the fuel control unit if one or more fuel tubes are damaged. If you replace the damaged fuel tube(s), make sure you do the installation test of the fuel control unit for signs of fuel leakage.
- (e) If there is no fuel leakage, then the fuel control unit [1] and the five fuel tubes [2] are satisfactory.

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

SUBTASK 49-31-11-410-004

- (1) To close the access panel, do these steps:

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

315A	APU Cowl Door
------	---------------

- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

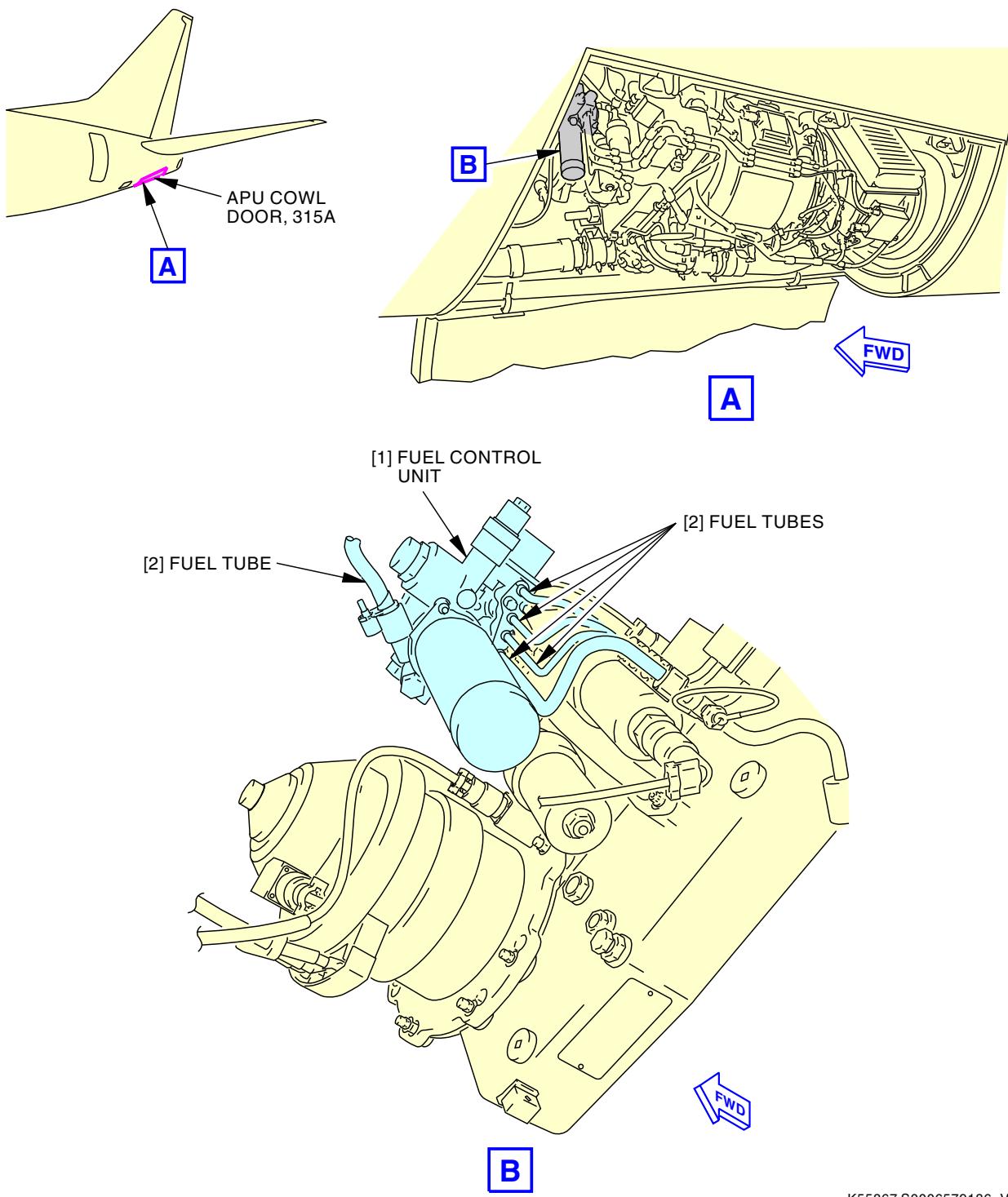
———— END OF TASK ————

EFFECTIVITY	LOM ALL
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**Fuel Control Unit Inspection**  
Figure 601/49-31-11-990-802

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FUEL NOZZLE - REMOVAL/INSTALLATION

**1. General**

- A. This procedure has these tasks:
  - (1) A removal of the fuel nozzle
  - (2) An installation of the fuel nozzle.
- B. Ten fuel nozzles are installed on the combustor housing.

**TASK 49-31-14-000-801**

**2. Fuel Nozzle Removal**

(Figure 401)

**A. Tools/Equipment**

Reference	Description
STD-4049	Container - Fuel Resistant, 1 Gallon (4 Liter)

**B. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Primary fuel manifold fitting	49-31-16-02-010	LOM ALL
2	Secondary fuel manifold fitting	49-31-16-02-005	LOM ALL
3	Shroud	49-31-14-02-030	LOM ALL
5	Bolt	49-31-14-02-010	LOM ALL
6	Plate	49-31-14-02-015	LOM ALL

**C. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**D. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**E. Prepare for the Removal**

SUBTASK 49-31-14-860-001

- (1) Make sure the Auxiliary Power Unit (APU) master switch on the P5 forward overhead panel is OFF and install a DO-NOT-OPERATE tag.

SUBTASK 49-31-14-860-002

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

**F/O Electrical System Panel, P6-2**

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT

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SUBTASK 49-31-14-010-002

- (3) To open the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Support the APU panel (cowl door) under the center latch.

- (b) Open the three latches.

NOTE: Use this sequence: forward latch, aft latch, middle latch.

- (c) Open the APU Cowl Door, 315A.

- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.

- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.

- (f) Disconnect the two hold-open rods from the two spring clips.

- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.

- (h) Install the two retainer pins in the two rod ends.

## F. Fuel Nozzle Removal

SUBTASK 49-31-14-020-002



DO NOT REMOVE ALL THE FUEL NOZZLES FROM THE COMBUSTOR HOUSING AT THE SAME TIME. YOU CAN REMOVE THE FUEL NOZZLE IF THERE ARE TWO ADJACENT FUEL NOZZLES. THE MAXIMUM NUMBER OF FUEL NOZZLES THAT YOU CAN REMOVE AT THE SAME TIME IS FIVE. IF YOU REMOVE ALL THE FUEL NOZZLES, THE COMBUSTOR LINER WILL NOT ALIGN WITH THE FUEL NOZZLES ON THE COMBUSTOR HOUSING.

- (1) Do these steps to remove the fuel nozzle [4]:

- (a) Put the 1 gallon (4 l) fuel resistant container, STD-4049 below the combustor housing.



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

- (b) Disconnect the primary fuel manifold fitting [1] and secondary fuel manifold fitting [2] from the fuel nozzle [4].
- (c) Drain the fuel from the primary fuel manifold fitting [1] and secondary fuel manifold fitting [2] into the 1 gallon (4 l) fuel resistant container, STD-4049.
- (d) Install the caps on the primary fuel manifold fitting [1] and secondary fuel manifold fitting [2].
- (e) Remove the two pins [7] and plate [6] from the two bolts [5].  
1) Discard the two pins [7].
- (f) Remove the two bolts [5] from the fuel nozzle [4].
- (g) Remove the fuel nozzle [4], gasket [8] and shroud [3] from the combustor housing.  
1) Discard the gasket [8].
- (h) Make sure that you install all necessary protection covers.

EFFECTIVITY  
LOM ALL

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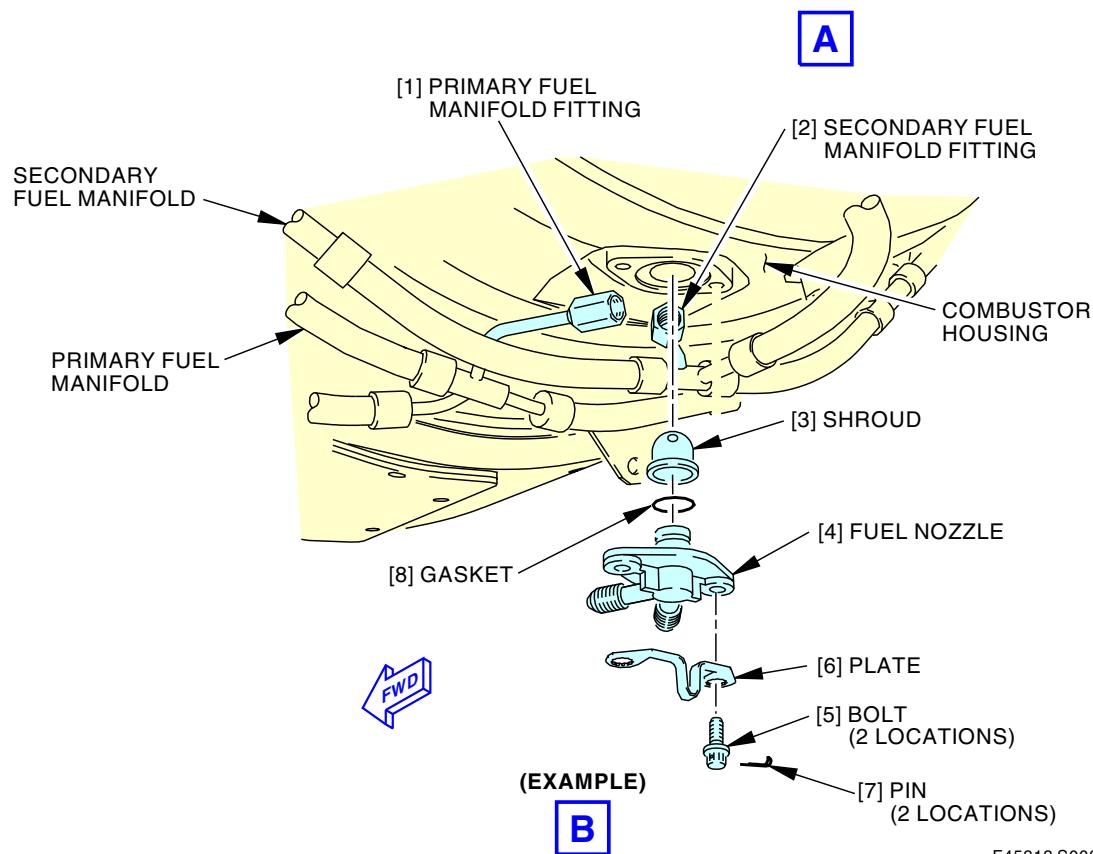
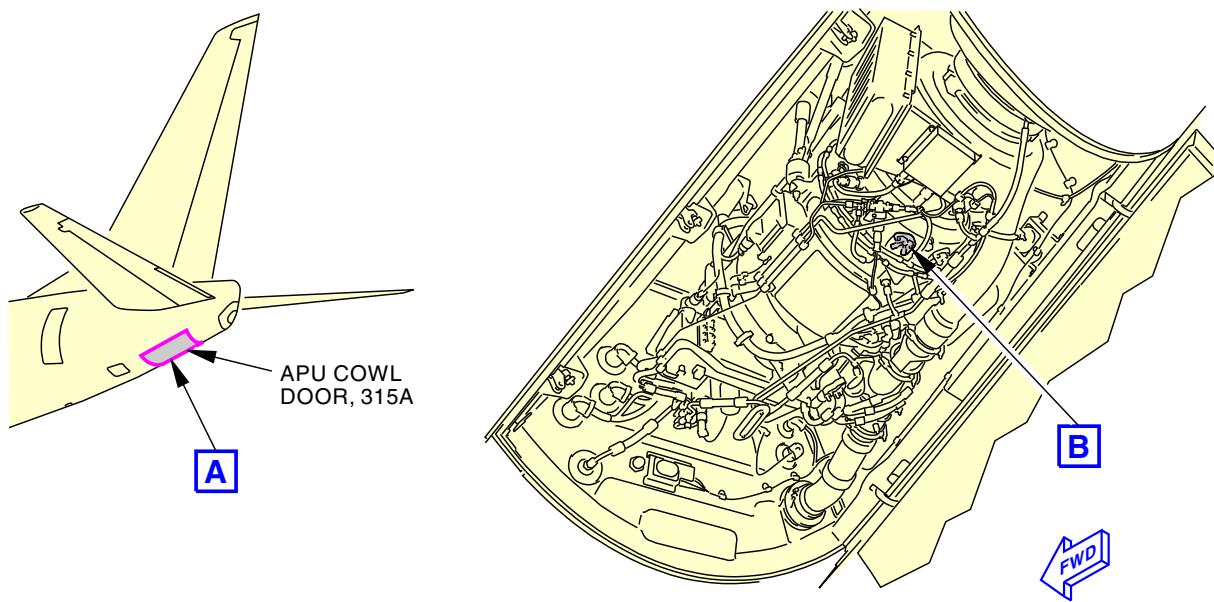
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- (i) Remove the 1 gallon (4 l) fuel resistant container, STD-4049.

———— END OF TASK ——

— EFFECTIVITY —  
**LOM ALL**

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**Fuel Nozzle Installation**  
**Figure 401/49-31-14-990-801**

EFFECTIVITY  
**LOM ALL**

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**TASK 49-31-14-400-801**

**3. Fuel Nozzle Installation**

(Figure 401)

**A. References**

Reference	Title
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)

**B. Consumable Materials**

Reference	Description	Specification
D00006	Compound - Antiseize, Pure Nickel Special - Never-Seez NSBT-8N/-16N	

**C. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
4	Fuel nozzle	49-31-14-02-020	LOM ALL
7	Pin	49-31-14-02-005	LOM ALL
8	Gasket	49-31-14-02-025	LOM ALL

**D. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**E. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**F. Procedure**

SUBTASK 49-31-14-420-002



**CAUTION** REMOVE THE PROTECTION COVERS FROM THE OPENINGS AS NECESSARY. IF YOU DO NOT REMOVE THE PROTECTION COVERS, DAMAGE TO THE APU CAN OCCUR.

- (1) Do these steps to install the fuel nozzle [4]:

- (a) Apply a thin layer of Pure Nickel Special compound, D00006 on the threads of the two bolts [5].



**CAUTION** MAKE SURE THAT THE HOLE IN THE SHROUD IS CENTERED OVER THE ALIGNMENT PIN ON THE FUEL NOZZLE. IF THE SHROUD IS NOT INSTALLED CORRECTLY ON THE FUEL NOZZLE, DAMAGE TO THE APU CAN OCCUR.

- (b) Install the shroud [3], gasket [8] and fuel nozzle [4] in the combustor housing with the two bolts [5].

NOTE: You install the gasket [8] on the fuel nozzle.

- 1) Tighten the two bolts [5] to 60 pound-inches (6.8 newton-meters).

- (c) Install the plate [6] on the two bolts [5].

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**LOM ALL**

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- (d) Install the two pins [7] in the two bolts [5] to attach the plate [6] to the two bolts.
- (e) Remove the caps from the two fittings [1], [2].
- (f) Connect the two fittings [1], [2] for the primary and secondary fuel manifolds to the fuel nozzle [4].
  - 1) Tighten the two fittings [1], [2] to 120 pound-inches (13.6 newton-meters).

**G. Fuel Nozzle Installation Test**

SUBTASK 49-31-14-860-003

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-31-14-860-004

- (2) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.

SUBTASK 49-31-14-790-001

- (3) Do the installation test for the fuel nozzle:

- (a) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.

NOTE: It may be necessary to start the APU more than three times after you replace the fuel nozzle. If you start the APU again, make sure you obey the start duty cycle of three times during a 15 minute interval.

- (b) Operate the APU for a minimum of five minutes.
  - (c) During the APU operation, examine the fuel nozzle for signs of fuel leakage.
  - (d) If you find fuel leakage, do these steps to repair the leakage:
    - 1) Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.
    - 2) Install a DO-NOT-OPERATE tag to the APU master switch on the P5 forward overhead panel.
    - 3) Repair the cause of the fuel leakage.
    - 4) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.
    - 5) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
    - 6) During the APU operation, examine the fuel nozzle for signs of fuel leakage.
    - 7) If you find fuel leakage, do the leakage repair again.
  - (e) If it is not necessary to do other tasks, do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

EFFECTIVITY  
LOM ALL

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**H. Put the Airplane Back to Its Usual Condition**

SUBTASK 49-31-14-410-002

- (1) To close the access panel, do these steps:

**Number**      **Name/Location**

315A      APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the Auxiliary Power Unit (APU) compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

EFFECTIVITY  
LOM ALL

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FUEL NOZZLE - INSPECTION/CHECK

**1. General**

- A. This procedure has the task to inspect the fuel nozzle. Ten fuel nozzles are installed on the combustor housing.

**TASK 49-31-14-200-801**

**2. Fuel Nozzle Inspection**

**A. References**

Reference	Title
49-31-14-000-801	Fuel Nozzle Removal (P/B 401)
49-31-14-400-801	Fuel Nozzle Installation (P/B 401)

**B. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**C. Procedure**

SUBTASK 49-31-14-020-001

- (1) Do this task: Fuel Nozzle Removal, TASK 49-31-14-000-801.

SUBTASK 49-31-14-210-001

- (2) Do these steps to inspect the fuel nozzle:
- Examine the two inlet fittings for the fuel nozzle for crossed, stripped and peened threads.
  - Examine the mounting flange for burrs and nicks.
  - Examine the fuel nozzle for burrs, nicks, scratches and carbon buildup.
  - Examine the fuel nozzle for blockage.
  - Examine the locating pin for damage.
  - If you find any of the above damage, replace the fuel nozzle.

SUBTASK 49-31-14-420-001

- (3) Do this task: Fuel Nozzle Installation, TASK 49-31-14-400-801.

———— END OF TASK ————







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FUEL FLOW DIVIDER - REMOVAL/INSTALLATION

**1. General**

- A. This procedure has these tasks:
  - (1) A removal of the fuel flow divider
  - (2) An installation of the fuel flow divider.
- B. The fuel flow divider is installed between the compressor inlet section and eductor housing at the 6 o'clock position.
- C. The flow divider solenoid is a part of the fuel flow divider.

**TASK 49-31-15-000-801**

**2. Fuel Flow Divider Removal**

(Figure 401)

**A. Tools/Equipment**

Reference	Description
STD-4049	Container - Fuel Resistant, 1 Gallon (4 Liter)

**B. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**C. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**D. Prepare for the Removal**

SUBTASK 49-31-15-860-001

- (1) Make sure the APU master switch on the P5 forward overhead panel is OFF and install a DO-NOT-OPERATE tag.

SUBTASK 49-31-15-860-002

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

**F/O Electrical System Panel, P6-2**

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-31-15-010-002

- (3) To open the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.

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LOM ALL

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- (b) Open the three latches.  
NOTE: Use this sequence: forward latch, aft latch, middle latch.
- (c) Open the APU Cowl Door, 315A.
- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

## E. Fuel Flow Divider Removal

SUBTASK 49-31-15-020-001

- (1) Disconnect the electrical connector (P23) [17] from the flow divider solenoid [16].

SUBTASK 49-31-15-020-002

- (2) Do these steps to disconnect the fuel supply tube and two fuel manifolds from the fuel flow divider [1]:
  - (a) Put the 1 gallon (4 l) fuel resistant container, STD-4049 below the fuel flow divider [1].



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

- (b) Disconnect the fitting for the fuel supply tube [3] from the fuel flow divider [1].
- (c) Disconnect the fitting for the primary fuel manifold [2] from the fuel flow divider [1].
- (d) Disconnect the fitting for the secondary fuel manifold [13] from the flow divider solenoid [16].
- (e) Drain the fuel from the three fittings [2], [3], [13] into the 1 gallon (4 l) fuel resistant container, STD-4049.
- (f) Install the caps on the three fittings [2], [3], [13].

SUBTASK 49-31-15-020-003

- (3) Do these steps to remove the fuel flow divider [1]:
  - (a) Remove the two nuts [10] and two bolts [7] that attach the two ground straps [9] to the flow divider solenoid [16].
  - (b) Remove the bolt [15] that attaches the clamp [14] to the bracket.
  - (c) Remove the fuel flow divider [1] and clamp [14].
  - (d) Remove the clamp [14].
  - (e) Make sure you install all necessary protection covers.
  - (f) Remove the 1 gallon (4 l) fuel resistant container, STD-4049.

SUBTASK 49-31-15-020-004

- (4) Do these steps to remove the flow divider solenoid [16]:

NOTE: It is necessary to remove the flow divider solenoid [16] if there is a problem with the fuel flow divider [1].

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**49-31-15**



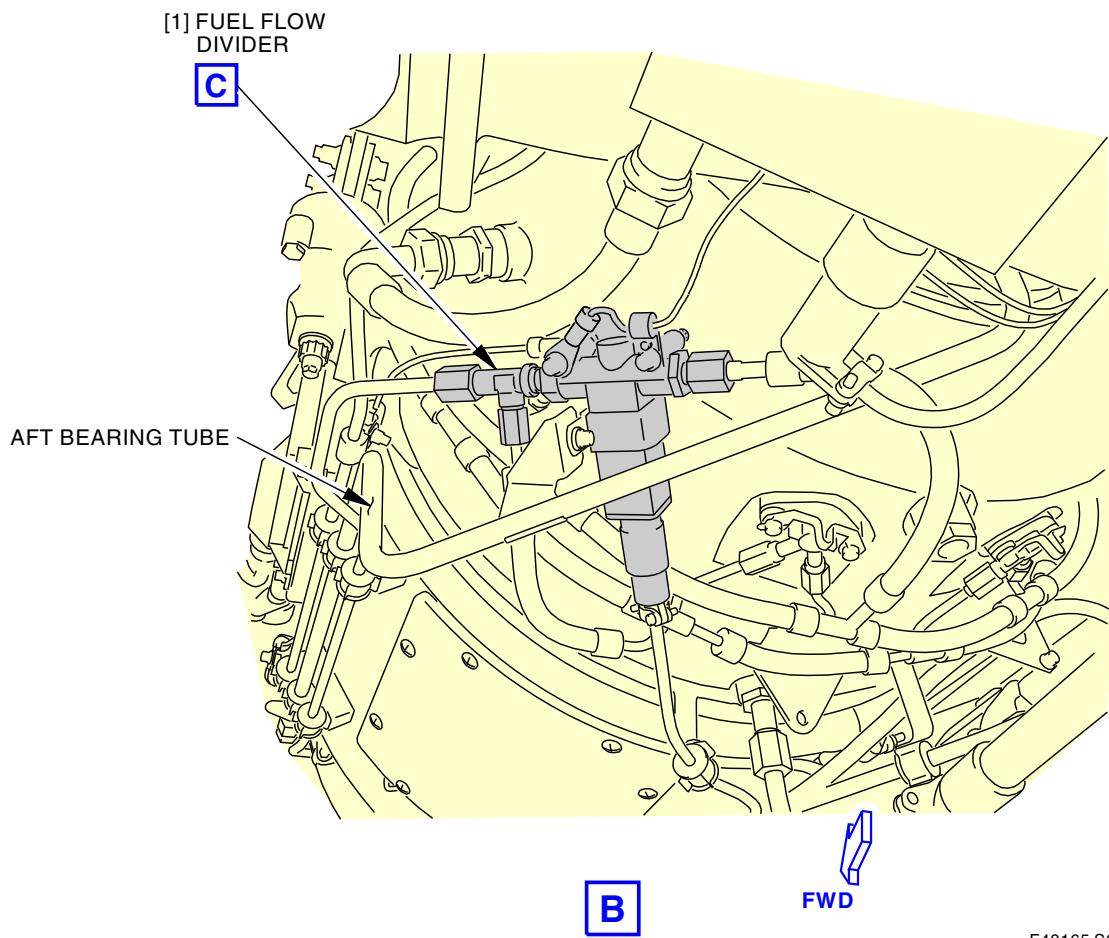
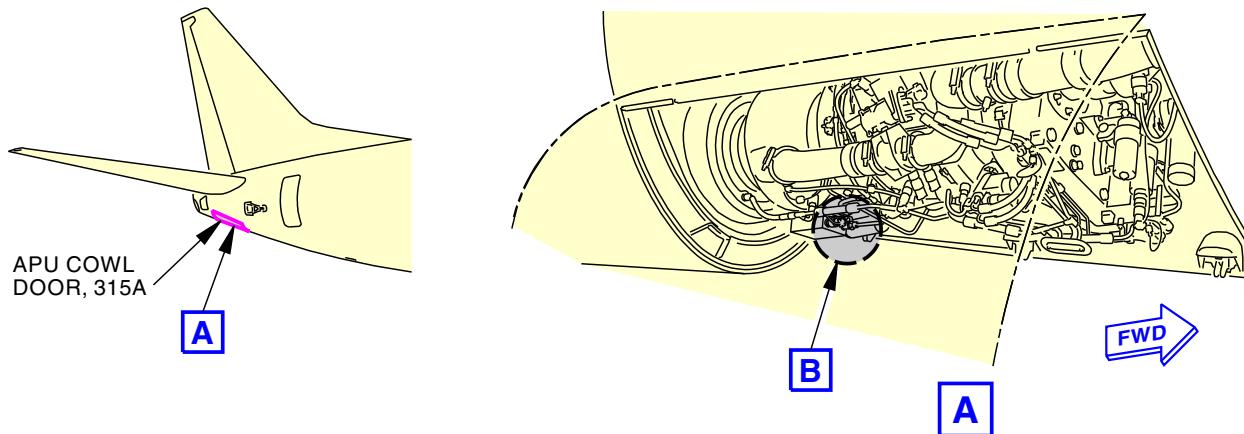
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- (a) Loosen the nut [4] until you can remove the fuel flow divider [1] from the flow divider solenoid [16].
- (b) Remove the flow divider solenoid [16].
- (c) Remove the nut [4], packing retainer [5] and packing [6].
  - 1) Discard the packing [6].
- (d) Remove the union [12] and packing [11] from the flow divider solenoid [16].
  - 1) Discard the packing [11].

———— END OF TASK ————

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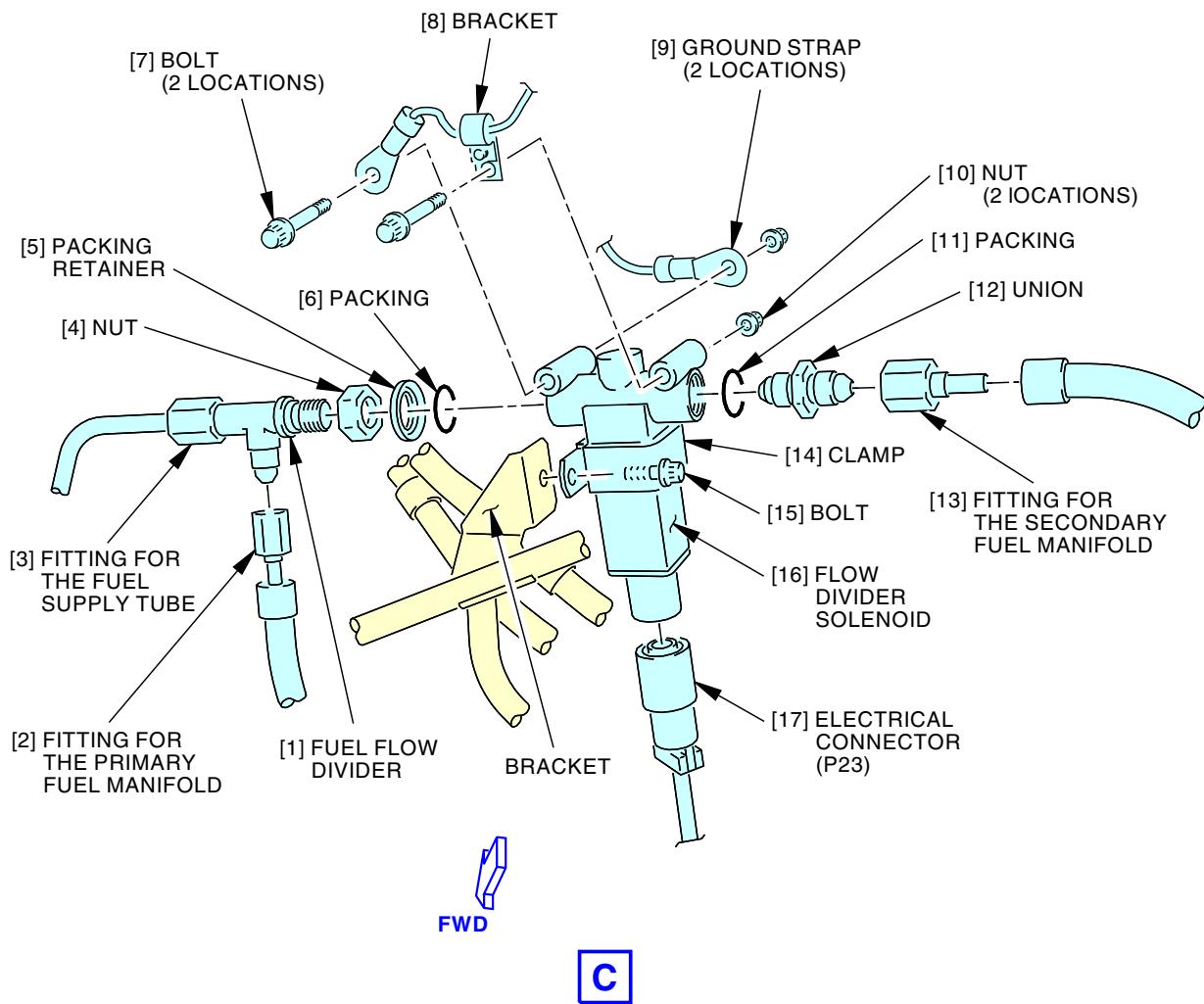
**Fuel Flow Divider Installation**  
**Figure 401/49-31-15-990-801 (Sheet 1 of 2)**

EFFECTIVITY  
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**Fuel Flow Divider Installation**  
**Figure 401/49-31-15-990-801 (Sheet 2 of 2)**

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**TASK 49-31-15-400-801**

**3. Fuel Flow Divider Installation**

(Figure 401)

**A. References**

Reference	Title
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)

**B. Consumable Materials**

Reference	Description	Specification
D00341	Lubricant - Polyphenyl Ether, Vacuum Pump - Santovac 5	
D00504	Grease - Petrolatum	VV-P-236

**C. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Fuel flow divider	49-31-15-02-030	LOM ALL
6	Packing	49-31-15-02-015	LOM ALL
11	Packing	49-31-15-02-015	LOM ALL
16	Flow divider solenoid	49-31-15-02-020	LOM ALL

**D. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**E. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**F. Procedure**

SUBTASK 49-31-15-420-001

- (1) If the flow divider solenoid [16] was removed from the fuel flow divider [1], install the flow divider solenoid:
  - (a) Lubricate the new packing [6] and new packing [11] for the flow divider solenoid [16] with a light coat of Santovac 5 lubricant, D00341 or grease, D00504.
  - (b) Put the packing [6] and packing retainer [5] in the flow divider solenoid [16].
  - (c) Install the nut [4] on the fuel flow divider [1].
  - (d) Install the fuel flow divider [1] with the nut [4] on the flow divider solenoid [16].  
NOTE: Do not tighten the nut at this time.
  - (e) Install the packing [11] on the union [12].
  - (f) Install the union [12] on the flow divider solenoid [16].
- 1) Tighten the union [12] to 140 pound-inches (15.8 newton-meters).



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SUBTASK 49-31-15-420-002



**CAUTION**

REMOVE THE PROTECTION COVERS FROM THE OPENINGS AS NECESSARY. IF YOU DO NOT REMOVE THE PROTECTION COVERS, DAMAGE TO THE APU CAN OCCUR.

- (2) Do these steps to install the fuel flow divider [1]:

- (a) Install the clamp [14] and flow divider solenoid [16] to the bracket with the bolt [15].  
NOTE: Do not tighten the bolt at this time.
- (b) Install the two ground straps [9] and bracket [8] to the flow divider solenoid [16] with the two bolts [7] and two nuts [10].
  - 1) Tighten the two bolts [7] to 60 pound-inches (6.8 newton-meters).

SUBTASK 49-31-15-420-003

- (3) Do these steps to connect the fuel supply tube and two fuel manifolds to the fuel flow divider [1]:

- (a) Remove the caps from the three fittings [2], [3], [13].
- (b) Connect the fitting for the primary fuel manifold [2] to the fuel flow divider [1].
- (c) Connect the fitting for the secondary fuel manifold [13] to the flow divider solenoid [16].
- (d) Connect the fitting for the fuel supply tube [3] to the fuel flow divider [1].
  - 1) Tighten the fitting [3] to 140 pound-inches (15.8 newton-meters).
- (e) Tighten the fitting for the primary fuel manifold [2] to 140 pound-inches (15.8 newton-meters).
- (f) Tighten the fitting for the secondary fuel manifold [13] to 140 pound-inches (15.8 newton-meters).
- (g) Tighten the bolt [15] on the clamp [14] to 50 pound-inches (5.6 newton-meters).
- (h) Tighten the nut [4] on the fuel flow divider [1] to 140 pound-inches (15.8 newton-meters).
- (i) Make sure the primary fuel manifold does not touch the aft bearing tube.

SUBTASK 49-31-15-420-004

- (4) Connect the electrical connector (P23) [17] to the flow divider solenoid [16].

## G. Fuel Flow Divider Installation Test

SUBTASK 49-31-15-860-003

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-31-15-860-004

- (2) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.

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SUBTASK 49-31-15-790-001

- (3) Do the installation test for the fuel flow divider:
  - (a) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
  - (b) Operate the APU for a minimum of five minutes.
  - (c) During the APU operation, examine the fuel flow divider for signs of fuel leakage.
  - (d) If you find fuel leakage, do these steps to repair the leakage:
    - 1) Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.
    - 2) Install a DO-NOT-OPERATE tag to the APU master switch on the P5 forward overhead panel.
    - 3) Repair the cause of the fuel leakage.
    - 4) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.
    - 5) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
    - 6) During the APU operation, examine the fuel flow divider for signs of fuel leakage.
    - 7) If you find fuel leakage, do the leakage repair again.
  - (e) If it is not necessary to do other tasks, do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

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

SUBTASK 49-31-15-410-002

- (1) To close the access panel, do these steps:

**Number**      **Name/Location**

315A            APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the Auxiliary Power Unit (APU) compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

EFFECTIVITY  
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FUEL MANIFOLD ASSEMBLY - REMOVAL/INSTALLATION

**1. General**

- A. This procedure has these tasks:
  - (1) A removal of the primary fuel manifold
  - (2) An installation of the primary fuel manifold
  - (3) A removal of the secondary fuel manifold
  - (4) An installation of the secondary fuel manifold.
- B. The fuel manifold assembly has two fuel manifolds on the APU. The primary and the secondary fuel manifolds are installed on the combustor housing.

**TASK 49-31-16-000-801**

**2. Primary Fuel Manifold Removal**

(Figure 401)

**A. Tools/Equipment**

<u>Reference</u>	<u>Description</u>
STD-4049	Container - Fuel Resistant, 1 Gallon (4 Liter)

**B. Location Zones**

<u>Zone</u>	<u>Area</u>
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**C. Access Panels**

<u>Number</u>	<u>Name/Location</u>
315A	APU Cowl Door

**D. Prepare for the Removal**

SUBTASK 49-31-16-860-001

- (1) Make sure the APU master switch on the P5 forward overhead panel is OFF and install a DO-NOT-OPERATE tag.

SUBTASK 49-31-16-860-002

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-31-16-010-004

- (3) To open the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.

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**AIRCRAFT MAINTENANCE MANUAL**

- (b) Open the three latches.  
**NOTE:** Use this sequence: forward latch, aft latch, middle latch.
- (c) Open the APU Cowl Door, 315A.
- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

**E. Primary Fuel Manifold Removal**

SUBTASK 49-31-16-020-001



**WARNING**

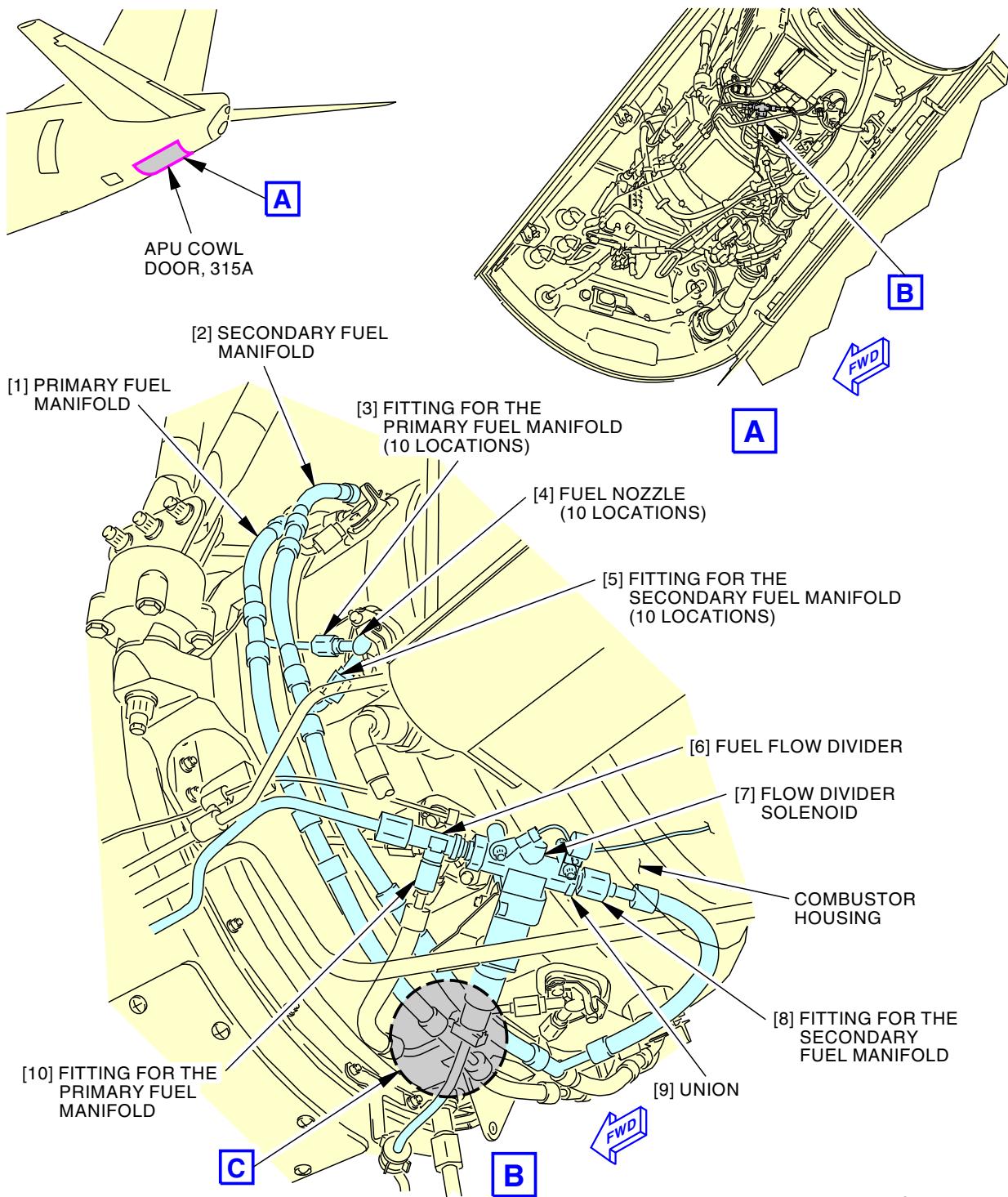
DO NOT TOUCH THE FUEL MANIFOLD ASSEMBLY IF THE APU IS HOT. THE FUEL MANIFOLD ASSEMBLY IS HOT AFTER THE APU IS OPERATED. HOT COMPONENTS CAN BURN YOU.

- (1) Do these steps to remove the primary fuel manifold [1]:
  - (a) Put the 1 gallon (4 l) fuel resistant container, STD-4049 below the combustor housing.  
  
  
**WARNING**  
DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.
  - (b) Disconnect the fitting for the primary fuel manifold [10] from the fuel flow divider [6].
  - (c) Disconnect the 10 fittings for the primary fuel manifold [3] from the 10 fuel nozzles [4].
  - (d) Drain the fuel from the 11 fittings [3], [10] into the 1 gallon (4 l) fuel resistant container, STD-4049.
  - (e) Install the caps on the 11 fittings [3], [10].
  - (f) Remove the primary fuel manifold [1].
  - (g) Make sure you install all necessary protection covers.
  - (h) Remove the 1 gallon (4 l) fuel resistant container, STD-4049.

— END OF TASK —

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**49-31-16**



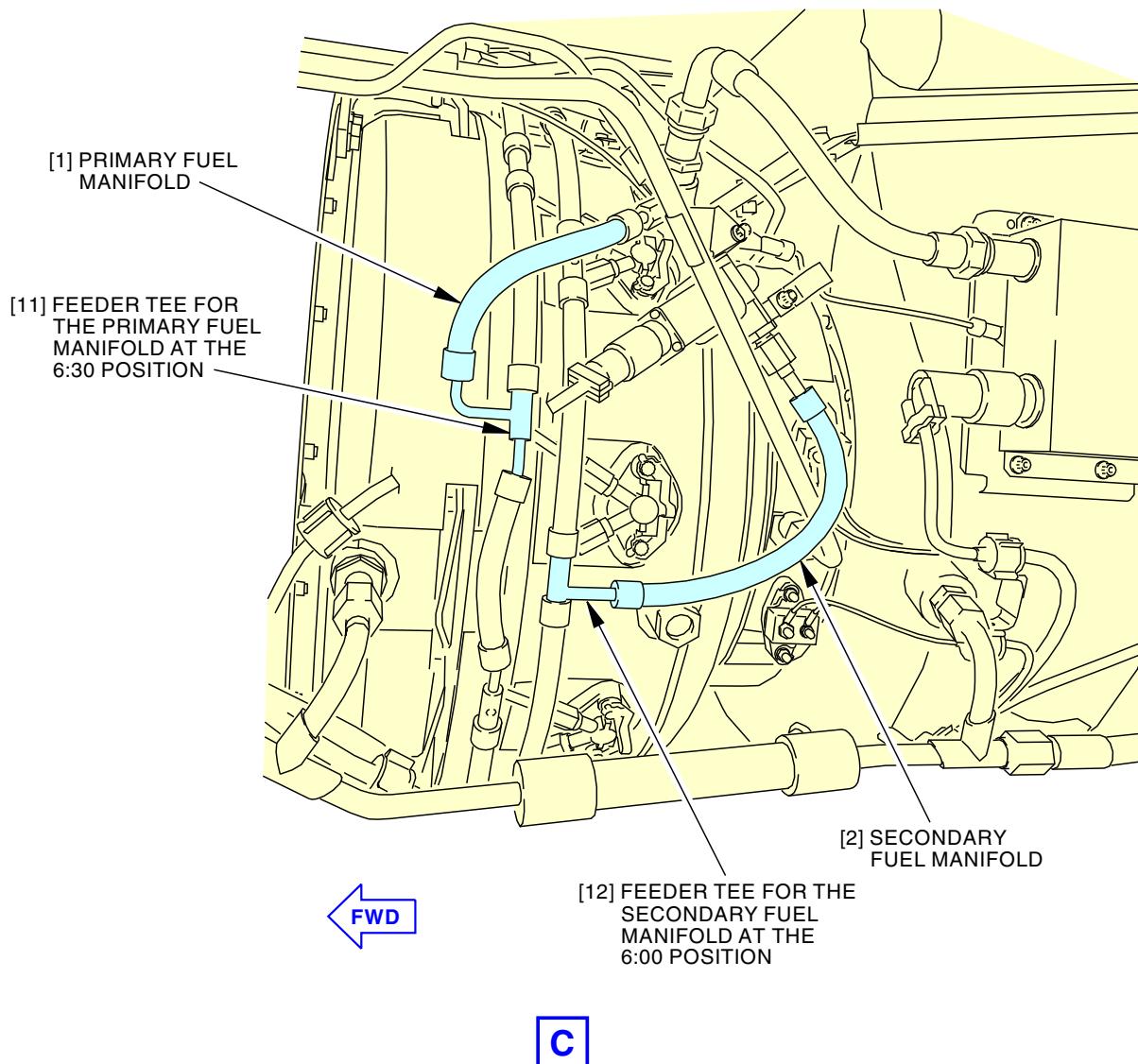
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**Fuel Manifold Assembly Installation**  
**Figure 401/49-31-16-990-801 (Sheet 1 of 2)**

EFFECTIVITY  
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**49-31-16**

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**Fuel Manifold Assembly Installation**  
Figure 401/49-31-16-990-801 (Sheet 2 of 2)

EFFECTIVITY  
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**TASK 49-31-16-400-801**

**3. Primary Fuel Manifold Installation**

(Figure 401)

**A. References**

Reference	Title
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)

**B. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Primary fuel manifold	49-31-16-02-010	LOM ALL

**C. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**D. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**E. Procedure**

SUBTASK 49-31-16-420-001



**CAUTION** REMOVE THE PROTECTION COVERS FROM THE OPENINGS AS NECESSARY. IF YOU DO NOT REMOVE THE PROTECTION COVERS, DAMAGE TO THE APU CAN OCCUR.

- (1) Do these steps to install the primary fuel manifold [1]:
  - (a) Look for the safety wire that holds the thermal blankets.

NOTE: Reference Honeywell SIL D200907000007 (safety wire chafing on the fuel manifold) to make sure the safety wire that holds the thermal blankets will not rub (chafe) the fuel manifold.

    - 1) If the safety wire chafes the fuel manifold in this location, then remove the wire as recommended in the SIL.
      - a) If the safety wire is not chafing the fuel manifold then it is not necessary to remove the safety wire.
    - (b) Remove the caps from the 11 fittings [3], [10].
    - (c) Install the primary fuel manifold [1] on the combustor housing.

NOTE: The feeder tee for the primary fuel manifold [1] must be at the 6:30 position.
    - (d) Connect the 10 fittings for the primary fuel manifold [3] to the 10 fuel nozzles [4].
      - 1) Tighten the 10 fittings [3] to 120 pound-inches (13.6 newton-meters).
    - (e) Connect the fitting for the primary fuel manifold [10] to the fuel flow divider [6].
      - 1) Tighten the fitting [10] to 140 pound-inches (15.8 newton-meters).

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LOM ALL

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**F. Primary Fuel Manifold Installation Test**

SUBTASK 49-31-16-860-003

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-31-16-860-004

- (2) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.

SUBTASK 49-31-16-790-001

- (3) Do the installation test for the primary fuel manifold:
  - (a) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
  - (b) Operate the APU for a minimum of five minutes.
  - (c) During the APU operation, examine the primary fuel manifold for signs of fuel leakage.
  - (d) If you find fuel leakage, do these steps to repair the leakage:
    - 1) Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.
    - 2) Install a DO-NOT-OPERATE tag to the APU master switch on the P5 forward overhead panel.
    - 3) Repair the cause of the fuel leakage.
    - 4) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.
    - 5) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
    - 6) During the APU operation, examine the primary fuel manifold for signs of fuel leakage.
    - 7) If you find fuel leakage, do the leakage repair again.
  - (e) If it is not necessary to do other tasks, do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

**G. Put the Airplane Back to Its Usual Condition**

SUBTASK 49-31-16-410-004

- (1) To close the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the Auxiliary Power Unit (APU) compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.

EFFECTIVITY  
LOM ALL

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(f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.

    1) Make sure that the installation of fire shield has not shifted.

    2) If it is necessary, hand form the insulation blanket to obtain a better clearance.

(g) Close the APU Cowl Door, 315A.

(h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

————— END OF TASK ————

**TASK 49-31-16-000-802**

**4. Secondary Fuel Manifold Removal**

(Figure 401)

**A. Tools/Equipment**

<b>Reference</b>	<b>Description</b>
STD-4049	Container - Fuel Resistant, 1 Gallon (4 Liter)

**B. Location Zones**

<b>Zone</b>	<b>Area</b>
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**C. Access Panels**

<b>Number</b>	<b>Name/Location</b>
315A	APU Cowl Door

**D. Prepare for the Removal**

SUBTASK 49-31-16-860-005

(1) Make sure the APU master switch on the P5 forward overhead panel is OFF and install a DO-NOT-OPERATE tag.

SUBTASK 49-31-16-860-006

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

**F/O Electrical System Panel, P6-2**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-31-16-010-003

(3) To open the access panel, do these steps:

**Number**      **Name/Location**

315A      APU Cowl Door

(a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.

— EFFECTIVITY —  
LOM ALL

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- (b) Open the three latches.  
**NOTE:** Use this sequence: forward latch, aft latch, middle latch.
- (c) Open the APU Cowl Door, 315A.
- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

**E. Secondary Fuel Manifold Removal**

SUBTASK 49-31-16-020-002



**WARNING**

DO NOT TOUCH THE FUEL MANIFOLD ASSEMBLY IF THE APU IS HOT. THE FUEL MANIFOLD ASSEMBLY IS HOT AFTER THE APU IS OPERATED. HOT COMPONENTS CAN BURN YOU.

- (1) Do these steps to remove the secondary fuel manifold [2]:
  - (a) Put the 1 gallon (4 l) fuel resistant container, STD-4049 below the combustor housing.



**WARNING**

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

- (b) Disconnect the fitting for the secondary fuel manifold [8] from the union [9] on the flow divider solenoid [7].
- (c) Disconnect the 10 fittings for the secondary fuel manifold [5] from the 10 fuel nozzles [4].
- (d) Drain the fuel from the 11 fittings [5], [8] into the 1 gallon (4 l) fuel resistant container, STD-4049.
- (e) Install the caps on the 11 fittings [5], [8].
- (f) Remove the secondary fuel manifold [2].
- (g) Make sure you install all necessary protection covers.
- (h) Remove the 1 gallon (4 l) fuel resistant container, STD-4049.

— END OF TASK —

**TASK 49-31-16-400-802**

**5. Secondary Fuel Manifold Installation**

(Figure 401)

**A. References**

Reference	Title
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)

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**B. Expendables/Parts**

<b>AMM Item</b>	<b>Description</b>	<b>AIPC Reference</b>	<b>AIPC Effectivity</b>
2	Secondary fuel manifold	49-31-16-02-005	LOM ALL

**C. Location Zones**

<b>Zone</b>	<b>Area</b>
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**D. Access Panels**

<b>Number</b>	<b>Name/Location</b>
315A	APU Cowl Door

**E. Procedure**

SUBTASK 49-31-16-420-002



**CAUTION** REMOVE THE PROTECTION COVERS FROM THE OPENINGS AS NECESSARY. IF YOU DO NOT REMOVE THE PROTECTION COVERS, DAMAGE TO THE APU CAN OCCUR.

- (1) Do these steps to install the secondary fuel manifold [2]:
  - (a) Remove the caps from the 11 fittings [5], [8].
  - (b) Install the secondary fuel manifold [2] on the combustor housing.  
NOTE: The feeder tee for the secondary fuel manifold [12] must be at the 6:00 position.
  - (c) Connect the 10 fittings for the secondary fuel manifold [5] to the 10 fuel nozzles [4].
    - 1) Tighten the 10 fittings [5] to 120 pound-inches (13.6 newton-meters).
  - (d) Connect the fitting for the secondary fuel manifold [8] to the union [9] on the flow divider solenoid [7].
    - 1) Tighten the fitting [8] to 140 pound-inches (15.8 newton-meters).

**F. Secondary Fuel Manifold Installation Test**

SUBTASK 49-31-16-860-007

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

**F/O Electrical System Panel, P6-2**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-31-16-860-008

- (2) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.

SUBTASK 49-31-16-790-002

- (3) Do the installation test for the secondary fuel manifold:
  - (a) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.

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- (b) Operate the APU for a minimum of five minutes.
- (c) During the APU operation, examine the secondary fuel manifold for signs of fuel leakage.
- (d) If you find fuel leakage, do these steps to repair the leakage:
  - 1) Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.
  - 2) Install a DO-NOT-OPERATE tag to the APU master switch on the P5 forward overhead panel.
  - 3) Repair the cause of the fuel leakage.
  - 4) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.
  - 5) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
  - 6) During the APU operation, examine the secondary fuel manifold for signs of fuel leakage.
  - 7) If you find fuel leakage, do the leakage repair again.
- (e) If it is not necessary to do other tasks, do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

**G. Put the Airplane Back to Its Usual Condition**

SUBTASK 49-31-16-410-003

- (1) To close the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the Auxiliary Power Unit (APU) compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

**NOTE:** Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

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INLET FUEL FILTER ELEMENT - REMOVAL/INSTALLATION

**1. General**

- A. This procedure has these tasks:
  - (1) A removal of the inlet fuel filter element
  - (2) An installation of the inlet fuel filter element.
- B. The inlet fuel filter element is referred to as the fuel filter element.
- C. The fuel filter element is installed on the fuel control unit. You can get access to the fuel filter element through the APU cowl door.

**TASK 49-31-21-000-801**

**2. Inlet Fuel Filter Element Removal**

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

**A. Tools/Equipment**

Reference	Description
STD-858	Tag - DO NOT OPERATE
STD-4049	Container - Fuel Resistant, 1 Gallon (4 Liter)

**B. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**C. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**D. Prepare for the Removal**

SUBTASK 49-31-21-860-005

- (1) Make sure that the APU master switch, on the P5 forward overhead panel, is in the OFF position.
  - (a) Install a DO NOT OPERATE tag, STD-858, on the APU master switch.

SUBTASK 49-31-21-860-006

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

**F/O Electrical System Panel, P6-2**

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT

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AIRCRAFT MAINTENANCE MANUAL

SUBTASK 49-31-21-010-003

- (3) To open the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.

- (b) Open the three latches.

NOTE: Use this sequence: forward latch, aft latch, middle latch.

- (c) Open the APU Cowl Door, 315A.

- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.

- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.

- (f) Disconnect the two hold-open rods from the two spring clips.

- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.

- (h) Install the two retainer pins in the two rod ends.

## E. Inlet Fuel Filter Element Removal

SUBTASK 49-31-21-020-002

- (1) Do these steps to remove the fuel filter element [3]:

- (a) Put the 1 gallon (4 l) fuel resistant container, STD-4049, below the fuel filter housing [1].



**WARNING**

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

- (b) Loosen the nuts [4] that attach the fuel filter housing [1] to the fuel control unit.

- (c) Turn the fuel filter housing [1] counterclockwise until the flange disengages from the two studs.

- (d) Remove the fuel filter housing [1].

- (e) Remove the packing [2] from the fuel filter housing [1].

- 1) Discard the packing [2].

- (f) Remove the fuel filter element [3].

- 1) Discard the fuel filter element [3] and packing [5].

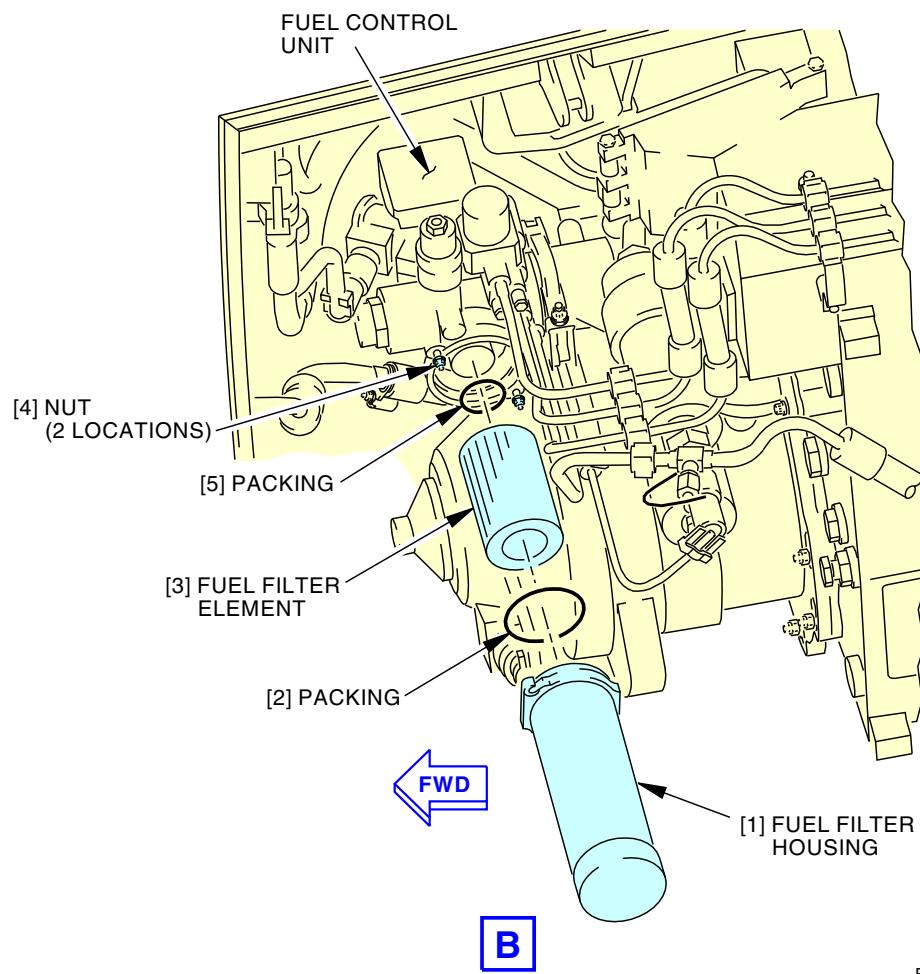
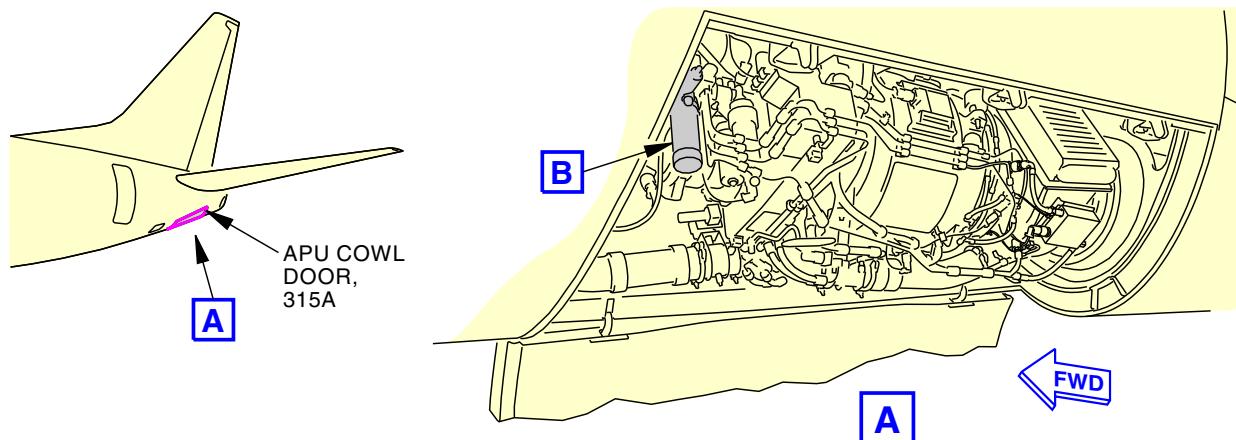
- (g) Make sure that you install all necessary protection covers.

- (h) Remove the 1 gallon (4 l) fuel resistant container, STD-4049.

———— END OF TASK ————

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**Inlet Fuel Filter Element Installation**  
**Figure 401/49-31-21-990-802**

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AIRCRAFT MAINTENANCE MANUAL

**TASK 49-31-21-400-801**

**3. Inlet Fuel Filter Element Installation**

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

**A. References**

Reference	Title
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)

**B. Tools/Equipment**

Reference	Description
STD-858	Tag - DO NOT OPERATE
STD-1057	Air Source - Regulated, Dry Filtered, Compressed 60-105 PSIG (414-723.9 KPa)(22 SCFM)

**C. Consumable Materials**

Reference	Description	Specification
B00130	Alcohol - Isopropyl	TT-I-735
D00341	Lubricant - Polyphenyl Ether, Vacuum Pump - Santovac 5	
D00504	Grease - Petrolatum	VV-P-236
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)

**D. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Packing	49-31-21-02-060	LOM ALL
3	Fuel filter element	49-31-21-02-065	LOM ALL
5	Packing	49-31-21-02-055	LOM ALL

**E. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**F. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**G. Inlet Fuel Filter Element Installation**

SUBTASK 49-31-21-110-001

(1) Do these steps to clean the fuel filter housing [1]:

(a) Clean the fuel filter housing [1] with alcohol, B00130, and cotton wiper, G00034.



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- (b) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057, to dry the fuel filter housing [1].

NOTE: It is recommended to use a pressure of 60 psig (413.7 kPa) - 90 psig (620.5 kPa) of air or nitrogen to dry the fuel filter housing.

SUBTASK 49-31-21-420-001



**CAUTION**

REMOVE THE PROTECTION COVERS FROM THE OPENINGS AS NECESSARY. IF YOU DO NOT REMOVE THE PROTECTION COVERS, DAMAGE TO THE APU CAN OCCUR.

- (2) Do these steps to install the fuel filter element [3]:

- (a) Lubricate the new packing [2] with a light coat of Santovac 5 lubricant, D00341, or grease, D00504.
- (b) Install the packing [2] on the fuel filter housing [1].
- (c) Lubricate the new packing [5] with a light coat of Santovac 5 lubricant, D00341, or grease, D00504.
- (d) Install the packing [5] on the fuel filter element [3].
- (e) Install the fuel filter element [3] in the fuel control unit.
- (f) Install the fuel filter housing [1] on the fuel control unit.
- (g) Turn the fuel filter housing [1] clockwise until the flange fully engages the two studs.
- (h) Tighten the nuts [4] to 40 in-lb (4.5 N·m).

## H. Inlet Fuel Filter Element Installation Test

SUBTASK 49-31-21-860-003

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

### F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

### F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-31-21-860-004

- (2) Remove the DO NOT OPERATE tag from the APU master switch, on the P5 forward overhead panel.

SUBTASK 49-31-21-790-001

- (3) Do the installation test for the fuel filter element [3]:

- (a) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.

NOTE: Air in the airplane fuel system and/or fuel filter housing can cause an APU BITE maintenance message 49-31171 to show on the Control Display Unit (CDU) display.

- 1) It can be necessary to start the Auxiliary Power Unit (APU) more than three times after you replace the fuel filter element [3].
  - a) If you start the APU again, make sure that you obey the start duty cycle of three times during a 15 minute interval.

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- (b) Operate the APU for a minimum of five minutes.
- (c) During the APU operation, examine the fuel filter housing [1] for signs of fuel leakage.
- (d) If you find fuel leakage, do these steps to repair the leakage:
  - 1) Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.
  - 2) Install a DO NOT OPERATE tag, STD-858, on the APU master switch, on the P5 forward overhead panel.
  - 3) Repair the cause of the fuel leakage.
  - 4) Remove the DO NOT OPERATE tag from the APU master switch, on the P5 forward overhead panel.
  - 5) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
  - 6) During the APU operation, examine the fuel filter housing [1] for signs of fuel leakage.
  - 7) If you find fuel leakage, do the leakage repair again.
- (e) If it is not necessary to do other tasks, do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

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

SUBTASK 49-31-21-410-002

- (1) To close the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

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AIRCRAFT MAINTENANCE MANUAL  
MASTER SWITCH - REMOVAL/INSTALLATION

**1. General**

- A. This procedure has these tasks:
- (1) A removal of the APU master switch
  - (2) An installation of the APU master switch.

**TASK 49-41-01-000-801**

**2. Master Switch Removal**

(Figure 401)

**A. General**

- (1) The task gives the instructions on how to remove the APU master switch, S248.
- (2) The APU master switch, S248 is located on the P5 forward overhead panel.

**B. Location Zones**

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

**C. Prepare for the Removal**

SUBTASK 49-41-01-860-001

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

**F/O Electrical System Panel, P6-4**

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT

- (2) Make sure that the master switch [1] is off.

**D. Master Switch Removal**

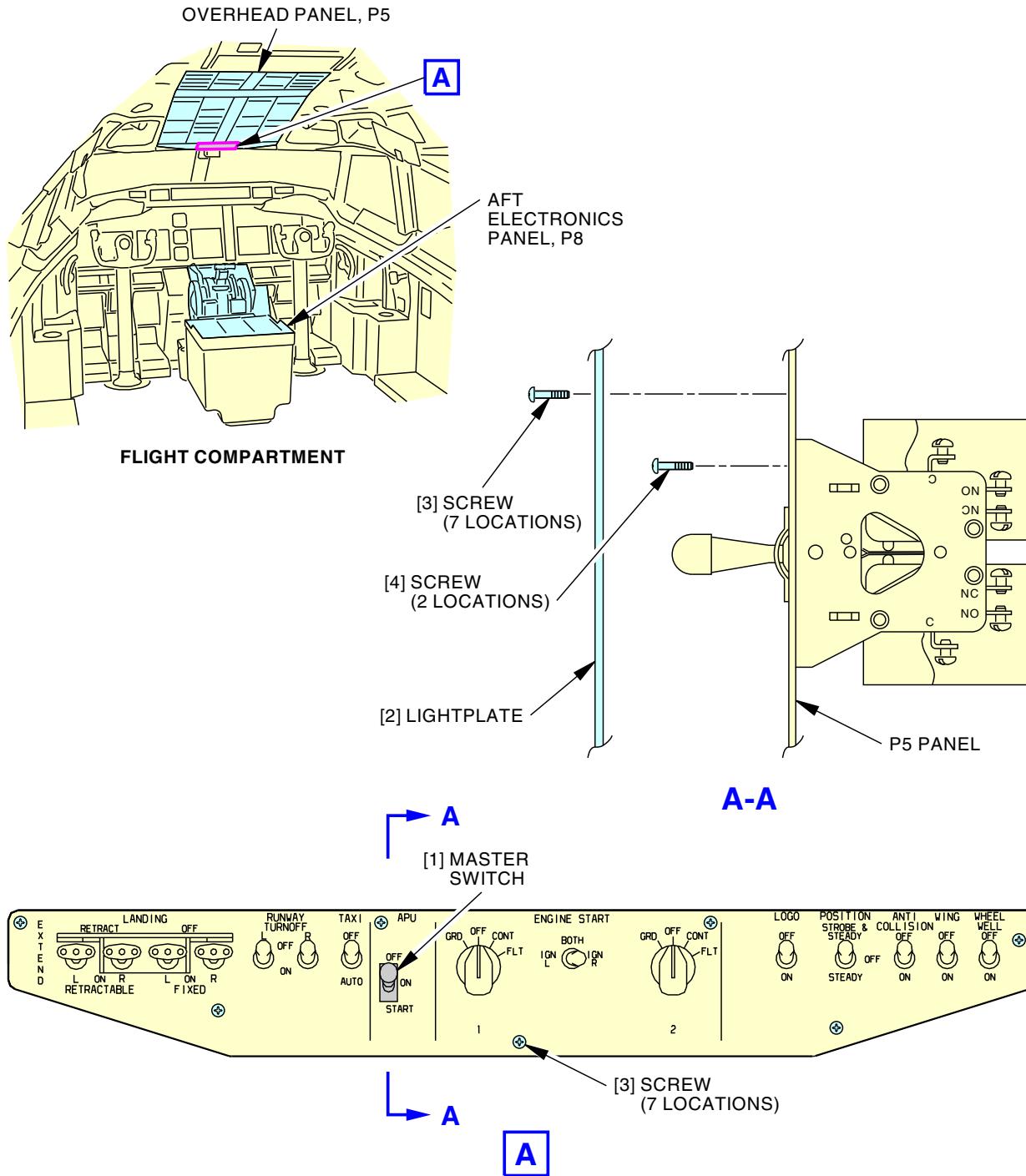
SUBTASK 49-41-01-020-001

- (1) Remove the master switch [1] as follows:
  - (a) Remove the screws [3] and knobs (if it is necessary) to remove the lightplate [2].
  - (b) Unlatch the P5 forward overhead panel and put it in the open position.
  - (c) Disconnect the applicable wires from the master switch [1].
    - 1) Remove each wire lug from the terminal.
  - (d) Remove the screws [4] from the master switch [1].
  - (e) Remove the master switch [1].

———— END OF TASK ————



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**APU Master Switch**  
**Figure 401/49-41-01-990-801**

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**TASK 49-41-01-400-801**

**3. Master Switch Installation**

(Figure 401)

**A. General**

- (1) The task gives the instructions on how to install the APU master switch, S248.
- (2) The APU master switch, S248 is located on the P5 forward overhead panel.

**B. References**

Reference	Title
20-10-34-120-801	Hand Clean Metal Surfaces with Abrasives (P/B 701)
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (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-614	Bonding Meters - Non-Intrinsically Safe (For use in outside Class I, Divisions I & II non-hazardous locations. For hazardous locations, use COM-1550). Part #: 247000 Supplier: 00426 Part #: 620LK Supplier: 1CRL2 Part #: BLR-0003-XX Supplier: KC432 Part #: BT51 Supplier: 00426 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659 Opt Part #: 247001 Supplier: 00426

**D. Consumable Materials**

Reference	Description	Specification
B50095	Solvent	BAC5750
G50262	Wiper - Cleaning	BMS15-5
G50590	Metallic Wool - Aluminum	

**E. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Master switch	49-61-00-01-015 49-61-52-01-050	LOM 402, 404, 406, 407 LOM 411, 412, 415, 416, 420, 422-434, 437-447, 450-999

**F. Location Zones**

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

**G. Prepare for the Installation**

SUBTASK 49-41-01-840-001

- (1) Prepare the mount surface of the aircraft structure.

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- (a) Do these steps to prepare one of the two screws locations for electrical bond.
  - 1) Using aluminum wool, G50590, abrasive clean a circular pattern around one screw hole (TASK 20-10-34-120-801).
  - 2) Using solvent, B50095, and wiper, G50262, wipe clean the mating surfaces.

**H. Master Switch Installation**

SUBTASK 49-41-01-420-001

- (1) Install the master switch [1] as follows:
  - (a) Put the master switch [1] in its position in the P5 forward overhead panel.
    - 1) Make sure that the master switch [1] is in the off position.
  - (b) Install the screws [4] into the master switch [1].
  - (c) Connect the applicable wires back to the master switch [1].
    - 1) Install each wire lug to its terminal.

SUBTASK 49-41-01-410-001

- (2) Install the lightplate [2] as follows:
  - (a) Put the lightplate [2] in the P5 forward overhead panel.
  - (b) Install the screws [3] and knobs (if it is necessary) to the lightplate [2].

SUBTASK 49-41-01-760-001

- (3) Do the bonding resistance check between the master switch [1] and P5 forward overhead panel.
  - (a) Use a non-intrinsically safe bonding meter, COM-614.
  - (b) Make sure that the bonding resistance is 0.0025 ohm (2.5 milliohms) or less.

SUBTASK 49-41-01-860-002

- (4) 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	14	C00033	AUX POWER UNIT CONT

**I. Master Switch Operational Test**

SUBTASK 49-41-01-860-003

- (1) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.

SUBTASK 49-41-01-860-004

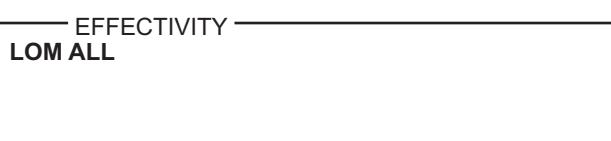
- (2) Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

**J. Put the Airplane Back to Its Usual Condition**

SUBTASK 49-41-01-410-002

- (1) Close and latch the P5 forward overhead panel.

———— END OF TASK ————



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STARTER-GENERATOR - REMOVAL/INSTALLATION

**1. General**

- A. This procedure has these tasks:
  - (1) A removal of the starter-generator
  - (2) An installation of the starter-generator.
- B. The starter-generator is installed on the front of the Auxiliary Power Unit (APU).

**TASK 49-41-21-000-801**

**2. Starter-Generator Removal**

(Figure 401)

**A. General**

- (1) The starter-generator is a brushless AC starter-generator and weights approximately 60 lb (27 kg).
- (2) It is a permanent-magnet generator, exciter generator and a main AC generator (all of that share a common shaft and housing).
- (3) The starter-generator is located on the upper right side of the Auxiliary Power Unit (APU) gearbox.

NOTE: Reference Honeywell SB 131-49-8084 (Replace the Starter/Generator, PN 28B545-7A, -7B, or -7C, with PN 28B545-9A) dated 27 July 2012 for detailed information (if applicable).

**B. References**

Reference	Title
49-52-13-000-801	Bleed Air Duct Removal (P/B 401)

**C. Tools/Equipment**

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

Reference	Description
COM-1563	Hoist - Fishpole, 500 lb Safe Working Limit (SWL) Part #: 10/4180 Supplier: K1425 Part #: IA5101-1 Supplier: 053H3 Part #: IA5101-501 Supplier: 053H3 Part #: IA5119-1 Supplier: 053H3 Part #: IA5119-501 Supplier: 053H3 Part #: PF51-003-1 Supplier: 1YRX6 Part #: PF51-009-1 Supplier: 1YRX6 Opt Part #: 10/3641 Supplier: K1425 Opt Part #: 10/3641C1 Supplier: K1425 Opt Part #: MINILIFT Supplier: K1425
COM-1592	Hoist - Fishpole, Chain, 1,000 lb Safe Working Limit (SWL) Part #: AP6108 Supplier: 4Y309
SPL-1626	Eye - Lifting, Generator Part #: A49002-2 Supplier: 81205
STD-203	Container - Oil Resistant, 1 U.S.-Gal (3.8 l)
STD-858	Tag - DO NOT OPERATE

EFFECTIVITY  
LOM ALL

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(Continued)

<b>Reference</b>	<b>Description</b>
STD-1081	Flashlight - Explosion Proof
STD-7394	Cap - Dust, Electrical Connector

**D. Location Zones**

<b>Zone</b>	<b>Area</b>
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**E. Access Panels**

<b>Number</b>	<b>Name/Location</b>
117A	Electronic Equipment Access Door
315A	APU Cowl Door

**F. Prepare for the Removal**

SUBTASK 49-41-21-010-004

- (1) To open the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Support the APU panel (cowl door) under the center latch.
- (b) Open the three latches.  
*NOTE:* Use this sequence: forward latch, aft latch, middle latch.
- (c) Open the APU Cowl Door, 315A.
- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

SUBTASK 49-41-21-860-006

- (2) Make sure that the APU master switch, on the P5 forward overhead panel, is OFF and install a DO NOT OPERATE tag, STD-858.

SUBTASK 49-41-21-020-001

- (3) Optional: do this task: Bleed Air Duct Removal, TASK 49-52-13-000-801.

SUBTASK 49-41-21-860-001

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

**F/O Electrical System Panel, P6-4**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
A	14	C00033	AUX POWER UNIT CONT

EFFECTIVITY  
LOM ALL

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(Continued)

**F/O Electrical System Panel, P6-4**

Row   Col   Number   Name

LOM 465-999; LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464 PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B      14      C01424      AUX POWER UNIT SCU FAN POWER

**LOM ALL**

This circuit breaker is inoperative and should remain open:

**F/O Electrical System Panel, P6-4**

Row   Col   Number   Name

LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464 POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B      14      C01424      AUX POWER UNIT SCU FAN POWER (INOP)

**LOM ALL**

SUBTASK 49-41-21-010-002

- (5) Open this access door:

Number   Name/Location

117A      Electronic Equipment Access Door

SUBTASK 49-41-21-860-004



**WARNING**

WHEN YOU OPEN THE P91 AND P92 PANELS, MAKE SURE THAT THE OUTER DOOR STAYS AS OPEN AS POSSIBLE. IF THE OUTER DOOR TURNS IN, THE ATTACHED DOOR COMPONENTS COULD TOUCH THE INNER DOOR COMPONENTS. THIS CAN CAUSE AN ARC CONDITION WHEN YOU SUPPLY POWER. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT AND INJURY TO PERSONNEL CAN OCCUR.



**WARNING**

DO NOT TOUCH THE CONDUCTORS IN THE P91 AND P92 PANELS. BE CAREFUL WHEN YOU GET ACCESS TO THE CIRCUIT BREAKERS ON THE INNER SIDE OF THE P91 AND P92 PANELS (ROW F). IF IT IS POSSIBLE, REMOVE AIRPLANE ELECTRICAL POWER FIRST. THE P91 AND P92 PANELS HAVE HIGH VOLTAGES AND CURRENTS. ELECTRICAL VOLTAGE AND CURRENT CAN KILL YOU OR CAUSE INJURIES.

- (6) Open this circuit breaker and install safety tag:

**Power Distribution Panel Number 1, P91**

Row   Col   Number   Name

A      11      C01336      APU START CONV

**G. Starter-Generator Removal**

SUBTASK 49-41-21-020-002



**WARNING**

DO NOT TOUCH THE COMPONENTS OF THE OIL SYSTEM IF THE APU IS HOT. THESE COMPONENTS STAY HOTTER THAN OTHER COMPONENTS. HOT COMPONENTS CAN BURN YOU.

- (1) Do these steps to disconnect the electrical connector (P5) [2] and electrical connector (P6) [3]:  
(a) Disconnect the electrical connector (P5) [2] from the starter-generator [1].

EFFECTIVITY  
**LOM ALL**

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- (b) Disconnect the electrical connector (P6) [3] from the starter-generator [1].
- (c) Install dust caps, STD-7394, on the electrical connectors to prevent contamination.

SUBTASK 49-41-21-020-003

- (2) Do these steps to disconnect the terminal lug (N) [6], terminal lug (T3) [8], terminal lug (T2) [9], and terminal lug (T1) [10]:
  - (a) Disengage the terminal block cover [12] from the four pins on the starter-generator [1].
  - (b) Remove the terminal block cover [12].
  - (c) Remove the nuts [4] from the four terminal studs.
  - (d) Disconnect the terminal lug (T1) [10], terminal lug (T2) [9], terminal lug (T3) [8], and terminal lug (N) [6] from the four terminal studs.

NOTE: The terminal strip and the fanning strip [7] show the identification of the terminal studs for terminal lug (T1) [10], terminal lug (T2) [9], terminal lug (T3) [8], and terminal lug (N) [6]. The fanning strip [7] does not need to be removed in order to remove the starter-generator.

SUBTASK 49-41-21-020-004



**WARNING**

BE CAREFUL WHEN YOU MOVE THE COMPONENT. THE COMPONENT IS HEAVY. INJURIES TO PERSONS CAN OCCUR.

- (3) Do these steps to remove the starter-generator [1] from the APU:
  - (a) Put the 1 U.S.-gal (3.81 l) oil resistant container, STD-203, below the starter-generator [1].
  - (b) Loosen seven of the eight nuts [11] that attach the starter-generator [1] to the APU.  
NOTE: The starter-generator weighs approximately 60 lb (27 kg).  
NOTE: Keep one of the top nuts [11] tight to help you with the removal of the starter-generator.



**CAUTION**

MAKE SURE THAT YOU DO THE INSPECTION OF THE STARTER-GENERATOR LIFT FITTING. A DAMAGED LIFT FITTING CAN CAUSE INCORRECT SUPPORT OF THE STARTER-GENERATOR. THIS CAN CAUSE DAMAGE TO THE STARTER-GENERATOR.

- (c) Visually examine the starter-generator lift fitting [14] with an explosion proof flashlight, STD-1081, to make sure that there are no signs of cracks or elongations.



**WARNING**

MAKE SURE THAT THE FISHPOLE HOIST IS IN A SERVICEABLE CONDITION. MAKE SURE THAT THERE ARE NO SIGNS OF DAMAGE ON THE CABLES OR CHAINS. IF THERE IS DAMAGE, INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT CAN OCCUR.

EFFECTIVITY  
LOM ALL

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(WARNING PRECEDES)



MAKE SURE THE CABLE OF THE FISHPOLE HOIST IS EQUALLY WOUND AROUND THE DRUM BEFORE YOU USE THE FISHPOLE HOIST TO HOLD THE STARTER-GENERATOR. A CABLE THAT IS NOT EQUALLY WOUND CAN CAUSE THE STARTER-GENERATOR TO FALL SUDDENLY. THIS CAN CAUSE DAMAGE TO THE STARTER-GENERATOR.

- (d) Install the fishpole hoist [13] (fishpole hoist, COM-1563, or chain fishpole hoist, COM-1592) to the starter-generator [1]:
  - 1) Install the adapter [17] (generator lifting eye, SPL-1626) to the starter-generator boss [18].
  - 2) Install the fishpole hoist [13] to the starter-generator lift fitting [14].
    - a) Make sure that the pin of the fishpole hoist [13] is engaged in the starter-generator lift fitting [14].
  - 3) Extend the fishpole hoist [13] to a length that is easy to use.
  - 4) Unwind the cable or chain of the fishpole hoist [13] until the clevis fitting [15] is aligned with the adapter [17] (generator lifting eye, SPL-1626).
  - 5) Install the pin [16] in the clevis fitting [15] and adapter [17] (generator lifting eye, SPL-1626).
  - 6) Wind and tighten the cable or chain of the fishpole hoist [13].
- (e) Loosen the last nut [11] that attaches the starter-generator [1] to the APU.
- (f) Turn the starter-generator [1] clockwise until the eight nuts [11] disengage from the eight keyhole slots.

NOTE: It may be necessary to unwind the cable or chain of the fishpole hoist a sufficient amount to turn and move the starter-generator from the drive shaft.
- (g) Slowly move the starter-generator [1] away from the APU about 1.5 in. (38.1 mm) to disengage the drive shaft assembly [21] from the drive shaft.
- (h) Slowly unwind the cable or chain of the fishpole hoist [13] to lower the starter-generator [1] out of the APU compartment.
- (i) Remove the packing [20] from the drive shaft assembly [21].
  - 1) Discard the packing [20].
- (j) Install the nuts [4] on the four terminal studs.
- (k) Install the terminal block cover [12] on the starter-generator [1]:
  - 1) Put the terminal block cover [12] on the starter-generator [1].
  - 2) Engage the terminal block cover [12] to the four pins on the starter-generator [1].
- (l) Make sure that you install all necessary protection covers.
- (m) Remove the 1 U.S.-gal (3.81 l) oil resistant container, STD-203.

SUBTASK 49-41-21-080-001

- (4) Remove the fishpole hoist [13] (fishpole hoist, COM-1563, or chain fishpole hoist, COM-1592) from the starter-generator [1]:
  - (a) Remove the pin [16] from the clevis fitting [15] and adapter [17] (generator lifting eye, SPL-1626).
  - (b) Disconnect the clevis fitting [15] from the adapter [17] (generator lifting eye, SPL-1626).

EFFECTIVITY  
LOM ALL

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- (c) Remove the adapter [17] (generator lifting eye, SPL-1626) from the starter-generator boss [18].
- (d) If you do not install a new starter-generator [1] immediately, then remove the fishpole hoist [13]:
  - 1) Wind the cable or chain of the fishpole hoist [13].
  - 2) Disconnect the pin of the fishpole hoist [13] from the starter-generator lift fitting [14].
  - 3) Remove the fishpole hoist [13].

SUBTASK 49-41-21-020-005

- (5) Do these steps to remove the seal plate [19] for the starter-generator [1]:

NOTE: It is necessary to replace the seal plate [19] if you find signs of oil leakage around the starter-generator.

NOTE: It is permissible to continue to use the existing seal plate [19] if there are no signs of oil leakage around the starter-generator and no damage to the seal plate [19].

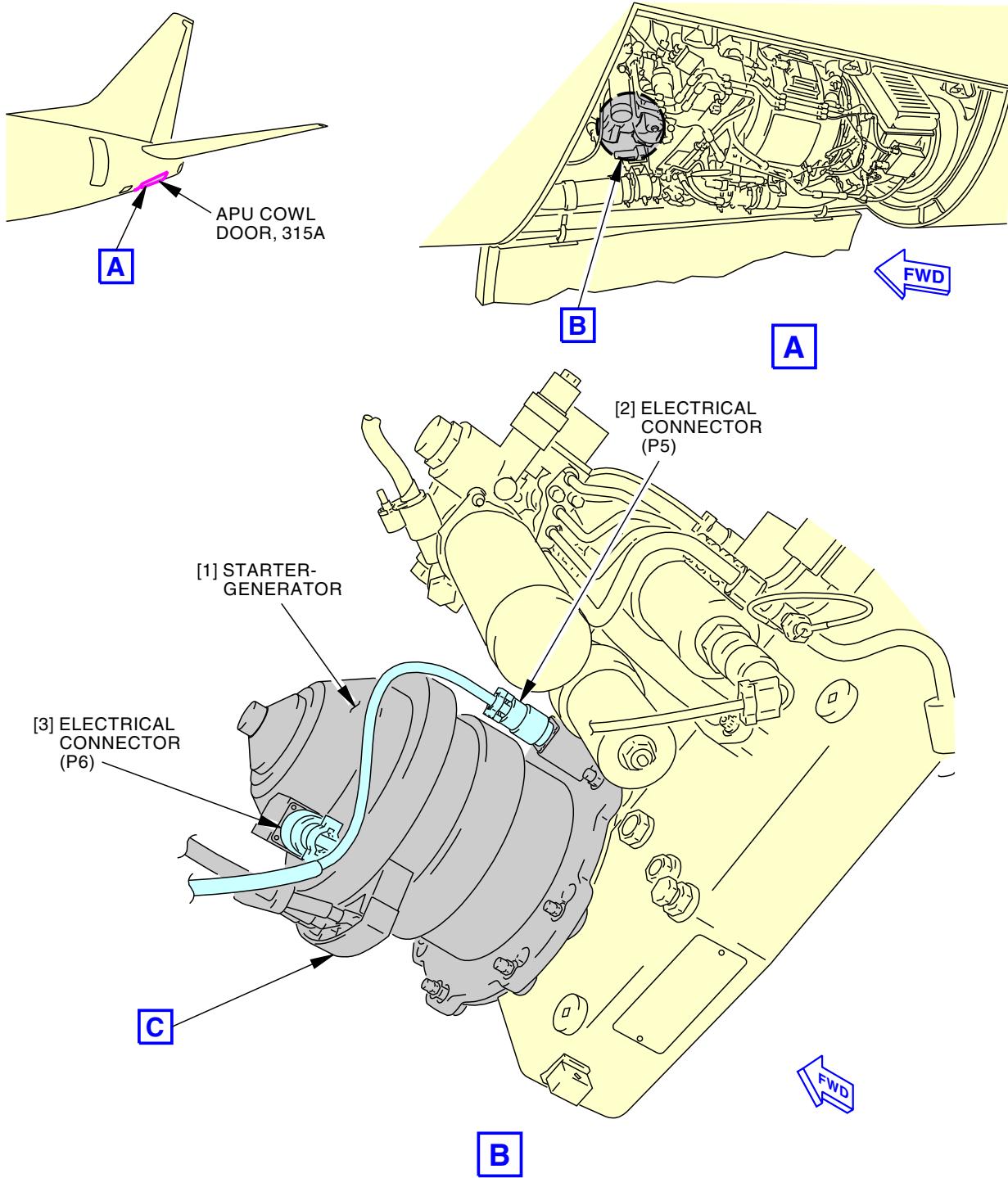
NOTE: The seal plate [19] should be sent to the repair shop together with the starter-generator.

- (a) Remove the eight nuts [11] that attach the seal plate [19] to the mounting flange of the starter-generator [1].
- (b) Remove the seal plate [19].

———— END OF TASK ————

EFFECTIVITY  
LOM ALL

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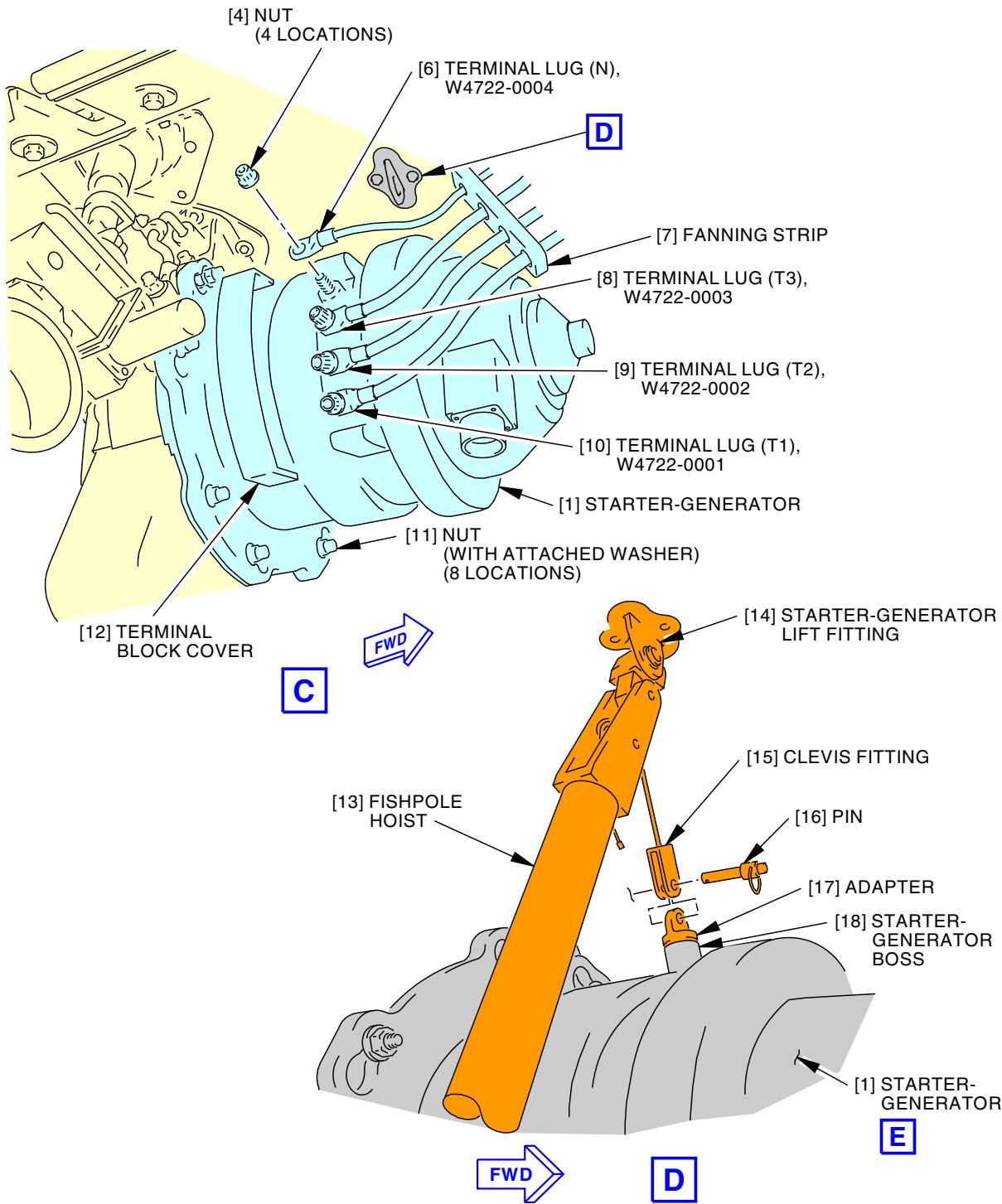
**Starter-Generator Installation**  
**Figure 401/49-41-21-990-801 (Sheet 1 of 3)**

EFFECTIVITY  
LOM ALL

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D633A101-LOM

ECCN 9E991 BOEING PROPRIETARY - See title page for details

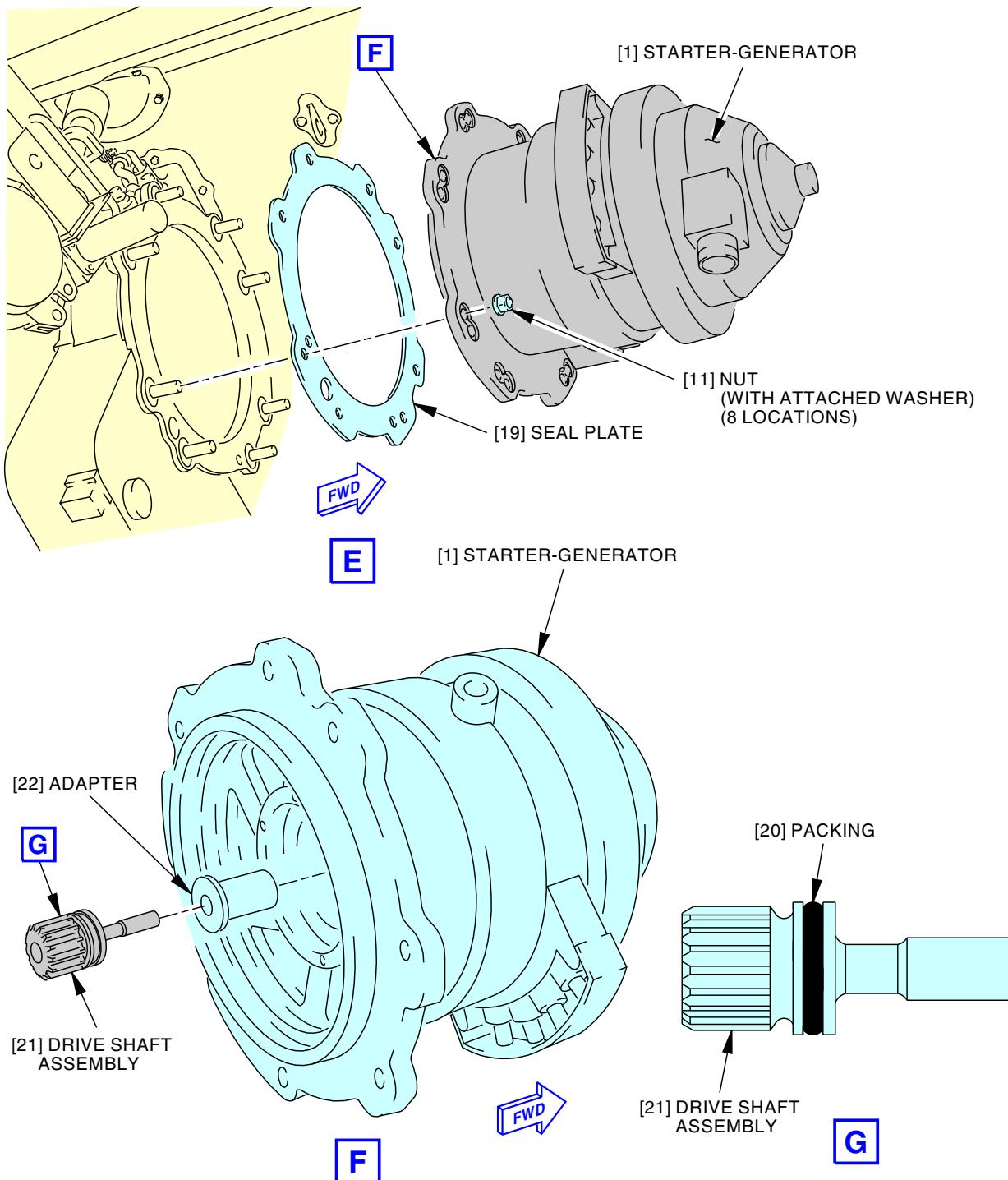
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**Starter-Generator Installation**  
**Figure 401/49-41-21-990-801 (Sheet 2 of 3)**

EFFECTIVITY  
LOM ALL

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**Starter-Generator Installation**  
**Figure 401/49-41-21-990-801 (Sheet 3 of 3)**

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LOM ALL

D633A101-LOM

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**TASK 49-41-21-400-801**

**3. Starter-Generator Installation**

(Figure 401)

**A. General**

- (1) The starter-generator is located on the upper right side of the Auxiliary Power Unit (APU) gearbox.

NOTE: Reference Honeywell SB 131-49-8084 (Replace the Starter/Generator, PN 28B545-7A, -7B, or -7C, with PN 28B545-9A) dated 27 July 2012 for detailed information (if applicable).

- (2) The starter-generator weighs approximately 60 lb (27 kg).

**B. References**

Reference	Title
12-13-31-200-801	APU Oil Level Inspection (P/B 301)
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)
49-52-13-400-801	Bleed Air Duct Installation (P/B 401)
49-61-00-700-801	APU BITE Procedure (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-1563	Hoist - Fishpole, 500 lb Safe Working Limit (SWL) Part #: 10/4180 Supplier: K1425 Part #: IA5101-1 Supplier: 053H3 Part #: IA5101-501 Supplier: 053H3 Part #: IA5119-1 Supplier: 053H3 Part #: IA5119-501 Supplier: 053H3 Part #: PF51-003-1 Supplier: 1YRX6 Part #: PF51-009-1 Supplier: 1YRX6 Opt Part #: 10/3641 Supplier: K1425 Opt Part #: 10/3641C1 Supplier: K1425 Opt Part #: MINILIFT Supplier: K1425
COM-1592	Hoist - Fishpole, Chain, 1,000 lb Safe Working Limit (SWL) Part #: AP6108 Supplier: 4Y309
SPL-1626	Eye - Lifting, Generator Part #: A49002-2 Supplier: 81205
STD-858	Tag - DO NOT OPERATE
STD-1081	Flashlight - Explosion Proof
STD-7502	Screwdriver
STD-11392	Fire Extinguisher - 150lb Portable, Carbon Dioxide, Dry Chemical, Halon, or Aqueous Film Forming Foam (AFFF)

**D. Consumable Materials**

Reference	Description	Specification
D00341	Lubricant - Polyphenyl Ether, Vacuum Pump - Santovac 5	

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Reference	Description	Specification
D50055	Oil - Aircraft Turbine Engine Oil for AE 131-9[B] APU (AMM 12-13-31/301)	

**E. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Starter-generator	49-41-21-02-015 49-41-21-02-135 49-41-21-02-300	LOM ALL LOM ALL LOM ALL
19	Seal plate	49-41-21-02-350	LOM ALL
20	Packing	49-41-21-02-062 49-41-21-02-320	LOM ALL LOM ALL
21	Drive shaft assembly	49-41-21-02-063 49-41-21-02-330	LOM ALL LOM ALL
22	Adapter	49-41-21-02-064 49-41-21-02-340	LOM ALL LOM ALL

**F. Location Zones**

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**G. Access Panels**

Number	Name/Location
117A	Electronic Equipment Access Door
315A	APU Cowl Door

**H. Starter-Generator Installation**



BE CAREFUL WHEN YOU MOVE THE COMPONENT. THE COMPONENT IS HEAVY. INJURIES TO PERSONS CAN OCCUR.

SUBTASK 49-41-21-300-001

- (1) If the starter-generator [1] was removed because the starter-generator oil filter was clogged, do these steps:
  - (a) Turn the lock screw inside the drive shaft assembly [21] one half turn counter-clockwise with a screwdriver, STD-7502.
  - (b) Remove the drive shaft assembly [21] and adapter [22].
  - (c) Visually examine the inside of the rotorshaft for wear and make sure that it is free of debris.
  - (d) If it is necessary, install a new adapter [22] and then a new drive shaft assembly [21].
  - (e) Turn the lock screw inside the drive shaft assembly [21] one half turn clockwise with a screwdriver, STD-7502.



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- (f) Pull on the drive shaft assembly [21] to make sure that it is locked in place.

SUBTASK 49-41-21-420-001

- (2) Do these steps to install the seal plate [19] of the starter-generator [1]:
- Lubricate the packings on the seal plate [19] with a light coat of Santovac 5 lubricant, D00341, or aircraft turbine engine oil, D50055.
  - Install the seal plate [19] on the mounting flange of the starter-generator [1].
  - Loosely install the eight nuts [11].

NOTE: A clearance between the seal plate [19] and the eight nuts [11] is necessary to install the eight keyhole slots of the starter-generator.

SUBTASK 49-41-21-210-001



**CAUTION**

MAKE SURE THAT YOU DO THE INSPECTION OF THE STARTER-GENERATOR LIFT FITTING. A DAMAGED LIFT FITTING CAN CAUSE INCORRECT SUPPORT OF THE STARTER-GENERATOR. THIS CAN CAUSE DAMAGE TO THE STARTER-GENERATOR.

- (3) Visually examine the starter-generator lift fitting [14] with an explosion proof flashlight, STD-1081, to make sure that there are no signs of cracks or elongations.

SUBTASK 49-41-21-480-001



**WARNING**

MAKE SURE THAT THE FISHPOLE HOIST IS IN A SERVICEABLE CONDITION. THE CABLE OR CHAIN OF THE FISHPOLE HOIST MUST SHOW NO SIGNS OF DAMAGE. YOU CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.



**CAUTION**

MAKE SURE THAT YOU EQUALLY WOUND THE CABLE AROUND THE DRUM BEFORE YOU USE THE FISHPOLE HOIST TO HOLD THE STARTER-GENERATOR. IF YOU DO NOT OBEY, THE STARTER-GENERATOR CAN FALL SUDDENLY AND DAMAGE CAN OCCUR.

- (4) Do these steps to install the fishpole hoist [13] (fishpole hoist, COM-1563, or chain fishpole hoist, COM-1592) to the starter-generator [1]:
- Make sure that the starter-generator [1] is directly under the starter-generator lift fitting [14].
  - Install the adapter [17] (generator lifting eye, SPL-1626) in the starter-generator boss [18].
  - Install the fishpole hoist [13] to the starter-generator lift fitting [14].
    - Make sure that the pin of the fishpole hoist [13] is engaged in the starter-generator lift fitting [14].
  - Extend the fishpole hoist [13] to a length that is easy to use.
  - Unwind the cable or chain of the fishpole hoist [13] until the clevis fitting [15] is aligned with the adapter [17] (generator lifting eye, SPL-1626).
  - Install the pin [16] in the clevis fitting [15] and adapter [17] (generator lifting eye, SPL-1626).

EFFECTIVITY  
LOM ALL

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SUBTASK 49-41-21-420-002



**CAUTION**

REMOVE ANY INSTALLED PROTECTION COVERS FROM THE OPENINGS.  
IF YOU DO NOT REMOVE THE PROTECTION COVERS, DAMAGE TO THE  
APU CAN OCCUR.

- (5) Do these steps to install the starter-generator [1]:

- (a) If the packings on the seal plate [19] are not lubricated, lubricate the packings with a light coat of Santovac 5 lubricant, D00341, or aircraft turbine engine oil, D50055.
- (b) Lubricate the new packing [20] with a light coat of Santovac 5 lubricant, D00341, or aircraft turbine engine oil, D50055.

- (c) Install the packing [20] on the drive shaft assembly [21].

- (d) Disengage the terminal block cover [12] from the four pins on the starter-generator [1].

- (e) Remove the terminal block cover [12].

- (f) Remove the nuts [4] from the four terminal studs.

- (g) Wind the cable or chain of the fishpole hoist [13] to lift the starter-generator [1] into position.

NOTE: The starter-generator weighs approximately 60 lb (27 kg).

- (h) Put the starter-generator [1] on the APU.

- (i) Align the eight nuts [11] on the APU with the eight keyhole slots on the starter-generator [1].

- (j) Make sure that the drive shaft assembly [21] engages with the drive shaft.

- (k) Turn the starter-generator [1] counterclockwise until the eight nuts [11] fully engage the eight keyhole slots.

- (l) Tighten one of the eight nuts [11] to 240 in-lb (27.1 N·m).

NOTE: Keep one of the top nuts [11] tight to help you with the installation of the starter-generator.

- (m) Remove the fishpole hoist [13] (fishpole hoist, COM-1563, or chain fishpole hoist, COM-1592) from the starter-generator [1]:

- 1) Remove the pin [16] from the clevis fitting [15] and adapter [17] (generator lifting eye, SPL-1626).

- 2) Disconnect the clevis fitting [15] from the adapter [17] (generator lifting eye, SPL-1626).

- 3) Remove the adapter [17] (generator lifting eye, SPL-1626) from the starter-generator boss [18].

- 4) Wind the cable or chain of the fishpole hoist [13].

- 5) Disconnect the pin of the fishpole hoist [13] from the starter-generator lift fitting [14].

- 6) Remove the fishpole hoist [13].

- (n) Tighten the other seven of the eight nuts [11] to 240 in-lb (27.1 N·m).

SUBTASK 49-41-21-420-003

- (6) Do these steps to connect the electrical connector (P5) [2] and electrical connector (P6) [3]:

- (a) Remove the caps from the electrical connectors.

- (b) Connect the electrical connector (P6) [3] to the starter-generator [1].

EFFECTIVITY  
LOM ALL

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- (c) Connect the electrical connector (P5) [2] to the starter-generator [1].

SUBTASK 49-41-21-420-004

- (7) Do these steps to connect the terminal lug (N) [6], terminal lug (T3) [8], terminal lug (T2) [9], and terminal lug (T1) [10]:

- (a) Connect the terminal lug (T1) [10], terminal lug (T2) [9], terminal lug (T3) [8], and terminal lug (N) [6] to the related terminal studs.

**NOTE:** The terminal strip and the fanning strip [7] show the identification of the terminal studs for each of the terminal lugs (T1), (T2), (T3) and (N). The fanning strip [7] is installed correctly if the terminal stud numbers on the fanning strip [7] agree with the terminal lug numbers on the electrical wires that go through the fanning strip [7].

- (b) Install the nuts [4] on the four terminal studs.

- 1) Tighten the nuts [4] to 115 in-lb (13.0 N·m) - 135 in-lb (15.3 N·m).

- (c) Install the terminal block cover [12] on the starter-generator [1]:

- 1) Put the terminal block cover [12] on the starter-generator [1].

- 2) Engage the terminal block cover [12] to the four pins on the starter-generator [1].

SUBTASK 49-41-21-860-005



**WARNING**

WHEN YOU OPEN THE P91 AND P92 PANELS, MAKE SURE THAT THE OUTER DOOR STAYS AS OPEN AS POSSIBLE. IF THE OUTER DOOR TURNS IN, THE ATTACHED DOOR COMPONENTS COULD TOUCH THE INNER DOOR COMPONENTS. THIS CAN CAUSE AN ARC CONDITION WHEN YOU SUPPLY POWER. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT AND INJURY TO PERSONNEL CAN OCCUR.



**WARNING**

DO NOT TOUCH THE CONDUCTORS IN THE P91 AND P92 PANELS. BE CAREFUL WHEN YOU GET ACCESS TO THE CIRCUIT BREAKERS ON THE INNER SIDE OF THE P91 AND P92 PANELS (ROW F). IF IT IS POSSIBLE, REMOVE AIRPLANE ELECTRICAL POWER FIRST. THE P91 AND P92 PANELS HAVE HIGH VOLTAGES AND CURRENTS. ELECTRICAL VOLTAGE AND CURRENT CAN KILL YOU OR CAUSE INJURIES.

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

**Power Distribution Panel Number 1, P91**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01336	APU START CONV

SUBTASK 49-41-21-410-002

- (9) Close this access door:

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

SUBTASK 49-41-21-420-005

- (10) If it is necessary (optional), do this task: Bleed Air Duct Installation, TASK 49-52-13-400-801.

EFFECTIVITY  
LOM ALL

**49-41-21**



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I. Starter-Generator Installation Test

SUBTASK 49-41-21-860-002

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

**F/O Electrical System Panel, P6-4**

Row    Col    Number    Name

A        14     C00033    AUX POWER UNIT CONT

LOM 465-999; LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464 PRE SB  
737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B        14     C01424    AUX POWER UNIT SCU FAN POWER

**LOM ALL**

This circuit breaker is inoperative and should remain open:

**F/O Electrical System Panel, P6-4**

Row    Col    Number    Name

LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464 POST SB 737-49-1150  
REV 0 AND PRE SB 737-49-1150 REV 1

B        14     C01424    AUX POWER UNIT SCU FAN POWER (INOP)

**LOM ALL**

SUBTASK 49-41-21-860-003

- (2) Remove the DO NOT OPERATE tag from the APU master switch on the P5 forward overhead panel.

SUBTASK 49-41-21-890-001



**CAUTION**

PUT A PERSON NEAR THE APU COMPARTMENT TO LOOK FOR FIRE. IF A FIRE OCCURS WHILE THE APU COWL DOOR IS OPEN, IT IS POSSIBLE THAT THE FIRE EXTINGUISHING AGENT WILL NOT STOP THE FIRE. FIRE WILL CAUSE DAMAGE TO THE AIRPLANE.

- (3) Put an observer near the APU compartment to watch for a fire.

- (a) If a fire occurs, immediately tell the personnel in the flight compartment to do an emergency APU shutdown.

NOTE: The APU fire detection system may not sense a small fire and most of the fire extinguishing agent will go out from the open APU cowl door.

- (b) Use a fire extinguisher, STD-11392, to put out the fire.

SUBTASK 49-41-21-710-001

- (4) Do the installation test for the starter-generator [1]:

- (a) Make sure that the BUS TRANS switch, on the P5 forward overhead panel, is in the AUTO position.

- (b) Make sure that the APU master switch is in the ON position.

- (c) If you installed a new starter-generator [1] after a faulty starter-generator [1] was removed, then do this step:

- 1) Go to the CURRENT STATUS page for the fault and enter STARTOK in the scratchpad.

- a) Push the line select key at the top right side of the Control Display Unit (CDU).

- (d) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.

- (e) Operate the APU for a minimum of five minutes.

EFFECTIVITY  
**LOM ALL**

**49-41-21**



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

- (f) During the APU operation, examine the starter-generator [1] for signs of oil leakage.
- (g) If you find oil leakage, do these steps to repair the leakage:
  - 1) Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.
  - 2) Install a DO NOT OPERATE tag, STD-858, to the APU master switch on the P5 forward overhead panel.
  - 3) Repair the cause of the oil leakage.
  - 4) Remove the DO NOT OPERATE tag from the APU master switch on the P5 forward overhead panel.
  - 5) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
  - 6) During the APU operation, examine the starter-generator [1] for signs of oil leakage.
  - 7) If you find oil leakage, do the leakage repair again.
- (h) Make sure that the APU GEN OFF BUS light, on the P5 forward overhead panel, comes on.
- (i) Set the two APU GEN switches, on the P5 forward overhead panel, to the ON position.

NOTE: One of the two APU GEN switches will connect the APU starter-generator to the two 115V ac transfer busses. It is necessary to set the two APU GEN switches to the ON position for the two SOURCE OFF lights to go off.
- (j) Make sure that these lights on the P5 forward overhead panel go off:
  - 1) APU GEN OFF BUS
  - 2) 1 SOURCE OFF
  - 3) 2 SOURCE OFF
  - 4) 1 TRANSFER BUS OFF
  - 5) 2 TRANSFER BUS OFF.
- (k) Set the two APU GEN switches to the OFF position.
- (l) Make sure that these lights come on:
  - 1) APU GEN OFF BUS
  - 2) 1 SOURCE OFF
  - 3) 2 SOURCE OFF
  - 4) 1 TRANSFER BUS OFF
  - 5) 2 TRANSFER BUS OFF.
- (m) Do this task: APU BITE Procedure, TASK 49-61-00-700-801.
  - 1) If maintenance message(s) show for the APU electrical system or the starter-generator, refer to the applicable Maintenance Message Index in the Fault Isolation Manual (FIM).
- (n) If it is not necessary to do other tasks, do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

**SUBTASK 49-41-21-210-002**

- (5) Make sure that the APU oil system is full, do this task: APU Oil Level Inspection, TASK 12-13-31-200-801.

EFFECTIVITY  
LOM ALL

**49-41-21**



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**AIRCRAFT MAINTENANCE MANUAL**

**J. Put the Airplane Back to Its Usual Condition**

SUBTASK 49-41-21-410-008

- (1) To close the access panel, do these steps:

**Number**      **Name/Location**

315A      APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

**NOTE:** Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

EFFECTIVITY  
LOM ALL

**49-41-21**





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

IGNITION UNIT - REMOVAL/INSTALLATION

**1. General**

- A. This procedure has these tasks:
  - (1) A removal of the ignition unit
  - (2) An installation of the ignition unit.
- B. The ignition unit is installed on the eductor housing.

**TASK 49-41-31-000-801**

**2. Ignition Unit - Removal**

(Figure 401)

**A. General**

- (1) The high voltage from the ignition unit must be released before you can remove the ignition unit. To release the high voltage, the electrical connector (P13) must be disconnected from the ignition unit.

**B. Location Zones**

<b>Zone</b>	<b>Area</b>
211	Flight Compartment - Left
315	APU Compartment - Left

**C. Access Panels**

<b>Number</b>	<b>Name/Location</b>
315A	APU Cowl Door

**D. Prepare for the Removal**

SUBTASK 49-41-31-860-001

- (1) Make sure the APU master switch on the P5 forward overhead panel is OFF and install a DO-NOT-OPERATE tag.

SUBTASK 49-41-31-860-002

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

**F/O Electrical System Panel, P6-2**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-41-31-010-002

- (3) To open the access panel, do these steps:

**Number**      **Name/Location**

315A      APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.
- (b) Open the three latches.

NOTE: Use this sequence: forward latch, aft latch, middle latch.

- (c) Open the APU Cowl Door, 315A.

EFFECTIVITY  
LOM ALL

**49-41-31**



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**AIRCRAFT MAINTENANCE MANUAL**

- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

**E. Ignition Unit Removal**

SUBTASK 49-41-31-020-001



**WARNING**

DO NOT TOUCH THE IGNITION COMPONENTS UNTIL YOU DO THESE STEPS. THESE STEPS WILL RELEASE THE HIGH VOLTAGE FROM THE IGNITION UNIT. IF YOU DO NOT OBEY THIS PROCEDURE, INJURY TO PERSONS CAN OCCUR.

- (1) Do these steps to release the high voltage from the ignition unit [4]:
  - (a) Make sure five minutes have gone by since the last APU start.
  - (b) Disconnect the electrical connector (P13) [7] from the ignition unit [4].

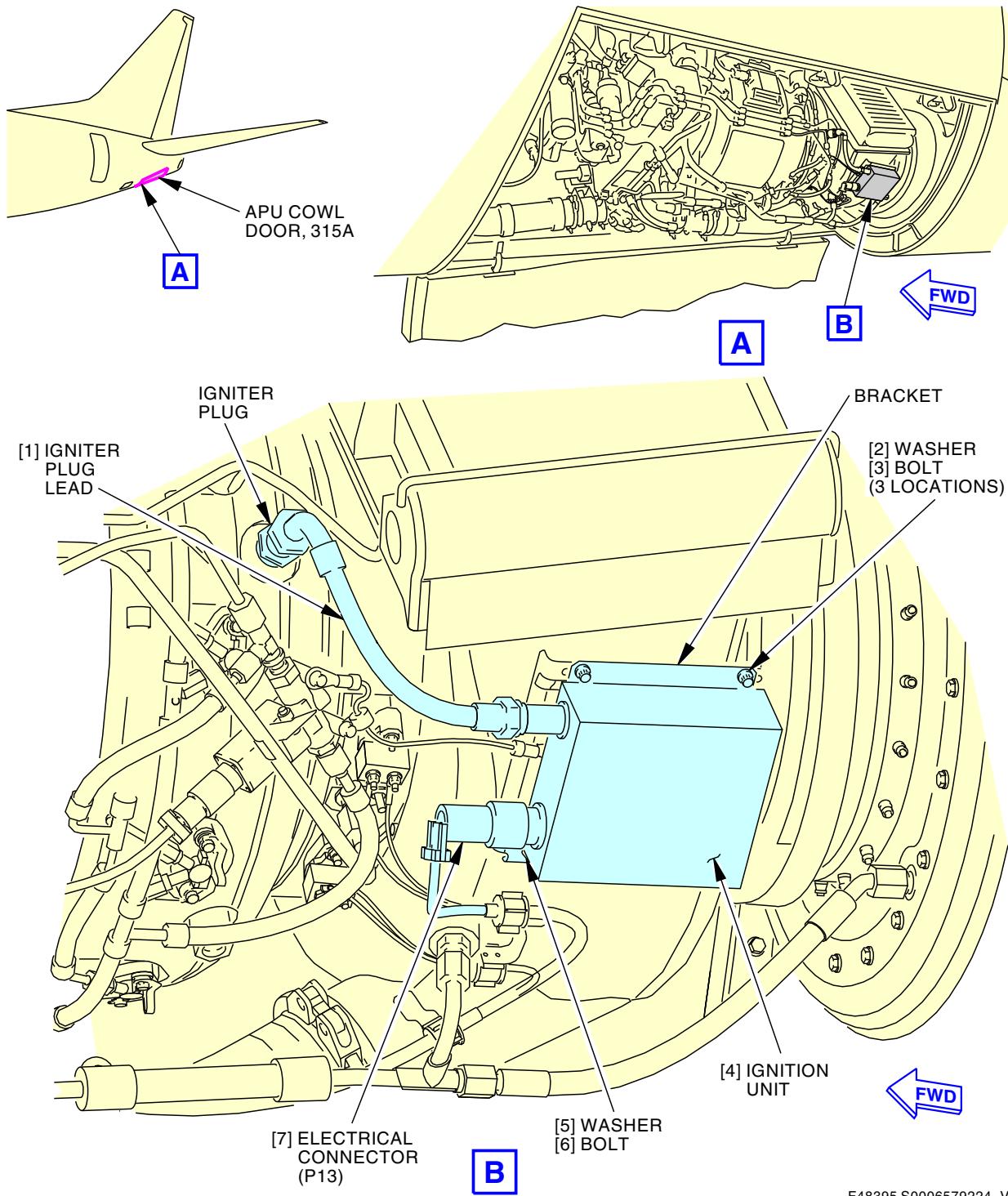
SUBTASK 49-41-31-020-002

- (2) Do these steps to remove the ignition unit [4]:
  - (a) Disconnect the igniter plug lead [1] from the ignition unit [4].
  - (b) Remove the bolts [3], washers [2], bolt [6], and the washer [5] that attach the ignition unit [4] to the bracket.
  - (c) Remove the ignition unit [4].
  - (d) Make sure you install all necessary protection covers.

———— END OF TASK ————

EFFECTIVITY  
LOM ALL

**49-41-31**



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**Ignition Unit Installation**  
**Figure 401/49-41-31-990-801**

 EFFECTIVITY  
 LOM ALL

**49-41-31**



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**TASK 49-41-31-400-801**

**3. Ignition Unit - Installation**

(Figure 401)

**A. References**

Reference	Title
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)

**B. Tools/Equipment**

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)

**C. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Igniter plug lead	49-41-52-02-005	LOM ALL
4	Ignition unit	49-41-31-02-005	LOM ALL
		49-41-31-02-007	LOM ALL

**D. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left

**E. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**F. Ignition Unit Installation**

SUBTASK 49-41-31-420-001



**CAUTION** REMOVE THE PROTECTION COVERS FROM THE OPENINGS AS NECESSARY. IF YOU DO NOT REMOVE THE PROTECTION COVERS, DAMAGE TO THE APU CAN OCCUR.

(1) Do these steps to install the ignition unit [4]:

- (a) Install the ignition unit [4] on the bracket.
  - 1) Install the bolts [3], washers [2], bolt [6], and washer [5].
  - 2) Tighten the bolts [3] and bolt [6] to 50 in-lb (5.6 N·m).



**DO NOT TWIST OR BEND THE IGNITION LEAD. YOU CAN CAUSE DAMAGE TO THE CONDUIT AND THE INTERNAL WIRES.**

- CAUTION**
- (b) Connect the igniter plug lead [1] to the ignition unit [4].
    - 1) Use the teflon-jawed pliers, STD-664, to connect the igniter plug lead [1].
    - 2) Tighten the igniter plug lead [1] to 225 in-lb (25.4 N·m).
  - (c) Connect the electrical connector (P13) [7] to the ignition unit [4].



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**G. Ignition Unit Installation Test**

SUBTASK 49-41-31-860-003

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-41-31-860-004

- (2) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.

SUBTASK 49-41-31-710-001

- (3) Do the installation test for the ignition unit:
  - (a) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
  - (b) If it is not necessary to do other tasks, do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

**H. Put the Airplane Back to Its Usual Condition**

SUBTASK 49-41-31-410-002

- (1) To close the access panel, do these steps:

<u>Number</u>	<u>Name/Location</u>
315A	APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the Auxiliary Power Unit (APU) compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

————— END OF TASK ————

EFFECTIVITY  
LOM ALL

**49-41-31**





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IGNITER PLUG - REMOVAL/INSTALLATION

1. General

- A. This procedure contains scheduled maintenance task data.
- B. This procedure has these tasks:
  - (1) A removal of the igniter plug
  - (2) An installation of the igniter plug.
- C. The igniter plug is installed in the combustor housing.

**TASK 49-41-51-000-801**

2. Igniter Plug Removal

(Figure 401)

A. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

B. Location Zones

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left

C. Access Panels

Number	Name/Location
315A	APU Cowl Door

D. Prepare for the Removal

SUBTASK 49-41-51-860-001

- (1) Make sure that the Auxiliary Power Unit (APU) master switch, on the P5 forward overhead panel, is OFF and install a DO NOT OPERATE tag, STD-858.

SUBTASK 49-41-51-860-002

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

**F/O Electrical System Panel, P6-2**

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-41-51-010-002

- (3) To open the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Support the APU panel (cowl door) under the center latch.
- (b) Open the three latches.

NOTE: Use this sequence: forward latch, aft latch, middle latch.

- (c) Open the APU Cowl Door, 315A.

EFFECTIVITY  
LOM ALL

**49-41-51**



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

- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

**E. Igniter Plug Removal**

SUBTASK 49-41-51-020-002



**WARNING** DO NOT TOUCH THE IGNITION COMPONENTS UNTIL YOU DO THESE STEPS. THESE STEPS WILL RELEASE THE HIGH VOLTAGE FROM THE IGNITION UNIT. IF YOU DO NOT OBEY THIS PROCEDURE, INJURY TO PERSONS CAN OCCUR.

- (1) Do these steps to release the high voltage from the ignition unit and to remove the igniter plug [2]:
  - (a) Make sure that five minutes have gone by since the last APU start.



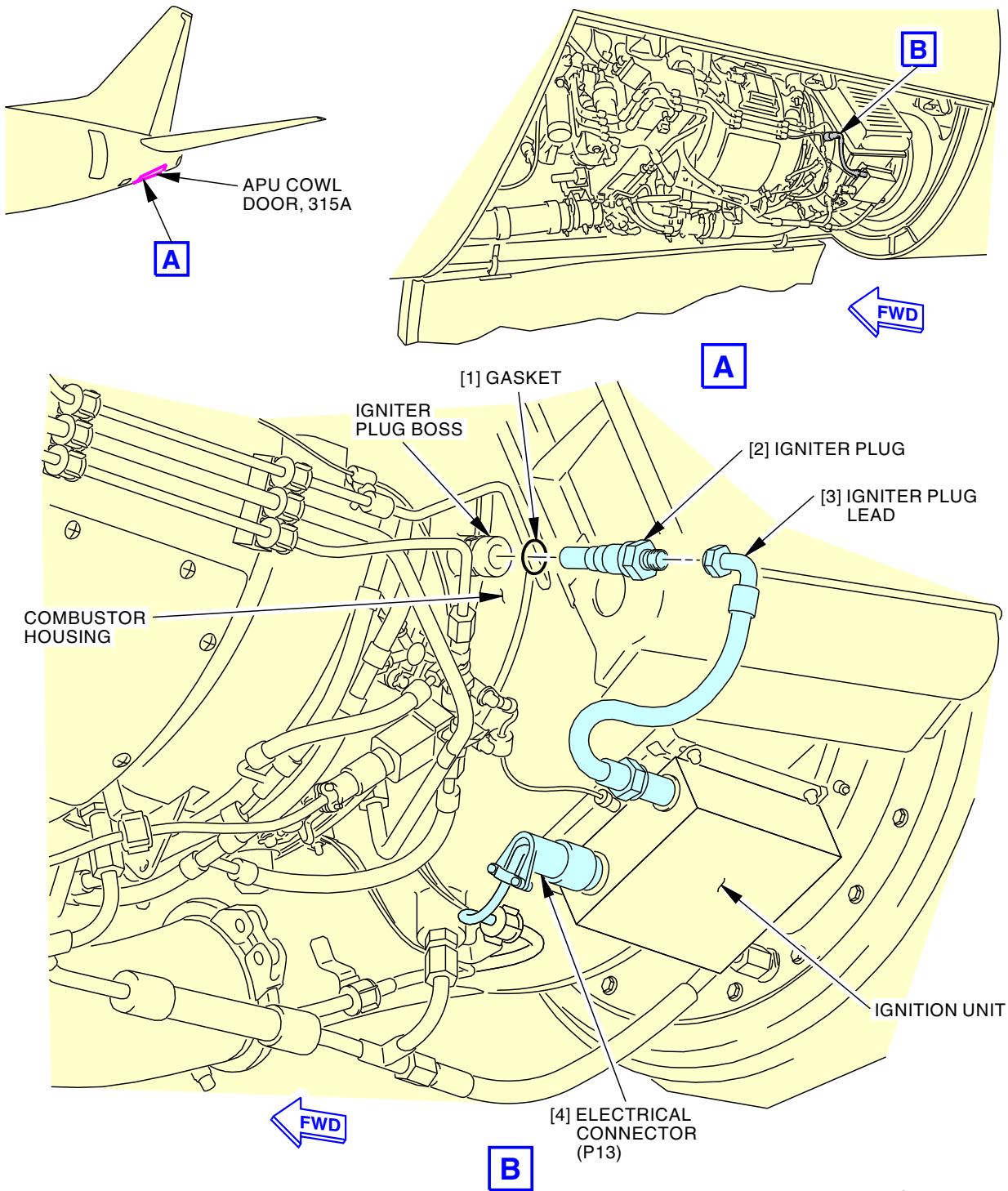
**WARNING** MAKE SURE THAT YOU DISCONNECT THE ELECTRICAL CONNECTOR (P13) FROM THE IGNITION UNIT TO RELEASE THE HIGH VOLTAGE. INJURIES TO PERSONNEL CAN OCCUR.

- (b) Disconnect the electrical connector (P13) [4] from the ignition unit.
- (c) Disconnect the igniter plug lead [3] from the ignition unit.
- (d) Disconnect the igniter plug lead [3] from the igniter plug [2].
- (e) Remove the igniter plug [2].
- (f) Remove the gasket [1] from the igniter plug [2].
  - 1) Discard the gasket [1].
- (g) Make sure that you install all necessary protection covers.

— END OF TASK —

EFFECTIVITY  
LOM ALL

**49-41-51**



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### Igniter Plug Installation

Figure 401/49-41-51-990-801

EFFECTIVITY  
LOM ALL

**49-41-51**

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ECCN 9E991 BOEING PROPRIETARY - See title page for details



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**TASK 49-41-51-400-801**

**3. Igniter Plug Installation**

(Figure 401)

**A. References**

Reference	Title
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)

**B. Consumable Materials**

Reference	Description	Specification
D00006	Compound - Antiseize, Pure Nickel Special - Never-Seez NSBT-8N/-16N	

**C. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Gasket	49-41-51-02-010	LOM ALL
2	Igniter plug	49-41-51-02-005	LOM ALL
3	Igniter plug lead	49-41-52-02-005	LOM ALL

**D. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left

**E. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**F. Igniter Plug Installation**

SUBTASK 49-41-51-420-002



**CAUTION** REMOVE THE PROTECTION COVERS FROM THE OPENINGS AS NECESSARY. IF YOU DO NOT REMOVE THE PROTECTION COVERS, DAMAGE TO THE APU CAN OCCUR.



**CAUTION** MAKE SURE THAT YOUR HANDS AND TOOLS ARE CLEAN. DO NOT TOUCH THE IGNITION LEAD OR THE IGNITER PLUG WITH DIRT OR GREASE ON HANDS OR TOOLS. DIRT AND GREASE WILL CAUSE DAMAGE TO THE IGNITION LEAD AND THE IGNITER PLUG.

(1) Do these steps to install the igniter plug [2]:

- (a) Install the new gasket [1] on the igniter plug [2].
  - 1) Make sure that you install the flat surface of the gasket [1] to the igniter plug boss.
- (b) Lubricate the igniter plug [2] threads with a light coat of Pure Nickel Special compound, D00006.
- (c) Install the igniter plug [2] in the igniter plug boss on the combustor housing.
  - 1) Tighten the igniter plug [2] to 225 in-lb (25.42 N·m).

EFFECTIVITY  
**LOM ALL**

**49-41-51**



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**CAUTION**

DO NOT APPLY GREASE OR LUBRICANT TO THE THREADS OF THE CONNECTOR ON THE IGNITION LEAD. GREASE AND LUBRICANTS WILL CAUSE DAMAGE TO THE IGNITION LEAD AND THE IGNITER PLUG.

- (d) Connect the igniter plug lead [3] to the igniter plug [2].
  - 1) Tighten the igniter plug lead [3] to 225 in-lb (25.42 N·m).
- (e) Connect the igniter plug lead [3] to the ignition unit.
  - 1) Tighten the igniter plug lead [3] to 225 in-lb (25.42 N·m).
- (f) Connect the electrical connector (P13) [4] to the ignition unit.

## G. Igniter Plug Installation Test

SUBTASK 49-41-51-860-003

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

### F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

### F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-41-51-860-004

- (2) Remove the DO-NOT-OPERATE tag from the Auxiliary Power Unit (APU) master switch, on the P5 forward overhead panel.

SUBTASK 49-41-51-710-001

- (3) Do the installation test for the igniter plug:
  - (a) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
  - (b) If it is not necessary to do other tasks, do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

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

SUBTASK 49-41-51-410-002

- (1) To close the access panel, do these steps:

### Number      Name/Location

315A      APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.

EFFECTIVITY  
LOM ALL

**49-41-51**



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

(g) Close the APU Cowl Door, 315A.

(h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

— EFFECTIVITY —  
**LOM ALL**

**49-41-51**

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ECCN 9E991 BOEING PROPRIETARY - See title page for details



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AIRCRAFT MAINTENANCE MANUAL

IGNITER PLUG - INSPECTION/CHECK

**1. General**

- A. This procedure contains scheduled maintenance task data.
- B. This procedure has the task to inspect the igniter plug.

**TASK 49-41-51-200-801**

**2. Igniter Plug Inspection**

(Figure 601)

**A. References**

Reference	Title
49-41-51-000-801	Igniter Plug Removal (P/B 401)
49-41-51-400-801	Igniter Plug Installation (P/B 401)

**B. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left

**C. Procedure**

SUBTASK 49-41-51-020-003

- (1) Do this task: Igniter Plug Removal, TASK 49-41-51-000-801.

SUBTASK 49-41-51-210-001

- (2) Inspect the semiconductor (firing tip) for radial cracks and wear.
  - (a) Replace the igniter plug if you find damage on the semiconductor.

SUBTASK 49-41-51-220-001

- (3) Inspect the outer electrode (shell):
  - (a) Measure the inside diameter of the outer electrode.
    - 1) If the diameter is more than 0.335 inch (8.5 mm), replace the igniter plug.
  - (b) Measure the distance from the inside diameter to the outer edge of the outer electrode.
    - 1) If the distance is less than 0.085 inch (2.2 mm), replace the igniter plug.
  - (c) If the inside diameter of the outer electrode shows wear over 90 degrees, replace the igniter plug.
  - (d) Examine the outer electrode that is burned away.
    - 1) If you find the part of the outer electrode that is burned away, replace the igniter plug.

SUBTASK 49-41-51-210-002

- (4) Examine the igniter plug:
  - (a) Shake the igniter plug and listen for noise.
  - (b) Examine the body of the igniter plug for wear that is more than 0.015 inch (0.38 mm).
  - (c) Examine the ceramic insulator for cracks and broken areas.
  - (d) Examine the electrical connector for bent or damaged pin.
  - (e) Examine the inlet and exit holes for contamination and clogged areas.
  - (f) If you find any of the above damage or you hear noise, replace the igniter plug.

EFFECTIVITY  
LOM ALL

**49-41-51**



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**AIRCRAFT MAINTENANCE MANUAL**

SUBTASK 49-41-51-420-003

- (5) Do this task: Igniter Plug Installation, TASK 49-41-51-400-801.

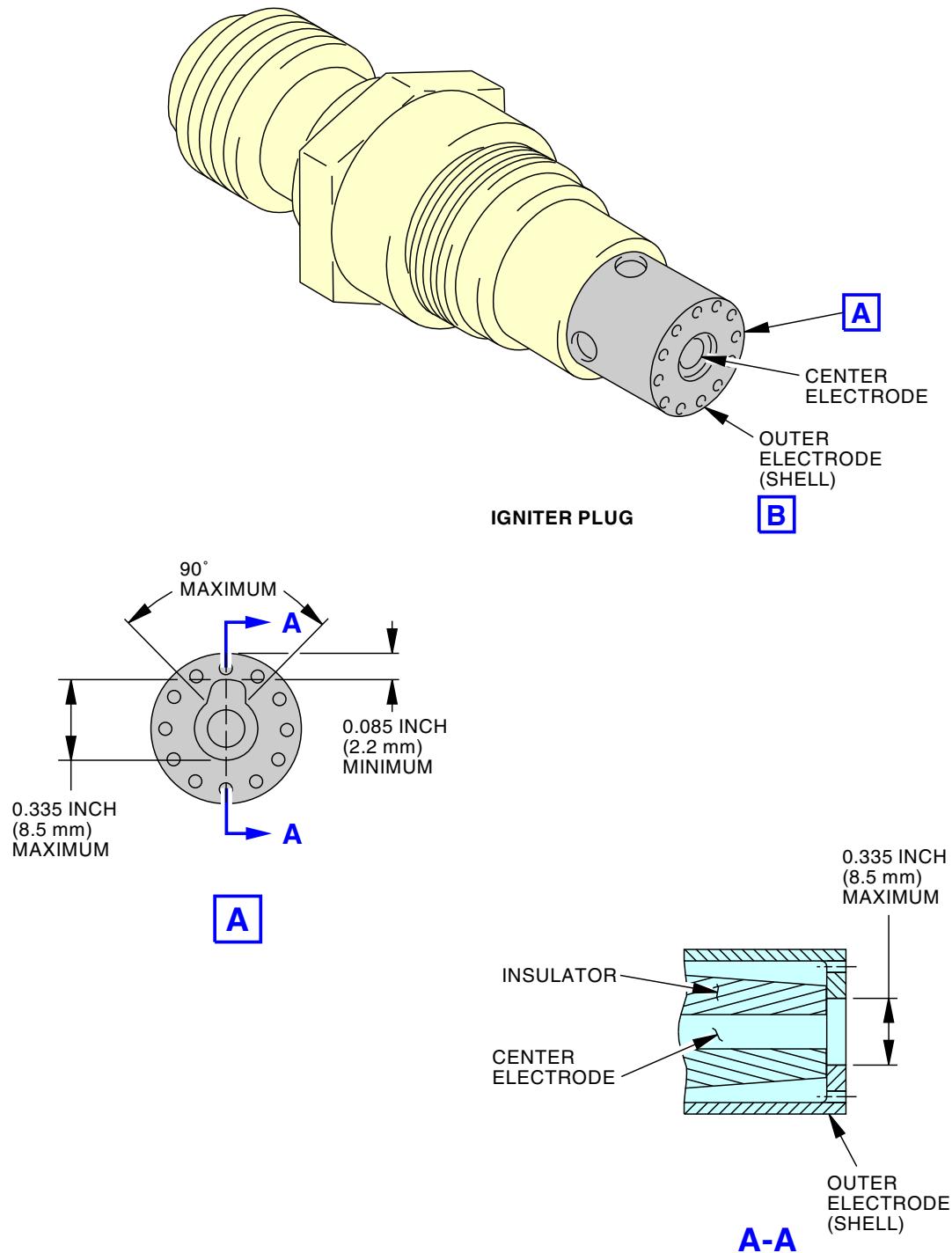
———— END OF TASK ——

— EFFECTIVITY —  
**LOM ALL**

**49-41-51**

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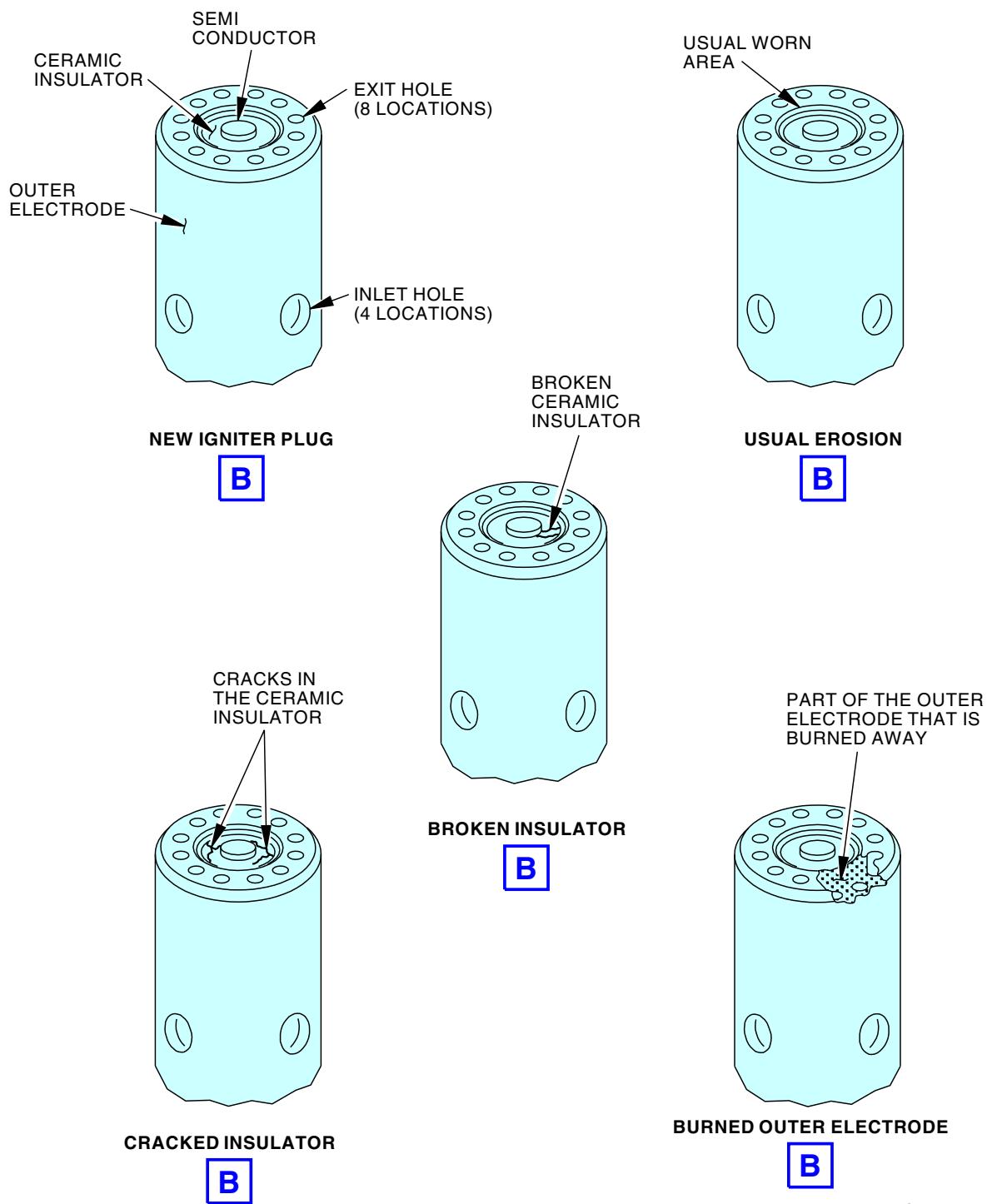
**Igniter Plug Inspection**  
**Figure 601/49-41-51-990-802 (Sheet 1 of 4)**

EFFECTIVITY  
LOM ALL; AIRPLANES WITHOUT IGNITER PLUG  
WITH DRAIN SLOTS

D633A101-LOM

**49-41-51**

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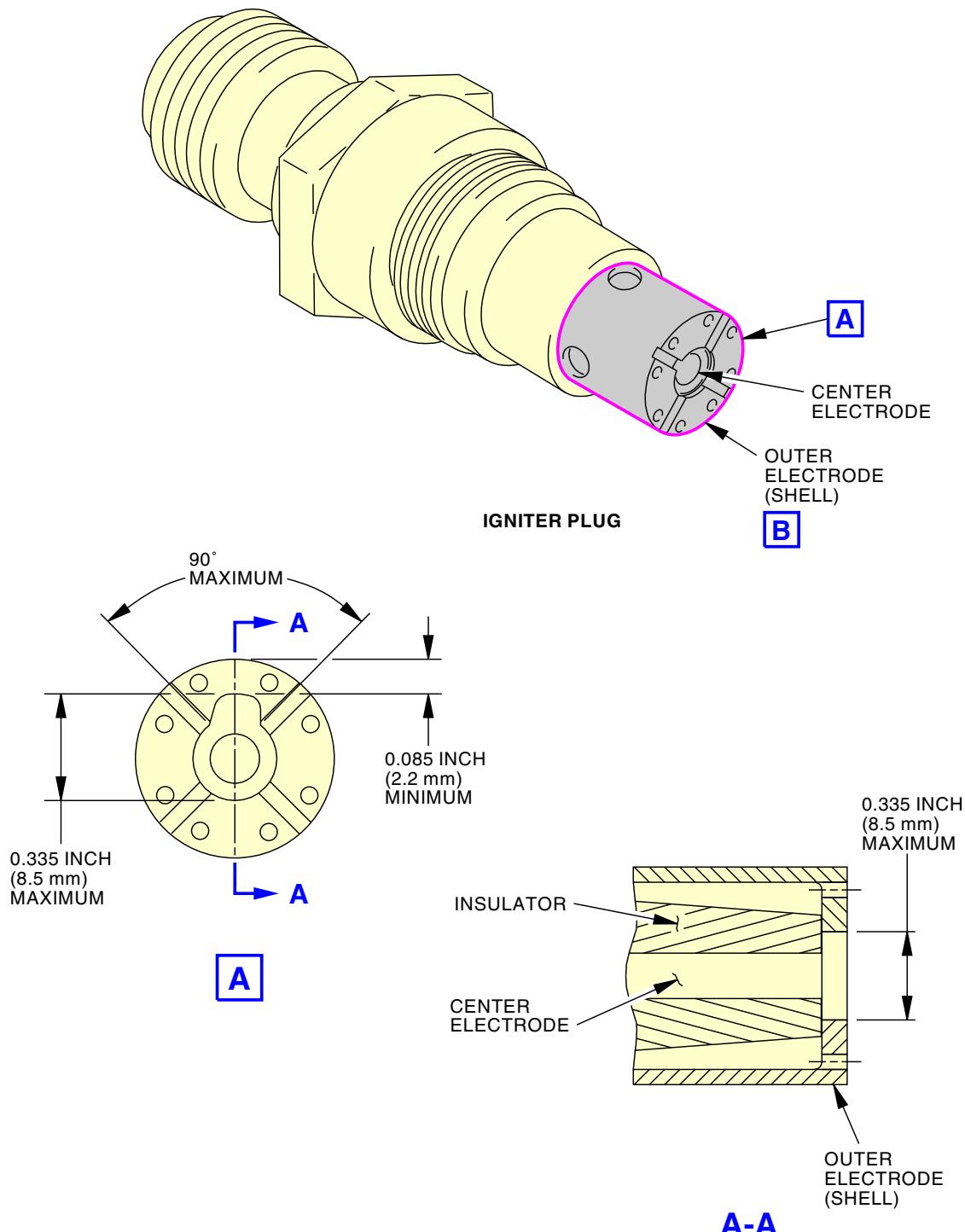


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**Igniter Plug Inspection**  
**Figure 601/49-41-51-990-802 (Sheet 2 of 4)**

EFFECTIVITY  
LOM ALL; AIRPLANES WITHOUT IGNITER PLUG  
WITH DRAIN SLOTS

**49-41-51**



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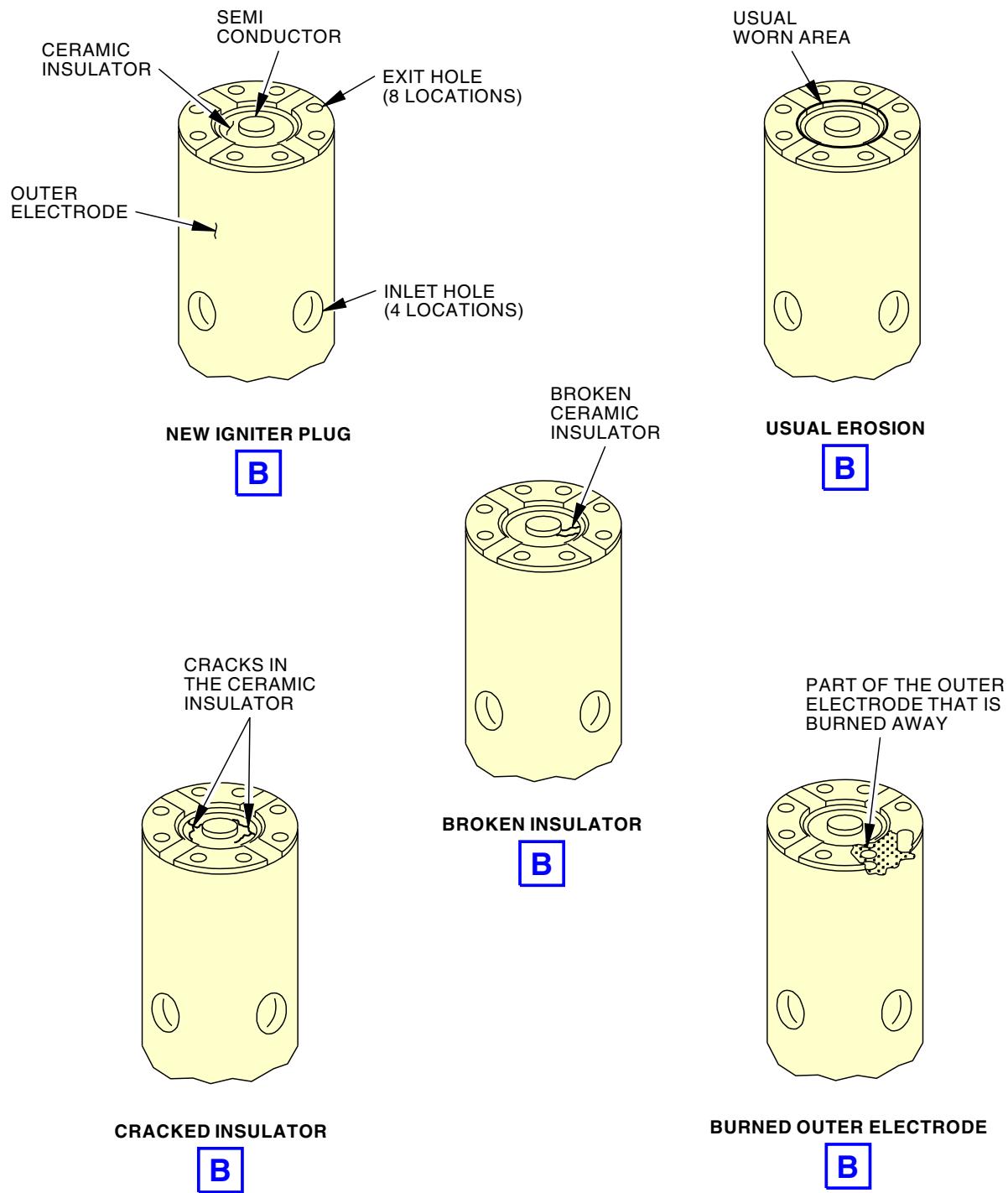
**Igniter Plug Inspection**  
**Figure 601/49-41-51-990-802 (Sheet 3 of 4)**

EFFECTIVITY  
**LOM ALL; AIRPLANES WITH IGNITER PLUG WITH  
 DRAIN SLOTS**

**49-41-51**

D633A101-LOM

ECCN 9E991 BOEING PROPRIETARY - See title page for details



2924505 S0000705709\_V1

**Igniter Plug Inspection**  
**Figure 601/49-41-51-990-802 (Sheet 4 of 4)**

EFFECTIVITY  
LOM ALL; AIRPLANES WITH IGNITER PLUG WITH  
DRAIN SLOTS

**49-41-51**



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AIRCRAFT MAINTENANCE MANUAL

IGNITER PLUG - CLEANING/PAINTING

1. General

- A. This procedure has the task to clean the igniter plug.

**TASK 49-41-51-100-801**

2. Igniter Plug Cleaning

A. References

Reference	Title
49-41-51-000-801	Igniter Plug Removal (P/B 401)
49-41-51-400-801	Igniter Plug Installation (P/B 401)

B. Tools/Equipment

Reference	Description
STD-1057	Air Source - Regulated, Dry Filtered, Compressed 60-105 PSIG (414-723.9 KPa)(22 SCFM)
STD-1236	Brush - Brass Bristles

C. Consumable Materials

Reference	Description	Specification
B00130	Alcohol - Isopropyl	TT-I-735
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CLA)

D. Location Zones

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left

E. Procedure

SUBTASK 49-41-51-020-001

- (1) Do this task: Igniter Plug Removal, TASK 49-41-51-000-801.

SUBTASK 49-41-51-110-001

- (2) Do these steps to clean the igniter plug:

- (a) Clean the igniter plug with alcohol, B00130 and a cotton wiper, G00034.
- (b) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057 to dry the igniter plug.

NOTE: It is recommended that you use a pressure of 60-90 psig (414-620 kPa) of air or nitrogen to dry the igniter plug or to blow away loose material off the igniter plug.



**CAUTION**

DO NOT USE HARD GRIT OR A STEEL BRUSH TO CLEAN THE IGNITER PLUG. DAMAGE TO THE IGNITER PLUG CAN OCCUR.

- (c) Clean all the unwanted materials off the igniter plug with a brass bristles brush, STD-1236.

EFFECTIVITY  
LOM ALL

**49-41-51**



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

- (d) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057 to blow away all the loose material off the igniter plug.

SUBTASK 49-41-51-420-001

- (3) Do this task: Igniter Plug Installation, TASK 49-41-51-400-801.

———— END OF TASK ————

— EFFECTIVITY —  
**LOM ALL**

**49-41-51**

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

IGNITER PLUG LEAD - REMOVAL/INSTALLATION

**1. General**

- A. This procedure has these tasks:
  - (1) A removal of the igniter plug lead
  - (2) An installation of the igniter plug lead.
- B. The igniter plug lead is installed between the ignition unit and the igniter plug.

**TASK 49-41-52-000-801**

**2. Igniter Plug Lead Removal**

(Figure 401)

**A. Location Zones**

<u>Zone</u>	<u>Area</u>
211	Flight Compartment - Left
315	APU Compartment - Left

**B. Access Panels**

<u>Number</u>	<u>Name/Location</u>
315A	APU Cowl Door

**C. Prepare for the Removal**

SUBTASK 49-41-52-860-001

- (1) Make sure the APU master switch on the P5 forward overhead panel is OFF and install a DO-NOT-OPERATE tag.

SUBTASK 49-41-52-860-002

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-41-52-010-002

- (3) To open the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.
- (b) Open the three latches.  
*NOTE: Use this sequence: forward latch, aft latch, middle latch.*
- (c) Open the APU Cowl Door, 315A.
- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.

EFFECTIVITY  
LOM ALL

**49-41-52**



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- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

**D. Igniter Plug Lead Removal**

SUBTASK 49-41-52-020-003



**WARNING**

DO NOT TOUCH THE IGNITION COMPONENTS UNTIL YOU DO THESE STEPS. THESE STEPS WILL RELEASE THE HIGH VOLTAGE FROM THE IGNITION UNIT. IF YOU DO NOT OBEY THIS PROCEDURE, INJURY TO PERSONS CAN OCCUR.

- (1) Do these steps to release the high voltage from the ignition unit and to remove the igniter plug lead [1]:

- (a) Make sure five minutes have gone by since the last APU start.



**WARNING**

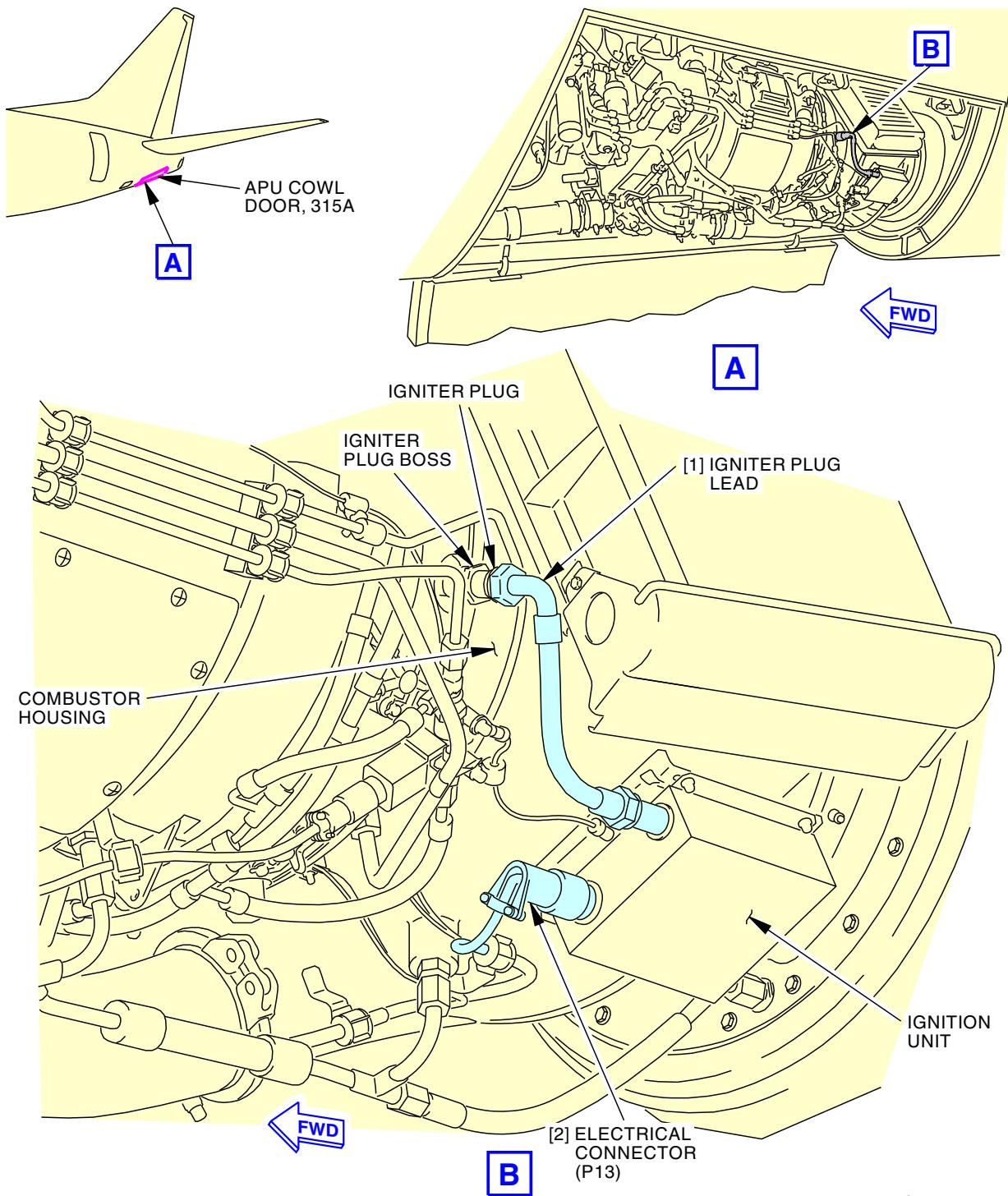
MAKE SURE YOU DISCONNECT ELECTRICAL CONNECTOR (P13) FROM THE IGNITION UNIT TO RELEASE THE HIGH VOLTAGE. INJURY TO PERSONS CAN OCCUR.

- (b) Disconnect the electrical connector (P13) [2] from the ignition unit.
  - (c) Disconnect the igniter plug lead [1] from the ignition unit.
  - (d) Disconnect the igniter plug lead [1] from the igniter plug.
  - (e) Remove the igniter plug lead [1].
  - (f) Make sure you install all necessary protection covers.

———— END OF TASK ————

EFFECTIVITY  
LOM ALL

**49-41-52**



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**Igniter Plug Lead Installation**  
**Figure 401/49-41-52-990-801**

 EFFECTIVITY  
 LOM ALL

**49-41-52**

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**TASK 49-41-52-400-801**

**3. Igniter Plug Lead Installation**

(Figure 401)

**A. References**

Reference	Title
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)

**B. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Igniter plug lead	49-41-52-02-005	LOM ALL

**C. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left

**D. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**E. Procedure**

SUBTASK 49-41-52-420-003



**CAUTION**

REMOVE THE PROTECTION COVERS FROM THE OPENINGS AS NECESSARY. IF YOU DO NOT REMOVE THE PROTECTION COVERS, DAMAGE TO THE APU CAN OCCUR.

- (1) Do these steps to install the igniter plug lead [1]:

- (a) Connect the igniter plug lead [1] to the igniter plug.
  - 1) Tighten the igniter plug lead [1] to 225 pound-inches (25.4 newton-meters).
- (b) Connect the igniter plug lead [1] to the ignition unit.
  - 1) Tighten the igniter plug lead [1] to 225 pound-inches (25.4 newton-meters).
- (c) Connect the electrical connector (P13) [2] to the ignition unit.

**F. Igniter Plug Lead Installation Test**

SUBTASK 49-41-52-860-003

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

**F/O Electrical System Panel, P6-2**

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-41-52-860-004

- (2) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.

EFFECTIVITY  
**LOM ALL**

**49-41-52**



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SUBTASK 49-41-52-710-001

- (3) Do the installation test for the igniter plug lead:
  - (a) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
  - (b) If it is not necessary to do other tasks, do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

**G. Put the Airplane Back to Its Usual Condition**

SUBTASK 49-41-52-410-002

- (1) To close the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the Auxiliary Power Unit (APU) compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

**NOTE:** Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

EFFECTIVITY  
LOM ALL

**49-41-52**





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IGNITER PLUG LEAD - INSPECTION/CHECK

1. General

- A. This procedure has the task to inspect the igniter plug lead.

**TASK 49-41-52-200-801**

2. Igniter Plug Lead Inspection

A. References

Reference	Title
49-41-52-000-801	Igniter Plug Lead Removal (P/B 401)
49-41-52-100-801	Igniter Plug Lead Cleaning (P/B 701)
49-41-52-400-801	Igniter Plug Lead Installation (P/B 401)

B. Location Zones

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left

C. Procedure

SUBTASK 49-41-52-020-001

- (1) Do this task: Igniter Plug Lead Removal, TASK 49-41-52-000-801.

SUBTASK 49-41-52-100-001

- (2) If it is necessary, do this task: Igniter Plug Lead Cleaning, TASK 49-41-52-100-801.

SUBTASK 49-41-52-210-001

- (3) Do these steps to inspect the igniter plug lead:

- (a) Examine the coupling nut for cracks and corrosion.
- (b) Examine the coupling nut for crossed, stripped and worn threads.
- (c) Examine the teflon or silicone grommet that surrounds the insulator for cracks and distortion.
- (d) Examine the outer shielding of the igniter plug lead for wear.
- (e) Examine the igniter plug lead for cracks and separation between the shielding and the terminal end.
- (f) If you find any of the above damage, replace the igniter plug lead.

SUBTASK 49-41-52-420-001

- (4) Do this task: Igniter Plug Lead Installation, TASK 49-41-52-400-801.

———— END OF TASK ————



**49-41-52**





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AIRCRAFT MAINTENANCE MANUAL

IGNITER PLUG LEAD - CLEANING/PAINTING

1. General

- A. This procedure has the task to clean the igniter plug lead.

**TASK 49-41-52-100-801**

2. Igniter Plug Lead Cleaning

A. References

Reference	Title
49-41-52-000-801	Igniter Plug Lead Removal (P/B 401)
49-41-52-400-801	Igniter Plug Lead Installation (P/B 401)

B. Tools/Equipment

Reference	Description
STD-123	Brush - Soft Bristle
STD-1057	Air Source - Regulated, Dry Filtered, Compressed 60-105 PSIG (414-723.9 KPa)(22 SCFM)

C. Consumable Materials

Reference	Description	Specification
B00130	Alcohol - Isopropyl	TT-I-735
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CLA)

D. Location Zones

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left

E. Procedure

SUBTASK 49-41-52-020-002

- (1) Do this task: Igniter Plug Lead Removal, TASK 49-41-52-000-801.

SUBTASK 49-41-52-110-001

- (2) Do these steps to clean the igniter plug lead:

- (a) Clean the igniter plug lead with alcohol, B00130 and a cotton wiper, G00034.
- (b) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057 to dry the igniter plug lead.

NOTE: It is recommended that you use a pressure of 60-90 psig (414-620 kPa) of air or nitrogen to dry the igniter plug lead and to blow away the loose material.
- (c) Clean all the unwanted materials off the connectors for the igniter plug lead with a soft bristle brush, STD-123.
- (d) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057 to blow away all the loose material off the igniter plug lead.

SUBTASK 49-41-52-420-002

- (3) Do this task: Igniter Plug Lead Installation, TASK 49-41-52-400-801.

— END OF TASK —

EFFECTIVITY  
LOM ALL





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

START CONVERTER UNIT - REMOVAL/INSTALLATION

**1. General**

- A. This procedure has these tasks:
  - (1) A removal of the start converter unit
  - (2) An installation of the start converter unit.
- B. The start converter unit is installed on the E2-2 electrical shelf. The E2-2 electrical shelf is found in the electrical and electronics compartment (section 43).
- C. The start converter unit is referred to as the SCU.

**TASK 49-41-61-000-801**

**2. Start Converter Unit Removal**

(Figure 401)

**A. General**

- (1) This task includes the steps to remove the start converter unit.

**B. References**

Reference	Title
20-10-07-000-801	E/E Box Removal (P/B 201)
20-40-12-000-802	ESDS Handling for Metal Encased Unit Removal (P/B 201)

**C. Tools/Equipment**

Reference	Description
STD-858	Tag - DO NOT OPERATE

**D. Location Zones**

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
211	Flight Compartment - Left

**E. Access Panels**

Number	Name/Location
117A	Electronic Equipment Access Door

**F. Prepare for the Removal**

SUBTASK 49-41-61-860-001

- (1) Make sure that the APU master switch, on the P5 forward overhead panel, is in the OFF position and install a DO NOT OPERATE tag, STD-858.

SUBTASK 49-41-61-860-002

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

**F/O Electrical System Panel, P6-4**

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT
<b>LOM 465-999; LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464 PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1</b>			
B	14	C01424	AUX POWER UNIT SCU FAN POWER

EFFECTIVITY  
LOM ALL

**49-41-61**



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LOM 465-999; LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464 PRE SB 737-49-1150  
REV 0 OR POST SB 737-49-1150 REV 1 (Continued)

(Continued)

**F/O Electrical System Panel, P6-4**

Row    Col    Number    Name

**LOM ALL**

This circuit breaker is inoperative and should remain open:

**F/O Electrical System Panel, P6-4**

Row    Col    Number    Name

**LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464 POST SB 737-49-1150  
REV 0 AND PRE SB 737-49-1150 REV 1**

B      14      C01424      AUX POWER UNIT SCU FAN POWER (INOP)

**LOM ALL**

SUBTASK 49-41-61-010-007

- (3) Open this access panel:

Number    Name/Location

117A      Electronic Equipment Access Door

SUBTASK 49-41-61-860-006



**WARNING**

WHEN YOU OPEN THE P91 AND P92 PANELS, MAKE SURE THAT THE OUTER DOOR STAYS AS OPEN AS POSSIBLE. IF THE OUTER DOOR TURNS IN, THE ATTACHED DOOR COMPONENTS COULD TOUCH THE INNER DOOR COMPONENTS. THIS CAN CAUSE AN ARC CONDITION WHEN YOU SUPPLY POWER. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT AND INJURY TO PERSONNEL CAN OCCUR.



**WARNING**

DO NOT TOUCH THE CONDUCTORS IN THE P91 AND P92 PANELS. BE CAREFUL WHEN YOU GET ACCESS TO THE CIRCUIT BREAKERS ON THE INNER SIDE OF THE P91 AND P92 PANELS (ROW F). IF IT IS POSSIBLE, REMOVE AIRPLANE ELECTRICAL POWER FIRST. THE P91 AND P92 PANELS HAVE HIGH VOLTAGES AND CURRENTS. ELECTRICAL VOLTAGE AND CURRENT CAN KILL YOU OR CAUSE INJURIES.

- (4) Open this circuit breaker and install safety tag:

**Power Distribution Panel Number 1, P91**

Row    Col    Number    Name

A      11      C01336      APU START CONV

**G. Start Converter Unit Removal**

SUBTASK 49-41-020-008



**WARNING**

DO NOT TOUCH THE HOT SURFACE OF A METAL ENCASED ELECTRICAL COMPONENT. A HOT SURFACE CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

EFFECTIVITY  
**LOM ALL**

**49-41-61**



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(WARNING PRECEDES)



**CAUTION**

YOU MUST CAREFULLY DO THE STEPS BELOW TO REMOVE THE START CONVERTER UNIT. IF YOU DO NOT DO THE STEPS CORRECTLY CAN CAUSE DAMAGE TO THE EQUIPMENT.



**CAUTION**

DO NOT TOUCH THE CONNECTOR PINS, OR OTHER CONDUCTORS. IF YOU TOUCH THESE CONDUCTORS, ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE COMPONENTS.

(1) Do these steps to remove the start converter unit [1]:

- (a) Before the start converter unit [1] is touched, do this task: ESDS Handling for Metal Encased Unit Removal, TASK 20-40-12-000-802.
- (b) Remove the start converter unit [1], do this task: E/E Box Removal, TASK 20-10-07-000-801.

NOTE: The weight of the start converter unit is approximately 40 lb (18 kg).

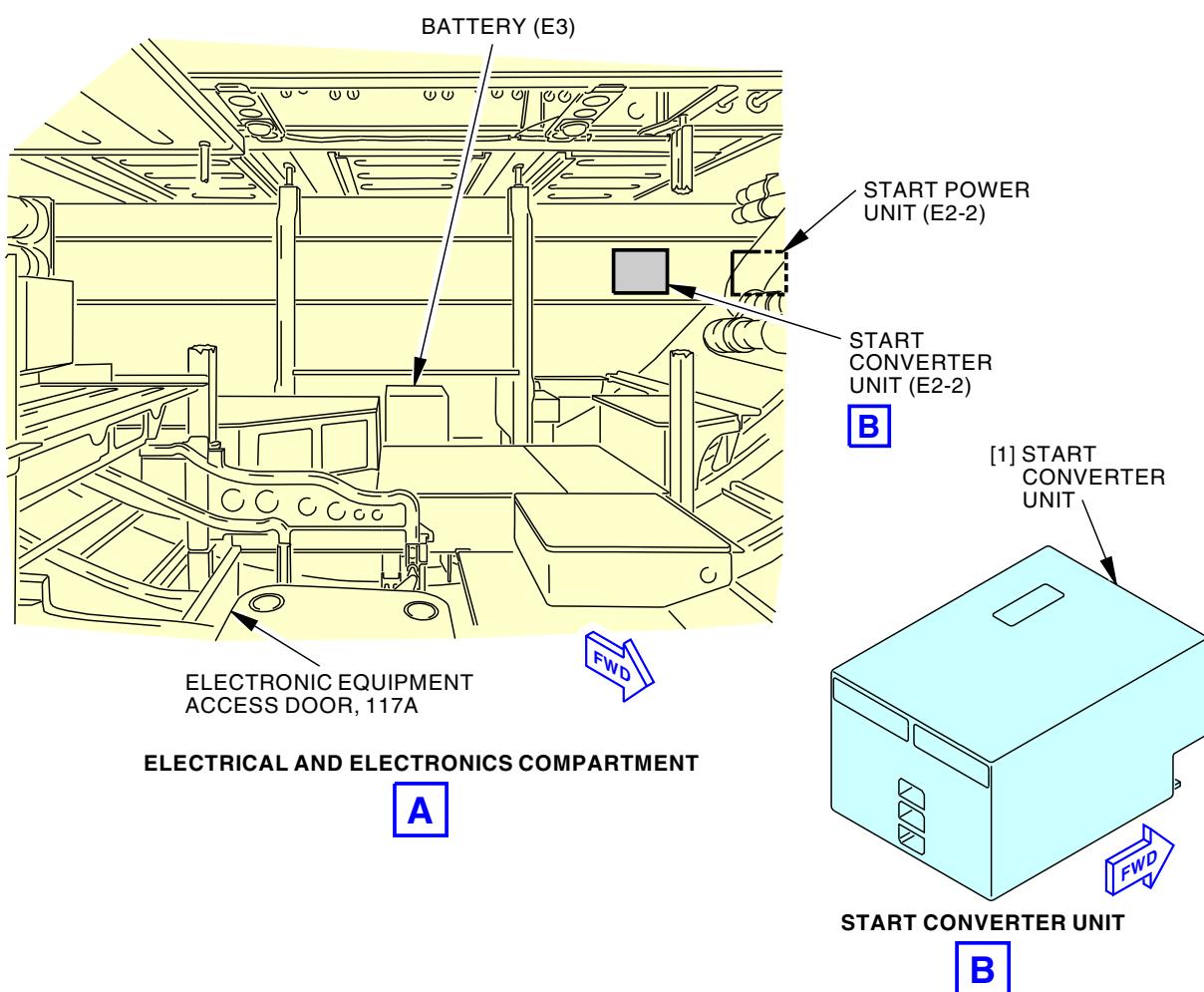
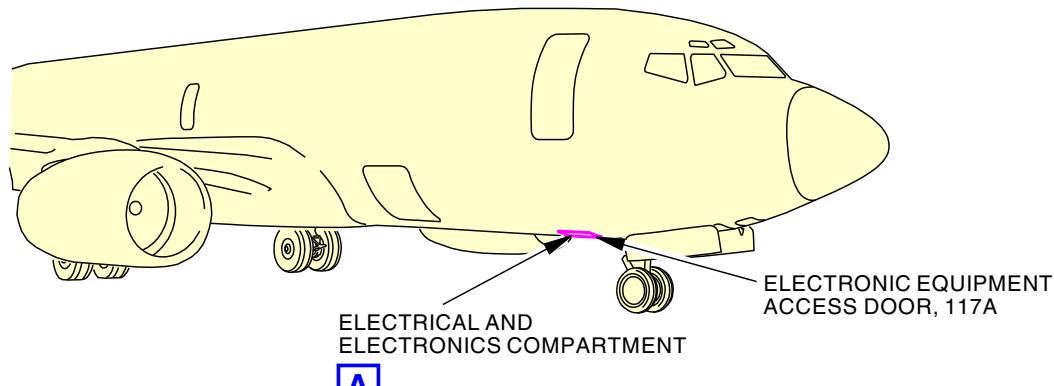
———— END OF TASK ————

EFFECTIVITY  
LOM ALL

**49-41-61**



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



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Start Converter Unit Installation  
Figure 401/49-41-61-990-801

EFFECTIVITY  
LOM ALL

**49-41-61**



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

**TASK 49-41-61-400-801**

**3. Start Converter Unit Installation**

(Figure 401)

**A. General**

- (1) This task includes the steps to remove the start converter unit.

**B. References**

Reference	Title
20-10-07-400-801	E/E Box Installation (P/B 201)
20-40-12-400-802	ESDS Handling for Metal Encased Unit Installation (P/B 201)
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)
49-61-00-700-801	APU BITE Procedure (P/B 201)

**C. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Start converter unit	49-41-61-01-005	LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464
		49-41-61-01-200	LOM 465-999

**D. Location Zones**

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
211	Flight Compartment - Left

**E. Access Panels**

Number	Name/Location
117A	Electronic Equipment Access Door

**F. Start Converter Unit Installation**

SUBTASK 49-41-61-420-006



YOU MUST CAREFULLY DO THE STEPS BELOW TO INSTALL THE START CONVERTER UNIT. A FAILURE TO DO THE STEPS CORRECTLY CAN CAUSE DAMAGE TO THE EQUIPMENT.



DO NOT TOUCH THE CONNECTOR PINS, OR OTHER CONDUCTORS. IF YOU TOUCH THESE CONDUCTORS, ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE COMPONENTS.

- (1) Do these steps to install the start converter unit [1]:

- (a) Before the start converter unit [1] is touched, do this task: ESDS Handling for Metal Encased Unit Installation, TASK 20-40-12-400-802.

NOTE: The weight of the start converter unit is 40 lb (18 kg).

- (b) Do this task: E/E Box Installation, TASK 20-10-07-400-801.

EFFECTIVITY  
LOM ALL

**49-41-61**



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

G. Start Converter Unit Installation Test

SUBTASK 49-41-61-860-007



**WARNING**

WHEN YOU OPEN THE P91 AND P92 PANELS, MAKE SURE THAT THE OUTER DOOR STAYS AS OPEN AS POSSIBLE. IF THE OUTER DOOR TURNS IN, THE ATTACHED DOOR COMPONENTS COULD TOUCH THE INNER DOOR COMPONENTS. THIS CAN CAUSE AN ARC CONDITION WHEN YOU SUPPLY POWER. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT AND INJURY TO PERSONNEL CAN OCCUR.



**WARNING**

DO NOT TOUCH THE CONDUCTORS IN THE P91 AND P92 PANELS. BE CAREFUL WHEN YOU GET ACCESS TO THE CIRCUIT BREAKERS ON THE INNER SIDE OF THE P91 AND P92 PANELS (ROW F). IF IT IS POSSIBLE, REMOVE AIRPLANE ELECTRICAL POWER FIRST. THE P91 AND P92 PANELS HAVE HIGH VOLTAGES AND CURRENTS. ELECTRICAL VOLTAGE AND CURRENT CAN KILL YOU OR CAUSE INJURIES.

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

**Power Distribution Panel Number 1, P91**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01336	APU START CONV

SUBTASK 49-41-61-860-003

- (2) 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	14	C00033	AUX POWER UNIT CONT
LOM 465-999; LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464 PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1			
B	14	C01424	AUX POWER UNIT SCU FAN POWER
<b>LOM ALL</b>			

This circuit breaker is inoperative and should remain open:

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464 POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1			
B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

**LOM ALL**

SUBTASK 49-41-61-860-004

- (3) Remove the DO-NOT-OPERATE tag from the APU master switch, on the P5 forward overhead panel.

SUBTASK 49-41-61-710-001

- (4) Do the installation test for the start converter unit:

- Set the BUS TRANS switch, on the P5 forward overhead panel, to the AUTO position.
- Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
- Make sure that the APU GEN OFF BUS light, on the P5 forward overhead panel, comes on.

EFFECTIVITY  
**LOM ALL**

**49-41-61**



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- (d) Set the two APU GEN switches, on the P5 forward overhead panel, to the ON position.  
NOTE: One of the two APU GEN switches will connect the APU starter-generator to the two 115V ac transfer busses. It is necessary to set the two APU GEN switches to the ON position for the two SOURCE OFF lights to go off.
- (e) Make sure that these lights, on the P5 forward overhead, panel go off:  
1) APU GEN OFF BUS  
2) 1 SOURCE OFF  
3) 2 SOURCE OFF  
4) 1 TRANSFER BUS OFF  
5) 2 TRANSFER BUS OFF.
- (f) Set the two APU GEN switches to the OFF position.
- (g) Make sure that these lights come on:  
1) APU GEN OFF BUS  
2) 1 SOURCE OFF  
3) 2 SOURCE OFF  
4) 1 TRANSFER BUS OFF  
5) 2 TRANSFER BUS OFF.
- (h) Do this task: APU BITE Procedure, TASK 49-61-00-700-801.  
1) If maintenance message(s) show for the APU electrical system, ignition system or the start converter unit, refer to the applicable Maintenance Message Index in the FIM.  
(i) If it is not necessary to do other tasks, do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

**H. Put the Airplane Back to Its Usual Condition**

SUBTASK 49-41-61-410-001

- (1) Close this access panel:

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

———— END OF TASK ————

EFFECTIVITY  
LOM ALL

**49-41-61**





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START POWER UNIT - REMOVAL/INSTALLATION

**1. General**

- A. This procedure has these tasks:
  - (1) A removal of the start power unit
  - (2) An installation of the start power unit.
- B. The start power unit is installed on the E2-2 electrical shelf. The E2-2 electrical shelf is found in the electrical and electronics compartment (section 43).
- C. The start power unit is referred to as the SPU.

**TASK 49-41-71-000-801**

**2. Start Power Unit - Removal**

(Figure 401)

**A. References**

Reference	Title
20-10-07-000-801	E/E Box Removal (P/B 201)
20-40-12-000-802	ESDS Handling for Metal Encased Unit Removal (P/B 201)

**B. Tools/Equipment**

Reference	Description
STD-858	Tag - DO NOT OPERATE

**C. Location Zones**

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
121	Forward Cargo Compartment - Left
122	Forward Cargo Compartment - Right
211	Flight Compartment - Left

**D. Access Panels**

Number	Name/Location
117A	Electronic Equipment Access Door
821	Forward Cargo Door

**E. Prepare for the Removal**

SUBTASK 49-41-71-860-001

- (1) Make sure that the APU master switch, on the P5 forward overhead panel, is set to the OFF position.
  - (a) Attach the DO NOT OPERATE tag, STD-858, to the applicable switch.

SUBTASK 49-41-71-860-006

- (2) Make sure that the BAT switch, on the P5-13 panel, is set to the OFF position.

SUBTASK 49-41-71-860-007

- (3) Make sure that the STANDBY POWER switch, on the P5-5 panel, is set to the AUTO position.



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SUBTASK 49-41-71-860-011

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

**F/O Electrical System Panel, P6-4**

Row    Col    Number    Name

A      14      C00033      AUX POWER UNIT CONT

LOM 465-999; LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464 PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B      14      C01424      AUX POWER UNIT SCU FAN POWER

**LOM ALL**

This circuit breaker is inoperative and should remain open:

**F/O Electrical System Panel, P6-4**

Row    Col    Number    Name

LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464 POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B      14      C01424      AUX POWER UNIT SCU FAN POWER (INOP)

**LOM ALL**

SUBTASK 49-41-71-010-001

- (5) Open these access panels:

**Number**    **Name/Location**

117A      Electronic Equipment Access Door

821      Forward Cargo Door

SUBTASK 49-41-71-860-002



**WARNING**

WHEN YOU OPEN THE P91 AND P92 PANELS, MAKE SURE THAT THE OUTER DOOR STAYS AS OPEN AS POSSIBLE. IF THE OUTER DOOR TURNS IN, THE ATTACHED DOOR COMPONENTS COULD TOUCH THE INNER DOOR COMPONENTS. THIS CAN CAUSE AN ARC CONDITION WHEN YOU SUPPLY POWER. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT AND INJURY TO PERSONNEL CAN OCCUR.



**WARNING**

DO NOT TOUCH THE CONDUCTORS IN THE P91 AND P92 PANELS. BE CAREFUL WHEN YOU GET ACCESS TO THE CIRCUIT BREAKERS ON THE INNER SIDE OF THE P91 AND P92 PANELS (ROW F). IF IT IS POSSIBLE, REMOVE AIRPLANE ELECTRICAL POWER FIRST. THE P91 AND P92 PANELS HAVE HIGH VOLTAGES AND CURRENTS. ELECTRICAL VOLTAGE AND CURRENT CAN KILL YOU OR CAUSE INJURIES.

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

**Battery Shield, J9**

Row    Col    Number    Name

A      4      C00142      BATTERY CHARGER

**Power Distribution Panel Number 1, P91**

Row    Col    Number    Name

A      11      C01336      APU START CONV

SUBTASK 49-41-71-010-003

- (7) Remove the access panel [1] to get access to the rear side of the battery.

EFFECTIVITY  
**LOM ALL**

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F. Start Power Unit Removal

SUBTASK 49-41-71-020-001



YOU MUST CAREFULLY DO THE STEPS BELOW TO REMOVE THE START POWER UNIT. A FAILURE TO DO THE STEPS CORRECTLY CAN CAUSE DAMAGE TO THE EQUIPMENT.

- (1) Do these steps to remove the start power unit [4]:

**LOM 423, 424, 439, 441, 446, 447, 455, 456, 458-464, 466-999**

- (a) Remove the lockwire from the battery connector D44 [3] at the battery [2].

NOTE: You can find the battery on the bottom of the E3 electronic equipment rack. The E3 electronic equipment rack is found in the electrical and electronics compartment (section 43).



MAKE SURE THAT YOU ISOLATE THE BATTERY CONNECTOR FROM THE AIRPLANE STRUCTURE. A BATTERY POWER VOLTAGE OF 28V DC IS PRESENT AT THE BATTERY CONNECTOR. THE ELECTRICAL SHOCK CAN CAUSE INJURY TO PERSONNEL OR CAUSE DAMAGE TO THE AIRPLANE.

- (b) Disconnect and isolate the battery connector D44 [3] from the battery [2].

**LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422, 425-434, 437, 438, 440, 442-445, 450-454, 457, 465**

- (c) Remove the lockwires from the battery connectors D44 [3] at the batteries [2].

NOTE: You can find the batteries on the bottom of the E3 electronic equipment rack. The E3 electronic equipment rack is found in the electrical and electronics compartment (section 43).



MAKE SURE THAT YOU ISOLATE THE BATTERY CONNECTOR FROM THE AIRPLANE STRUCTURE. A BATTERY POWER VOLTAGE OF 28V DC IS PRESENT AT THE BATTERY CONNECTOR. THE ELECTRICAL SHOCK CAN CAUSE INJURY TO PERSONNEL OR CAUSE DAMAGE TO THE AIRPLANE.

- (d) Disconnect and isolate the battery connectors D44 [3] from the batteries [2].

**LOM ALL**

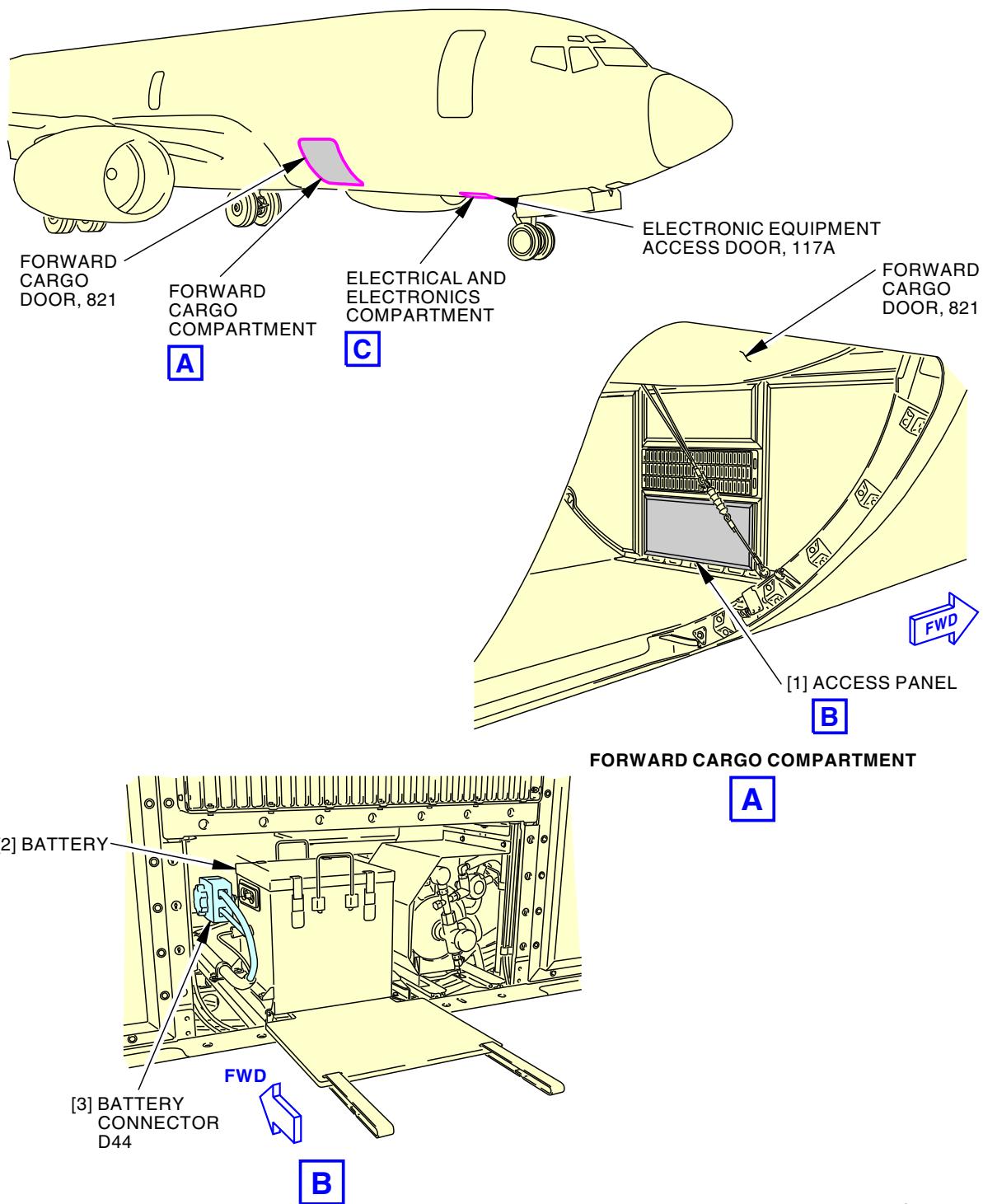
- (e) Do this task: ESDS Handling for Metal Encased Unit Removal, TASK 20-40-12-000-802.  
(f) Remove the lockwire from the battery connector D11798 [5] at start power unit [4].  
(g) Disconnect the battery connector D11798 [5] from the start power unit [4].  
(h) Remove the nut [6], washer [7], and ground wire [8] from the terminal stud.  
(i) Remove the start power unit [4] (TASK 20-10-07-000-801).

NOTE: The weight of the start power unit is approximately 40 lb (18 kg).

— END OF TASK —

EFFECTIVITY  
**LOM ALL**

**49-41-71**



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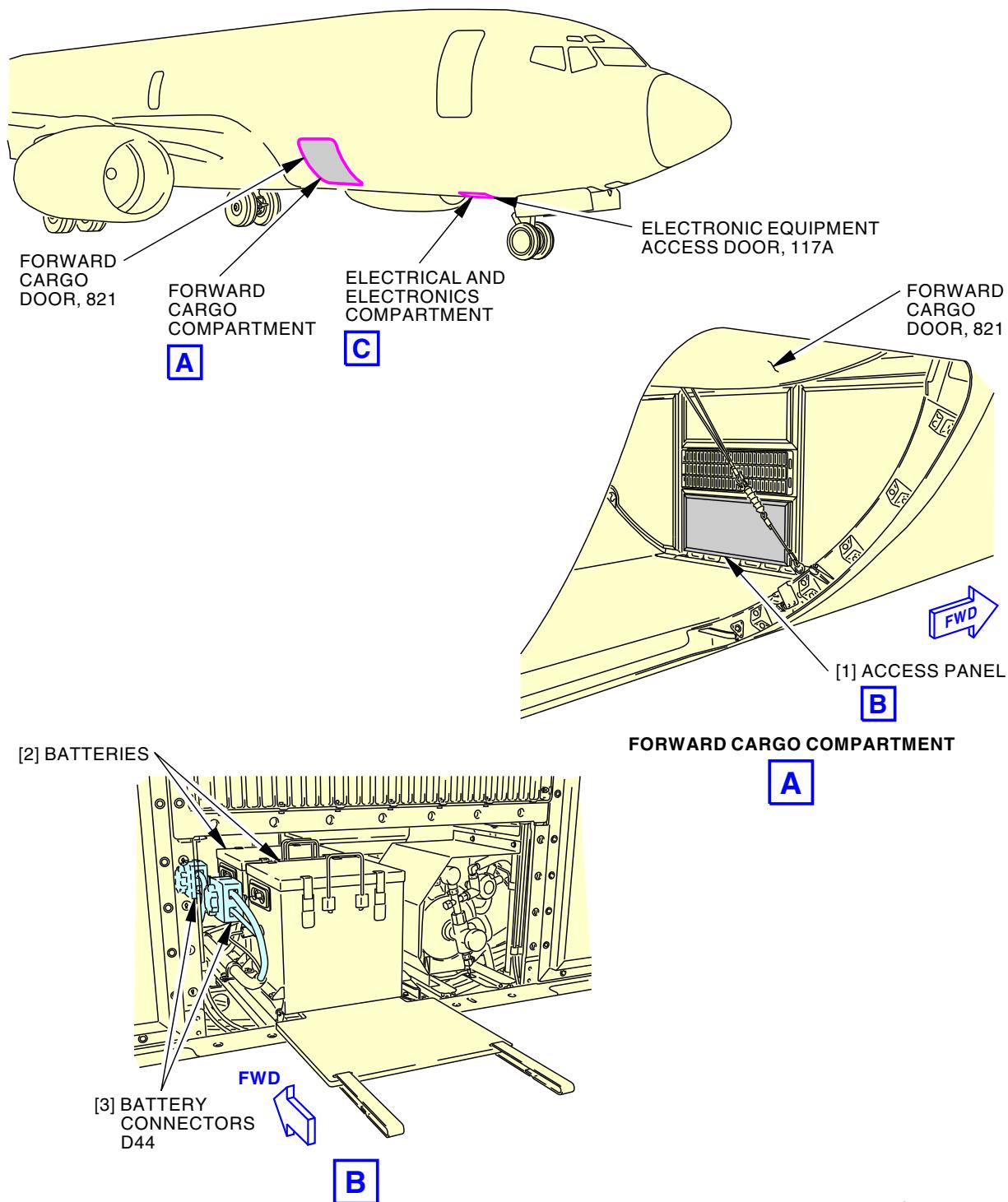
**Start Power Unit Installation**  
**Figure 401/49-41-71-990-801 (Sheet 1 of 3)**

EFFECTIVITY  
LOM 423, 424, 439, 441, 446, 447, 455, 456, 458-464,  
466-999

**49-41-71**

D633A101-LOM

ECCN 9E991 BOEING PROPRIETARY - See title page for details

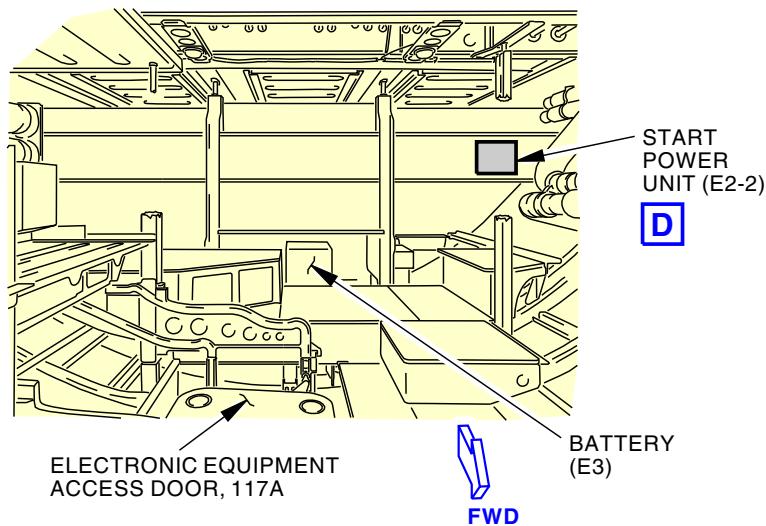
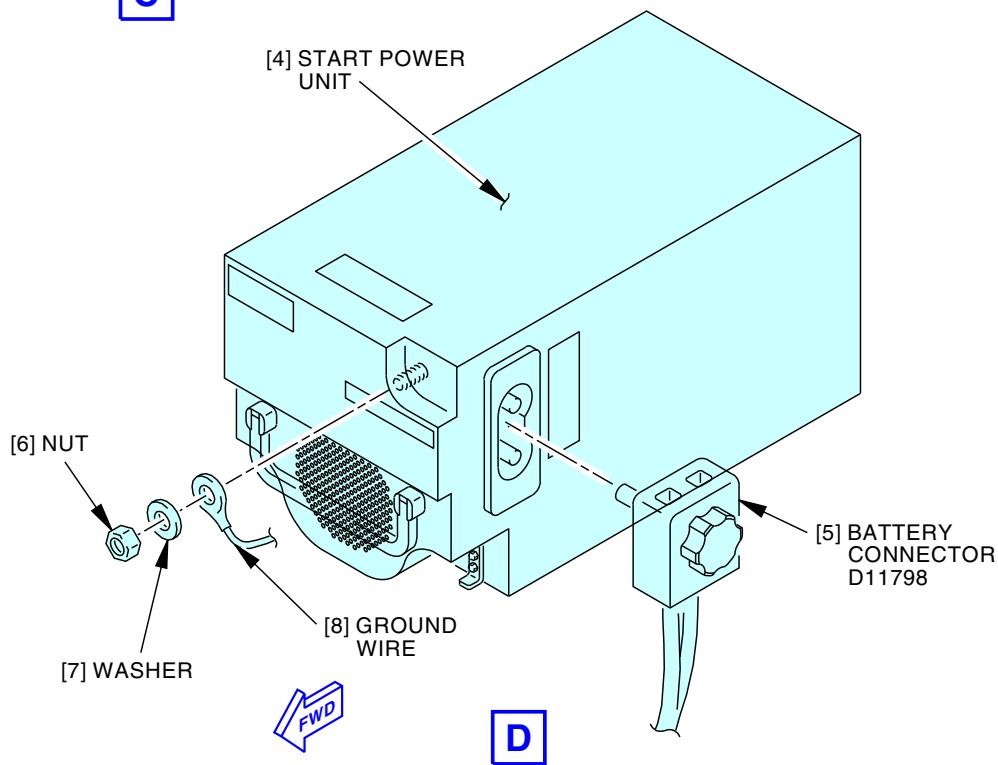
**737-600/700/800/900  
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**Start Power Unit Installation  
Figure 401/49-41-71-990-801 (Sheet 2 of 3)**

EFFECTIVITY  
 LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422,  
 425-434, 437, 438, 440, 442-445, 450-454, 457, 465

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**ELECTRICAL AND ELECTRONICS COMPARTMENT**
**C**


N47650 S0006579279\_V2

**Start Power Unit Installation  
Figure 401/49-41-71-990-801 (Sheet 3 of 3)**

 EFFECTIVITY  
LOM ALL

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**TASK 49-41-71-400-801**

**3. Start Power Unit - Installation**

(Figure 401)

**A. References**

Reference	Title
20-10-07-400-801	E/E Box Installation (P/B 201)
20-40-12-400-802	ESDS Handling for Metal Encased Unit Installation (P/B 201)
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)
49-61-00-700-801	APU BITE Procedure (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-614	Bonding Meters - Non-Intrinsically Safe (For use in outside Class I, Divisions I & II non-hazardous locations. For hazardous locations, use COM-1550). Part #: 247000 Supplier: 00426 Part #: 620LK Supplier: 1CRL2 Part #: BLR-0003-XX Supplier: KC432 Part #: BT51 Supplier: 00426 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659 Opt Part #: 247001 Supplier: 00426

**C. Consumable Materials**

Reference	Description	Specification
A50231	Sealant - Pressure And Environmental - Chromate Type	BMS5-95 Class B
A50296	Sealant - Pressure And Environmental - Chromate Type	BMS5-95 Class C
G02166	Lockwire - MS20995NC20, Monel - 0.020 Inch (0.508 mm) Diameter	NASM20995
G02479	Lockwire - MS20995CY20, Copper - 0.020 Inch (0.508 mm) Diameter	NASM20995

**D. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
4	Start power unit	49-41-71-01-005	LOM ALL
		49-41-71-01-020	LOM ALL

**E. Location Zones**

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
121	Forward Cargo Compartment - Left
122	Forward Cargo Compartment - Right

EFFECTIVITY
LOM ALL

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(Continued)

**Zone      Area**

211      Flight Compartment - Left

**F. Access Panels**

**Number      Name/Location**

117A      Electronic Equipment Access Door  
821      Forward Cargo Door

**G. Start Power Unit Installation**

SUBTASK 49-41-71-420-001



**CAUTION**

YOU MUST CAREFULLY DO THE STEPS BELOW TO INSTALL THE START POWER UNIT. A FAILURE TO DO THE STEPS CORRECTLY CAN CAUSE DAMAGE TO THE EQUIPMENT.

- (1) Do these steps to install the start power unit [4]:

- (a) Install the start power unit [4] (TASK 20-40-12-400-802).

NOTE: The weight of the start power unit is approximately 40 lb (18 kg).

- (b) Do this task: E/E Box Installation, TASK 20-10-07-400-801.

- (c) Install the nut [6], washer [7], and ground wire [8] to the terminal stud.

- 1) Clean the nut [6], washer [7], ground wire [8], and terminal stud with solvent.

- 2) Apply sealant, A50231, or sealant, A50296, to the mating surfaces of the nut [6], washer [7], ground wire [8], and terminal stud.

NOTE: Refer to the category 2 fay sealing procedure in SWPM 20-20-10.

- 3) Install the nut [6], washer [7], and ground wire [8] to the terminal stud.

- 4) Tighten the nut [6] to 95 in-lb (11 N·m) - 110 in-lb (12 N·m).

- a) Make sure that the sealant squeeze-out is continuous and visible around the installed parts.

- 5) Measure the electrical bonding resistance across the terminal stud.

- a) Use a non-intrinsically safe bonding meter, COM-614.

- b) Make sure that the electrical bonding resistance is 0.50 milliohm (0.0005 ohm) or less.

- (d) Connect the battery connector D11798 [5] to the start power unit [4].

- 1) Install MS20995NC20 lockwire, G02166, on the battery connector D11798 [5].

**LOM 423, 424, 439, 441, 446, 447, 455, 456, 458-464, 466-999**

- (e) Connect the battery connector D44 [3] to the battery [2].

- 1) Install MS20995CY20 lockwire, G02479, on the battery connector D44 [3].

**LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422, 425-434, 437, 438, 440, 442-445, 450-454, 457, 465**

- (f) Connect the battery connectors D44 [3] to the batteries [2].

- 1) Install MS20995CY20 lockwire, G02479, on the battery connectors D44 [3].

**LOM ALL**

EFFECTIVITY  
LOM ALL

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H. Start Power Unit Installation Test

SUBTASK 49-41-71-860-010



**WARNING**

WHEN YOU OPEN THE P91 AND P92 PANELS, MAKE SURE THAT THE OUTER DOOR STAYS AS OPEN AS POSSIBLE. IF THE OUTER DOOR TURNS IN, THE ATTACHED DOOR COMPONENTS COULD TOUCH THE INNER DOOR COMPONENTS. THIS CAN CAUSE AN ARC CONDITION WHEN YOU SUPPLY POWER. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT AND INJURY TO PERSONNEL CAN OCCUR.



**WARNING**

DO NOT TOUCH THE CONDUCTORS IN THE P91 AND P92 PANELS. BE CAREFUL WHEN YOU GET ACCESS TO THE CIRCUIT BREAKERS ON THE INNER SIDE OF THE P91 AND P92 PANELS (ROW F). IF IT IS POSSIBLE, REMOVE AIRPLANE ELECTRICAL POWER FIRST. THE P91 AND P92 PANELS HAVE HIGH VOLTAGES AND CURRENTS. ELECTRICAL VOLTAGE AND CURRENT CAN KILL YOU OR CAUSE INJURIES.

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

**Battery Shield, J9**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

**Power Distribution Panel Number 1, P91**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01336	APU START CONV

SUBTASK 49-41-71-410-004

- (2) Close this access panel:

**Number      Name/Location**

117A      Electronic Equipment Access Door

SUBTASK 49-41-71-860-003

- (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	14	C00033	AUX POWER UNIT CONT

LOM 465-999; LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464 PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B      14      C01424      AUX POWER UNIT SCU FAN POWER

**LOM ALL**

This circuit breaker is inoperative and should remain open:

**F/O Electrical System Panel, P6-4**

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

LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464 POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B      14      C01424      AUX POWER UNIT SCU FAN POWER (INOP)

**LOM ALL**

EFFECTIVITY  
LOM ALL

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SUBTASK 49-41-71-860-004

- (4) Remove the DO NOT OPERATE tag, from the APU master switch on the P5 forward overhead panel.

SUBTASK 49-41-71-860-008

- (5) Make sure that the BAT switch, on the P5-13 panel, is set to the ON position.

SUBTASK 49-41-71-860-009

- (6) Make sure that the STANDBY POWER switch, on the P5-5 panel, is set to the AUTO position.

SUBTASK 49-41-71-710-001

- (7) Do the installation test for the start power unit [4] using AC power:

- (a) Set the BUS TRANS switch, on the P5 forward overhead panel, to the AUTO position.
- (b) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
- (c) Make sure that the APU GEN OFF BUS light, on the P5 forward overhead panel, comes on.
- (d) Operate the APU for a minimum of five minutes.
- (e) Set the two APU GEN switches, on the P5 forward overhead panel, to the ON position.

NOTE: One of the two APU GEN switches will connect the APU starter-generator to the two 115V AC transfer busses. It is necessary to set the two APU GEN switches to the ON position for the two SOURCE OFF lights to go off.

- (f) Make sure that these lights, on the P5 forward overhead panel, go off:

- 1) APU GEN OFF BUS
- 2) 1 SOURCE OFF
- 3) 2 SOURCE OFF
- 4) 1 TRANSFER BUS OFF
- 5) 2 TRANSFER BUS OFF.

- (g) Set the two APU GEN switches to the OFF position.

- (h) Make sure that these lights come on:

- 1) APU GEN OFF BUS
- 2) 1 SOURCE OFF
- 3) 2 SOURCE OFF
- 4) 1 TRANSFER BUS OFF
- 5) 2 TRANSFER BUS OFF.

- (i) Do this task: APU BITE Procedure, TASK 49-61-00-700-801.

- 1) If maintenance message(s) show for the APU Electrical System, ignition system or the start power unit, refer to the applicable Maintenance Message Index in the Fault Isolation Manual (FIM).

- (j) If it is not necessary to do other tasks, do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

SUBTASK 49-41-71-710-002

- (8) Do the installation test for the start power unit [4] using DC power:

- (a) Set the BUS TRANS switch, on the P5 forward overhead panel, to the AUTO position.
- (b) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.

EFFECTIVITY  
LOM ALL

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- (c) Make sure that the APU GEN OFF BUS light, on the P5 forward overhead panel, comes on.
- (d) Operate the APU for a minimum of five minutes.
- (e) Set the two APU GEN switches, on the P5 forward overhead panel, to the ON position.  
NOTE: One of the two APU GEN switches will connect the APU starter-generator to the two 115V AC transfer busses. It is necessary to set the two APU GEN switches to the ON position for the two SOURCE OFF lights to go off.
- (f) Make sure that these lights, on the P5 forward overhead panel, go off:
  - 1) APU GEN OFF BUS
  - 2) 1 SOURCE OFF
  - 3) 2 SOURCE OFF
  - 4) 1 TRANSFER BUS OFF
  - 5) 2 TRANSFER BUS OFF.
- (g) Set the two APU GEN switches to the OFF position.
- (h) Make sure that these lights come on:
  - 1) APU GEN OFF BUS
  - 2) 1 SOURCE OFF
  - 3) 2 SOURCE OFF
  - 4) 1 TRANSFER BUS OFF
  - 5) 2 TRANSFER BUS OFF.
- (i) Do this task: APU BITE Procedure, TASK 49-61-00-700-801.
  - 1) If maintenance message(s) show for the APU Electrical System, ignition system or the start power unit, refer to the applicable Maintenance Message Index in the FIM.
- (j) If it is not necessary to do other tasks, do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

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

### SUBTASK 49-41-71-410-002

- (1) Install the access panel [1] that you removed to get access to the rear side of the battery.

### SUBTASK 49-41-71-410-001

- (2) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
821	Forward Cargo Door

———— END OF TASK ————

EFFECTIVITY  
LOM ALL

**49-41-71**





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BLEED AIR VALVE - REMOVAL/INSTALLATION

**1. General**

- A. This procedure has these tasks:
  - (1) A removal of the bleed air valve
  - (2) An installation of the bleed air valve.
- B. The bleed air valve is installed between the bleed air duct and the compressor discharge duct. You can get access to the bleed air valve through the APU cowl door.

**TASK 49-52-11-000-801**

**2. Bleed Air Valve Removal**

(Figure 401)

**A. Location Zones**

<b>Zone</b>	<b>Area</b>
211	Flight Compartment - Left
316	APU Compartment - Right

**B. Access Panels**

<b>Number</b>	<b>Name/Location</b>
315A	APU Cowl Door

**C. Prepare for the Removal**

SUBTASK 49-52-11-860-001

- (1) Make sure the APU master switch on the P5 forward overhead panel is OFF and install a DO-NOT-OPERATE tag.

SUBTASK 49-52-11-860-002

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

**F/O Electrical System Panel, P6-2**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-52-11-010-002

- (3) To open the access panel, do these steps:

**Number**      **Name/Location**

315A      APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowling) under the center latch.

- (b) Open the three latches.

NOTE: Use this sequence: forward latch, aft latch, middle latch.

- (c) Open the APU Cowl Door, 315A.

- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.

- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.

EFFECTIVITY  
LOM ALL

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**AIRCRAFT MAINTENANCE MANUAL**

- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

**D. Bleed Air Valve Removal**

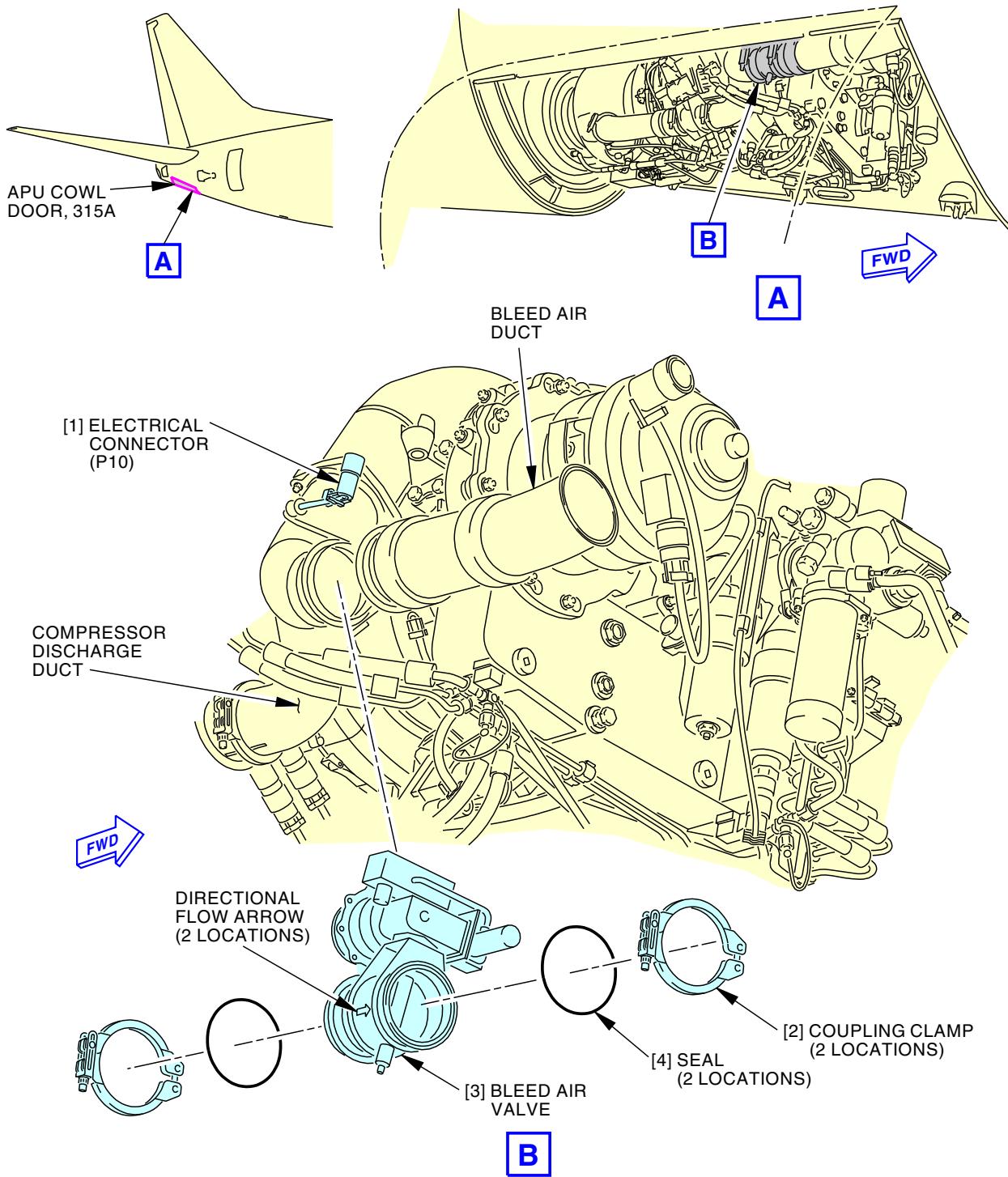
SUBTASK 49-52-11-020-001

- (1) Do these steps to remove the bleed air valve [3]:
  - (a) Disconnect the electrical connector (P10) [1] from the bleed air valve [3].
  - (b) Remove the two coupling clamps [2] that hold the bleed air valve [3] to the bleed air duct and compressor discharge duct.
  - (c) Move the bleed air duct forward and up to get access to the bleed air valve [3].
  - (d) Remove the bleed air valve [3].
  - (e) Remove the seals [4] from the bleed air valve [3].
  - (f) Examine the seals [4] for signs of deterioration and leakage.
    - 1) Discard the seals [4] if you find signs of deterioration or leakage.
  - (g) Make sure you install all necessary protection covers.

———— END OF TASK ————

EFFECTIVITY  
LOM ALL

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**Bleed Air Valve Installation**  
**Figure 401/49-52-11-990-801**

 EFFECTIVITY  
 LOM ALL

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TASK 49-52-11-400-801

3. **Bleed Air Valve Installation**

(Figure 401)

A. **References**

Reference	Title
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)
49-61-00-700-801	APU BITE Procedure (P/B 201)

B. **Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Bleed air valve	49-52-11-02-035	LOM ALL
4	Seal	49-52-11-02-010	LOM ALL

C. **Location Zones**

Zone	Area
211	Flight Compartment - Left
316	APU Compartment - Right

D. **Access Panels**

Number	Name/Location
315A	APU Cowl Door

E. **Procedure**

SUBTASK 49-52-11-420-001



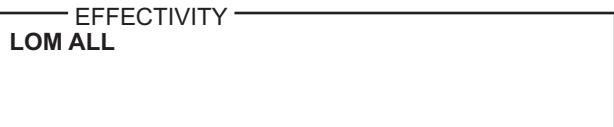
**CAUTION** REMOVE ANY INSTALLED PROTECTION COVERS FROM THE OPENINGS.  
IF YOU DO NOT REMOVE THE PROTECTION COVERS, DAMAGE TO THE  
APU CAN OCCUR.

- (1) Do these steps to install the bleed air valve [3]:

- Install the seals [4] on the bleed air valve [3].
- Put the two coupling clamps [2] on the bleed air duct and compressor discharge duct.
- Carefully put the bleed air valve [3] in its position on the bleed air duct and compressor discharge duct.

NOTE: To install the bleed air valve [3], make sure the directional flow arrow points to the front of the APU.

- Open the two coupling clamps [2] to permit the mark on the bleed air valve [3] to align with the marks on the bleed air duct and compressor discharge duct.
  - Make sure the mark on the bleed air valve [3] aligns with the marks on the bleed air duct and compressor discharge duct.
- Put the two coupling clamps [2] over the flanges of the bleed air valve [3], bleed air duct and compressor discharge duct.
    - For AS1895 or 234-591 clamps: tighten the two coupling clamps [2] to 95 in-lb (10.7 N·m) - 110 in-lb (12.4 N·m).
    - For 543227A or 234-607 clamps: tighten the two coupling clamps [2] to 35 in-lb (4.0 N·m) - 40 in-lb (4.5 N·m).
  - Connect the electrical connector (P10) [1] to the bleed air valve [3].



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**F. Bleed Air Valve Installation Test**

SUBTASK 49-52-11-860-003

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-52-11-860-004

- (2) Remove the DO-NOT-OPERATE tag from the Auxiliary Power Unit (APU) master switch on the P5 forward overhead panel.

SUBTASK 49-52-11-710-001

- (3) Do the installation test for the bleed air valve:
  - (a) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
  - (b) Operate the APU for a minimum of five minutes.
  - (c) During the APU operation, examine the bleed air valve for signs of air leakage.
  - (d) If you find air leakage, do these steps to repair the leakage:
    - 1) Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.
    - 2) Install a DO-NOT-OPERATE tag to the APU master switch on the P5 forward overhead panel.
    - 3) Repair the cause of the air leakage.
    - 4) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.
    - 5) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
    - 6) During the APU operation, examine the bleed air valve for signs of air leakage.
    - 7) If you find air leakage, do the leakage repair again.
  - (e) Set these switches on the P5 forward overhead panel:
    - 1) Set the ISOLATION VALVE switch to the OPEN position.
    - 2) Make sure the engines 1 and/or 2 BLEED switches are in the OFF position.
    - 3) Make sure the L PACK and R PACK switches are in the OFF position.
    - 4) Set the APU BLEED switch to the ON position.
  - (f) Do this task: APU BITE Procedure, TASK 49-61-00-700-801.
    - 1) If maintenance message(s) show for the APU bleed air system or the bleed air valve, refer to the applicable Maintenance Message Index in the Fault Isolation Manual (FIM).
  - (g) Set these switches on the P5 forward overhead panel:
    - 1) Set the APU BLEED switch to the OFF position.

NOTE: The duct pressure will be 0-6 psig when the bleed switch is in the OFF position, because the bleed air valve is not fully sealed.
    - 2) Set the ISOLATION VALVE switch to the CLOSE position.

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LOM ALL

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**AIRCRAFT MAINTENANCE MANUAL**

- (h) If it is not necessary to do other tasks, do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

**G. Put the Airplane Back to Its Usual Condition**

SUBTASK 49-52-11-410-002

- (1) To close the access panel, do these steps:

**Number**      **Name/Location**

315A      APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

**NOTE:** Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

EFFECTIVITY  
LOM ALL

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INLET GUIDE VANE (IGV) ACTUATOR - REMOVAL/INSTALLATION

**1. General**

- A. This procedure has these tasks:
  - (1) A removal of the inlet guide vane actuator
  - (2) An installation of the inlet guide vane actuator.
- B. The Inlet Guide Vane (IGV) actuator is referred to as the IGV actuator.

**TASK 49-52-12-000-801**

**2. Inlet Guide Vane (IGV) Actuator Removal**

(Figure 401)

**A. Tools/Equipment**

<u>Reference</u>	<u>Description</u>
STD-858	Tag - DO NOT OPERATE
STD-4049	Container - Fuel Resistant, 1 Gallon (4 Liter)

**B. Location Zones**

<u>Zone</u>	<u>Area</u>
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**C. Access Panels**

<u>Number</u>	<u>Name/Location</u>
315A	APU Cowl Door

**D. Prepare for the Removal**

SUBTASK 49-52-12-860-001

- (1) Make sure that the APU master switch, on the P5 forward overhead panel, is in the OFF position and install a DO NOT OPERATE tag, STD-858.

SUBTASK 49-52-12-860-002

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-52-12-010-004

- (3) To open the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowling door) under the center latch.
- (b) Open the three latches.

NOTE: Use this sequence: forward latch, aft latch, middle latch.

EFFECTIVITY  
LOM ALL

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- (c) Open the APU Cowl Door, 315A.
- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

**E. Inlet Guide Vane (IGV) Actuator Removal**

SUBTASK 49-52-12-020-001

- (1) Disconnect the electrical connector (P17) [13] from the IGV actuator [14].

SUBTASK 49-52-12-020-002

- (2) Do these steps to disconnect the fuel supply tube [9], fuel return tube [10], and fuel drain tube [8] from the IGV actuator [14]:
  - (a) Put the 1 gallon (4 l) fuel resistant container, STD-4049, below the IGV actuator [14].



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

- (b) Loosen the bolts [11] that attach the bracket to the IGV actuator [14].
- (c) Disconnect the fuel drain tube [8] from the IGV actuator [14].
- (d) Disconnect the fuel supply tube [9] and fuel return tube [10] for the fuel control unit and surge control valve from the IGV actuator [14].
- (e) Remove the packings [6], packings [7], and packings [12] from the fuel supply tube [9], fuel drain tube [8], and fuel return tube [10].
  - 1) Discard the packings [6], packings [7], and packings [12].
- (f) Drain the fuel from the fuel drain tube [8], fuel supply tube [9], and fuel return tube [10] into the 1 gallon (4 l) fuel resistant container, STD-4049.
- (g) Install caps on the fuel drain tube [8], fuel supply tube [9], and fuel return tube [10].

SUBTASK 49-52-12-020-003

- (3) Do these steps to remove the IGV actuator [14]:
  - (a) Loosen the bolts [2] that attach the cover [1] to the APU.

**LOM ALL PRE SB 131-49-7366**

- (b) Turn the cover [1] clockwise to show the captive bolt [15] for the clevis assembly.

**LOM ALL POST SB 131-49-7366**

- (c) Turn the cover [1] clockwise to show the bolt [16] and washer [17] for the clevis assembly.

**LOM ALL PRE SB 131-49-7366**

- (d) Loosen the captive bolt [15] until the rod end [3] of the IGV actuator [14] disengages from the captive bolt.

EFFECTIVITY  
LOM ALL

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**AIRCRAFT MAINTENANCE MANUAL**

**LOM ALL POST SB 131-49-7366**

- (e) Remove the bolt [16] and washer [17] that attach the rod end [3] to the clevis assembly.

**LOM ALL**

- (f) Remove the bolts [5] and washers [4] that attach the IGV actuator [14] to the APU.



**CAUTION**

MAKE SURE THAT THE CLEVIS ASSEMBLY AND CAPTIVE BOLT ARE  
DISENGAGED FROM THE IGV ACTUATOR. IF YOU REMOVE THE IGV  
ACTUATOR WITH THE CLEVIS ASSEMBLY AND CAPTIVE BOLT  
ENGAGED, DAMAGE TO THE CLEVIS ASSEMBLY CAN OCCUR.

- (g) Pull out the IGV actuator [14] slowly.

**LOM ALL PRE SB 131-49-7366**

- (h) If it is necessary, disengage the clevis assembly and captive bolt [15] from the IGV actuator [14].

**LOM ALL**

- (i) Remove the IGV actuator [14].  
(j) Remove the rod end [3] from the IGV actuator [14].  
(k) Make sure to install all necessary protection covers.  
(l) Remove the 1 gallon (4 l) fuel resistant container, STD-4049.

———— END OF TASK ————

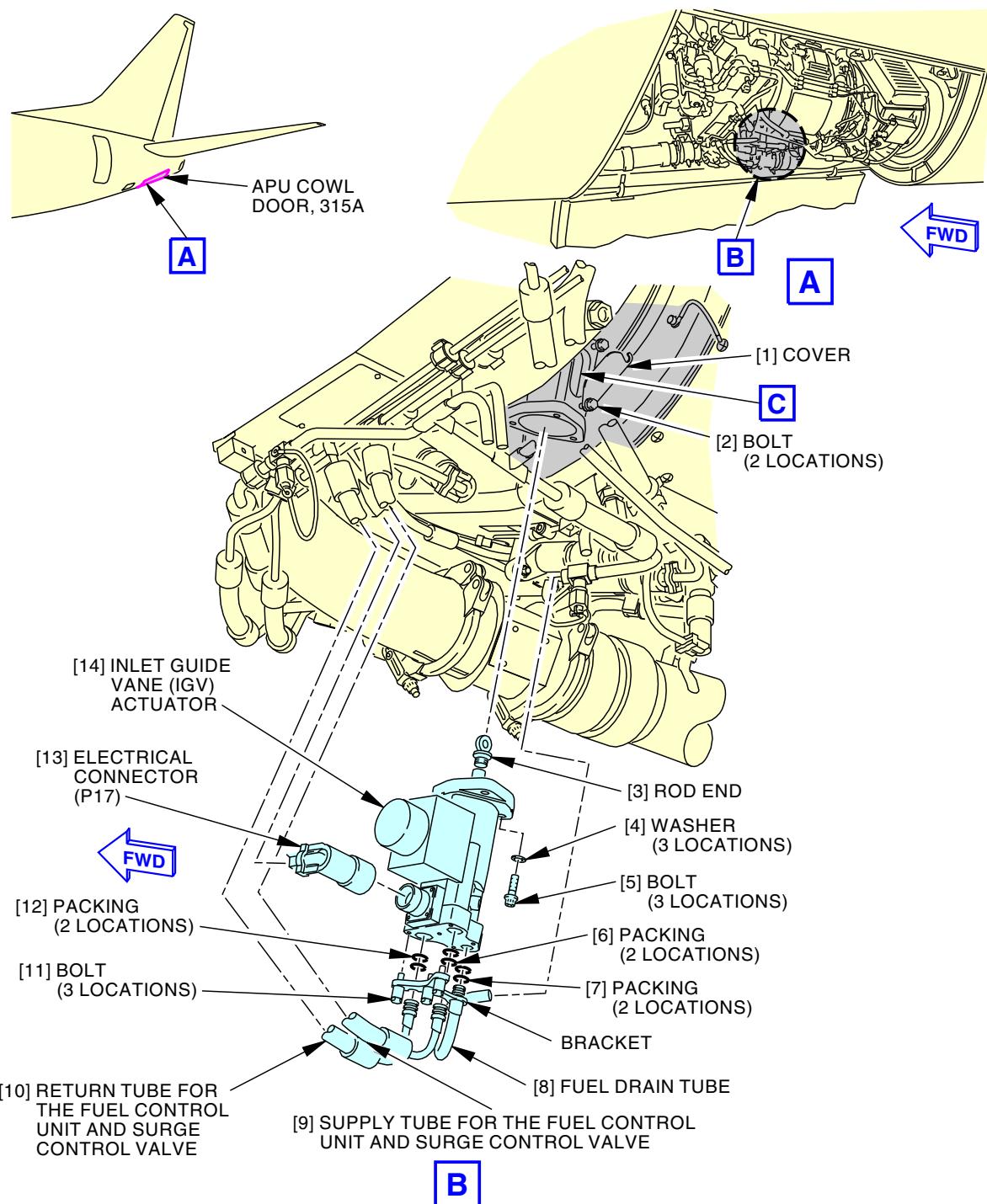
EFFECTIVITY  
**LOM ALL**

**49-52-12**

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ECCN 9E991 BOEING PROPRIETARY - See title page for details

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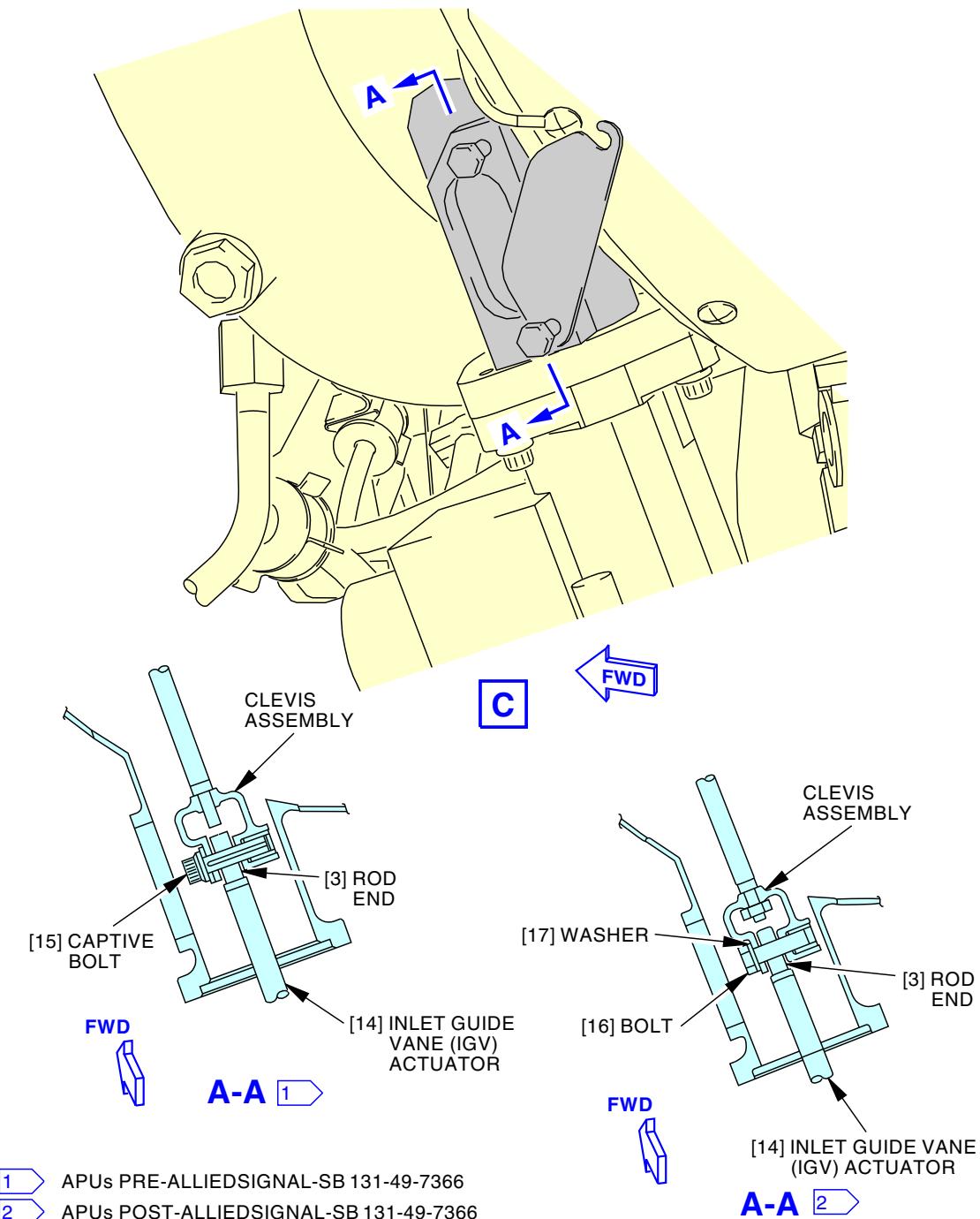
**Inlet Guide Vane Actuator Installation**  
**Figure 401/49-52-12-990-801 (Sheet 1 of 2)**

EFFECTIVITY  
LOM ALL

**49-52-12**

D633A101-LOM

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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**Inlet Guide Vane Actuator Installation**  
**Figure 401/49-52-12-990-801 (Sheet 2 of 2)**

EFFECTIVITY  
LOM ALL

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ECCN 9E991 BOEING PROPRIETARY - See title page for details

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**TASK 49-52-12-400-801**

**3. Inlet Guide Vane (IGV) Actuator Installation**

(Figure 401)

**A. References**

Reference	Title
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)
49-61-00-700-801	APU BITE Procedure (P/B 201)

**B. Tools/Equipment**

Reference	Description
STD-858	Tag - DO NOT OPERATE

**C. Consumable Materials**

Reference	Description	Specification
D00341	Lubricant - Polyphenyl Ether, Vacuum Pump - Santovac 5	
D00504	Grease - Petrolatum	VV-P-236

**D. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
6	Packing	49-52-12-02-030	LOM ALL
7	Packing	49-52-12-02-025	LOM ALL
12	Packing	49-52-12-02-035	LOM ALL
14	IGV actuator	49-52-12-02-080	LOM ALL

**E. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**F. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**G. Inlet Guide Vane (IGV) Actuator Installation**

SUBTASK 49-52-12-420-001



REMOVE THE PROTECTION COVERS FROM THE OPENINGS AS NECESSARY. IF YOU DO NOT REMOVE THE PROTECTION COVERS, DAMAGE TO THE APU CAN OCCUR.

- (1) Do these steps to install the IGV actuator [14]:
  - (a) Clean the mating surfaces of the IGV actuator [14].
  - (b) Install the rod end [3] on the IGV actuator [14].
    - 1) Tighten the rod end [3] to 50 in-lb (5.6 N·m).
  - (c) Put the IGV actuator [14] in its position on the Auxiliary Power Unit (APU).

EFFECTIVITY  
LOM ALL

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**LOM ALL PRE SB 131-49-7366**

- (d) Align the rod end [3] with the clevis assembly and captive bolt [15].
  - 1) Tighten the captive bolt [15] to 50 in-lb (5.6 N·m).

**LOM ALL POST SB 131-49-7366**

- (e) Align the rod end [3] with the clevis assembly and install the washer [17] and bolt [16].
  - 1) Tighten the bolt [16] to 50 in-lb (5.6 N·m).

**LOM ALL**

- (f) Install the bolts [5] and washers [4] that attach the IGV actuator [14] to the APU.
  - 1) Tighten the bolts [5] to 120 in-lb (13.6 N·m).
- (g) Turn the cover [1] counterclockwise until the flange fully engages the top bolt.
  - 1) Tighten the bolts [2] to 50 in-lb (5.6 N·m).

SUBTASK 49-52-12-420-002

- (2) Do these steps to connect the fuel supply tube [9], fuel return tube [10], and fuel drain tube [8] to the IGV actuator [14]:
  - (a) Lubricate the new packings [6] and new packings [12] for the fuel supply tube [9] and fuel return tube [10] for the fuel control unit and surge control valve with a light coat of Santovac 5 lubricant, D00341, or grease, D00504.
  - (b) Lubricate the new packings [7] for the fuel drain tube [8] with a light coat of Santovac 5 lubricant, D00341, or grease, D00504.
  - (c) Remove the caps from the fuel drain tube [8], fuel supply tube [9], and fuel return tube [10].
  - (d) Install the packings [6] and packings [12] on the fuel supply tube [9] and fuel return tube [10] for the fuel control unit and surge control valve.
  - (e) Install the packings [7] on the fuel drain tube [8].
  - (f) Connect the fuel drain tube [8], fuel supply tube [9], and fuel return tube [10] with the bracket to the IGV actuator [14].
  - (g) Tighten the bolts [11] that attach the bracket to the IGV actuator [14] to 50 in-lb (5.6 N·m).

SUBTASK 49-52-12-420-003

- (3) Connect the electrical connector (P17) [13] to the IGV actuator [14].

**H. Inlet Guide Vane (IGV) Actuator Installation Test**

SUBTASK 49-52-12-860-003

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-52-12-860-004

- (2) Remove the DO-NOT-OPERATE tag from the APU master switch, on the P5 forward overhead panel.

EFFECTIVITY  
**LOM ALL**

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SUBTASK 49-52-12-710-001

- (3) Do the installation test for the Inlet Guide Vane (IGV) actuator:
  - (a) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
  - (b) Operate the APU for a minimum of five minutes.
  - (c) During the APU operation, examine the IGV actuator for signs of fuel leakage.  
NOTE: A fuel leakage rate of 1 drop for each minute (0.04 cc for each minute) is permitted during an APU operation from the forward drain on the APU drain seal.
  - (d) If more than the fuel leakage rate was found, do these steps to repair the leakage:
    - 1) Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.
    - 2) Install a DO NOT OPERATE tag, STD-858, to the APU master switch, on the P5 forward overhead panel.
    - 3) Repair the cause of the fuel leakage.
    - 4) Remove the DO-NOT-OPERATE tag from the APU master switch, on the P5 forward overhead panel.
    - 5) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
    - 6) During the APU operation, examine the IGV actuator for signs of fuel leakage.
    - 7) If more than the fuel leakage rate was found, do the leakage repair again.
  - (e) Set these switches on the P5 forward overhead panel:
    - 1) Set the ISOLATION VALVE switch to the OPEN position.
    - 2) Make sure that the engines 1 and/or 2 BLEED switches are in the OFF position.
    - 3) Make sure that the L PACK and R PACK switches are in the OFF position.
    - 4) Set the APU BLEED switch to the ON position.
  - (f) Do this task: APU BITE Procedure, TASK 49-61-00-700-801.
    - 1) If maintenance message(s) show for the APU bleed air system or the IGV actuator, refer to the applicable Maintenance Message Index in the FIM.
  - (g) Set these switches on the P5 forward overhead panel:
    - 1) Set the APU BLEED switch to the OFF position.
    - 2) Set the ISOLATION VALVE switch to the CLOSE position.
  - (h) If it is not necessary to do other tasks, do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

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

SUBTASK 49-52-12-410-005

- (1) To close the access panel, do these steps:

**Number**    **Name/Location**

315A       APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.

EFFECTIVITY  
LOM ALL

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**AIRCRAFT MAINTENANCE MANUAL**

(f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.

1) Make sure that the installation of fire shield has not shifted.

2) If it is necessary, hand form the insulation blanket to obtain a better clearance.

(g) Close the APU Cowl Door, 315A.

(h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

————— END OF TASK ————

EFFECTIVITY  
LOM ALL

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INLET GUIDE VANE (IGV) ACTUATOR - ADJUSTMENT/TEST

**1. General**

- A. This procedure has the task to do the operational test for the inlet guide vane actuator.
- B. The inlet guide vane (IGV) actuator is referred to as the IGV actuator.

**TASK 49-52-12-710-801**

**2. Inlet Guide Vane (IGV) Actuator Operational Test**

(Figure 501)

**A. References**

<u>Reference</u>	<u>Title</u>
49-11-00 P/B 401	APU POWER PLANT - REMOVAL/INSTALLATION

**B. Expendables/Parts**

<u>AMM Item</u>	<u>Description</u>	<u>AIPC Reference</u>	<u>AIPC Effectivity</u>
3	Inlet guide vane actuator	49-52-12-02-080	LOM ALL

**C. Location Zones**

<u>Zone</u>	<u>Area</u>
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**D. Access Panels**

<u>Number</u>	<u>Name/Location</u>
315A	APU Cowl Door

**E. Prepare for the Operational Test**

SUBTASK 49-52-12-860-005

- (1) Make sure the APU master switch on the P5 forward overhead panel is OFF and install a DO-NOT-OPERATE tag.

SUBTASK 49-52-12-860-006

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-52-12-010-005

- (3) To open the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.
- (b) Open the three latches.

NOTE: Use this sequence: forward latch, aft latch, middle latch.

EFFECTIVITY  
LOM ALL

**49-52-12**



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

- (c) Open the APU Cowl Door, 315A.
- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

**SUBTASK 49-52-12-010-003**

- (4) Do these steps to remove the access door for the compressor inlet plenum [1]:
  - (a) Loosen the eight captive screws [2] that attach the access door [1] to the compressor inlet plenum.
  - (b) Remove the access door [1] from the compressor inlet plenum.

NOTE: A lanyard is attached to the access door to keep the access door with the APU.

**F. Procedure**

**SUBTASK 49-52-12-860-007**

- (1) Do the operational test for the inlet guide vane actuator [3] as follows:
  - (a) Loosen the two bolts [5] that attach the cover [4] to the APU.
  - (b) Turn the cover [4] clockwise to show the inlet guide vanes.
  - (c) Remove the three bolts [7] and three washers [6] that attach the inlet guide vane actuator [3] to the APU.
  - (d) While you pull the inlet guide vane actuator [3] down approximately one inch (25.4 mm), make sure the inlet guide vanes move smoothly as follows:

NOTE: The force necessary to pull the inlet guide vane actuator [3] down is approximately 6-10 pounds (26.7-44.5 newtons).

    - 1) Use a flashlight to view the inlet guide vanes through the access door for the compressor inlet plenum.
    - 2) All of the vanes should open and close together.
      - a) If one or more of the vanes does not move or is out of sequence, replace the APU (APU POWER PLANT - REMOVAL/INSTALLATION, PAGEBLOCK 49-11-00/401).

- (e) Put the inlet guide vane actuator [3] in its position on the APU.
- (f) Install the three washers [6] and three bolts [7] that attach the inlet guide vane actuator [3] to the APU.
  - 1) Tighten the three bolts [7] to 120 pound-inches (13.6 newton-meters).
- (g) Turn the cover [4] counterclockwise until the flange fully engages the top bolt.
  - 1) Tighten the two bolts [5] to 50 pound-inches (5.7 newton-meters).

**G. Put the Airplane Back to Its Usual Condition**

**SUBTASK 49-52-12-410-002**

- (1) Install the access door [1] to the compressor inlet plenum with the eight captive screws [2].

EFFECTIVITY
LOM ALL

**49-52-12**



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AIRCRAFT MAINTENANCE MANUAL

SUBTASK 49-52-12-410-004

- (2) To close the access panel, do these steps:

Number    Name/Location

315A      APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

SUBTASK 49-52-12-860-008

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

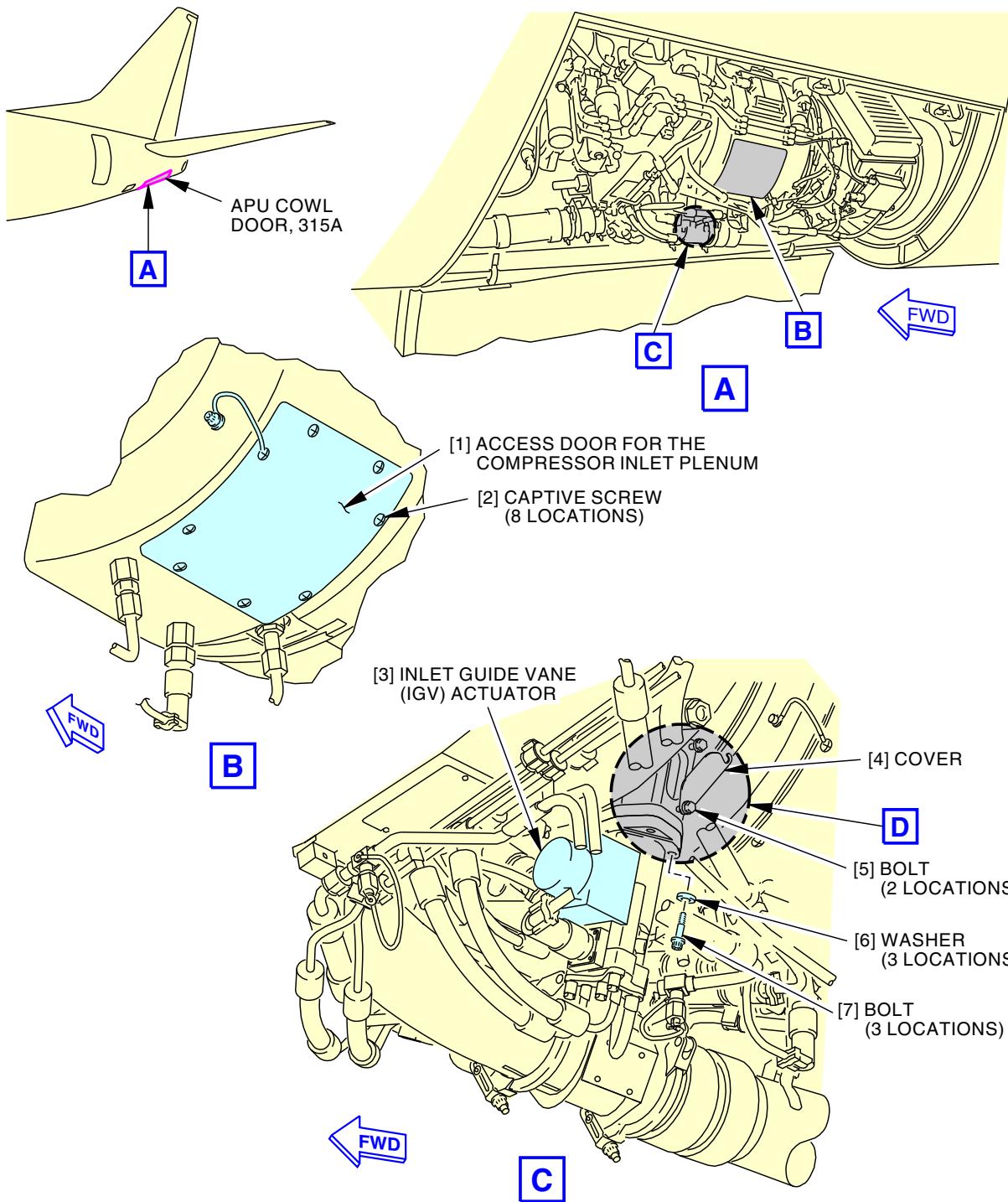
SUBTASK 49-52-12-860-009

- (4) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.

———— END OF TASK ————

EFFECTIVITY  
LOM ALL

**49-52-12**



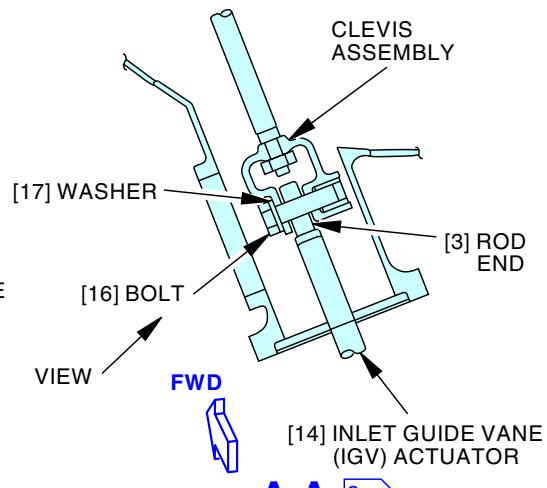
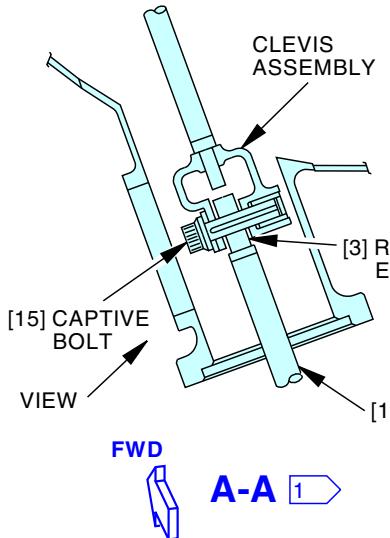
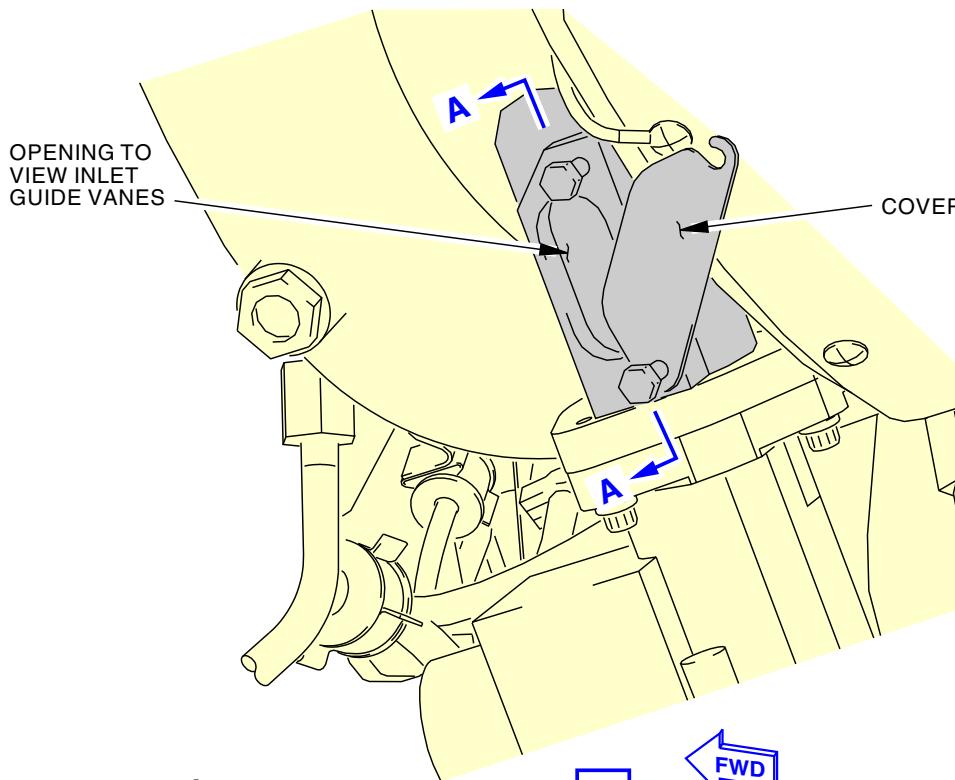
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**Inlet Guide Vane Actuator Test**  
**Figure 501/49-52-12-990-802 (Sheet 1 of 2)**

EFFECTIVITY  
**LOM ALL**

**49-52-12**

D633A101-LOM



1 APUs PRE-ALLIEDSIGNAL-SB 131-49-7366

2 APUs POST-ALLIEDSIGNAL-SB 131-49-7366

X3800703MM14  
2283998 S0000516180\_V3

**Inlet Guide Vane Actuator Test**  
**Figure 501/49-52-12-990-802 (Sheet 2 of 2)**

EFFECTIVITY  
LOM ALL

**49-52-12**





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AIRCRAFT MAINTENANCE MANUAL

BLEED AIR DUCT - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
  - (1) A removal of the bleed air duct
  - (2) An installation of the bleed air duct.
- B. The bleed air duct is installed between the bleed air valve and bleed duct assembly.

**TASK 49-52-13-000-801**

2. Bleed Air Duct Removal

(Figure 401)

A. Tools/Equipment

<u>Reference</u>	<u>Description</u>
STD-858	Tag - DO NOT OPERATE

B. Location Zones

<u>Zone</u>	<u>Area</u>
211	Flight Compartment - Left
316	APU Compartment - Right

C. Access Panels

<u>Number</u>	<u>Name/Location</u>
315A	APU Cowl Door

D. Prepare for the Removal

SUBTASK 49-52-13-860-001

- (1) Make sure that the APU master switch, on the P5 forward overhead panel, is in the OFF position and install a DO NOT OPERATE tag, STD-858.

SUBTASK 49-52-13-860-002

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-52-13-010-002

- (3) To open the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.
- (b) Open the three latches.

NOTE: Use this sequence: forward latch, aft latch, middle latch.

- (c) Open the APU Cowl Door, 315A.

EFFECTIVITY  
LOM ALL

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**AIRCRAFT MAINTENANCE MANUAL**

- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

**E. Bleed Air Duct Removal**

SUBTASK 49-52-13-020-001

- (1) Do these steps to remove the bleed air duct [3]:
  - (a) Remove the two coupling clamps [1] that attach the bleed air duct [3] to the bleed air valve and bleed duct assembly.  
NOTE: The bleed duct assembly extends through the 1088 bulkhead.
  - (b) Remove the bleed air duct [3].



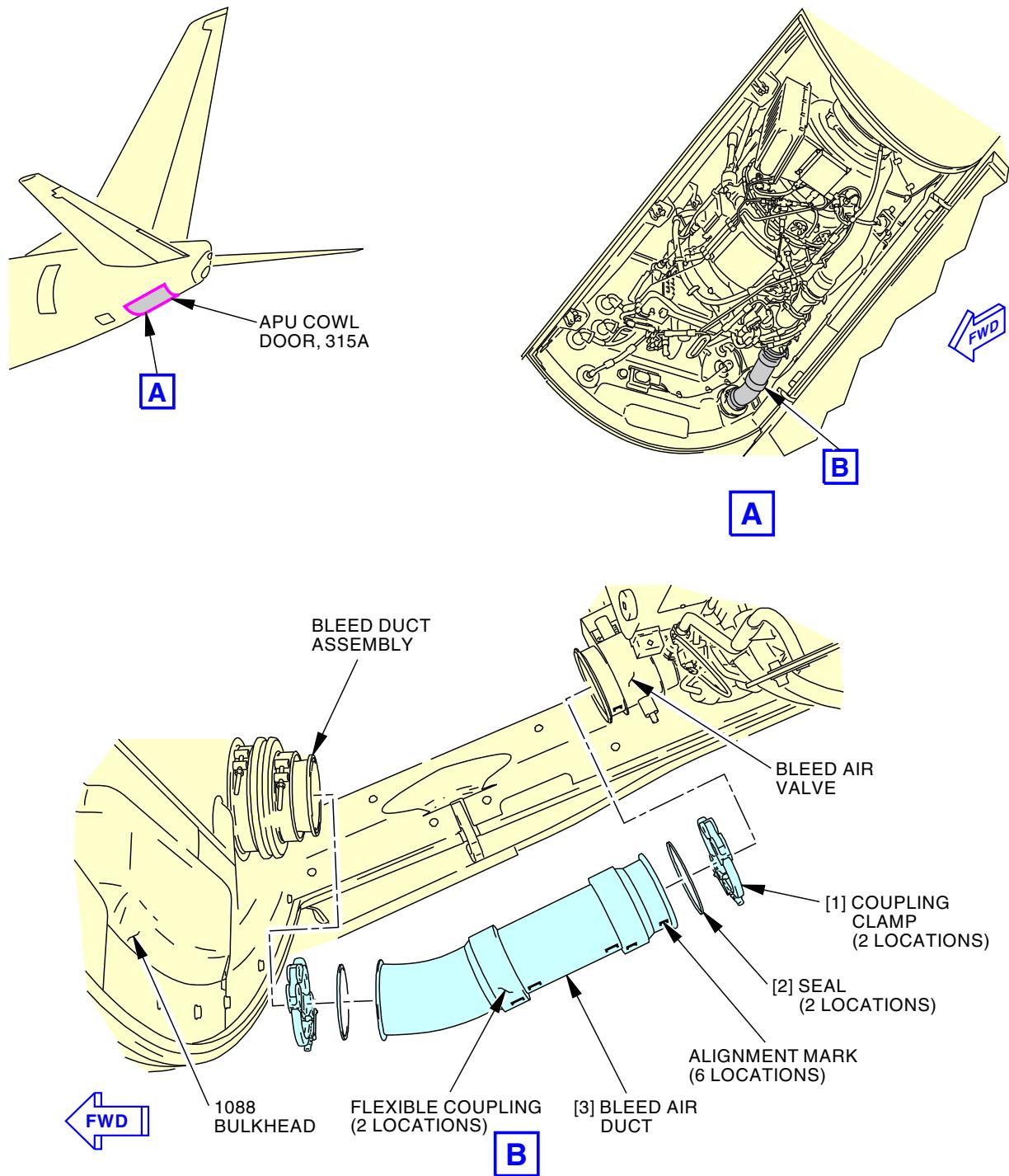
**CAUTION**  
BE CAREFUL WHEN YOU REMOVE THE TWO SEALS FROM THE BLEED AIR DUCT. DAMAGE TO THE SEALS CAN OCCUR.

- (c) Carefully remove the two seals [2] from the bleed air duct [3].
- (d) Examine the two seals [2] for signs of deterioration and leakage.
  - 1) Discard the two seals [2] if you find signs of deterioration or leakage.
- (e) Make sure that you install all necessary protection covers.

— END OF TASK —

EFFECTIVITY  
LOM ALL

**49-52-13**



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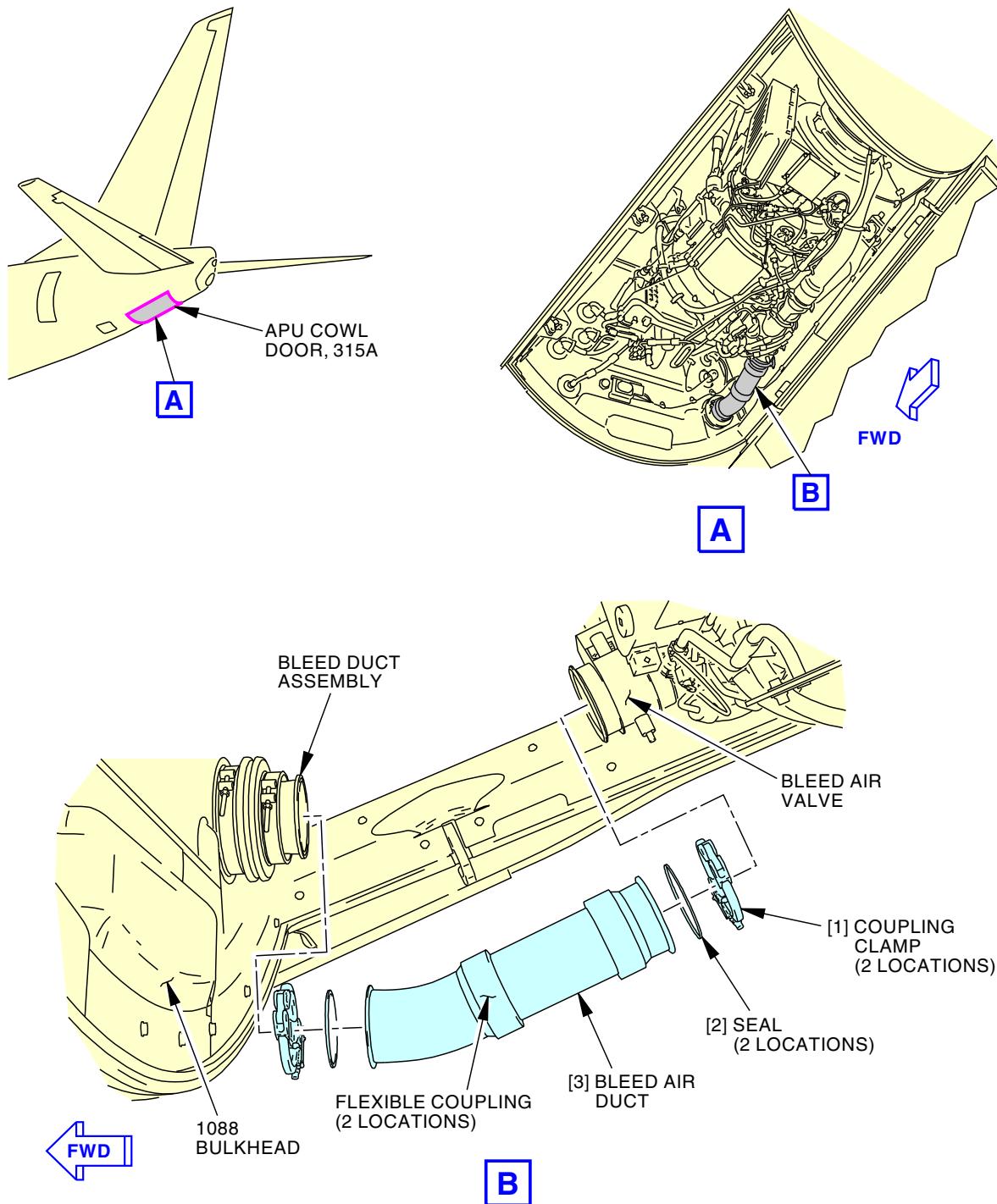
**Bleed Air Duct Installation**  
**Figure 401/49-52-13-990-801 (Sheet 1 of 2)**

EFFECTIVITY  
LOM ALL; AIRPLANES WITH BLEED AIR DUCT P/N  
3885004-1-2

**49-52-13**

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3051199 S0000816670\_V1

**Bleed Air Duct Installation**  
**Figure 401/49-52-13-990-801 (Sheet 2 of 2)**

EFFECTIVITY  
LOM ALL; AIRPLANES WITH BLEED AIR DUCT P/N  
3885004-5

D633A101-LOM

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TASK 49-52-13-400-801

3. **Bleed Air Duct Installation**

(Figure 401)

A. **References**

Reference	Title
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)

B. **Tools/Equipment**

Reference	Description
STD-858	Tag - DO NOT OPERATE

C. **Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Seal	49-52-11-02-010	LOM ALL
3	Bleed air duct	49-52-11-02-015	LOM ALL

D. **Location Zones**

Zone	Area
211	Flight Compartment - Left
316	APU Compartment - Right

E. **Access Panels**

Number	Name/Location
315A	APU Cowl Door

F. **Bleed Air Duct Installation**

SUBTASK 49-52-13-420-002



REMOVE ANY INSTALLED PROTECTION COVERS FROM THE OPENINGS.  
IF YOU DO NOT REMOVE THE PROTECTION COVERS, DAMAGE TO THE  
APU CAN OCCUR.

- (1) Remove the protective covers from the openings.

SUBTASK 49-52-13-420-001

- (2) Do these steps to install the bleed air duct [3]:
- Install the two seals [2] on the bleed air duct [3].
  - Put the two coupling clamps [1] on the bleed air valve and bleed duct assembly.  
NOTE: The bleed duct assembly extends through the 1088 bulkhead.
  - Put the bleed air duct [3] in its position.

**LOM ALL; AIRPLANES WITH BLEED AIR DUCT P/N 3885004-1/-2**

NOTE: To install the bleed air duct, make sure that the directional flow arrow points away from the front of the Auxiliary Power Unit (APU).

- Open the two coupling clamps [1] to permit alignment of the bleed air duct [3] to the bleed air valve and the bleed duct assembly.
- Make sure that the alignment marks on the two flexible couplings align with the two alignment marks on the bleed air duct [3].

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LOM ALL

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**LOM ALL; AIRPLANES WITH BLEED AIR DUCT P/N 3885004-1/-2 (Continued)**

- (f) Make sure that the center of the alignment mark on the bleed air duct [3] is  $\pm 0.16$  in.  
(4 mm) from the center of the alignment mark on the bleed air valve.

**LOM ALL**

- (g) Put the two coupling clamps [1] over the flanges of the bleed air valve, bleed air duct [3] and bleed duct assembly.
- 1) For AS1895 or 234-591 clamps: tighten the two coupling clamps [1] to 95 in-lb (10.7 N·m) - 110 in-lb (12.4 N·m).
  - 2) For 543227A or 234-607 clamps: tighten the two coupling clamps [1] to 35 in-lb (4.0 N·m) - 40 in-lb (4.5 N·m).

**G. Bleed Air Duct Installation Test**

SUBTASK 49-52-13-860-003

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-52-13-860-004

- (2) Remove the DO NOT OPERATE tag, STD-858, from the APU master switch, on the P5 forward overhead panel.

SUBTASK 49-52-13-710-001

- (3) Do the installation test for the bleed air duct:

- (a) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
- (b) Operate the APU for a minimum of five minutes.
- (c) Set these switches, on the P5 forward overhead panel:
  - 1) Set the ISOLATION VALVE switch to the OPEN position.
  - 2) Make sure that the engines 1 and/or 2 BLEED switches are in the OFF position.
  - 3) Make sure that the L PACK and R PACK switches are in the OFF position.
  - 4) Set the APU BLEED switch to the ON position.
- (d) During the APU operation, examine the bleed air duct for signs of air leakage.
- (e) If you find air leakage, do these steps to repair the leakage:
  - 1) Set these switches, on the P5 forward overhead panel:
    - a) Set the APU BLEED switch to the OFF position.
    - b) Set the ISOLATION VALVE switch to the CLOSE position.
  - 2) Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.
  - 3) Install a DO NOT OPERATE tag, STD-858, to the APU master switch, on the P5 forward overhead panel.
  - 4) Repair the cause of the air leakage.

EFFECTIVITY
LOM ALL

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**AIRCRAFT MAINTENANCE MANUAL**

- 5) Remove the DO NOT OPERATE tag, STD-858, from the APU master switch, on the P5 forward overhead panel.
  - 6) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
  - 7) Set these switches, on the P5 forward overhead panel:
    - a) Set the ISOLATION VALVE switch to the OPEN position.
    - b) Set the APU BLEED switch to the ON position.
  - 8) During the APU operation, examine the bleed air duct for signs of air leakage.
  - 9) If you find air leakage, do the leakage repair again.
- (f) If you did not find air leakage, set these switches, on the P5 forward overhead panel:
- 1) Set the APU BLEED switch to the OFF position.
  - 2) Set the ISOLATION VALVE switch to the CLOSE position.
- (g) If it is not necessary to do other tasks, do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

#### **H. Put the Airplane Back to Its Usual Condition**

SUBTASK 49-52-13-410-002

- (1) To close the access panel, do these steps:

**Number**      **Name/Location**

315A            APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

EFFECTIVITY  
LOM ALL

**49-52-13**





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INLET PRESSURE SENSOR - REMOVAL/INSTALLATION

**1. General**

- A. This procedure has these tasks:
  - (1) A removal of the inlet pressure sensor
  - (2) An installation of the inlet pressure sensor.
- B. The inlet pressure sensor (P2) is installed on the compressor inlet section of the APU.

**TASK 49-52-31-000-801**

**2. Inlet Pressure Sensor Removal**

(Figure 401)

**A. Location Zones**

<u>Zone</u>	<u>Area</u>
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**B. Access Panels**

<u>Number</u>	<u>Name/Location</u>
315A	APU Cowl Door

**C. Prepare for the Removal**

SUBTASK 49-52-31-860-001

- (1) Make sure that the APU master switch, on the P5 forward overhead panel, is in the OFF position and install a DO-NOT-OPERATE tag.

SUBTASK 49-52-31-860-002

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-52-31-010-002

- (3) To open the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.

- (b) Open the three latches.

NOTE: Use this sequence: forward latch, aft latch, middle latch.

- (c) Open the APU Cowl Door, 315A.

- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.

- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.

EFFECTIVITY  
LOM ALL

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

- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

**D. Inlet Pressure Sensor Removal**

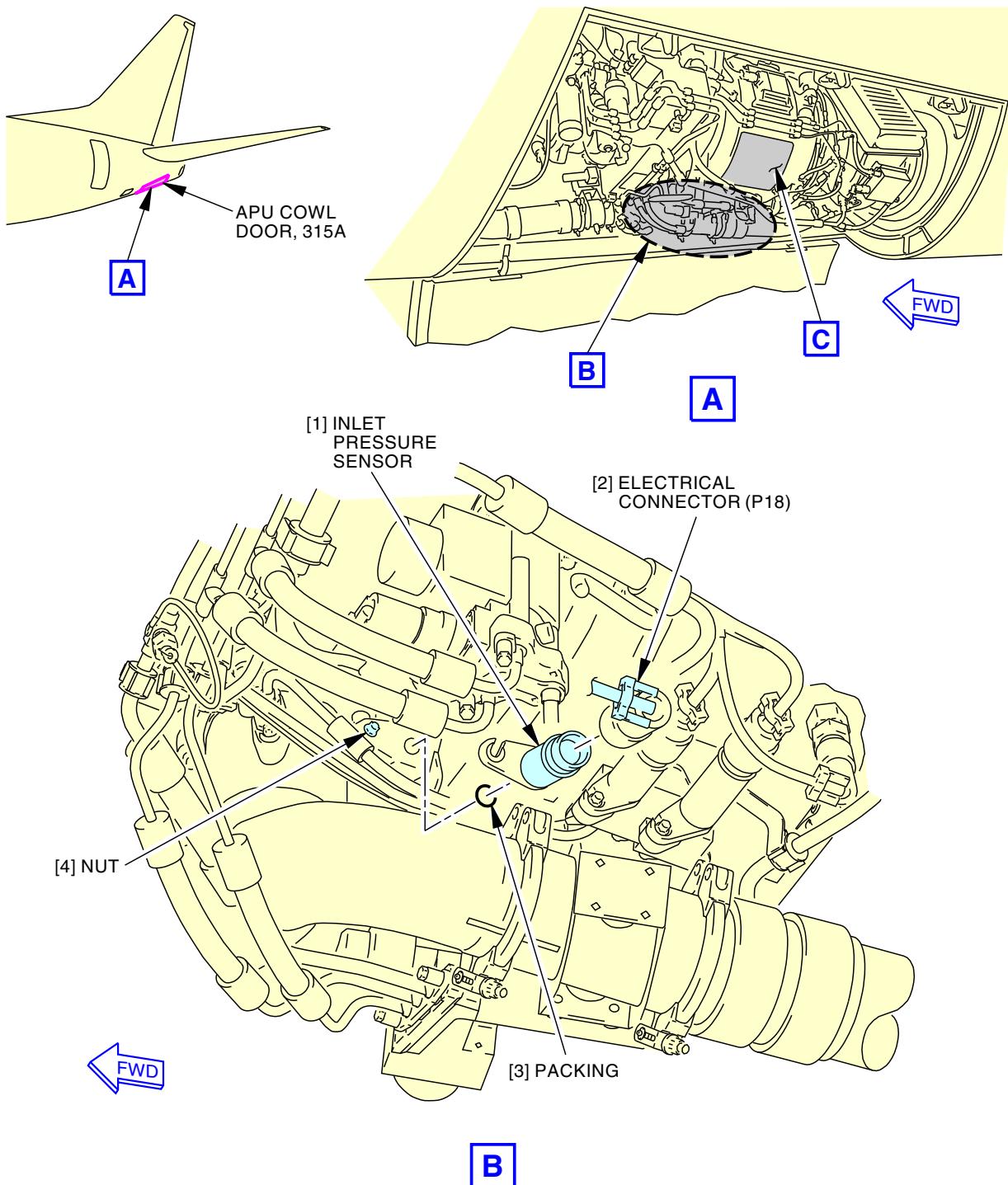
SUBTASK 49-52-31-020-001

- (1) Do these steps to remove the inlet pressure sensor [1]:
  - (a) Disconnect the electrical connector (P18) [2] from the inlet pressure sensor [1].
  - (b) Loosen the nut [4] that attaches the inlet pressure sensor [1] to the compressor inlet section of the APU.
  - (c) Turn the inlet pressure sensor [1] counterclockwise until the flange disengages from the stud.
  - (d) Remove the inlet pressure sensor [1].
  - (e) Remove the packing [3] from the inlet pressure sensor [1].
    - 1) Discard the packing [3].
  - (f) Make sure that all necessary protection covers are installed.

———— END OF TASK ————

EFFECTIVITY  
LOM ALL

**49-52-31**



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**Inlet Pressure Sensor Installation**  
**Figure 401/49-52-31-990-801 (Sheet 1 of 2)**

EFFECTIVITY  
 LOM ALL

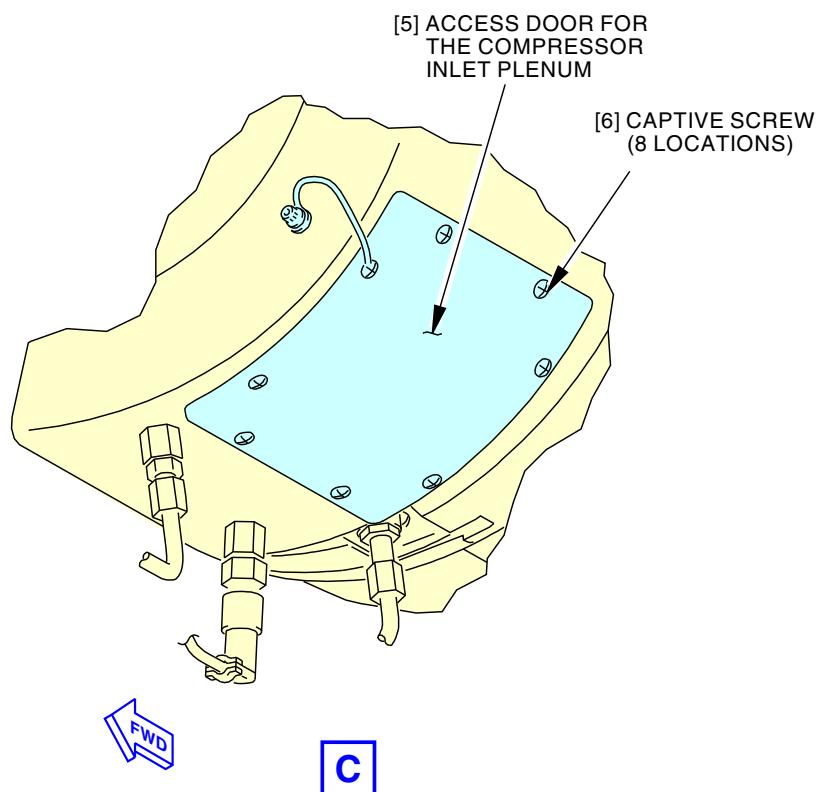
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Inlet Pressure Sensor Installation  
Figure 401/49-52-31-990-801 (Sheet 2 of 2)

EFFECTIVITY  
LOM ALL

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TASK 49-52-31-400-801

3. Inlet Pressure Sensor Installation

(Figure 401)

A. References

Reference	Title
49-61-00-700-801	APU BITE Procedure (P/B 201)

B. Tools/Equipment

Reference	Description
STD-1057	Air Source - Regulated, Dry Filtered, Compressed 60-105 PSIG (414-723.9 KPa)(22 SCFM)

C. Consumable Materials

Reference	Description	Specification
D00068	Oil - Aircraft Turbine Engine, Synthetic Base	MIL-PRF-23699 Class STD (Standard)
D00341	Lubricant - Polyphenyl Ether, Vacuum Pump - Santovac 5	
D00418	Oil - Aircraft Turbine Engine Synthetic Base	MIL-PRF-7808
G50138	Cloth - Soft Cotton	

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Inlet pressure sensor	49-52-31-02-010	LOM ALL
3	Packing	49-52-31-02-015	LOM ALL

E. Location Zones

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

F. Access Panels

Number	Name/Location
315A	APU Cowl Door

G. Inlet Pressure Sensor Installation

SUBTASK 49-52-31-160-001



REMOVE THE PROTECTION COVERS FROM THE OPENINGS AS NECESSARY. IF YOU DO NOT REMOVE THE PROTECTION COVERS, DAMAGE TO THE APU CAN OCCUR.

- (1) Do these steps to clean the tube for the inlet pressure sensor:

NOTE: It is not necessary to clean the tube for the inlet pressure sensor if the compressed 60-105 PSIG dry filtered regulated air source, STD-1057, is not available.

- (a) Loosen the eight captive screws [6] that attach the access door [5] to the compressor inlet plenum.

EFFECTIVITY  
LOM ALL

**49-52-31**



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**AIRCRAFT MAINTENANCE MANUAL**

- (b) Remove the access door [5] from the compressor inlet plenum.
- NOTE: A lanyard is attached to the access door to keep the access door with the Auxiliary Power Unit (APU).
- (c) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057, to blow the air through the outer tube for the inlet pressure sensor.
- NOTE: It is recommended that you use a pressure of 60 psig (414 kPa) - 90 psig (621 kPa) of air or nitrogen to blow the air through the outer tube.
- (d) Make sure that the air flows through the outer tube to the inner tube.
- NOTE: You can find the inner tube for the inlet pressure sensor in the left forward side of the compressor inlet plenum. You get access to the inner tube through the access door.
- (e) If there is no or minimum air flow from the inner tube, then remove the blockage of unwanted materials or repair the problems that you find.
- (f) Install the access door [5] to the compressor inlet plenum with the eight captive screws [6].

SUBTASK 49-52-31-420-001

- (2) Do these steps to install the inlet pressure sensor [1]:
- (a) Inspect the inlet pressure sensor [1] and mating housing for residual lubricant.
- 1) If the inlet pressure sensor [1] being installed is not new, examine the inlet pressure sensor [1] and sense ports for residual lubricant.
    - a) If it is necessary, clean with soft cotton cloth, G50138.
    - b) If lubricant is seen in the sense port, replace the inlet pressure sensor [1].
  - 2) Examine the sensor mating housing for debris build up and residual lubricant.
    - a) Look inside small pockets within the housing for lubricant that was used to aide installation of the inlet pressure sensor [1].

NOTE: This residual lubricant can clog the sensor.
    - b) If it is necessary, clean with soft cotton cloth, G50138.
- (b) Lubricate the new packing [3] with a light coat of oil, D00068, or aircraft turbine engine oil, D00418, or Santovac 5 lubricant, D00341.
- NOTE: D00504 grease is no longer an acceptable packing lubricant. Excessive application of grease was found to block the pressure port resulting in erratic or failed pressure indication. As such, grease is no longer allowed.
- (c) Install the packing [3] on the inlet pressure sensor [1].
- (d) Install the inlet pressure sensor [1].
- (e) Turn the inlet pressure sensor [1] clockwise until the flange fully engages the stud.
- (f) Tighten the nut [4] to 40 in-lb (4.5 N·m).
- (g) Connect the electrical connector (P18) [2] to the inlet pressure sensor [1].

EFFECTIVITY  
LOM ALL

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**H. Inlet Pressure Sensor Installation Test**

SUBTASK 49-52-31-860-003

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-52-31-860-004

- (2) Remove the DO-NOT-OPERATE tag from the APU master switch, on the P5 forward overhead panel.

SUBTASK 49-52-31-740-001

- (3) Do the installation test for the inlet pressure sensor [1]:
  - (a) Do this task: APU BITE Procedure, TASK 49-61-00-700-801.
    - 1) If maintenance message(s) show for the APU bleed air system or the inlet pressure sensor (P2), refer to the applicable Maintenance Message Index in the FIM.

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

SUBTASK 49-52-31-410-002

- (1) To close the access panel, do these steps:

<u>Number</u>	<u>Name/Location</u>
315A	APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————



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TOTAL PRESSURE SENSOR - REMOVAL/INSTALLATION

**1. General**

- A. This procedure has these tasks:
  - (1) A removal of the total pressure sensor
  - (2) An installation of the total pressure sensor.
- B. The total pressure sensor (PT) is installed on the compressor inlet section of the APU.

**TASK 49-52-32-000-801**

**2. Total Pressure Sensor Removal**

(Figure 401)

**A. Location Zones**

<u>Zone</u>	<u>Area</u>
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**B. Access Panels**

<u>Number</u>	<u>Name/Location</u>
315A	APU Cowl Door

**C. Prepare for the Removal**

SUBTASK 49-52-32-860-001

- (1) Make sure the APU master switch on the P5 forward overhead panel is OFF and install a DO-NOT-OPERATE tag.

SUBTASK 49-52-32-860-002

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-52-32-010-002

- (3) To open the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

(a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.

(b) Open the three latches.

NOTE: Use this sequence: forward latch, aft latch, middle latch.

(c) Open the APU Cowl Door, 315A.

(d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.

(e) Remove the retainer pin from the spring clip on the aft hold-open rod.

EFFECTIVITY  
LOM ALL

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- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

**D. Total Pressure Sensor Removal**

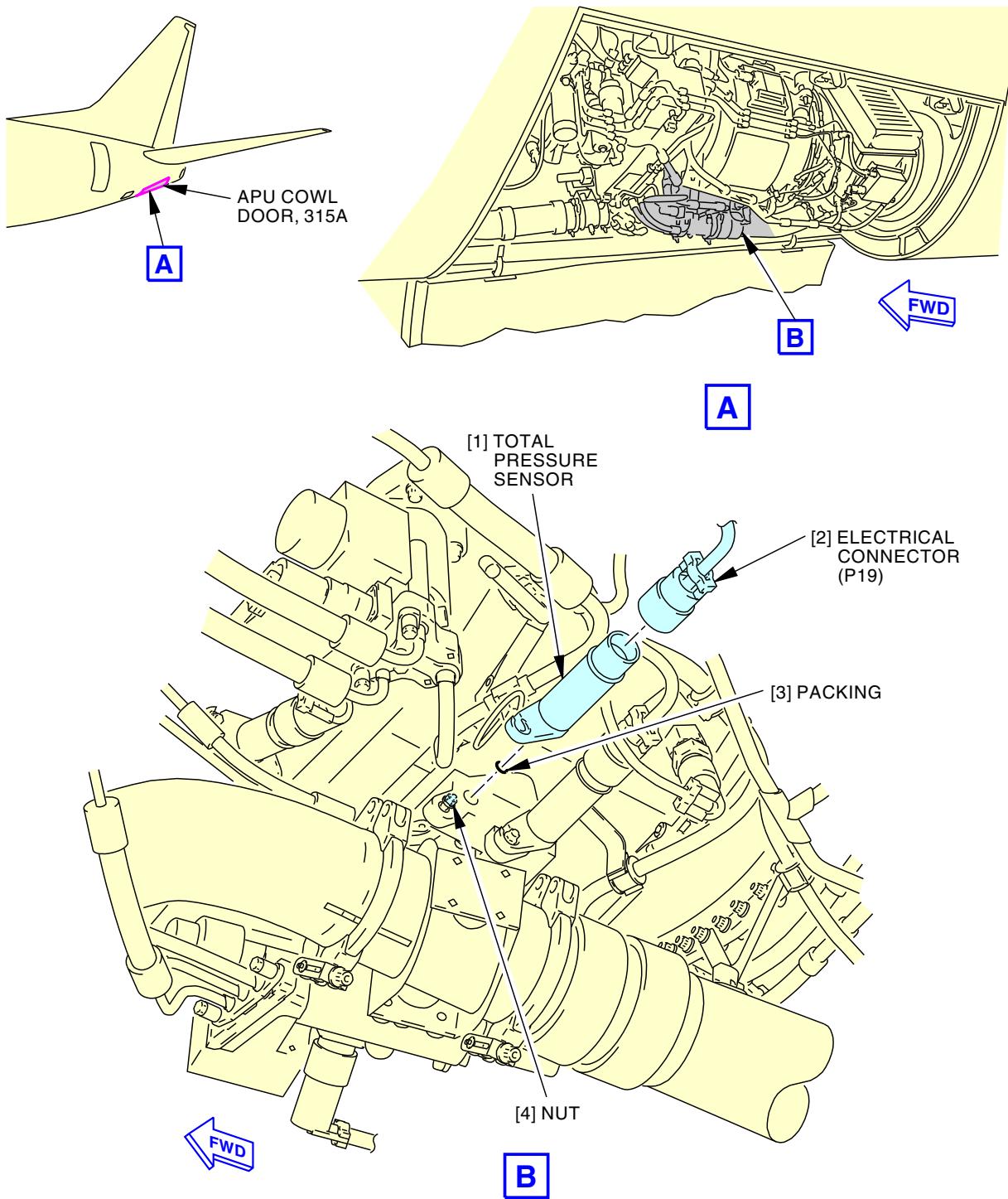
SUBTASK 49-52-32-020-001

- (1) Do these steps to remove the total pressure sensor [1]:
  - (a) Disconnect the electrical connector (P19) [2] from the total pressure sensor [1].
  - (b) Loosen the nut [4] that attaches the total pressure sensor [1] to the compressor inlet section of the APU.
  - (c) Turn the total pressure sensor [1] counterclockwise until the flange disengages from the stud.
  - (d) Remove the total pressure sensor [1].
  - (e) Remove the packing [3] from the total pressure sensor [1].
    - 1) Discard the packing [3].
  - (f) Make sure you install all necessary protection covers.

———— END OF TASK ————

EFFECTIVITY  
LOM ALL

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**Total Pressure Sensor Installation  
Figure 401/49-52-32-990-801**

EFFECTIVITY  
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D633A101-LOM

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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**TASK 49-52-32-400-801**

**3. Total Pressure Sensor Installation**

(Figure 401)

**A. References**

Reference	Title
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)
49-61-00-700-801	APU BITE Procedure (P/B 201)

**B. Consumable Materials**

Reference	Description	Specification
D00068	Oil - Aircraft Turbine Engine, Synthetic Base	MIL-PRF-23699 Class STD (Standard)
D00341	Lubricant - Polyphenyl Ether, Vacuum Pump - Santovac 5	
D00418	Oil - Aircraft Turbine Engine Synthetic Base	MIL-PRF-7808
G50138	Cloth - Soft Cotton	

**C. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Total pressure sensor	49-52-32-02-010	LOM ALL
3	Packing	49-52-32-02-015	LOM ALL

**D. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**E. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**F. Total Pressure Sensor Installation**

SUBTASK 49-52-32-420-001



REMOVE THE PROTECTION COVERS FROM THE OPENINGS WHEN NECESSARY. IF YOU DO NOT REMOVE THE PROTECTION COVERS, DAMAGE TO THE APU CAN OCCUR.

- (1) Do these steps to install the total pressure sensor [1]:
  - (a) Inspect the total pressure sensor [1] and mating housing for residual lubricant.
    - 1) If the total pressure sensor [1] being installed is not new, examine the total pressure sensor [1] and sense ports for residual lubricant.
      - a) If it is necessary, clean with soft cotton cloth, G50138.
      - b) If lubricant is seen in the sense port, replace the total pressure sensor [1].
    - 2) Examine the sensor mating housing for debris build up and residual lubricant.



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- a) Look inside small pockets within the housing for lubricant that was used to aide installation of the total pressure sensor [1].  
NOTE: This residual lubricant can clog the sensor.
  - b) If it is necessary, clean with soft cotton cloth, G50138.
- (b) Lubricate the new packing [3] with a light coat of oil, D00068, or aircraft turbine engine oil, D00418, or Santovac 5 lubricant, D00341.  
NOTE: D00504 grease is no longer an acceptable packing lubricant. Excessive application of grease was found to block the pressure port resulting in erratic or failed pressure indication. As such, grease is no longer allowed.
- (c) Install the packing [3] on the total pressure sensor [1].
- (d) Install the total pressure sensor [1].
- (e) Turn the total pressure sensor [1] clockwise until the flange fully engages the stud.
- (f) Tighten the nut [4] to 40 in-lb (4.5 N·m).
- (g) Connect the electrical connector (P19) [2] to the total pressure sensor [1].

**G. Total Pressure Sensor Installation Test**

SUBTASK 49-52-32-860-003

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-52-32-860-004

- (2) Remove the DO-NOT-OPERATE tag from the Auxiliary Power Unit (APU) master switch on the P5 forward overhead panel.

SUBTASK 49-52-32-710-001

- (3) Do the installation test for the total pressure sensor [1]:
  - (a) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
  - (b) Operate the APU for a minimum of five minutes.
  - (c) During the APU operation, examine the total pressure sensor [1] for signs of air leakage.
  - (d) If you find air leakage, do these steps to repair the leakage:
    - 1) Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.
    - 2) Install a DO-NOT-OPERATE tag to the APU master switch on the P5 forward overhead panel.
    - 3) Repair the cause of the air leakage.
    - 4) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.
    - 5) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
    - 6) During the APU operation, examine the total pressure sensor [1] for signs of air leakage.



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- 7) If you find air leakage, do the leakage repair again.
- (e) Set these switches on the P5 forward overhead panel:
  - 1) Set the ISOLATION VALVE switch to the OPEN position.
  - 2) Make sure that the engines 1 and/or 2 BLEED switches are in the OFF position.
  - 3) Make sure that the L PACK and R PACK switches are in the OFF position.
  - 4) Set the APU BLEED switch to the ON position.
- (f) Do this task: APU BITE Procedure, TASK 49-61-00-700-801.
  - 1) If maintenance message(s) show for the APU bleed air system or the total pressure sensor (PT), refer to the applicable Maintenance Message Index in the FIM.
- (g) Set these switches on the P5 forward overhead panel:
  - 1) Set the APU BLEED switch to the OFF position.
  - 2) Set the ISOLATION VALVE switch to the CLOSE position.
- (h) If it is not necessary to do other tasks, do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

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

SUBTASK 49-52-32-410-002

- (1) To close the access panel, do these steps:

<b>Number</b>	<b>Name/Location</b>
---------------	----------------------

315A	APU Cowl Door
------	---------------

- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

EFFECTIVITY  
LOM ALL

**49-52-32**



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TOTAL PRESSURE SENSOR - INSPECTION/CHECK

1. General

- A. This procedure has this task:
- (1) An inspection of the total pressure sensor.

**TASK 49-52-32-200-801**

2. Total Pressure Sensor Inspection

A. References

Reference	Title
49-52-32-000-801	Total Pressure Sensor Removal (P/B 401)
49-52-32-400-801	Total Pressure Sensor Installation (P/B 401)

B. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

C. Consumable Materials

Reference	Description	Specification
G50138	Cloth - Soft Cotton	

D. Location Zones

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

E. Access Panels

Number	Name/Location
315A	APU Cowl Door

F. Prepare for the Inspection

SUBTASK 49-52-32-860-005

- (1) Make sure that Auxiliary Power Unit (APU) master switch, on the P5 forward overhead panel, is in the OFF position.
  - (a) Attach a DO NOT OPERATE tag, STD-858, to the APU master switch.

SUBTASK 49-52-32-860-006

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

**F/O Electrical System Panel, P6-2**

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-52-32-010-003

- (3) To open the APU cowl door, do these steps:
  - (a) Support the APU panel (cowling) under the center latch.

EFFECTIVITY  
LOM ALL

**49-52-32**



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**AIRCRAFT MAINTENANCE MANUAL**

- (b) Open the three latches.

NOTE: Use this sequence: forward latch, aft latch, middle latch.

- (c) Open this access panel:

**Number      Name/Location**

315A      APU Cowl Door

- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

**G. Total Pressure Sensor Inspection**

SUBTASK 49-52-32-200-001

- (1) Do an inspection of the pneumatic tubes and housings for the total pressure sensor:

- (a) Remove the total pressure sensor, do this task: Total Pressure Sensor Removal, TASK 49-52-32-000-801.
- 1) Remove the total pressure sensor drain tube.
- (b) Examine the tubes for cracks, worn areas, corrosion, or damage.
- 1) If you find cracks, worn areas, corrosion, or damage, replace the tubes or repair the problems that you find.
- (c) Examine the housings for debris build up and residual lubricant.
- NOTE: Look inside small pockets within the housing for lubricant that was used to aide installation of the sensors. This residual lubricant can clog the sensor.
- 1) If it is necessary, clean the housing with a soft cotton cloth, G50138.
- (d) Clean the tubes and sensor housing as follows:
- 1) Use the air source to blow air through the tubes to remove unwanted materials.
- NOTE: It is recommended that you use a pressure of  $75 \pm 15$  psig ( $517 \pm 104$  kPa) of filtered air or nitrogen to blow the air through the tubes.
- 2) Cap one end of the tube, and use the air source to blow the air through the tube to make sure that air will come out of the small orifice drain holes.
- a) If no air comes out of the small orifice drain holes, replace the tube.
- 3) If it is installed, remove the plug from the opening of the removed total pressure sensor.
- (e) Install the total pressure sensor, do this task: Total Pressure Sensor Installation, TASK 49-52-32-400-801.
- 1) Install the total pressure sensor drain tube.

**H. Put the Airplane Back to Its Usual Condition**

SUBTASK 49-52-32-410-003

- (1) To close the APU cowl door, do these steps:

- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
- (b) Disconnect the two hold-open rods from the two brackets.

EFFECTIVITY  
LOM ALL

**49-52-32**



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- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Close this access panel:

**Number      Name/Location**

315A            APU Cowl Door

- (g) Close the three latches.

**NOTE:** Use this sequence: middle latch, aft latch, forward latch.

SUBTASK 49-52-32-860-007

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

**F/O Electrical System Panel, P6-2**

<b><u>Row</u></b>	<b><u>Col</u></b>	<b><u>Number</u></b>	<b><u>Name</u></b>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<b><u>Row</u></b>	<b><u>Col</u></b>	<b><u>Number</u></b>	<b><u>Name</u></b>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-52-32-860-008

- (3) Remove the DO NOT OPERATE tag from the APU master switch.

———— END OF TASK ————

EFFECTIVITY  
LOM ALL

**49-52-32**





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DELTA PRESSURE SENSOR - REMOVAL/INSTALLATION

**1. General**

- A. This procedure has these tasks:
  - (1) A removal of the delta pressure sensor
  - (2) An installation of the delta pressure sensor.
- B. The delta pressure sensor (DP) is installed on the compressor inlet section of the APU.

**TASK 49-52-33-000-801**

**2. Delta Pressure Sensor Removal**

(Figure 401)

**A. Location Zones**

<u>Zone</u>	<u>Area</u>
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**B. Access Panels**

<u>Number</u>	<u>Name/Location</u>
315A	APU Cowl Door

**C. Prepare for the Removal**

SUBTASK 49-52-33-860-001

- (1) Make sure the APU master switch on the P5 forward overhead panel is OFF and install a DO-NOT-OPERATE tag.

SUBTASK 49-52-33-860-002

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-52-33-010-002

- (3) To open the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.

- (b) Open the three latches.

NOTE: Use this sequence: forward latch, aft latch, middle latch.

- (c) Open the APU Cowl Door, 315A.

- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.

- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.

EFFECTIVITY  
LOM ALL

**49-52-33**



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**AIRCRAFT MAINTENANCE MANUAL**

- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

**D. Delta Pressure Sensor Removal**

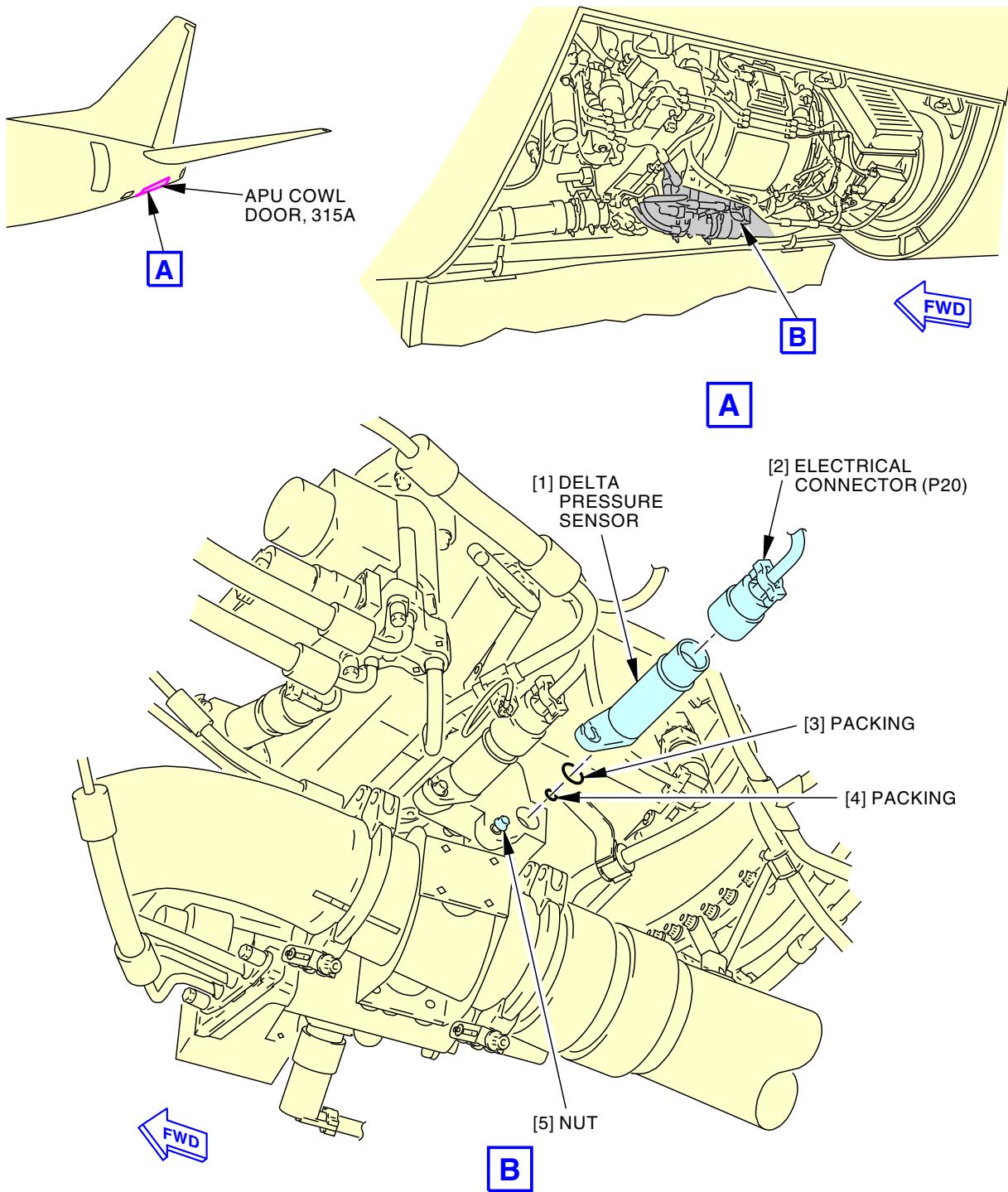
SUBTASK 49-52-33-020-001

- (1) Do these steps to remove the delta pressure sensor [1]:
  - (a) Disconnect the electrical connector (P20) [2] from the delta pressure sensor [1].
  - (b) Loosen the nut [5] that attaches the delta pressure sensor [1] to the compressor inlet section of the APU.
  - (c) Turn the delta pressure sensor [1] counterclockwise until the flange disengages from the stud.
  - (d) Remove the delta pressure sensor [1].
  - (e) Remove the packing [4] and packing [3] from the delta pressure sensor [1].
    - 1) Discard the packing [4] and packing [3].
  - (f) Make sure you install all necessary protection covers.

———— END OF TASK ————

EFFECTIVITY  
LOM ALL

**49-52-33**



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**Delta Pressure Sensor Installation**  
**Figure 401/49-52-33-990-801**

 EFFECTIVITY  
 LOM ALL

**49-52-33**

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TASK 49-52-33-400-801

3. Delta Pressure Sensor Installation

(Figure 401)

A. References

Reference	Title
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)
49-61-00-700-801	APU BITE Procedure (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00068	Oil - Aircraft Turbine Engine, Synthetic Base	MIL-PRF-23699 Class STD (Standard)
D00341	Lubricant - Polyphenyl Ether, Vacuum Pump - Santovac 5	
D00418	Oil - Aircraft Turbine Engine Synthetic Base	MIL-PRF-7808
G50138	Cloth - Soft Cotton	

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Delta pressure sensor	49-52-33-02-010	LOM ALL
3	Packing	49-52-33-02-020	LOM ALL
4	Packing	49-52-33-02-015	LOM ALL

D. Location Zones

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

E. Access Panels

Number	Name/Location
315A	APU Cowl Door

F. Delta Pressure Sensor Installation

SUBTASK 49-52-33-420-001



REMOVE THE PROTECTION COVERS FROM THE OPENINGS WHEN NECESSARY. IF YOU DO NOT REMOVE THE PROTECTION COVERS, DAMAGE TO THE APU CAN OCCUR.

- (1) Do these steps to install the delta pressure sensor [1]:
  - (a) Inspect the delta pressure sensor [1] and mating housing for residual lubricant.
    - 1) If the delta pressure sensor [1] being installed is not new, examine the delta pressure sensor [1] and sense ports for residual lubricant.
      - a) If it is necessary, clean with soft cotton cloth, G50138.
      - b) If lubricant is seen in the sense port, replace the delta pressure sensor [1].
    - 2) Examine the sensor mating housing for debris build up and residual lubricant.

EFFECTIVITY  
LOM ALL

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- a) Look inside small pockets within the housing for lubricant that was used to aide installation of the delta pressure sensor [1].  
NOTE: This residual lubricant can clog the sensor.
  - b) If it is necessary, clean with soft cotton cloth, G50138.
- (b) Lubricate the new packing [3] and new packing [4] with a light coat of oil, D00068, or aircraft turbine engine oil, D00418, or Santovac 5 lubricant, D00341.  
NOTE: D00504 grease is no longer an acceptable packing lubricant. Excessive application of grease was found to block the pressure ports resulting in erratic or failed pressure indications. As such, grease is no longer allowed.
- (c) Install the packing [3] and packing [4] on the delta pressure sensor [1].
- (d) Install the delta pressure sensor [1].
- (e) Turn the delta pressure sensor [1] clockwise until the flange fully engages the stud.
- (f) Tighten the nut [5] to 40 in-lb (4.5 N·m).
- (g) Connect the electrical connector (P20) [2] to the delta pressure sensor [1].

**G. Delta Pressure Sensor Installation Test**

SUBTASK 49-52-33-860-003

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-52-33-860-004

- (2) Remove the DO-NOT-OPERATE tag from the Auxiliary Power Unit (APU) master switch on the P5 forward overhead panel.

SUBTASK 49-52-33-710-001

- (3) Do the installation test for the delta pressure sensor [1]:
  - (a) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
  - (b) Operate the APU for a minimum of five minutes.
  - (c) During the APU operation, examine the delta pressure sensor [1] for signs of air leakage.
  - (d) If you find air leakage, do these steps to repair the leakage:
    - 1) Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.
    - 2) Install a DO-NOT-OPERATE tag to the APU master switch on the P5 forward overhead panel.
    - 3) Repair the cause of the air leakage.
    - 4) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.
    - 5) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
    - 6) During the APU operation, examine the delta pressure sensor [1] for signs of air leakage.



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- 7) If you find air leakage, do the leakage repair again.
- (e) Set these switches on the P5 forward overhead panel:
  - 1) Set the ISOLATION VALVE switch to the OPEN position.
  - 2) Make sure that the engines 1 and/or 2 BLEED switches are in the OFF position.
  - 3) Make sure that the L PACK and R PACK switches are in the OFF position.
  - 4) Set the APU BLEED switch to the ON position.
- (f) Do this task: APU BITE Procedure, TASK 49-61-00-700-801.
  - 1) If maintenance message(s) show for the APU bleed air system or the delta pressure sensor (DP), refer to the applicable Maintenance Message Index in the FIM.
- (g) Set these switches on the P5 forward overhead panel:
  - 1) Set the APU BLEED switch to the OFF position.
  - 2) Set the ISOLATION VALVE switch to the CLOSE position.
- (h) If it is not necessary to do other tasks, do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

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

SUBTASK 49-52-33-410-002

- (1) To close the access panel, do these steps:

<b>Number</b>	<b>Name/Location</b>
---------------	----------------------

315A	APU Cowl Door
------	---------------

- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

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DELTA PRESSURE SENSOR - INSPECTION/CHECK

1. General

- A. This procedure has the task:
- (1) An inspection of the delta pressure sensor.

**TASK 49-52-33-200-801**

2. Delta Pressure Sensor Inspection

A. References

Reference	Title
49-52-33-000-801	Delta Pressure Sensor Removal (P/B 401)
49-52-33-400-801	Delta Pressure Sensor Installation (P/B 401)

B. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

C. Consumable Materials

Reference	Description	Specification
G50138	Cloth - Soft Cotton	

D. Location Zones

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

E. Access Panels

Number	Name/Location
315A	APU Cowl Door

F. Prepare for the Inspection

SUBTASK 49-52-33-860-005

- (1) Make sure that the Auxiliary Power Unit (APU) master switch, on the P5 forward overhead panel, is in the OFF position.
  - (a) Attach a DO NOT OPERATE tag, STD-858.

SUBTASK 49-52-33-860-006

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

**F/O Electrical System Panel, P6-2**

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-52-33-010-003

- (3) To open the APU Cowl Door, do these steps:
  - (a) Support the APU panel (cowl door) under the center latch.

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- (b) Open the three latches.

NOTE: Use this sequence: forward latch, aft latch, middle latch.

- (c) Open this access panel:

<b>Number</b>	<b>Name/Location</b>
---------------	----------------------

315A	APU Cowl Door
------	---------------

- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

## G. Delta Pressure Sensor Inspection

SUBTASK 49-52-33-200-001

- (1) Do an inspection of the pneumatic tubes and housings for the delta pressure sensor.

- (a) Remove the delta pressure sensor, do this task: Delta Pressure Sensor Removal, TASK 49-52-33-000-801.

- 1) Remove the delta pressure sensor drain tube.

- (b) Examine the tubes for cracks, worn areas, corrosion, or damage.

- 1) If you find cracks, worn areas, corrosion, or damage, replace the tubes or do the applicable repairs.

- (c) Examine the housings for debris build up and residual lubricant.

NOTE: Look inside small pockets within the housing for lubricant that was used to aide installation of the sensors. This residual lubricant can clog the sensor.

- 1) If it is necessary clean with a soft cotton cloth, G50138.

- (d) Clean the tubes and sensor housing as follows:

- 1) Use the air source to blow air through the tubes to remove unwanted materials.

NOTE: It is recommended that you use a pressure of  $75 \pm 15$  psig ( $517 \pm 104$  kPa) of filtered air or nitrogen to blow the air through the tubes.

- 2) Cap one end of the tube, and use the air source to blow the air through the tube to be sure that air will come out of the small orifice drain holes.

- a) If no air comes out of the small orifice drain holes, replace the tube.

- 3) If it is installed, remove the plug from the opening of the removed total pressure sensor.

- (e) Install the delta pressure sensor, do this task: Delta Pressure Sensor Installation, TASK 49-52-33-400-801.

- 1) Install the delta pressure sensor drain tube.

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

SUBTASK 49-52-33-410-003

- (1) To close the APU Cowl Door, do these steps:

- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.

- (b) Disconnect the two hold-open rods from the two brackets.

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- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Close this access panel:

**Number      Name/Location**

315A            APU Cowl Door

- (g) Close the three latches.

**NOTE:** Use this sequence: middle latch, aft latch, forward latch.

SUBTASK 49-52-33-860-007

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

**F/O Electrical System Panel, P6-2**

<b><u>Row</u></b>	<b><u>Col</u></b>	<b><u>Number</u></b>	<b><u>Name</u></b>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<b><u>Row</u></b>	<b><u>Col</u></b>	<b><u>Number</u></b>	<b><u>Name</u></b>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-52-33-860-008

- (3) Remove the DO NOT OPERATE tag from the APU master switch.

———— END OF TASK ————

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LOM ALL

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**SURGE CONTROL VALVE - REMOVAL/INSTALLATION**

**1. General**

- A. This procedure has these tasks:
  - (1) A removal of the surge control valve
  - (2) An installation of the surge control valve.
- B. The surge control valve is installed between the compressor discharge duct and surge duct.

**TASK 49-52-41-000-801**

**2. Surge Control Valve Removal**

(Figure 401)

**A. Tools/Equipment**

<b>Reference</b>	<b>Description</b>
STD-858	Tag - DO NOT OPERATE
STD-4049	Container - Fuel Resistant, 1 Gallon (4 Liter)

**B. Location Zones**

<b>Zone</b>	<b>Area</b>
211	Flight Compartment - Left
316	APU Compartment - Right

**C. Access Panels**

<b>Number</b>	<b>Name/Location</b>
315A	APU Cowl Door

**D. Prepare for the Removal**

**SUBTASK 49-52-41-860-001**

- (1) Make sure that the APU master switch, on the P5 forward overhead panel, is in the OFF position.
  - (a) Install the DO NOT OPERATE tag, STD-858, on the APU master switch.

**SUBTASK 49-52-41-860-002**

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

**F/O Electrical System Panel, P6-2**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
A	14	C00033	AUX POWER UNIT CONT

**SUBTASK 49-52-41-010-002**

- (3) To open the access panel, do these steps:

**Number**      **Name/Location**

315A      APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.
- (b) Open the three latches.

**NOTE:** Use this sequence: forward latch, aft latch, middle latch.

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- (c) Open the APU Cowl Door, 315A.
- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

**E. Surge Control Valve Removal**

SUBTASK 49-52-41-020-001

- (1) Disconnect the electrical connector (P9) [1] from the surge control valve [9].

SUBTASK 49-52-41-020-002

- (2) Do these steps to disconnect the supply tube [5], return tube [6], and fuel drain tube [7] from the surge control valve [9]:
  - (a) Put the 1 gallon (4 l) fuel resistant container, STD-4049, below the surge control valve [9].
  - (b) Loosen the bolts [4] that attach the bracket to the surge control valve [9].



**WARNING**

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

- (c) Disconnect the fuel drain tube [7] from the surge control valve [9].
- (d) Disconnect the supply tube [5] and return tube [6] for the Inlet Guide Vane (IGV) actuator and fuel control unit from the surge control valve [9].
- (e) Remove the packings [2], packings [3], and packings [8] from the supply tube [5], return tube [6], and fuel drain tube [7].
  - 1) Discard the packings [2], packings [3], and packings [8].
- (f) Drain the fuel from the supply tube [5], return tube [6], and fuel drain tube [7] into the 1 gallon (4 l) fuel resistant container, STD-4049.
- (g) Install a cap on each of the supply tube [5], return tube [6], and fuel drain tube [7].

SUBTASK 49-52-41-020-003

- (3) Do these steps to remove the surge control valve [9]:
  - (a) Remove the coupling clamps [11] that hold the surge control valve [9] to the compressor discharge duct and surge duct.
  - (b) Remove the surge control valve [9].
  - (c) Remove the seals [10] from the surge control valve [9].
  - (d) Examine the seals [10] for signs of deterioration and leakage.
    - 1) If there are signs of deterioration or leakage, discard the seals [10].
  - (e) Use the 1 gallon (4 l) fuel resistant container, STD-4049, to drain the fuel from the surge control valve [9].
  - (f) Make sure that all necessary protection covers are installed.

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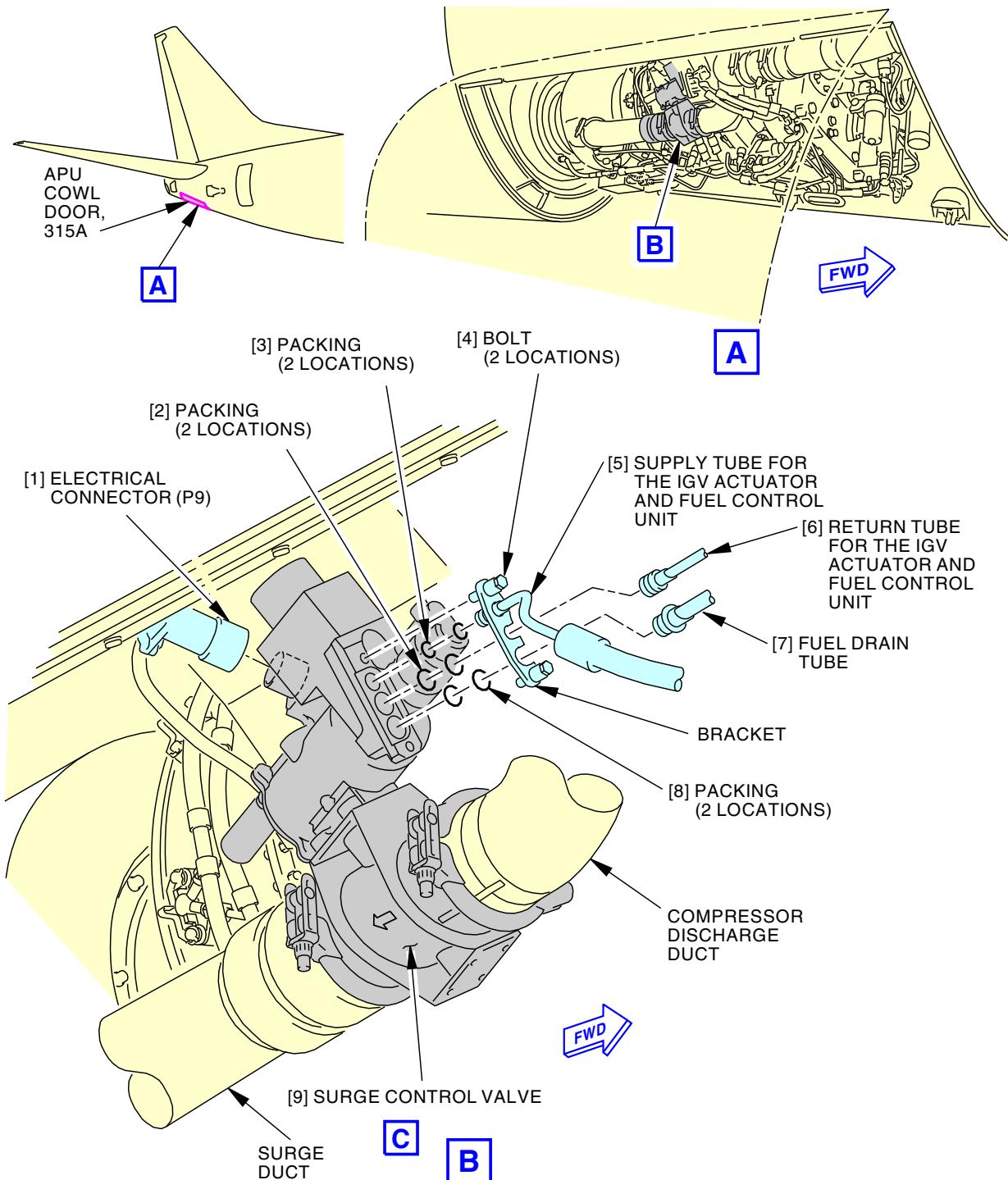
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- (g) Remove the 1 gallon (4 l) fuel resistant container, STD-4049.

———— END OF TASK ——

— EFFECTIVITY —  
**LOM ALL**

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F50032 S0006579326\_V2

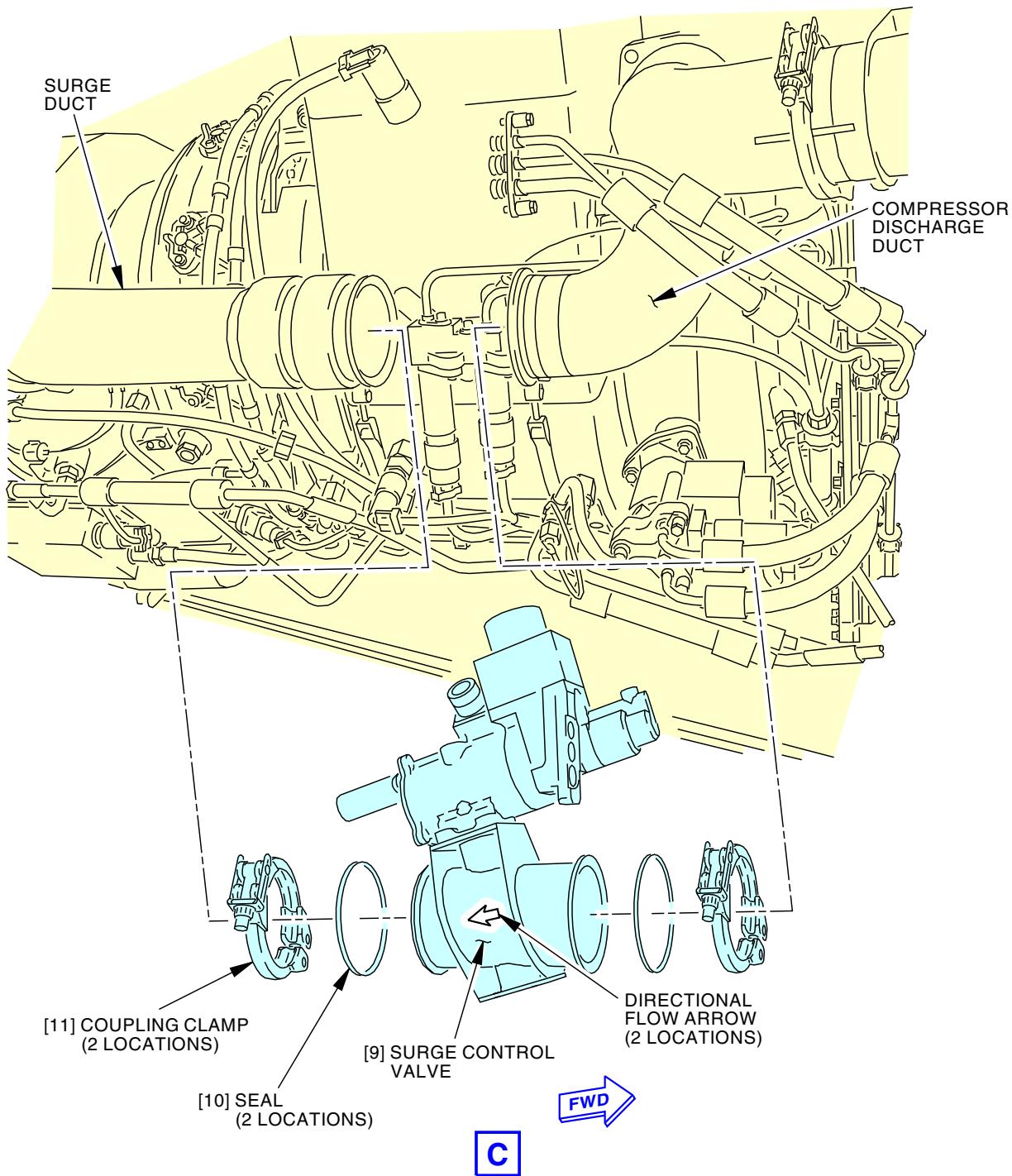
**Surge Control Valve Installation**  
**Figure 401/49-52-41-990-801 (Sheet 1 of 2)**

EFFECTIVITY  
LOM ALL

D633A101-LOM

ECCN 9E991 BOEING PROPRIETARY - See title page for details

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F50038 S0006579327\_V2

**Surge Control Valve Installation**  
Figure 401/49-52-41-990-801 (Sheet 2 of 2)

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D633A101-LOM

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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TASK 49-52-41-400-801

3. Surge Control Valve Installation

(Figure 401)

A. References

Reference	Title
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)
49-61-00-700-801	APU BITE Procedure (P/B 201)

B. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

C. Consumable Materials

Reference	Description	Specification
D00341	Lubricant - Polyphenyl Ether, Vacuum Pump - Santovac 5	
D00504	Grease - Petrolatum	VV-P-236

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Packing	49-52-12-02-035	LOM ALL
3	Packing	49-52-12-02-025	LOM ALL
8	Packing	49-52-12-02-035	LOM ALL
9	Surge control valve	49-52-41-02-030	LOM ALL
10	Seal	49-52-41-02-022	LOM ALL

E. Location Zones

Zone	Area
211	Flight Compartment - Left
316	APU Compartment - Right

F. Access Panels

Number	Name/Location
315A	APU Cowl Door

G. Surge Control Valve Installation

SUBTASK 49-52-41-420-001



REMOVE ANY INSTALLED PROTECTION COVERS FROM THE OPENINGS.  
IF YOU DO NOT REMOVE THE PROTECTION COVERS, DAMAGE TO THE  
APU CAN OCCUR.

- (1) Do these steps to install the surge control valve [9]:
  - (a) Install the seals [10] on the surge control valve [9].
    - 1) If the seals [10] were discarded, install the new seals [10].
  - (b) Put the coupling clamps [11] on the compressor discharge duct and surge duct.
  - (c) Carefully put the surge control valve [9] in its position on the compressor discharge duct and surge duct.

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- 1) To install the surge control valve [9], make sure that the directional flow arrow points to the aft of the Auxiliary Power Unit (APU).
- 2) Open the coupling clamps [11] to let the mark on the surge control valve [9] align with the mark on the compressor discharge duct.
- 3) Make sure that the mark on the surge control valve [9] aligns with the mark on the compressor discharge duct.

NOTE: Use stripes indicated to align within half a stripe.

- (d) Put the coupling clamps [11] over the flanges of the surge control valve [9], compressor discharge duct, and surge duct.
  - 1) For AS1895 or 234-591 clamps: tighten the coupling clamps [11] to 93 in-lb (10.5 N·m).
  - 2) For 543227A or 234-607 clamps: tighten the coupling clamps [11] to 35 in-lb (4.0 N·m) - 40 in-lb (4.5 N·m).

**SUBTASK 49-52-41-420-002**

- (2) Do these steps to connect the supply tube [5], return tube [6], and fuel drain tube [7] to the surge control valve [9]:
  - (a) Lubricate the new packings [3] and new packings [2] for the supply tube [5] and return tube [6] for the Inlet Guide Vane (IGV) actuator and fuel control unit with a light coat of Santovac 5 lubricant, D00341, or grease, D00504.
  - (b) Lubricate the new packings [8] for the fuel drain tube [7] with a light coat of Santovac 5 lubricant, D00341, or grease, D00504.
  - (c) Remove the caps from the supply tube [5], return tube [6], and fuel drain tube [7].
  - (d) Install the packings [3] on the supply tube [5] for the IGV actuator and fuel control unit.
  - (e) Install the packings [2] on the return tube [6] for the IGV actuator and fuel control unit.
  - (f) Install the packings [8] on the fuel drain tube [7].
  - (g) Connect the supply tube [5], return tube [6], and fuel drain tube [7] with the bracket to the surge control valve [9].
  - (h) Tighten the bolts [4] that attach the bracket to the surge control valve [9] to 50 in-lb (5.6 N·m).

**SUBTASK 49-52-41-420-003**

- (3) Connect the electrical connector (P9) [1] to the surge control valve [9].

## H. Surge Control Valve Installation Test

**SUBTASK 49-52-41-860-003**

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

**SUBTASK 49-52-41-860-004**

- (2) Remove the DO NOT OPERATE tag, STD-858, from the APU master switch, on the P5 forward overhead panel.

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SUBTASK 49-52-41-710-001

- (3) Do the installation test for the surge control valve [9]:
  - (a) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
  - (b) Operate the APU for a minimum of five minutes.
  - (c) During the APU operation, examine the surge control valve [9] for signs of air and fuel leakage.  
**NOTE:** A fuel leakage rate of 1 drop for each minute (0.04 cc for each minute) is permitted during an APU operation from the forward drain on the APU drain seal.
- (d) If air leakage or more than the fuel leakage rate is found, do these steps to repair the leakage:
  - 1) Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.
  - 2) Install a DO NOT OPERATE tag, STD-858, to the APU master switch, on the P5 forward overhead panel.
  - 3) Repair the cause of the fuel or air leakage.
  - 4) Remove the DO NOT OPERATE tag, STD-858, from the APU master switch, on the P5 forward overhead panel.
  - 5) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
  - 6) During the APU operation, examine the surge control valve for signs of air and fuel leakage.
  - 7) If air leakage or more than the fuel leakage rate is found, do the leakage repair again.
- (e) Set these switches, on the P5 forward overhead panel:
  - 1) Set the ISOLATION VALVE switch to the OPEN position.
  - 2) Make sure that the engines 1 and/or 2 BLEED switches are in the OFF position.
  - 3) Make sure that the L PACK and R PACK switches are in the OFF position.
  - 4) Set the APU BLEED switch to the ON position.
- (f) Do this task: APU BITE Procedure, TASK 49-61-00-700-801.
  - 1) If maintenance message(s) show for the APU bleed air system or surge control valve [9], refer to the applicable Maintenance Message Index in the FIM.
- (g) Set these switches, on the P5 forward overhead panel:
  - 1) Set the APU BLEED switch to the OFF position.
  - 2) Set the ISOLATION VALVE switch to the CLOSE position.
- (h) If it is not necessary to do other tasks, do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

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

SUBTASK 49-52-41-410-002

- (1) To close the access panel, do these steps:

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

315A	APU Cowl Door
------	---------------

- |     |  |
|-----|--|
| (a) | Remove the two retainer pins from the two hold-open rods in the APU compartment. |
| (b) | Disconnect the two hold-open rods from the two brackets.                         |
| (c) | Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.   |

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- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

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**APU CONTROLS - MAINTENANCE PRACTICES**

**1. General**

| A. This procedure has these tasks:

- (1) APU Built-In Test Equipment (BITE) Procedure
- (2) APU Controls Operational Check

**LOM 402, 404, 406, 407, 411, 416, 420, 422, 425, 426, 432-434, 437, 438**

- (3) Electronic Control Unit (ECU) Software Installation with an Airborne Data Loader (ADL)

**LOM 429-431, 440, 442-447, 450-460, 464-999**

- (4) Electronic Control Unit (ECU) Software Installation with an Enhanced Airborne Data Loader (eADL)

**LOM 412, 415, 423, 424, 427, 428, 437-447, 450-999**

- (5) Electronic Control Unit (ECU) Software Installation with a Portable Data Loader (PDL)

**LOM ALL**

- (6) Low Oil Quantity BITE Deactivation
- (7) Low Oil Quantity BITE Activation.

**LOM 429-434, 437-447, 450-999; LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-428 POST SB  
737-49-1162; APUS WITH ECU S/W 491A-TUS-A51-00 (CCC) AND SUBSEQUENT**

- (8) Ice Logic Deactivation
- (9) Ice Logic Activation.

**LOM ALL**

- B. For general information for software installation times and data loaders, do this task: On-Airplane Software - Installation, TASK 20-15-11-400-801.
- C. The APU BITE procedure task gives the instructions to use the control display unit (CDU) for the APU BITE procedure. There are two CDUs on the P9 forward electronics panel in the flight compartment. You make the selection for the CURRENT STATUS, FAULT HISTORY, MAINTENANCE HISTORY, IDENT/CONFIG, INPUT MONITORING and OIL QUANTITY data on the MAIN MENU page for the APU BITE TEST.
  - (1) The CURRENT STATUS page shows the current record of maintenance message(s).
  - (2) The FAULT HISTORY page shows the fault message(s). A fault message identifies a type of APU protective shutdown and its related problems, if any, that caused the APU protective shutdown. If you replace the electronic control unit (ECU) from a different airplane, the FAULT HISTORY page can contain APU engine problems from the different airplane.
  - (3) The MAINTENANCE HISTORY page shows the maintenance message(s). A maintenance message identifies a specified problem in the APU system. If you replace the ECU from a different airplane, the MAINTENANCE HISTORY page can contain APU engine problems from the different airplane.
  - (4) The IDENT/CONFIG page shows the serial number, hours in operation and cycles for the APU. You can set the hours since installation of the APU on the airplane to 0.0. The IDENT/CONFIG page also shows the hardware part number, serial number and operational software part number for the ECU. You can also see the program data for the data memory module.
  - (5) The INPUT MONITORING page shows the APU engine data while the APU is in operation. There are four pages of APU engine data.

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- (a) The first page shows these APU engine data:
  - 1) APU speed
  - 2) Exhaust gas temperature, T5 (EGT)
  - 3) Position of the inlet guide vanes (IGV) and surge control valve (SCV)
  - 4) Delta pressure from the delta pressure sensor (DP)
  - 5) Total pressure from the total pressure sensor (PT)
  - 6) Inlet pressure from the inlet pressure sensor (P2)
  - 7) Inlet temperature from the inlet temperature sensor (T2)
  - 8) Fuel torquemotor current from the fuel control unit
  - 9) Fuel flow.
- (b) The second page shows these APU engine data:
  - 1) Oil temperature
  - 2) Fuel temperature
  - 3) APU starter-generator load
  - 4) Position of the APU master switch, main engine start (MES) (ENGINE START 1 and 2) switches and air/ground switch
  - 5) Position of the L and R PACK switches.
- (c) The third page shows these APU engine data:
  - 1) Position of the APU bleed switch, air inlet door, bleed air valve and the APU fuel shutoff valve
  - 2) If the APU fire switch (handle), S10, on the P8 aft electronic panel or the APU remote fire switch (handle), S16, on the P28 APU remote control panel was pulled
  - 3) Operation of the fire detection system
  - 4) Airplane model number.
- (d) The fourth page shows these APU engine data:
  - 1) Received command signal to the ready to load, start relay, loadshed and ignition unit circuit
  - 2) Received command signal to the solenoid for the fuel control unit and bleed air valve
  - 3) OVER SPEED, FAULT, LOW OIL PRESSURE (LOP) and MAINT (indicator) lights, on the P5 forward overhead panel, are on or off.
- (6) The OIL QUANTITY page shows the oil level for the APU. If the oil level shows ADD or LOW, you will see the APU hours from the first time the ECU senses this ADD or LOW oil condition.
- (7) You can do the APU BITE procedure with the APU master switch, on the P5 forward overhead panel, in the OFF or ON position.
- D. The APU controls operational check is a short APU BITE procedure that does a check of the data memory module, electronic control unit, speed sensor and two EGT thermocouples for operational data. The operational data for the data memory module and electronic control unit are found in the IDENT/CONFIG page in the main menu of the APU BITE TEST. The operational data for the speed sensor and two EGT thermocouples are found in the INPUT MONITORING page in the main menu of the APU BITE TEST.
- E. There are three tasks for ECU Software Installation. You can use the Airborne Data Loader, the Enhanced Airborne Data Loader (eADL), or the Portable Data Loader.

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- F. The low oil quantity BITE deactivation and activation tasks give the instructions to deactivate or activate the MAINT light on the P5 forward overhead panel for low oil quantity indication. You must do the APU BITE procedure to deactivate or activate the MAINT light. A low oil quantity indication has no effect on the APU operation. A low oil pressure indication will cause an APU protective shutdown.

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**2. APU BITE Procedure**

(Figure 201)

**A. Location Zones**

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

**B. APU BITE Procedure**

SUBTASK 49-61-00-740-001

- (1) Do the Auxiliary Power Unit (APU) BITE procedure:

- (a) If you get access to the Control Display Unit (CDU) for the first time or were in an airplane system other than the APU, push the INIT REF function key until the PERF INIT page shows on the CDU display.

NOTE: The PERF INIT page or IDENT page can show on the CDU display.

- (b) If you see the PERF INIT or IDENT page, push the line select key adjacent to <INDEX>.

NOTE: The INIT/REF INDEX page shows on the CDU display.

- (c) If you see the INIT/REF INDEX page, push the line select key adjacent to MAINT>.

NOTE: The MAINT BITE INDEX page shows on the CDU display.

- (d) If you see the MAINT BITE INDEX page, push the line select key adjacent to APU>.

NOTE: If the last APU shutdown or cycle was an APU protective shutdown and/or the FAULT light is on, the FAULT HISTORY page for the APU BITE TEST shows on the CDU display. The related problem(s) that caused the APU protective shutdown with the date, Greenwich Mean Time (GMT), and APU cycle will show on this page.

NOTE: If the MAINT light is on, the CURRENT STATUS page for the APU BITE TEST shows on the CDU display. The related problem(s) that caused the MAINT light to come on will show on this page.

NOTE: If the FAULT and MAINT lights are off and there are no APU protective shutdowns, the MAIN MENU page for the APU BITE TEST shows on the CDU display. You can find the FAULT and MAINT lights, on the P5 forward overhead panel.

- (e) If you see the FAULT HISTORY page for the APU BITE TEST, write the maintenance message number(s) (MAINT MSG) for the fault message(s) to be corrected.

NOTE: The maintenance message number(s) that you write is necessary to go to the correct fault isolation task(s) in the Fault Isolation Manual (FIM).

- 1) Refer to 49-MAINT MSG INDEX at the front of the FIM to find the fault isolation task(s) for the applicable maintenance message number(s).

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- 2) If there are more than one FAULT HISTORY page, push the previous page key (PREV PAGE) or next page key (NEXT PAGE) to go to the other pages.  
NOTE: The number of pages are shown on the top right side of the FAULT HISTORY page.
  - 3) If you see the ">" symbol adjacent to CURRENT STATUS (CURRENT STATUS>) on the FAULT HISTORY page, the fault message(s) are active.
    - a) Push the line select key adjacent to CURRENT STATUS> to see the symptom(s) that cause the APU protective shutdown.
  - 4) If you do not see CURRENT STATUS> on the FAULT HISTORY page, the fault message(s) are intermittent.
  - 5) If it is necessary to see other APU cycles that have the same symptom, push the line select key adjacent to OTHER OCCURRENCES.  
NOTE: If there are no other APU cycles that have the same symptom, you will see the message "NO OTHER OCCURRENCES".
    - a) Push the line select key adjacent to <INDEX to go back to the FAULT HISTORY or MAINTENANCE HISTORY page.
  - 6) If it is necessary to go back to the MAIN MENU page for the APU BITE TEST, push the line select key adjacent to <INDEX.  
NOTE: The MAIN MENU page shows on the CDU display.
- (f) If you see the MAIN MENU page for the APU BITE TEST on the CDU display, push the line select key adjacent to <CURRENT STATUS.
- (g) If you see the CURRENT STATUS page for the APU BITE TEST, look at the current record of maintenance message(s).
- NOTE: If there are no current maintenance messages on the CURRENT STATUS page, you will see the message "no failures found".
- NOTE: If you see a maintenance message on the CURRENT STATUS page that was monitored continuously by the Electronic Control Unit (ECU) and you corrected the problem while you were on this page, you will see the message "FAULT CLEARED".
- 1) Write the maintenance message number(s) (MAINT MSG) for the maintenance message(s) to be corrected.  
NOTE: The maintenance message number(s) that you write is necessary to go to the correct fault isolation task(s) in the FIM.
  - 2) Refer to 49-MAINT MSG INDEX at the front of the FIM to find the fault isolation task(s) for the applicable maintenance message number(s).
  - 3) If there are more than one CURRENT STATUS page, push the previous page key (PREV PAGE) or next page key (NEXT PAGE) to go to the other pages.  
NOTE: The number of pages are shown on the top right side of the CURRENT STATUS page.
  - 4) If it is necessary to see other APU cycles that have the same symptom, push the line select key adjacent to OTHER OCCURRENCES.  
NOTE: If there are no other APU cycles that have the same symptom, you will see the message "NO OTHER OCCURRENCES".
    - a) Push the line select key adjacent to <INDEX to go back to the CURRENT STATUS page.

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- 5) If it is necessary to go back to the MAIN MENU page for the APU BITE TEST, push the line select key adjacent to <INDEX>.
- (h) If it is necessary to see the FAULT HISTORY page from the MAIN MENU page, push the line select key adjacent to <FAULT HISTORY>.
- NOTE: The FAULT HISTORY page shows a list of all APU protective shutdowns with the date, GMT, and APU cycle the fault(s) occurred. If you replace the ECU from a different airplane, the FAULT HISTORY page can contain APU engine problems from the different airplane.
- 1) If you see the ">" symbol adjacent to CURRENT STATUS (CURRENT STATUS>) on this page, the fault message(s) are active.
    - a) Push the line select key adjacent to CURRENT STATUS> to see the symptom(s) that cause the APU protective shutdown.
  - 2) If you do not see CURRENT STATUS> on this page, the fault message(s) are intermittent.
  - 3) If it is necessary to see other APU cycles that have the same APU protective shutdown, push the line select key adjacent to OTHER OCCURRENCES>.
- NOTE: If there are no other APU cycles that have the same APU protective shutdown, you will see the message "NO OTHER OCCURRENCES".
- a) Push the line select key adjacent to <INDEX to go back to the FAULT HISTORY page.
- 4) If there are more than one FAULT HISTORY page, push the previous page key (PREV PAGE) or next page key (NEXT PAGE) to go to the other pages.
- NOTE: The number of pages are shown on the top right side of the FAULT HISTORY page.
- 5) If it is necessary to go back to the MAIN MENU page for the APU BITE TEST, push the line select key adjacent to <INDEX>.
- (i) If it is necessary to see the MAINTENANCE HISTORY page from the MAIN MENU page, push the line select key adjacent to MAINTENANCE HISTORY>.
- NOTE: The MAINTENANCE HISTORY page shows a list of a maximum of 99 maintenance messages (symptoms) with the date, GMT, and APU cycle the symptom(s) occurred. If you replace the ECU from a different airplane, the MAINTENANCE HISTORY page can contain APU engine problems from the different airplane.
- 1) If you see the ">" symbol adjacent to CURRENT STATUS (CURRENT STATUS>) on this page, the maintenance message(s) are active.
    - a) Push the line select key adjacent to CURRENT STATUS> to see the symptom(s) that cause the Line Replaceable Unit (LRU) with the problem.
  - 2) If you do not see CURRENT STATUS> on this page, the maintenance message(s) are intermittent.
  - 3) If it is necessary to see other APU cycles that have the same symptom, push the line select key adjacent to OTHER OCCURRENCES>.
- NOTE: If there are no other APU cycles that have the same symptom, you will see the message "NO OTHER OCCURRENCES".
- a) Push the line select key adjacent to <INDEX to go back to the MAINTENANCE HISTORY page.

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- 4) If there are more than one MAINTENANCE HISTORY page, push the previous page key (PREV PAGE) or next page key (NEXT PAGE) to go to the other pages.

NOTE: The number of pages are shown on the top right side of the MAINTENANCE HISTORY page.

- 5) If it is necessary to go back to the MAIN MENU page for the APU BITE TEST, push the line select key adjacent to <INDEX>.

- (j) If it is necessary to see the IDENT/CONFIG page from the MAIN MENU page, push the line select key adjacent to <IDENT/CONFIG>.

NOTE: The IDENT/CONFIG page shows the two pages of APU and ECU identification/configuration data.

- 1) The first page shows these APU data:

- APU serial number (APU S/N)
- Hours of APU operation (APU HOURS)
- APU cycles (APU CYCLES)
- Hours since installation on the airplane.

- 2) If it is necessary to erase the data for the APU hours and set the APU hours to 0.0, push the line select key adjacent to RESET HOURS SINCE INSTALLATION>.

NOTE: A question "DO YOU WANT TO RESET THE HOURS SINCE INSTALLATION ON THIS AIRPLANE?" shows on the CDU display.

- If it is not necessary to set the APU hours to 0.0, push the line select key adjacent to NO>.
- If it is necessary to set the APU hours to 0.0, push the line select key adjacent to YES>.

- 3) Push the next page key (NEXT PAGE) to go to the second page that shows these ECU data:

- Part number for the ECU hardware (ECU HW P/N)
- ECU serial number (ECU S/N)
- Part number for the ECU software (ECU OPERATIONAL SW P/N).

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- Status of the maintenance light for low oil quantity.
- Status of ice logic.

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- 4) If it is necessary to see the program data for the data memory module, push the line select adjacent to DATA MEMORY MODULE>.

NOTE: The DATA MEMORY MODULE page shows on the CDU display.

- Push the previous page key (PREV PAGE) or next page key (NEXT PAGE) to go to the other pages.
- If it is necessary to view CT5ATP, advance to page 5 by pushing the NEXT PAGE key.

NOTE: CT5ATP will be displayed on the last row of the CDU.

NOTE: The number of pages are shown on the top right side of the DATA MEMORY MODULE page.

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- c) Push the line select key adjacent to <INDEX to go back to the IDENT/CONFIG page.
- 5) If it is necessary to go back to the MAIN MENU page for the APU BITE TEST, push the line select key adjacent to <INDEX.
- (k) If it is necessary to see the INPUT MONITORING page from the MAIN MENU page, push the line select key adjacent to <INPUT MONITORING.

NOTE: The INPUT MONITORING page shows these four pages of APU engine data.

- 1) The first page shows these APU engine data:
  - a) APU speed (SPEED) (%)
  - b) Exhaust gas temperature, T5 (EGT) (°C)
  - c) Position of the inlet guide vanes (IGV POSITION) (degrees)
  - d) Position of the surge control valve (SCV POSITION) (degrees)
  - e) Delta pressure from the delta pressure sensor (DP) (DELTA PRESS) (psid)
  - f) Total pressure from the total pressure sensor (PT) (TOTAL PRESS) (psia)
  - g) Inlet pressure from the inlet pressure sensor (P2) (INLET PRESS) (psia)
  - h) Inlet temperature from the inlet temperature sensor (T2) (INLET TEMP) (°C)
  - i) Fuel torquemotor current from the fuel control unit (FUEL TMC) (milliamperes)
  - j) Fuel flow (FUEL FLOW) (pounds for each hour).
- 2) Push the next page key (NEXT PAGE) to go to the second page that shows these APU engine data:
  - a) Oil temperature (OIL TEMP) (°C)
  - b) Fuel temperature (FUEL TEMP) (°C)
  - c) APU starter-generator load (GENERATOR LOAD) (KW)
  - d) APU master switch in the START position (START SWITCH) (YES/NO)
  - e) APU master switch in the ON position (APU ON SWITCH) (YES/NO)
  - f) APU master switch in the OFF position (APU OFF SWITCH) (YES/NO)
  - g) Position of the ENGINE START 1 and 2 switches, on the P5 forward overhead panel (MES SWITCH(S))
    - NOTE: If ENGINE START 1 and 2 switches are in the OFF position, the CDU display shows "OFF". If ENGINE START 1 switch is in the GRD position and ENGINE START 2 switch is in the OFF position, the CDU display shows "1". If ENGINE START 1 switch is in the OFF position and ENGINE START 2 switch is in the GRD position, the CDU display shows "2". If ENGINE START 1 and 2 switches are in the GRD position, the CDU display shows "BOTH".
    - h) Position of the air/ground switch (AIR/GROUND) (AIR/GND)
    - i) Position of the L PACK switch (LEFT PACK)
      - NOTE: If the L PACK switch is in the OFF position, the CDU display shows "OFF". If the L PACK switch is in the AUTO position, the CDU display shows "LOW". If the L PACK switch is in the HIGH position, the CDU display shows "HIGH".

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- j) Position of the R PACK switch (RIGHT PACK).
- NOTE: If the R PACK switch is in the OFF position, the CDU display shows "OFF". If the R PACK switch is in the AUTO position, the CDU display shows "LOW". If the R PACK switch is in the HIGH position, the CDU display shows "HIGH".
- 3) Push the next page key (NEXT PAGE) to go to the third page that shows these APU engine data:
- Position of the APU bleed switch (BLEED COMMAND SW) (ON/OFF)
  - Air inlet door in the open position (INLET DOOR OPEN) (YES/NO)
  - Air inlet door is not in the fully open position (DOOR NOT FULL OPEN) (YES/NO)
  - APU fire switch (handle), S10, on the P8 aft electronic panel, was pulled (FIRE COCKPIT) (YES/NO)
  - APU remote fire switch (handle), S16, on the P28 APUREmote control panel, was pulled (FIRE REMOTE HANDLE) (YES/NO)
  - Operation of the fire detection system (FIRE DETECTION) (YES/NO)
  - Airplane model number (AIRPLANE MODEL) (600, 700, or 800)  
NOTE: The 900 airplane model will show as 800.
  - Position of the bleed air valve (BLEED AIR VALVE) (OPEN/CLOSE)
  - APU fuel shutoff valve in the closed position (FUEL VALVE CLOSED) (YES/NO)
  - APU fuel shutoff valve in the open position (FUEL VALVE OPEN) (YES/NO).
- 4) Push the next page key (NEXT PAGE) to go to the fourth page that shows these APU engine data:
- Received command signal to the ready to load circuit (READY TO LOAD) (YES/NO)
  - Received command signal to the start relay circuit (START COMMAND) (YES/NO)
  - Received command signal to the loadshed circuit (LOAD SHED COMMAND) (YES/NO)
  - Received command signal to the ignition unit circuit (IGNITION COMMAND) (YES/NO)
  - Received command signal to the solenoid for the fuel control unit (FUEL SOL COMMAND) (YES/NO)
  - Received command signal to the solenoid for the bleed air valve (BLEED SOL COMMAND) (YES/NO)
  - OVER SPEED light, on the P5 forward overhead panel (OVERSPD INDICATOR) (ON/OFF)
  - FAULT light, on the P5 forward overhead panel (FAULT INDICATOR) (ON/OFF)
  - LOW OIL PRESSURE light, on the P5 forward overhead panel (LOP INDICATOR) (ON/OFF)
  - MAINT light, on the P5 forward overhead panel (MAINT INDICATOR) (ON/OFF).

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- 5) If it is necessary to go back to the MAIN MENU page for the APU BITE TEST, push the line select key adjacent to <INDEX>.
- (l) If it is necessary to see the OIL QUANTITY REPORT page from the MAIN MENU page, push the line select key adjacent to OIL QUANTITY>.  
NOTE: The OIL QUANTITY REPORT page shows on the CDU display.  
NOTE: To get an accurate indication, you must examine the APU oil level in the no APU operation (APU shutdown) condition.

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- 1) The oil level will show ADD, LOW, or FULL.
  - a) If the oil level shows ADD or LOW, you will see the APU hours from the first time the ECU senses this ADD or LOW oil condition.
  - b) If the oil level shows FULL, you will not see the APU hours for a FULL oil condition.
- 2) The oil level will show UNKNOWN, WAIT, ADD, LOW, or FULL.
  - a) If the oil level shows UNKNOWN, the APU is operating or it has been longer than one hour since the APU was started.  
<1> UNKNOWN will also be displayed when the APU and main engines are operating on the ground or during a sensor failure.
  - b) If the oil level shows WAIT, it has been less than two minutes since the APU was shutdown.

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- 3) If it is necessary to go back to the MAIN MENU page for the APU BITE TEST, push the line select key adjacent to <INDEX>.
- (m) If it is necessary to see other airplane MAINT BITE systems, push the line select key adjacent to <INDEX> on the MAIN MENU page for the APU BITE TEST.

NOTE: The MAINT BITE INDEX page for the other airplane systems shows on the CDU display.

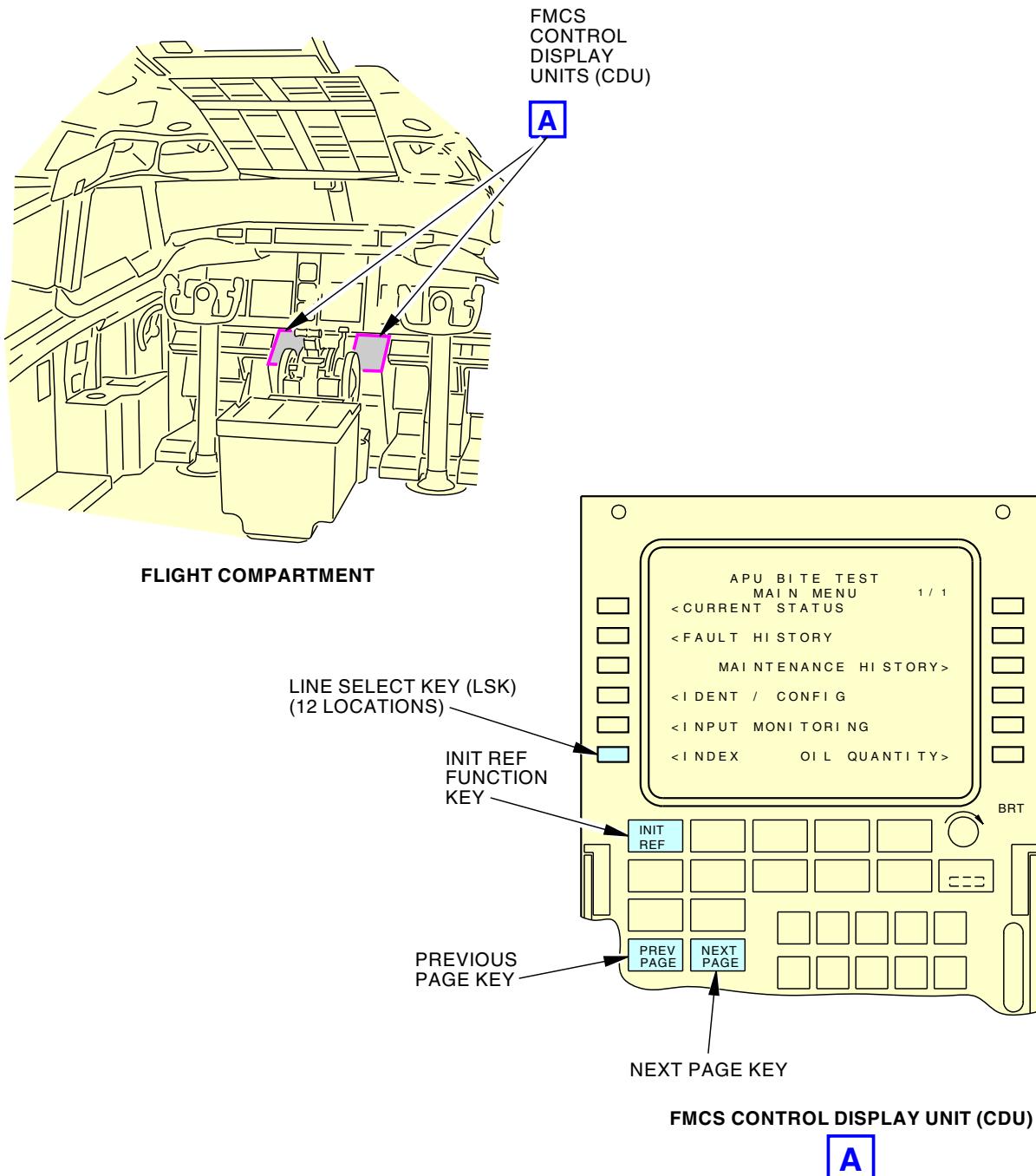
———— END OF TASK ———

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**APU BITE Procedure**  
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**TASK 49-61-00-710-801**

**3. APU Controls Operational Check**

(Figure 201)

NOTE: This procedure is a scheduled maintenance task.

**A. Location Zones**

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

**B. APU Controls Operational Check**

SUBTASK 49-61-00-740-006

- (1) Do an Auxiliary Power Unit (APU) controls operational check from the MAIN MENU page for the APU BITE TEST:

- (a) If you get access to the Control Display Unit (CDU) for the first time or were in an airplane system other than the APU, push the INIT REF function key until the PERF INIT page shows on the CDU display.

NOTE: The PERF INIT page or IDENT page can show on the CDU display.

- (b) If you see the PERF INIT or IDENT page, push the line select key adjacent to <INDEX>.  
NOTE: The INIT/REF INDEX page shows on the CDU display.

- (c) If you see the INIT/REF INDEX page, push the line select key adjacent to MAINT>.  
NOTE: The MAINT BITE INDEX page shows on the CDU display.

- (d) If you see the MAINT BITE INDEX page, push the line select key adjacent to APU>.  
NOTE: If the last APU shutdown or cycle was an APU protective shutdown and/or the

FAULT light is on, the FAULT HISTORY page for the APU BITE TEST shows on the CDU display. The related problem(s) that caused the APU protective shutdown with the date, Greenwich Mean Time (GMT), and APU cycle will show on this page.

NOTE: If the MAINT light is on, the CURRENT STATUS page for the APU BITE TEST shows on the CDU display. The related problem(s) that caused the MAINT light to come on will show on this page.

NOTE: If the FAULT and MAINT lights are off and there are no APU protective shutdowns, the MAIN MENU page for the APU BITE TEST shows on the CDU display. You can find the FAULT and MAINT lights, on the P5 forward overhead panel.

- (e) If you see the FAULT HISTORY page for the APU BITE TEST, push the line select key adjacent to <INDEX> to go back to the MAIN MENU page for the APU BITE TEST.

NOTE: The MAIN MENU page shows on the CDU display.

- (f) If you see the CURRENT STATUS page for the APU BITE TEST, push the line select key adjacent to <INDEX> to go back to the MAIN MENU page for the APU BITE TEST.

NOTE: The MAIN MENU page shows on the CDU display.

- (g) When the MAIN MENU page for the APU BITE TEST shows on the CDU display, push the line select key adjacent to <IDENT/CONFIG>.

NOTE: The IDENT/CONFIG page shows the first page of two pages of APU and Electronic Control Unit (ECU) identification/configuration data.

- 1) The first page shows these APU data:

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- a) APU serial number (APU S/N)
  - b) Hours of APU operation (APU HOURS)
  - c) APU cycles (APU CYCLES)
  - d) Hours since installation on the airplane.
- 2) Make sure that there is identification and configuration data for the APU.
  - 3) Push the next page key (NEXT PAGE) to go to the second page that shows these ECU data:
    - a) Part number for the ECU hardware (ECU HW P/N)
    - b) ECU serial number (ECU S/N)
    - c) Part number for the ECU software (ECU OPERATIONAL SW P/N).
  - 4) Make sure that there is configuration data for the ECU.
- (h) Push the line select key adjacent to <INDEX to go back to the MAIN MENU page for the APU BITE TEST.
- NOTE: The MAIN MENU page shows on the CDU display.
- (i) Push the line select key adjacent to <INPUT MONITORING.
- NOTE: The INPUT MONITORING page shows the first page of four pages of APU engine data.
- 1) The first page shows these APU engine data:
    - a) APU speed (SPEED) (%)
    - b) Exhaust Gas Temperature (EGT), T5 (EGT) (°C).
  - 2) If there is an APU operation, make sure that there is operational data for the speed sensor and EGT.
- (j) Push the line select key adjacent to <INDEX to go back to the MAIN MENU page for the APU BITE TEST.
- NOTE: The MAIN MENU page shows on the CDU display.
- (k) If it is necessary to see other airplane MAINT BITE systems, push the line select key adjacent to <INDEX on the MAIN MENU page for the APU BITE TEST.
- NOTE: The MAINT BITE INDEX page for the other airplane systems shows on the CDU display.

———— END OF TASK ————

**LOM 402, 404, 406, 407, 411, 416, 420, 422, 425, 426, 432-434, 437, 438**

**TASK 49-61-00-470-801**

**4. ECU Software Installation with an Airborne Data Loader**

**A. General**

- (1) This procedure tells you how to install the ECU software into the ECU with the use of an airborne data loader (ADL).
- (2) An airborne data loader and a control display unit (CDU) are necessary for this procedure. A data loader control panel is also necessary. The data loader control panel is installed above the airborne data loader on the P61 panel.
- (3) The airplane must be on the ground with the APU and engines shutdown before you can install the ECU software.

EFFECTIVITY
LOM ALL

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**737-600/700/800/900**  
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**LOM 402, 404, 406, 407, 411, 416, 420, 422, 425, 426, 432-434, 437, 438 (Continued)**

- (4) Some airlines keep the circuit breaker for the data loader open when the data loader is not necessary. This increases the length of time that the data loader is serviceable.

**B. References**

<b>Reference</b>	<b>Title</b>
20-15-11-400-801	On-Airplane Software - 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)

**C. Location Zones**

<b>Zone</b>	<b>Area</b>
211	Flight Compartment - Left
212	Flight Compartment - Right

**D. ECU Software Installation**

SUBTASK 49-61-00-860-006

- (1) Make sure the APU master switch on the P5 forward overhead panel is OFF.

SUBTASK 49-61-00-860-001

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

SUBTASK 49-61-00-860-007

- (3) Make sure that this circuit breaker is closed:

**CAPT Electrical System Panel, P18-2**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
A	9	C00923	DATA LOADER

SUBTASK 49-61-00-940-003

- (4) Do these steps to prepare for the ECU software installation:

NOTE: Make sure you know the correct software part number for the ECU. For the ECU to be an approved installation, the correct software part number must be installed.

- (a) Make sure the system select switch on the data loader control panel (P61) is set to NORM or NORMAL.  
(b) Set the APU master switch to the ON position.  
(c) Do this task: APU BITE Procedure, TASK 49-61-00-700-801.  
(d) Make sure you get access to the IDENT/CONFIG page from the MAIN MENU page.

NOTE: The IDENT/CONFIG page shows the two pages of APU and ECU identification/configuration data.

- (e) Do these steps at the data loader control panel:  
1) Set the upper switch to SINGLE SYS.  
2) Set the system select switch to the APU.

- (f) Continue the procedure.

NOTE: The APU BITE TEST will not operate during the ECU software installation.

SUBTASK 49-61-00-470-008

- (5) Do this step to install the software - (Preferred):

- (a) Follow the generic ADL procedure to load software part (TASK 20-15-11-400-801).

EFFECTIVITY  
LOM ALL

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**LOM 402, 404, 406, 407, 411, 416, 420, 422, 425, 426, 432-434, 437, 438 (Continued)**

SUBTASK 49-61-00-470-001

- (6) Do these steps at the airborne data loader to install the ECU software - (Non-Preferred):
  - (a) Put the correct disk in the disk drive.
  - (b) Follow the prompts on the data loader to complete the installation.
  - (c) Remove the disk from the disk drive when the ECU software installation is completed.  
NOTE: COMP, LOAD COMPLETE and TRANSF COMPLETE are examples of data loader prompts for a completed installation.

SUBTASK 49-61-00-740-002

- (7) Do these steps to make sure the ECU software installation is correct:
  - (a) Set the system select switch on the data loader control panel to NORM or NORMAL.
  - (b) Make sure the APU BITE TEST shows on the CDU display.
    - 1) If the APU BITE TEST does not show on the CDU display, do this task: APU BITE Procedure, TASK 49-61-00-700-801.
  - (c) Make sure you get access to the IDENT/CONFIG page from the MAIN MENU page.
  - (d) Make sure you get access to the second page of the IDENT/CONFIG page.  
NOTE: You push the next page key (NEXT PAGE) to go to the second page which shows the part number for the ECU software (ECU OPERATIONAL SW P/N).
  - (e) Make sure the part number for the correct ECU software shows on the CDU.
  - (f) Push the line select key adjacent to <INDEX to go to the MAIN MENU page.
  - (g) Set the APU master switch to the OFF position.

**LOM 402, 404, 406, 407, 411, 416, 420, 422, 425, 426 PRE SB 737-49-1162; APUS WITH ECU S/W PRIOR TO 491A-TUS-A51-00 (CCC)**

SUBTASK 49-61-00-040-002

- (8) If necessary, do this task: Low Oil Quantity BITE Deactivation, TASK 49-61-00-040-801.

SUBTASK 49-61-00-040-005

- (9) If deactivation of the Low Oil Quantity BITE is desired, do this task: Low Oil Quantity BITE Deactivation, TASK 49-61-00-040-801.

NOTE: The status of the Low Oil Quantity BITE function does not change when new software is installed.

- (10) If the Low Oil Quantity BITE function was deactivated and you have installed a new version of the software and want the Low Oil Quantity BITE to function, do this task: Low Oil Quantity BITE Activation, TASK 49-61-00-440-801

**LOM 402, 404, 406, 407, 411, 416, 420, 422, 425, 426, 432-434, 437, 438**

SUBTASK 49-61-00-860-003

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

— END OF TASK —

EFFECTIVITY  
LOM ALL

**49-61-00**



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LOM 429-431, 440, 442-447, 450-460, 464-999

**TASK 49-61-00-800-801**

**5. ECU Software Installation with an Enhanced Airborne Data Loader (eADL)**

**A. General**

- (1) This procedure tells you how to install the ECU software into the ECU with the use of an enhanced Airborne Data Loader (ADL).
- (2) An enhanced airborne data loader and a control display unit (CDU) are necessary for this procedure. A data loader control panel is also necessary. The data loader control panel is installed above the enhanced airborne data loader on the P61 panel.
- (3) The airplane must be on the ground with the APU and engines shutdown before you can install the ECU software.
- (4) Do not keep the circuit breaker for the data loader open when the data loader is not necessary. This increases the length of time that the data loader is serviceable.

**B. References**

Reference	Title
20-15-11-400-801	On-Airplane Software - 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)

**C. Location Zones**

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

**D. Prepare for the Installation**

**SUBTASK 49-61-00-860-009**

- (1) Make sure the APU master switch on the P5 forward overhead panel is OFF.

**SUBTASK 49-61-00-860-010**

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

**SUBTASK 49-61-00-860-011**

- (3) Make sure that this circuit breaker is closed:

**CAPT Electrical System Panel, P18-2**

Row	Col	Number	Name
A	9	C00923	DATA LOADER

**SUBTASK 49-61-00-860-012**

- (4) Do these steps to prepare for the ECU software installation:

**NOTE:** Make sure you know the correct software part number for the ECU. For the ECU to be an approved installation, the correct software part number must be installed.

- (a) Make sure the system select switch on the data loader control panel (P61) is set to NORM or NORMAL.
- (b) Set the APU master switch to the ON position.
- (c) Do this task: APU BITE Procedure, TASK 49-61-00-700-801.

EFFECTIVITY  
LOM ALL

**49-61-00**



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**LOM 429-431, 440, 442-447, 450-460, 464-999 (Continued)**

- (d) Make sure you get access to the IDENT/CONFIG page from the MAIN MENU page.

NOTE: The IDENT/CONFIG page shows the two pages of APU and ECU identification/configuration data.

- (e) Do these steps at the data loader control panel:

- 1) Set the upper switch to SINGLE SYS.
- 2) Set the system select switch to the APU.

- (f) Continue the procedure.

NOTE: The APU BITE TEST will not operate during the ECU software installation.

**E. Software Installation - (Preferred)**

SUBTASK 49-61-00-470-006

- (1) Follow the generic ADL procedure to load software part (TASK 20-15-11-400-801).

**F. Software Installation Procedure - (Non-Preferred)**

**LOM 429-431, 440, 442-447, 450-460, 464, 465**

SUBTASK 49-61-00-800-001

- (1) Do these steps to install software from a floppy disk:

- (a) Wait until the display shows the eADL Main Menu.

NOTE: To navigate UP or DOWN and make a selection on the eADL screen, use the appropriate buttons on the eADL front panel.

- 1) If the eADL Main Menu does not show, select MAIN or GO BACK until the eADL shows the Main Menu.

- (b) Select "Target Page."

- 1) The eADL will show the Select Target System screen.

- (c) Select "Floppy Drive."

- 1) The eADL will show a Load Confirmation screen.

- (d) Carefully push the first disk (label up) into the disk drive.

- (e) Select "CONFIRM."

- 1) The eADL will show "LOADING" on the Transfer In Progress screen.

NOTE: It may take one to two minutes for the installation to start.

NOTE: If the disk set has more than one disk and the data of the current disk is completely transferred, the eADL will prompt you to insert the next diskette. Eject the current diskette, insert the next diskette and select "CONTINUE."

- 2) The "TRANSFER" annunciator will change to "LOADING" and turn yellow during the installation procedure.

- 3) The "LOADING" annunciator will change to "COMPLETE" and turn green when the installation procedure is completed.

- (f) Select "MAIN" or "GO BACK" to go back to the main menu.

- (g) Eject the disk from the disk drive when the software installation is completed.

EFFECTIVITY  
LOM ALL

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**LOM 429-431, 440, 442-447, 450-460, 464-999**

SUBTASK 49-61-00-800-002

- (2) Do these steps to install software from a USB flash drive to the eADL MSD:

- (a) Put the USB flash drive into the eADL USB port.

NOTE: The USB flash drive must be configured correctly as specified in the eADL Operations Guide.

- (b) Make sure that the “eADL Main Menu” is shown.

NOTE: To navigate UP or DOWN and make a selection on the eADL screen, use the appropriate buttons on the eADL front panel.

- 1) If the eADL Main Menu does not show, select MAIN or GO BACK until the eADL shows the Main Menu.

- (c) Select “Maintenance Page.”

- 1) This will show the “Maintenance Menu” screen.

- (d) Select “Transfer Parts From USB.”

- 1) If the error message “USB Is Not Mounted Or Is Not A Valid USB” is shown, select “GO BACK” and do the steps again.

- 2) Make sure that the USB flash drive is configured correctly by the USB tool as specified in the eADL Operations Guide.

- 3) The eADL screen will show “CONFIRM TO BEGIN TRANSFERRING.”

- 4) Select “CONFIRM.”

NOTE: The USB and MSD annunciators will turn yellow during the transfer procedure.

NOTE: If the software is already on the eADL MSD, this message will show: “This part name already exists.”

- (e) Make sure that USB and MSB annunciators turn green and the message shows "Part Transfer Complete".

NOTE: This means that software transfer is complete.

NOTE: The annunciators will turn red if the transfer procedure is aborted or if there is a failure.

- (f) Select “MAIN” or “GO BACK” to go back to the main menu.

- (g) Remove the USB flash drive from the eADL USB port.

- (h) Following the successful load of the software perform these steps to remove previous versions from the MSD:

NOTE: This procedure allows the operator to remove an LSP from the MSD. This will also delete any downloaded files associated with the LSP that may have been added to the LSP. This action cannot be undone.

NOTE: It is recommended to remove the older LSP on the MSD, but it is not required.

- 1) On the eADL use the Up and Down keys and select the following:

- a) Select the Maintenance page.

- b) Select delete Software part option.

NOTE: The listed LSP may or may not appear as a part number. It will appear as it was originally saved using eADL Part Builder.

- c) Select the desired LSP.

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LOM ALL

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**LOM 429-431, 440, 442-447, 450-460, 464-999 (Continued)**

- d) The eADL screen will display, Part Selected for Deletion is <Desired LSP>.
- e) Press the CONFIRM softkey to initiate the deletion process.  
NOTE: If you want to cancel the operation, use the Go Back key.
- 2) The MSD annunciator will turn yellow while the delete operation is taking place.
- 3) The MSD annunciator will turn back to green and screen will display:
  - a) Part Deleted.
- 4) Press the GO BACK key to return to the Main Menu.

SUBTASK 49-61-00-800-003

- (3) Do these steps to install the software from the eADL MSD to the LRU:
  - (a) Make sure that the “eADL Main Menu” is shown.  
NOTE: To navigate UP or DOWN and make a selection on the eADL screen, use the appropriate buttons on the eADL front panel.
    - 1) If the eADL Main Menu does not show, select MAIN or GO BACK until the eADL shows the Main Menu.
  - (b) Select “Target Page.”  
NOTE: This will show the “Select Target System” screen.
  - (c) Select the software received by the LRU.  
NOTE: This will show the “Select Software Part” screen.
  - (d) Push the “SELECT” button for the desired software.  
NOTE: The listed software will appear as it was originally configured in the USB tool.  
See the supplier eADL Operations Guide.
  - (e) Make sure that the “Load Confirmation” screen shows.
  - (f) Select “CONFIRM”.  
NOTE: This will show the “Transfer In Progress” screen.  
NOTE: The “TRANSFER” annunciator will change to “LOADING” and turn yellow during the installation procedure.  
NOTE: The “LOADING” annunciator will change to “COMPLETE” and turn green when the installation procedure is completed.
  - (g) Select “MAIN” or “GO BACK” to go back to the main menu.

## G. Software Installation Test

SUBTASK 49-61-00-860-013

- (1) Do these steps to make sure the ECU software installation is correct:
  - (a) Set the system select switch on the data loader control panel to NORM or NORMAL.
  - (b) Make sure the APU BITE TEST shows on the CDU display.
    - 1) If the APU BITE TEST does not show on the CDU display, do this task: APU BITE Procedure, TASK 49-61-00-700-801.
  - (c) Make sure you get access to the IDENT/CONFIG page from the MAIN MENU page.
  - (d) Make sure you get access to the second page of the IDENT/CONFIG page.  
NOTE: You push the next page key (NEXT PAGE) to go to the second page which shows the part number for the ECU software (ECU OPERATIONAL SW P/N).

EFFECTIVITY  
LOM ALL

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**LOM 429-431, 440, 442-447, 450-460, 464-999 (Continued)**

- (e) Make sure the part number for the correct ECU software shows on the CDU.
- (f) Push the line select key adjacent to <INDEX to go to the MAIN MENU page.
- (g) Set the APU master switch to the OFF position.

SUBTASK 49-61-00-860-016

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

———— END OF TASK ————

**LOM 412, 415, 423, 424, 427, 428, 437-447, 450-999**

**TASK 49-61-00-470-802**

**6. ECU Software Installation with a Portable Data Loader**

**A. General**

- (1) This procedure tells you how to install the ECU software into the ECU with the use of a Portable Data Loader (PDL).
- (2) A portable data loader and the control display unit (CDU) are necessary for this procedure. A data loader control panel and a PDL interface connector are also necessary. The data loader control panel is installed above the DATA TRANSFER UNIT RECEPTACLE connector on the P61 panel.
- (3) A PDL is not a Boeing supplied part. Refer to the PDL supplier for instructions for operation. PDLs have a disk drive for software installation from disks. Some PDLs have an internal mass storage device. If the software is stored in the PDL, then disks are not necessary.
- (4) The airplane must be on the ground with the APU and engines shutdown before you can install the ECU software.
- (5) Modern software loaders that meet the security requirements defined in ARINC 645-1 or newer are recommended to use. The procedures for modern software loaders will be marked as preferred for now and will be the only procedures available after removing floppy disk loaders procedures in the future. Please check with your Software Loader Supplier for current capabilities since this is still maturing across current and future software loaders.

**B. References**

<b>Reference</b>	<b>Title</b>
20-15-11-400-801	On-Airplane Software - 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)

**C. Tools/Equipment**

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

— EFFECTIVITY —

**LOM ALL**



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**LOM 412, 415, 423, 424, 427, 428, 437-447, 450-999 (Continued)**

Reference	Description
COM-1915	Data Loader - ARINC 615 (without ARINC 645-1 Compliant) Part #: 11615-50 Supplier: 0D4J3 Part #: 2231560-1-B Supplier: 98571 Part #: 465130-01-01 Supplier: 30782 Part #: 800-0631 Supplier: 1JSZ6 Part #: CEI-715-DL-2 Supplier: 0BPH5 Part #: PXS-LDS-10 Supplier: 98571 Part #: YV68A110 Supplier: FAQ15 Opt Part #: 11615-02 Supplier: 0D4J3 Opt Part #: 11615-20 Supplier: 0D4J3 Opt Part #: 18000-02 Supplier: 0D4J3 Opt Part #: 30100 Supplier: 0BAW0 Opt Part #: 80000-03-01010203 Supplier: 0BAW0 Opt Part #: 80000-04-01020301 Supplier: 0BAW0 Opt Part #: 80000-05 Supplier: 0BAW0 Opt Part #: 964-0400-020 Supplier: 97896 Opt Part #: 964-0400-024 Supplier: 97896 Opt Part #: 964-0400-025 Supplier: 97896 Opt Part #: 964-0400-030 Supplier: 97896 Opt Part #: 964-0400-044 Supplier: 97896 Opt Part #: 964-0400-045 Supplier: 97896 Opt Part #: 964-0400-055 Supplier: 97896 Opt Part #: P2K-615A-06 Supplier: 0BAW0
COM-21223	Data Loader - ARINC 615 (with ARINC 645-1 Compliant) Part #: 403474 Supplier: CG603 Part #: 403562 Supplier: CG603 Part #: AE-615-MPDL Supplier: CD624 Part #: PDL-615-XT Supplier: 89Q20

**D. Location Zones**

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

**E. ECU Software Installation**

SUBTASK 49-61-00-860-004

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

SUBTASK 49-61-00-940-001

**LOM 412, 415, 423, 424, 427, 428, 437-447, 450-999; AIRPLANES WITH -222 THRU -999 ECU**

- (2) Do these steps to prepare for the ECU software installation:

NOTE: Make sure you know the correct software part number for the ECU. For the ECU to be an approved installation, the correct software part number must be installed.

**LOM 412, 415, 423, 424, 427, 428, 437-447, 450-999**

- (3) Do these steps to prepare for the ECU software installation:

NOTE: Make sure you know the correct software part number for the ECU. For the ECU to be an approved installation, the correct software part number must be installed.

- (a) Make sure the system select switch on the data loader control panel (P61) is set to NORM or NORMAL.

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**LOM 412, 415, 423, 424, 427, 428, 437-447, 450-999 (Continued)**



**MAKE SURE THAT THE DATA LOADER CIRCUIT-BREAKER IS OPEN BEFORE YOU CONNECT OR REMOVE THE DATA LOADER CABLE. IF THE CIRCUIT BREAKER IS NOT OPEN, DAMAGE TO EQUIPMENT CAN OCCUR.**

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

**CAPT Electrical System Panel, P18-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	9	C00923	DATA LOADER



**MAKE SURE THE POWER SWITCH FOR THE PORTABLE DATA LOADER IS SET TO OFF BEFORE YOU CONNECT OR REMOVE THE INTERFACE CABLE. IF THE POWER SWITCH IS NOT OFF, DAMAGE TO THE PORTABLE DATA LOADER CAN OCCUR.**

- (c) Connect the interface cable of the ARINC 615 data loader, COM-1915, or ARINC 645-1 compliant portable data loader, COM-21223, to the DATA TRANSFER UNIT RECEPTACLE on the P61 auxiliary panel.
- (d) Remove the safety tag and close this circuit breaker:

**CAPT Electrical System Panel, P18-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	9	C00923	DATA LOADER

- (e) Set the APU master switch on the P5 forward overhead panel to the ON position.
- (f) Do this task: APU BITE Procedure, TASK 49-61-00-700-801.
- (g) Make sure you get access to the IDENT/CONFIG page from the MAIN MENU page.

NOTE: The IDENT/CONFIG page shows the two pages of APU and ECU identification/configuration data.

**LOM 412, 415, 423, 424, 427, 428, 437-447, 450-999; AIRPLANES WITH TWO SWITCHES ON THE DATA LOADER CONTROL PANEL (P61)**

- (h) Do these steps at the data loader control panel:
- 1) Set the upper switch to SINGLE SYS.
  - 2) Set the system select switch to the APU.

**LOM 412, 415, 423, 424, 427, 428, 437-447, 450-999**

- (i) Continue the procedure.

NOTE: The APU BITE TEST will not operate during the ECU software installation.

SUBTASK 49-61-00-470-009

- (4) Do this step to install the software - (Preferred):
- (a) Follow the generic PDL procedure to load software part (TASK 20-15-11-400-801).

EFFECTIVITY  
LOM ALL

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**LOM 412, 415, 423, 424, 427, 428, 437-447, 450-999; SOFTWARE INSTALLATION WITH A PDL DISK DRIVE**

SUBTASK 49-61-00-470-002

- (5) Do these steps to install the ECU software - (Non-Preferred):

NOTE: For more information on how to use the data loader, refer to the supplier's instructions for the data loader.

- (a) Set the power switch on the data loader to the on position.
- (b) Put the correct disk in the disk drive.
- (c) Follow the prompts on the data loader to complete the installation.
- (d) Remove the disk from the disk drive when the ECU software installation is completed.

NOTE: COMP, LOAD COMPLETE and TRANSF COMPLETE are examples of data loader prompts for a completed installation.

**LOM 412, 415, 423, 424, 427, 428, 437-447, 450-999; SOFTWARE INSTALLATION WITH A PDL MASS STORAGE DEVICE**

SUBTASK 49-61-00-470-003

- (6) Follow the PDL supplier instructions to install the software - (Non-Preferred).

**LOM 412, 415, 423, 424, 427, 428, 437-447, 450-999**

SUBTASK 49-61-00-860-008

- (7) Set the power switch on the data loader to the off position.

SUBTASK 49-61-00-740-003

- (8) Do these steps to make sure the ECU software installation is correct:

- (a) Set the system select switch on the data loader control panel to NORM or NORMAL.
- (b) Make sure the APU BITE TEST shows on the CDU display.
  - 1) If the APU BITE TEST does not show on the CDU display, do this task: APU BITE Procedure, TASK 49-61-00-700-801.
- (c) Make sure you get access to the IDENT/CONFIG page from the MAIN MENU page.
- (d) Make sure you get access to the second page of the IDENT/CONFIG page.

NOTE: You push the next page key (NEXT PAGE) to go to the second page which shows the part number for the ECU software (ECU OPERATIONAL SW P/N).
- (e) Make sure the part number for the correct ECU software shows on the CDU.
- (f) Push the line select key adjacent to <INDEX to go to the MAIN MENU page.
- (g) Set the APU master switch to the OFF position.

**LOM 412, 415, 423, 424, 427, 428 PRE SB 737-49-1162; APUS WITH ECU S/W PRIOR TO 491A-TUS-A51-00 (CCC)**

SUBTASK 49-61-00-040-003

- (9) If necessary, do this task: Low Oil Quantity BITE Deactivation, TASK 49-61-00-040-801.

SUBTASK 49-61-00-040-006

- (10) If deactivation of the Low Oil Quantity BITE is desired, do this task: Low Oil Quantity BITE Deactivation, TASK 49-61-00-040-801.

NOTE: The status of the Low Oil Quantity BITE function does not change when new software is installed.

EFFECTIVITY  
LOM ALL

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**LOM 412, 415, 423, 424, 427, 428 PRE SB 737-49-1162; APUS WITH ECU S/W PRIOR TO 491A-TUS-A51-00  
(CCC) (Continued)**

- (11) If the Low Oil Quantity BITE function was deactivated and you have installed a new version of the software and want the Low Oil Quantity BITE to function, do this task: Low Oil Quantity BITE Activation, TASK 49-61-00-440-801

**LOM 412, 415, 423, 424, 427, 428, 437-447, 450-999**

SUBTASK 49-61-00-940-002

- (12) Do these steps to put the airplane back to its usual condition:



**MAKE SURE THAT THE DATA LOADER CIRCUIT-BREAKER IS OPEN BEFORE YOU CONNECT OR REMOVE THE DATA LOADER CABLE. IF THE CIRCUIT BREAKER IS NOT OPEN, DAMAGE TO EQUIPMENT CAN OCCUR.**

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

**CAPT Electrical System Panel, P18-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	9	C00923	DATA LOADER

- (b) Disconnect the interface cable from the DATA TRANSFER UNIT RECEPTACLE on the P61 auxiliary panel.  
(c) Remove the safety tag and close this circuit breaker:

**CAPT Electrical System Panel, P18-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	9	C00923	DATA LOADER

SUBTASK 49-61-00-860-005

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

**LOM ALL**

————— END OF TASK ————

**TASK 49-61-00-040-801**

**7. Low Oil Quantity BITE Deactivation**

**A. General**

- (1) This procedure tells you how to deactivate the MAINT light on the P5 forward overhead panel for low oil quantity indication.

**B. Location Zones**

<b>Zone</b>	<b>Area</b>
211	Flight Compartment - Left
212	Flight Compartment - Right

**C. Procedure**

SUBTASK 49-61-00-740-004

- (1) Do this task: APU BITE Procedure, TASK 49-61-00-700-801.

**LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-428 PRE SB 737-49-1162**

SUBTASK 49-61-00-040-009

- (2) Do these steps to deactivate the MAINT light for low oil quantity indication:

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LOM ALL

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**LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-428 PRE SB 737-49-1162 (Continued)**

- (a) Make sure you get access to the IDENT CONFIG page 2 from the MAIN MENU page.
- (b) Use the keyboard on the CDU to type this on the scratch pad: LOQOFF.
- (c) Push the line select key at the top right side of the CDU.  
NOTE: The message "MAINT LIGHT FOR LOQ OFF" will show on the CDU display.
- (d) Push the line select key adjacent to <INDEX two times to go back to the MAIN MENU page for the APU BITE TEST.  
NOTE: The MAIN MENU page shows on the CDU display.

NOTE: The MAINT LIGHT will remain illuminated if the starter generator has a shorted rotating diode.

**LOM 429-434, 437-447, 450-999; LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-428 POST SB 737-49-1162**

SUBTASK 49-61-00-040-010

- (3) Do these steps to deactivate the MAINT light for low oil quantity indication:
  - (a) Make sure you get access to the IDENT CONFIG page 2 from the MAIN MENU page.
  - (b) Use the keyboard on the CDU to type this on the scratch pad: LOQOFF.
  - (c) Push the line select key at the top right side of the CDU.  
NOTE: The message "MAINT LIGHT FOR LOQ OFF" will show on the CDU display.

**LOM ALL**

———— END OF TASK ————

**TASK 49-61-00-440-801**

**8. Low Oil Quantity BITE Activation**

**A. General**

- (1) This procedure tells you how to activate the MAINT light on the P5 forward overhead panel for low oil quantity indication.

**B. Location Zones**

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

**C. Procedure**

SUBTASK 49-61-00-740-005

- (1) Do this task: APU BITE Procedure, TASK 49-61-00-700-801.

SUBTASK 49-61-00-440-003

- (2) Do these steps to activate the MAINT light for low oil quantity indication:
  - (a) Make sure you get access to the IDENT CONFIG page 2 from the MAIN MENU page.
  - (b) Use the keyboard on the CDU to type this on the scratch pad: LOQON.
  - (c) Push the line select key at the top right side of the CDU.

NOTE: The message "MAINT LIGHT FOR LOQ ON" will show on the CDU display.

EFFECTIVITY  
**LOM ALL**

**49-61-00**



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- (d) Push the line select key adjacent to <INDEX two times to go back to the MAIN MENU page for the APU BITE TEST.

NOTE: The MAIN MENU page shows on the CDU display.

———— END OF TASK ————

**LOM 429-434, 437-447, 450-999; LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-428 POST SB  
737-49-1162; APUS WITH ECU S/W 491A-TUS-A51-00 (CCC) AND SUBSEQUENT**

**TASK 49-61-00-040-802**

**9. Ice Logic Deactivation**

**A. General**

- (1) This procedure tells you how to deactivate the ICE LOGIC on the current status page.

**B. Location Zones**

<b>Zone</b>	<b>Area</b>
211	Flight Compartment - Left
212	Flight Compartment - Right

**C. Procedure**

SUBTASK 49-61-00-740-007

- (1) Do this task: APU BITE Procedure, TASK 49-61-00-700-801.

SUBTASK 49-61-00-040-004

- (2) Do these steps to deactivate the ICE LOGIC:

(a) Make sure you get access to the IDENT CONFIG page 2 from the MAIN MENU page.

(b) Use the keyboard on the CDU to type this on the scratch pad: ICELOGICOFF.

(c) Push the line select key at the top right side of the CDU.

NOTE: The message "ICE LOGIC OFF" will show on the CDU display.

(d) Push the line select key adjacent to <INDEX to go back to the MAIN MENU page for the APU BITE TEST.

NOTE: The MAIN MENU page shows on the CDU display.

———— END OF TASK ————

**TASK 49-61-00-440-802**

**10. Ice Logic Activation**

**A. General**

- (1) This procedure tells you how to activate the ICE LOGIC.

**B. Location Zones**

<b>Zone</b>	<b>Area</b>
211	Flight Compartment - Left
212	Flight Compartment - Right

**C. Procedure**

SUBTASK 49-61-00-740-008

- (1) Do this task: APU BITE Procedure, TASK 49-61-00-700-801.

SUBTASK 49-61-00-440-002

- (2) Do these steps to activate the ICE LOGIC:



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**LOM 429-434, 437-447, 450-999; LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-428 POST SB  
737-49-1162; APUS WITH ECU S/W 491A-TUS-A51-00 (CCC) AND SUBSEQUENT (Continued)**

- (a) Make sure you get access to the IDENT CONFIG page 2 from the MAIN MENU page.
- (b) Use the keyboard on the CDU to type this on the scratch pad: ICELOGICON.
- (c) Push the line select key at the top right side of the CDU.  
NOTE: The message "ICE LOGIC ON" will show on the CDU display.
- (d) Push the line select key adjacent to <INDEX to go back to the MAIN MENU page for the APU BITE TEST.  
NOTE: The MAIN MENU page shows on the CDU display.

———— END OF TASK ————

EFFECTIVITY  
LOM ALL

**49-61-00**



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ELECTRONIC CONTROL UNIT - REMOVAL/INSTALLATION

**1. General**

- A. This procedure has these tasks:
  - (1) A removal of the electronic control unit
  - (2) An installation of the electronic control unit.

**LOM 461-463**

- B. The electronic control unit is installed in the aft cargo compartment. The rack for the electronic control unit is found on the aft right side of the aft cargo compartment. You can find the cockpit voice recorder with the electronic control unit.

**LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-460, 464-999**

- C. The electronic control unit is installed on the E6-3 electrical shelf. The E6-3 electrical shelf is found on the aft right side of the aft cargo compartment.

**LOM ALL**

- D. If you must remove the electronic control unit and the data memory module (DMM) at the same time, you must replace the electronic control unit first and do the installation test for the electronic control unit. If you do not do the installation test for the electronic control unit before you remove the DMM, you will lose the data for the APU.
- E. The electronic control unit is referred to as the ECU.

**TASK 49-61-12-000-801**

**2. Electronic Control Unit Removal**

(Figure 401)

**A. References**

Reference	Title
20-10-07-000-801	E/E Box Removal (P/B 201)
49-61-00-700-801	APU BITE Procedure (P/B 201)

**B. Location Zones**

Zone	Area
142	Aft Cargo Compartment - Right
211	Flight Compartment - Left

**C. Access Panels**

Number	Name/Location
822	Aft Cargo Door

**D. Prepare for the Removal**

SUBTASK 49-61-12-740-001



**CAUTION**

DO NOT REMOVE THE ELECTRONIC CONTROL UNIT (ECU) UNTIL YOU DO THE APU-BITE-PROCEDURE. WHEN YOU DO THE APU-BITE-PROCEDURE, LOOK AT MAINTENANCE MESSAGES FOR THE DATA MEMORY MODULE (DMM). IF YOU REPLACE THE ECU AND THERE IS A PROBLEM WITH THE DMM, THE FOLLOWING APU DATA WILL BE LOST: APU SERIAL NUMBER, APU HOURS AND APU CYCLES.

- (1) Do this task: APU BITE Procedure, TASK 49-61-00-700-801.

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- (a) Get access to the CURRENT STATUS page from the MAIN MENU page for the APU BITE TEST.
- (b) If maintenance message(s) 49-61106, 49-61108, 49-72101, 49-72103, 49-72104 and/or 49-72105 show on the CURRENT STATUS page, then do the fault isolation task(s) for these maintenance message(s) in the FIM.

SUBTASK 49-61-12-860-001

- (2) Make sure the APU master switch on the P5 forward overhead panel is OFF and install a DO-NOT-OPERATE tag.

SUBTASK 49-61-12-860-002

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-61-12-010-001

- (4) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
822	Aft Cargo Door

**E. Procedure**

SUBTASK 49-61-12-020-001



**DO NOT REMOVE THE ELECTRONIC CONTROL UNIT AND THE DATA MEMORY MODULE AT THE SAME TIME. IF YOU REMOVE THE ELECTRONIC CONTROL UNIT AND THE DATA MEMORY MODULE AT THE SAME TIME, YOU LOSE APU DATA.**

- (1) Remove the electronic control unit [1]. To remove it, do this task: E/E Box Removal, TASK 20-10-07-000-801.

**NOTE:** The electronic control unit is sensitive to electrostatic discharge.

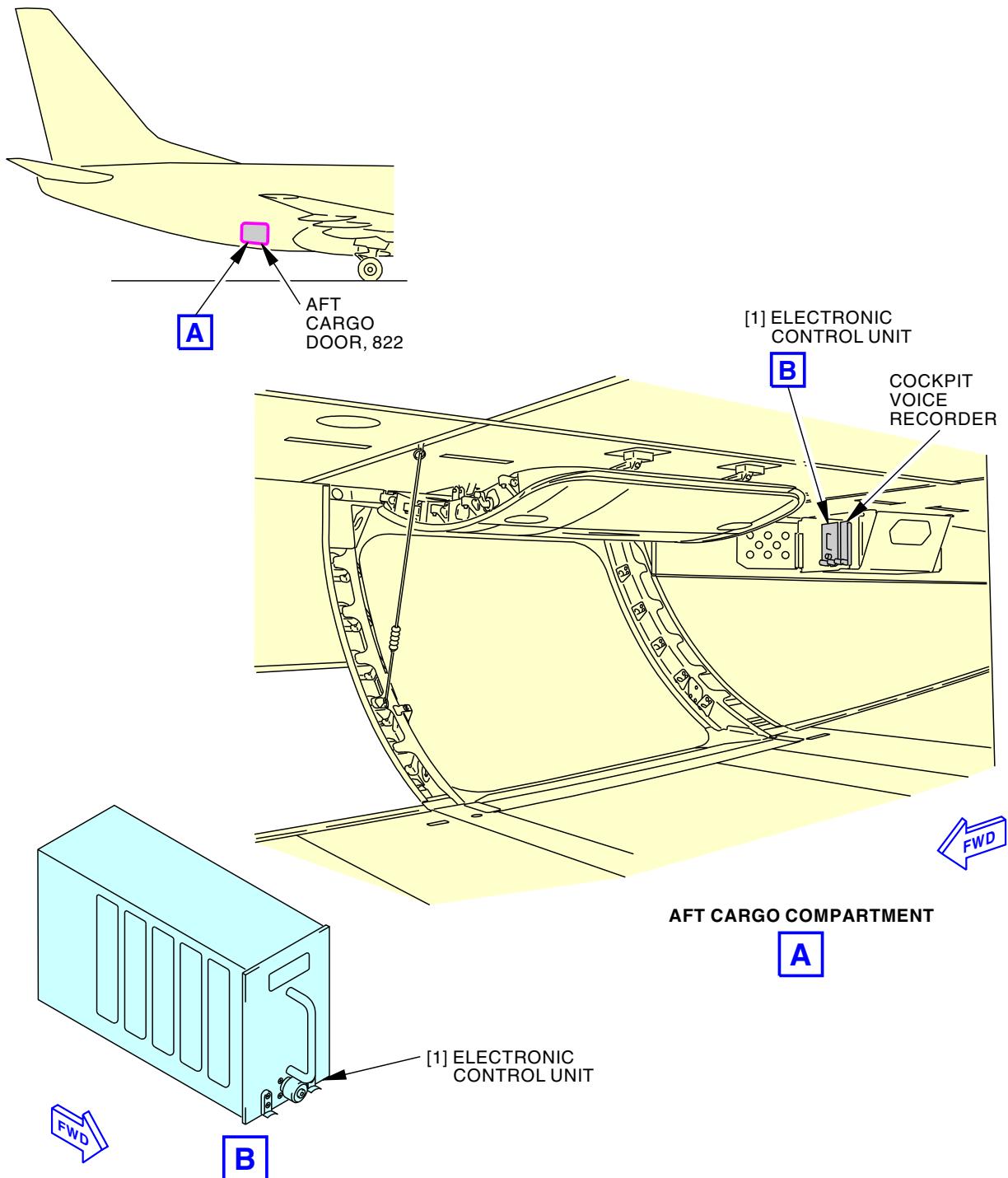
———— END OF TASK ————

EFFECTIVITY  
LOM ALL

**49-61-12**



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F88085 S0006579341\_V2

Electronic Control Unit Installation  
Figure 401/49-61-12-990-801 (Sheet 1 of 2)

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LOM 461-463

**49-61-12**

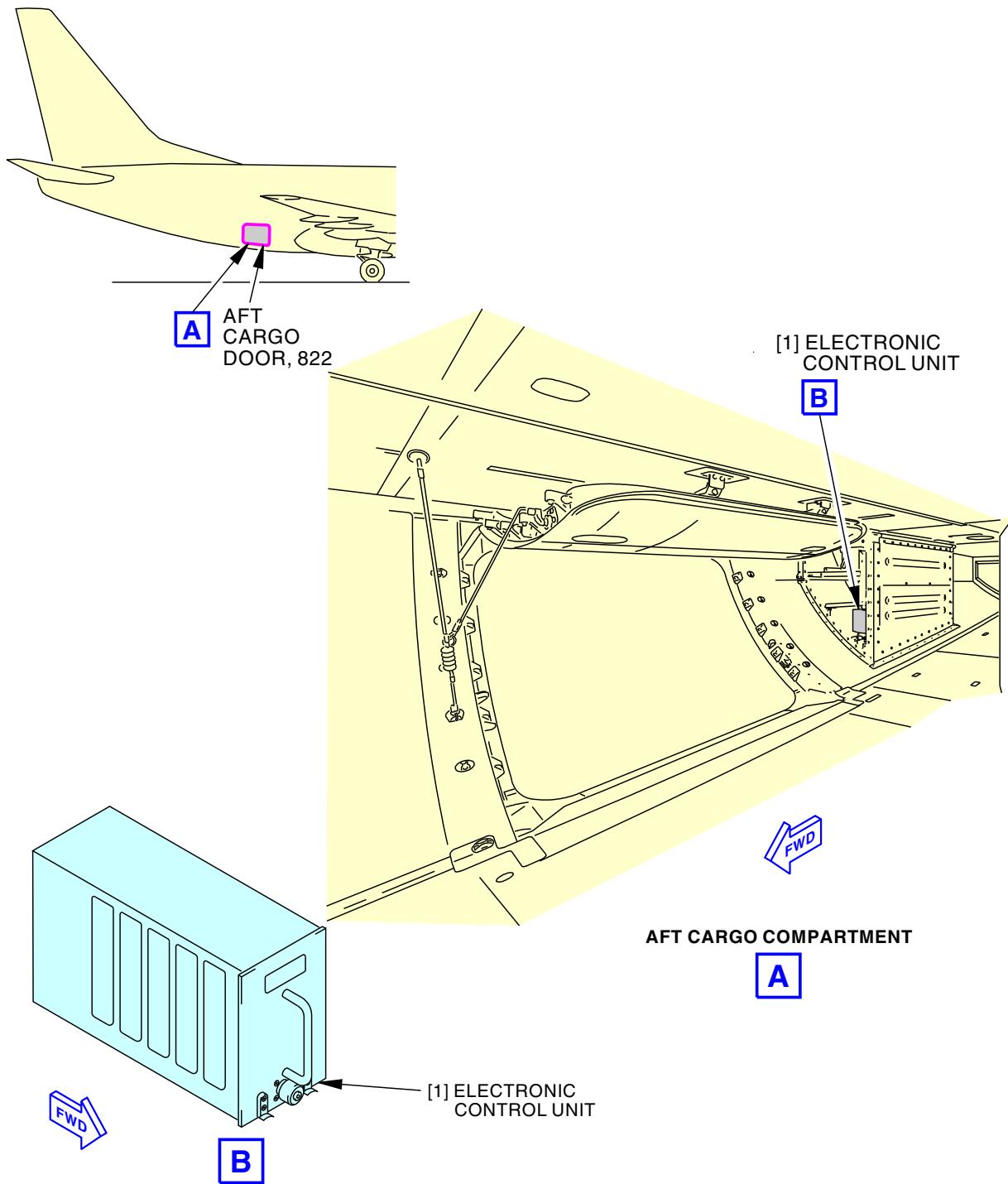
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

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H17652 S0006579342\_V2

Electronic Control Unit Installation  
Figure 401/49-61-12-990-801 (Sheet 2 of 2)

EFFECTIVITY  
LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,  
422-434, 437-447, 450-460, 464-999

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D633A101-LOM

ECCN 9E991 BOEING PROPRIETARY - See title page for details

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**TASK 49-61-12-400-801**

**3. Electronic Control Unit Installation**

(Figure 401)

**A. References**

Reference	Title
20-10-07-400-801	E/E Box Installation (P/B 201)
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)
49-61-00-470-801	ECU Software Installation with an Airborne Data Loader (P/B 201)
49-61-00-470-802	ECU Software Installation with a Portable Data Loader (P/B 201)
49-61-00-700-801	APU BITE Procedure (P/B 201)
49-61-00-800-801	ECU Software Installation with an Enhanced Airborne Data Loader (eADL) (P/B 201)

**B. Location Zones**

Zone	Area
142	Aft Cargo Compartment - Right
211	Flight Compartment - Left

**C. Access Panels**

Number	Name/Location
822	Aft Cargo Door

**D. Procedure**

SUBTASK 49-61-12-420-001

- (1) Install the electronic control unit [1]. To install it, do this task: E/E Box Installation, TASK 20-10-07-400-801.

NOTE: The electronic control unit is sensitive to electrostatic discharge.

**E. Electronic Control Unit Installation Test**

SUBTASK 49-61-12-860-003

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

**F/O Electrical System Panel, P6-2**

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-61-12-860-004

- (2) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.

SUBTASK 49-61-12-710-001

- (3) Do the installation test for the electronic control unit:
  - (a) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.

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LOM ALL

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- (b) Do this task: APU BITE Procedure, TASK 49-61-00-700-801.
- 1) If maintenance message(s) show for the APU controls system or the electronic control unit, refer to the applicable Maintenance Message Index in the FIM.
  - 2) Do these steps to make sure the ECU software installation is correct:
    - a) Make sure you get access to the IDENT/CONFIG page from the MAIN MENU page.
    - b) Make sure you get access to the second page of the IDENT/CONFIG page.  
NOTE: You push the next page key (NEXT PAGE) to go to the second page which shows the part number for the ECU software (ECU OPERATIONAL SW P/N).
    - c) Make sure the part number for the correct ECU software shows on the control display unit (CDU) display.
    - d) If the part number is not correct, do the applicable task: ECU Software Installation with a Portable Data Loader, TASK 49-61-00-470-802 or ECU Software Installation with an Airborne Data Loader, TASK 49-61-00-470-801 or ECU Software Installation with an Enhanced Airborne Data Loader (eADL), TASK 49-61-00-800-801 or replace the ECU.
  - (c) If it is not necessary to do other tasks, do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

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

SUBTASK 49-61-12-410-001

- (1) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
822	Aft Cargo Door

———— END OF TASK ————

EFFECTIVITY  
LOM ALL

**49-61-12**



# 737-600/700/800/900

## AIRCRAFT MAINTENANCE MANUAL

### SPEED SENSOR - REMOVAL/INSTALLATION

#### 1. General

- A. This procedure has these tasks:
  - (1) A removal of the speed sensor
  - (2) An installation of the speed sensor.
- B. The speed sensor is installed aft of the APU gearbox at the 4 o'clock position.

#### TASK 49-61-21-000-801

#### 2. Speed Sensor Removal

(Figure 401)

##### A. Location Zones

<u>Zone</u>	<u>Area</u>
211	Flight Compartment - Left
316	APU Compartment - Right

##### B. Access Panels

<u>Number</u>	<u>Name/Location</u>
315A	APU Cowl Door

##### C. Prepare for the Removal

###### SUBTASK 49-61-21-860-001

- (1) Make sure the APU master switch on the P5 forward overhead panel is OFF and install a DO-NOT-OPERATE tag.

###### SUBTASK 49-61-21-860-002

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

##### F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

##### F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

###### SUBTASK 49-61-21-010-002

- (3) To open the access panel, do these steps:

##### Number      Name/Location

315A      APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.

- (b) Open the three latches.

NOTE: Use this sequence: forward latch, aft latch, middle latch.

- (c) Open the APU Cowl Door, 315A.

- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.

- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.

- (f) Disconnect the two hold-open rods from the two spring clips.

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LOM ALL

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- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

**D. Speed Sensor Removal**

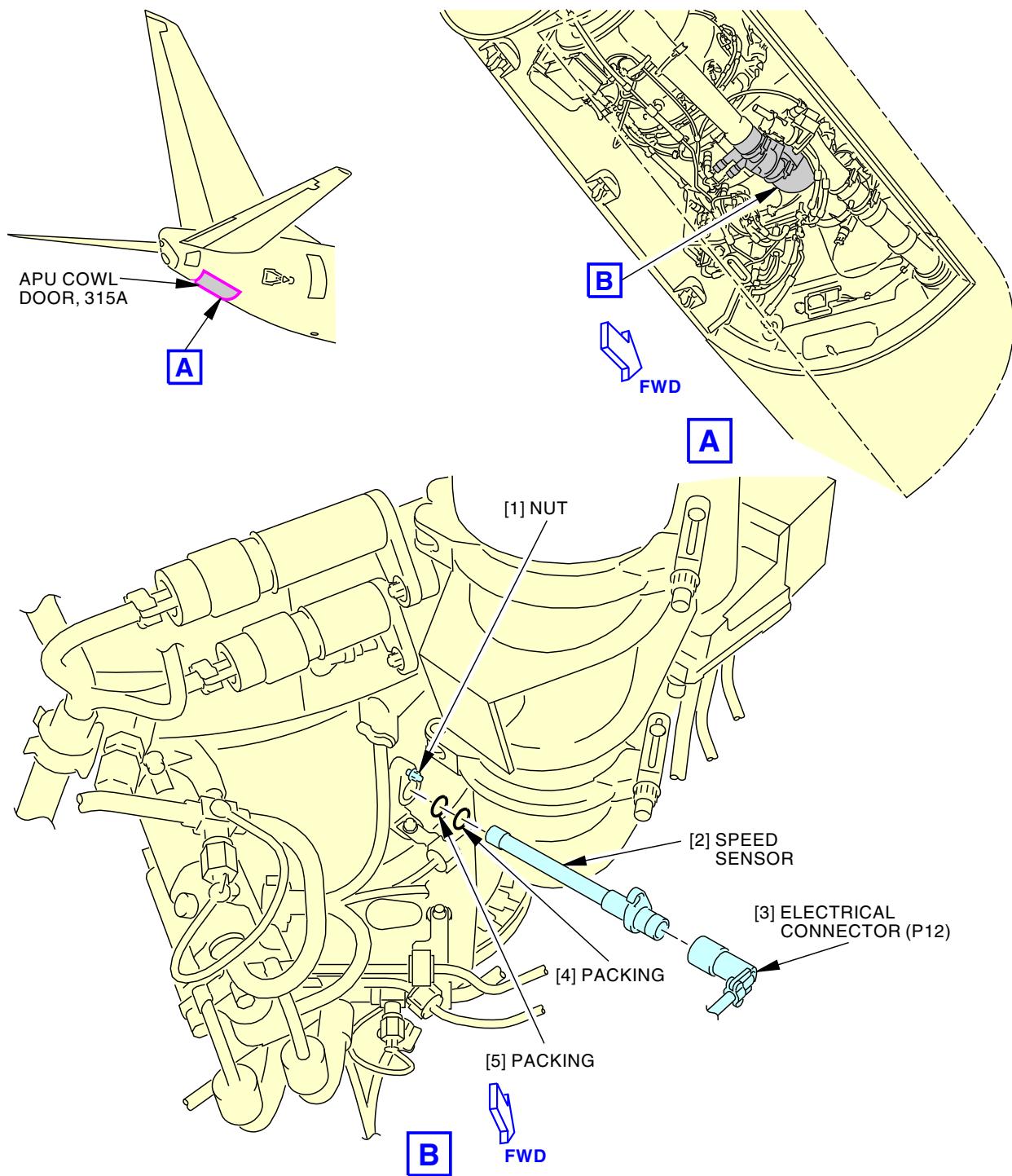
SUBTASK 49-61-21-020-001

- (1) Do these steps to remove the speed sensor [2]:
  - (a) Disconnect the electrical connector (P12) [3] from the speed sensor [2].
  - (b) Loosen the nut [1] that attaches the speed sensor [2] to the APU.
  - (c) Turn the speed sensor [2] clockwise until the flange disengages from the stud.
  - (d) Remove the speed sensor [2].
  - (e) Remove the packing [4] and packing [5] from the speed sensor [2].
    - 1) Discard the packing [4] and packing [5].
  - (f) Make sure you install all necessary protection covers.

———— END OF TASK ————

EFFECTIVITY  
LOM ALL

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**Speed Sensor Installation**  
**Figure 401/49-61-21-990-801**

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 LOM ALL

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**TASK 49-61-21-400-801**

**3. Speed Sensor Installation**

(Figure 401)

**A. References**

Reference	Title
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)
49-61-00-700-801	APU BITE Procedure (P/B 201)

**B. Consumable Materials**

Reference	Description	Specification
D00341	Lubricant - Polyphenyl Ether, Vacuum Pump - Santovac 5	
D50055	Oil - Aircraft Turbine Engine Oil for AE 131-9[B] APU (AMM 12-13-31/301)	

**C. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Speed sensor	49-61-21-02-010	LOM ALL
4	Packing	49-61-21-02-020	LOM ALL
5	Packing	49-61-21-02-015	LOM ALL

**D. Location Zones**

Zone	Area
211	Flight Compartment - Left
316	APU Compartment - Right

**E. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**F. Procedure**

SUBTASK 49-61-21-420-001



**CAUTION** REMOVE THE PROTECTION COVERS FROM THE OPENINGS AS NECESSARY. IF YOU DO NOT REMOVE THE PROTECTION COVERS, DAMAGE TO THE APU CAN OCCUR.

- (1) Do these steps to install the speed sensor [2]:
  - (a) Lubricate the new packing [4] and new packing [5] with a light coat of Santovac 5 lubricant, D00341 or aircraft turbine engine oil, D50055.
  - (b) Install the packing [4] and packing [5] on the speed sensor [2].
  - (c) Install the speed sensor [2].
  - (d) Turn the speed sensor [2] counterclockwise until the flange fully engages the stud.
  - (e) Tighten the nut [1] to 40 pound-inches (4.5 newton-meters).
  - (f) Connect the electrical connector (P12) [3] to the speed sensor [2].



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**G. Speed Sensor Installation Test**

SUBTASK 49-61-21-860-003

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-61-21-860-004

- (2) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.

SUBTASK 49-61-21-710-001

- (3) Do the installation test for the speed sensor:
  - (a) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
  - (b) Operate the APU for a minimum of five minutes.
  - (c) During the APU operation, examine the speed sensor for signs of oil leakage.
  - (d) If you find oil leakage, do these steps to repair the leakage:
    - 1) Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.
    - 2) Install a DO-NOT-OPERATE tag to the APU master switch on the P5 forward overhead panel.
    - 3) Repair the cause of the oil leakage.
    - 4) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.
    - 5) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
    - 6) During the APU operation, examine the speed sensor for signs of oil leakage.
    - 7) If you find oil leakage, do the leakage repair again.
  - (e) Do this task: APU BITE Procedure, TASK 49-61-00-700-801.
    - 1) If maintenance message(s) show for the APU control system or the speed sensor, refer to the applicable Maintenance Message Index in the FIM.
  - (f) If it is not necessary to do other tasks, do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

**H. Put the Airplane Back to Its Usual Condition**

SUBTASK 49-61-21-410-002

- (1) To close the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the Auxiliary Power Unit (APU) compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.

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LOM ALL

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- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

EFFECTIVITY  
LOM ALL

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AIRCRAFT MAINTENANCE MANUAL

INLET TEMPERATURE SENSOR - REMOVAL/INSTALLATION

**1. General**

- A. This procedure has these tasks:
  - (1) A removal of the inlet temperature sensor
  - (2) An installation of the inlet temperature sensor.
- B. The inlet temperature sensor (T2) is installed on the compressor inlet section of the APU at the 6 o'clock position.

**TASK 49-61-31-000-801**

**2. Inlet Temperature Sensor Removal**

(Figure 401)

**A. Tools/Equipment**

<b>Reference</b>	<b>Description</b>
STD-858	Tag - DO NOT OPERATE

**B. Location Zones**

<b>Zone</b>	<b>Area</b>
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**C. Access Panels**

<b>Number</b>	<b>Name/Location</b>
315A	APU Cowl Door

**D. Prepare for the Removal**

SUBTASK 49-61-31-860-001

- (1) Make sure that the APU master switch, on the P5 forward overhead panel, is OFF and install a DO NOT OPERATE tag, STD-858.

SUBTASK 49-61-31-860-002

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

**F/O Electrical System Panel, P6-2**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-61-31-010-002

- (3) To open the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.
- (b) Open the three latches.

NOTE: Use this sequence: forward latch, aft latch, middle latch.

EFFECTIVITY  
LOM ALL

**49-61-31**



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- (c) Open the APU Cowl Door, 315A.
- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

**E. Inlet Temperature Sensor Removal**

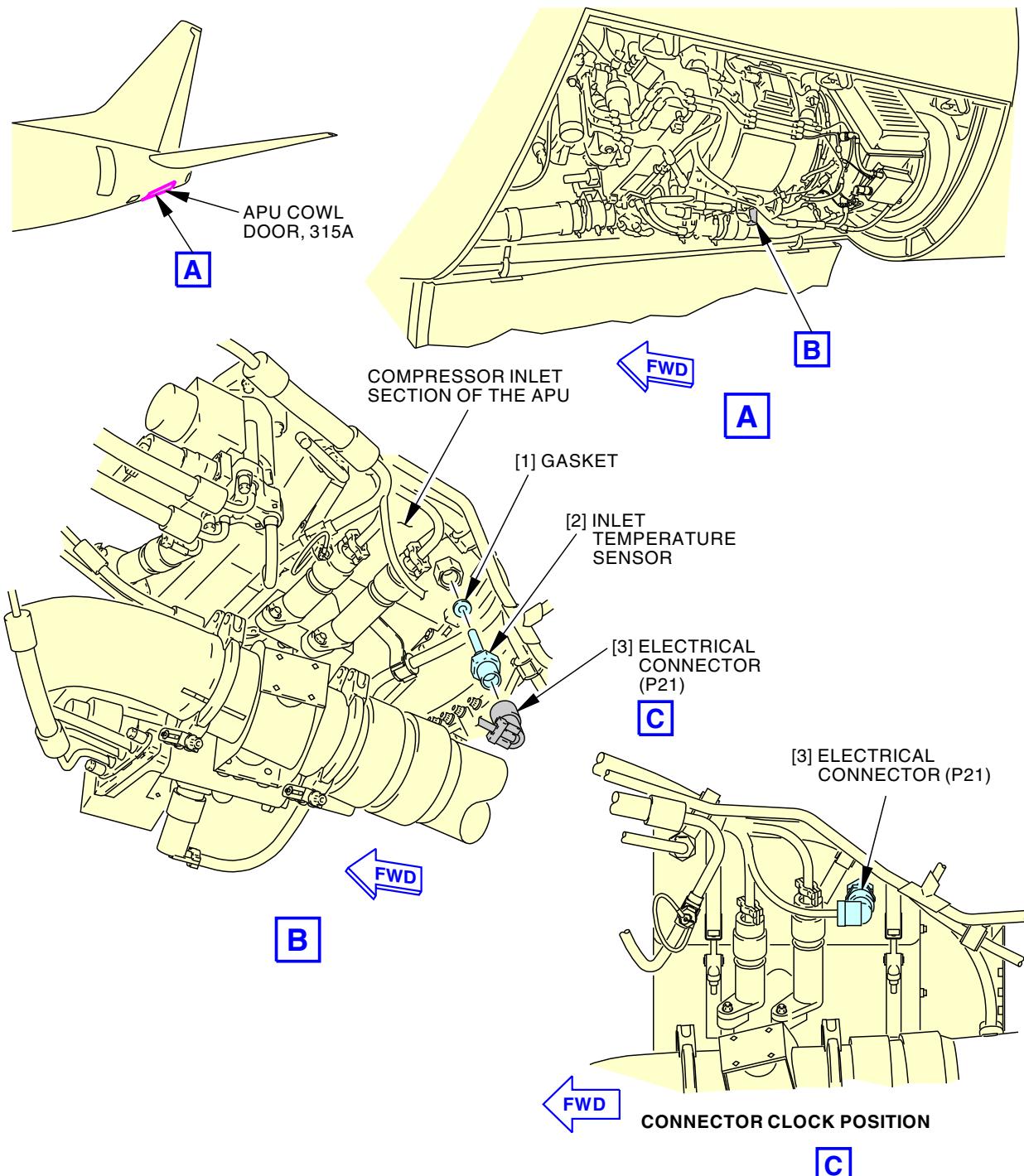
SUBTASK 49-61-31-020-001

- (1) Do these steps to remove the inlet temperature sensor [2]:
  - (a) Disconnect the electrical connector (P21) [3] from the inlet temperature sensor [2].
    - 1) Remove lockwire from the electrical connector (P21) [3].
    - 2) Disconnect the electrical connector (P21) [3].
  - (b) Hold the nut on the compressor inlet section while you remove the inlet temperature sensor [2].  
NOTE: Turn the inlet temperature sensor [2] counterclockwise for the removal.
  - (c) Remove the gasket [1] from the inlet temperature sensor [2].
    - 1) Discard the gasket [1].
  - (d) Make sure that you install all necessary protection covers.

———— END OF TASK ————

EFFECTIVITY  
LOM ALL

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F50651 S0006579353\_V2

**Inlet Temperature Sensor Installation  
Figure 401/49-61-31-990-801**

 EFFECTIVITY  
LOM ALL

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D633A101-LOM

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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**TASK 49-61-31-400-801**

**3. Inlet Temperature Sensor Installation**

(Figure 401)

**A. References**

Reference	Title
20-10-44-400-801	Lockwire, Cotter Pins, and Lockrings - Installation (P/B 401)
49-61-00-700-801	APU BITE Procedure (P/B 201)

**B. Consumable Materials**

Reference	Description	Specification
D00341	Lubricant - Polyphenyl Ether, Vacuum Pump - Santovac 5	
D00504	Grease - Petrolatum	VV-P-236
G50225	Lockwire - MS20995C20, Corrosion Resistant Steel - 0.020 Inch (0.508 mm) Diameter	NASM20995

**C. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Gasket	49-61-31-02-010	LOM ALL
2	Inlet temperature sensor	49-61-31-02-005	LOM ALL

**D. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**E. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**F. Inlet Temperature Sensor Installation**

SUBTASK 49-61-31-420-001



REMOVE THE PROTECTION COVERS FROM THE OPENINGS WHEN NECESSARY. IF YOU DO NOT REMOVE THE PROTECTION COVERS, DAMAGE TO THE APU CAN OCCUR.

- (1) Do these steps to install the inlet temperature sensor [2]:

- (a) Lubricate the new gasket [1] with a light coat of Santovac 5 lubricant, D00341, or grease, D00504.
- (b) Install the gasket [1] on the inlet temperature sensor [2].
  - 1) Make sure that the full copper face of the gasket [1] is against the flange of the inlet temperature sensor [2].
- (c) Install the inlet temperature sensor [2].

NOTE: Turn the inlet temperature sensor [2] clockwise for the installation.



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- 1) Hold the nut on the compressor inlet section while you tighten the inlet temperature sensor [2] to 230 in-lb (26 N·m).

NOTE: The clock position for the electrical connector (P21) [3] must be at the 9 o'clock position.

- (d) Connect the electrical connector (P21) [3] to the inlet temperature sensor [2].
  - 1) Install MS20995C20 lockwire, G50225, on the electrical connector (P21) [3] (TASK 20-10-44-400-801).

**G. Inlet Temperature Sensor Installation Test**

SUBTASK 49-61-31-860-003

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-61-31-860-004

- (2) Remove the DO-NOT-OPERATE tag from the Auxiliary Power Unit (APU) master switch on the P5 forward overhead panel.

SUBTASK 49-61-31-740-001

- (3) Do the installation test for the inlet temperature sensor:
  - (a) Do this task: APU BITE Procedure, TASK 49-61-00-700-801.
  - (b) If maintenance message(s) show for the APU control system or the inlet temperature sensor (T2), refer to the applicable Maintenance Message Index in the FIM.

**H. Put the Airplane Back to Its Usual Condition**

SUBTASK 49-61-31-410-002

- (1) To close the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.





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**AIRCRAFT MAINTENANCE MANUAL**

(h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

— EFFECTIVITY —  
**LOM ALL**

**49-61-31**



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AIRCRAFT MAINTENANCE MANUAL

EXHAUST GAS TEMPERATURE INDICATOR - REMOVAL/INSTALLATION

**1. General**

- A. This procedure has these tasks:
  - (1) A removal of the exhaust gas temperature indicator
  - (2) An installation of the exhaust gas temperature indicator.
- B. The exhaust gas temperature indicator is referred to as the EGT indicator.
- C. The EGT indicator is installed on the P5 forward overhead panel.

**TASK 49-71-11-000-801**

**2. Exhaust Gas Temperature Indicator Removal**

(Figure 401)

**A. Tools/Equipment**

Reference	Description
STD-858	Tag - DO NOT OPERATE

**B. Location Zones**

Zone	Area
211	Flight Compartment - Left

**C. Prepare for the Removal**

SUBTASK 49-71-11-860-001

- (1) Make sure that the APU master switch, on the P5 forward overhead panel, is in the OFF position.
  - (a) Install a DO NOT OPERATE tag, STD-858, on the APU master switch.

SUBTASK 49-71-11-860-002

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

**F/O Electrical System Panel, P6-2**

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT

**D. Exhaust Gas Temperature Indicator Removal**

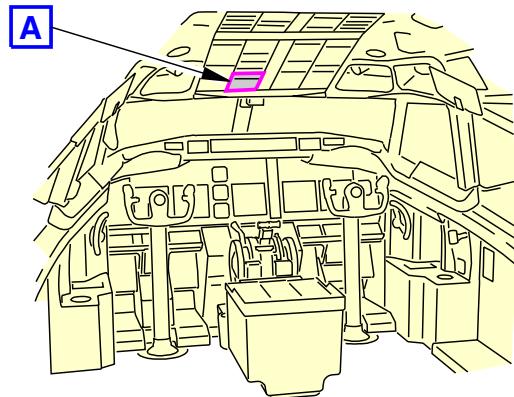
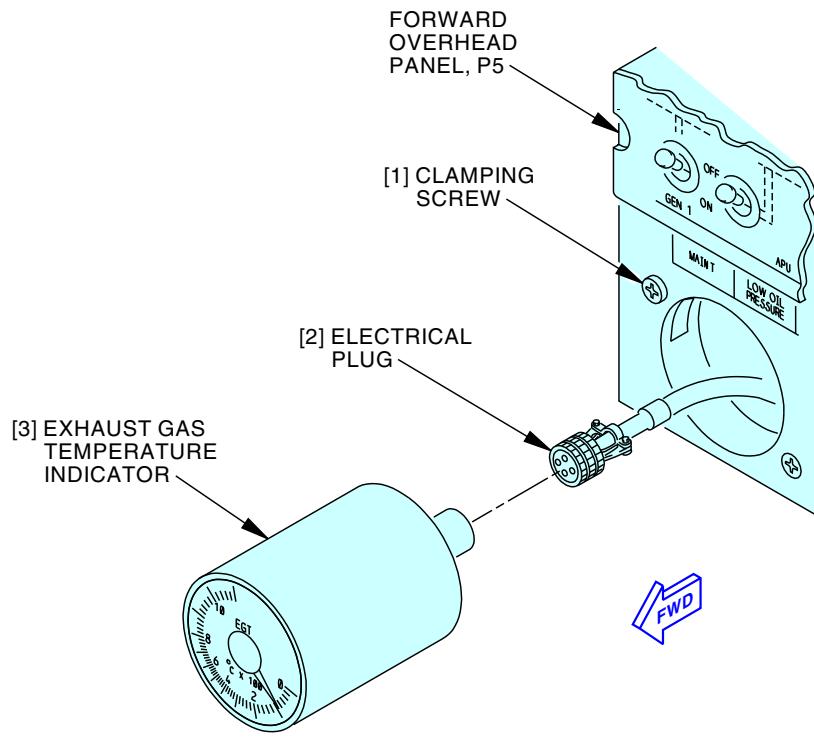
SUBTASK 49-71-11-020-001

- (1) Do these steps to remove the EGT indicator [3]:
  - (a) Turn the clamping screw [1] counterclockwise to loosen the EGT indicator [3].
  - (b) Carefully pull the EGT indicator [3] out of the P5 forward overhead panel.
  - (c) Disconnect the electrical plug [2] from the EGT indicator [3].
    - 1) Install a cap on the electrical plug [2] to prevent contamination.
  - (d) Remove the EGT indicator [3].

———— END OF TASK ————

EFFECTIVITY
LOM ALL

**49-71-11**


**FLIGHT COMPARTMENT**

**A**

L38990 S0006579359\_V2

**Exhaust Gas Temperature Indicator Installation**  
**Figure 401/49-71-11-990-801**


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TASK 49-71-11-400-801

3. Exhaust Gas Temperature Indicator Installation

(Figure 401)

A. References

Reference	Title
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	EGT indicator	49-71-11-01-020	LOM 427-434, 437-447, 450-999
		49-71-51-01-005	LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-426

C. Location Zones

Zone	Area
211	Flight Compartment - Left

D. Exhaust Gas Temperature Indicator Installation

SUBTASK 49-71-11-420-001

- (1) Do these steps to install the EGT indicator [3]:
  - (a) Remove the cap from the electrical plug [2].
  - (b) Connect the electrical plug [2] to the EGT indicator [3].
  - (c) Carefully install the EGT indicator [3] in the P5 forward overhead panel.
  - (d) Turn the clamping screw [1] clockwise to tighten the EGT indicator [3].

E. Exhaust Gas Temperature Indicator Test

SUBTASK 49-71-11-860-003

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

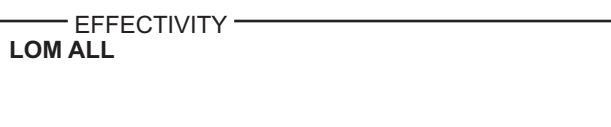
Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-71-11-860-004

- (2) Remove the DO NOT OPERATE tag, from the APU master switch on the P5 forward overhead panel.

SUBTASK 49-71-11-720-001

- (3) Do the installation test for the EGT indicator [3]:
  - (a) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
    - 1) Look at the EGT indicator [3] on the P5 forward overhead panel.
    - 2) Make sure that the EGT indicator [3] shows a minimum of 250° C.



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- (b) If it is not necessary to do other tasks, do this task: APU Usual Shutdown,  
TASK 49-11-00-860-802.

———— END OF TASK ————

— EFFECTIVITY —  
**LOM ALL**

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EXHAUST GAS TEMPERATURE THERMOCOUPLE - REMOVAL/INSTALLATION

**1. General**

- A. This procedure has these tasks:
  - (1) A removal of the exhaust gas temperature thermocouple
  - (2) An installation of the exhaust gas temperature thermocouple.
- B. The exhaust gas temperature thermocouple is referred to as the EGT thermocouple.
- C. Two EGT thermocouples are installed on the bottom of the turbine exhaust port.

**TASK 49-71-21-000-801**

**2. Exhaust Gas Temperature Thermocouple Removal**

(Figure 401)

**A. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**B. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**C. Prepare for the Removal**

SUBTASK 49-71-21-860-001

- (1) Make sure the APU master switch on the P5 forward overhead panel is OFF and install a DO-NOT-OPERATE tag.

SUBTASK 49-71-21-860-002

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

**F/O Electrical System Panel, P6-2**

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-71-21-010-002

- (3) To open the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.

- (b) Open the three latches.

NOTE: Use this sequence: forward latch, aft latch, middle latch.

- (c) Open the APU Cowl Door, 315A.

- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.

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LOM ALL

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- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

**D. Exhaust Gas Temperature Thermocouple Removal**

SUBTASK 49-71-21-020-001

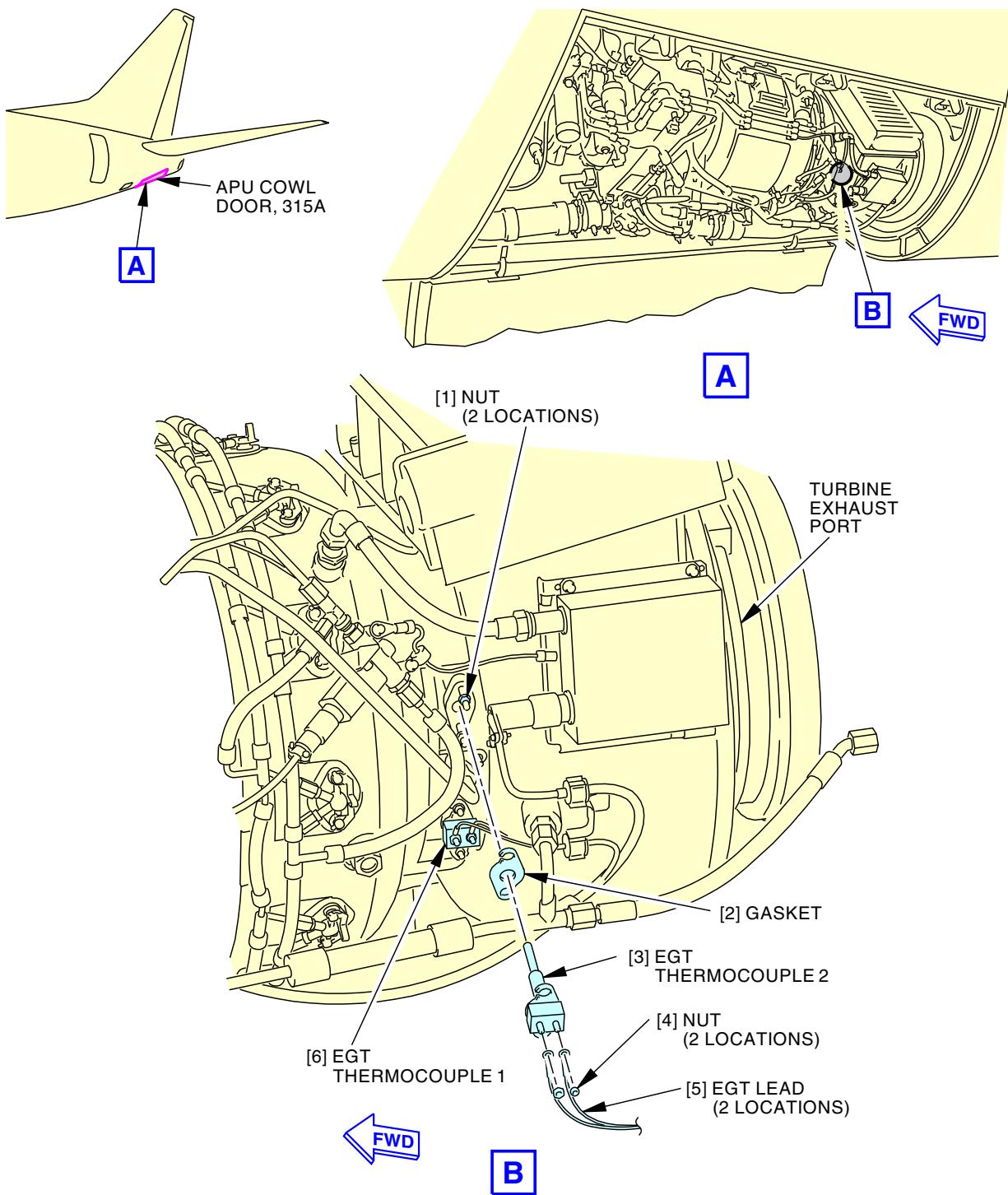
- (1) Do these steps to remove the EGT thermocouple 2 [3] or EGT thermocouple 1 [6]:
  - (a) Remove the two nuts [4] that attach the two EGT leads [5] to the EGT thermocouple 2 [3] or EGT thermocouple 1 [6].

NOTE: There are two different nuts that attach the two EGT leads to each thermocouple.  
The nut for the alumel stud is larger than the nut for the chromel stud.
  - (b) Remove the two EGT leads [5].
  - (c) Loosen the two nuts [1] that attach the EGT thermocouple 2 [3] or EGT thermocouple 1 [6] to the turbine exhaust port.
  - (d) Turn the EGT thermocouple 2 [3] or EGT thermocouple 1 [6] clockwise until the flange disengages from the two studs.
  - (e) Remove the EGT thermocouple 2 [3] or EGT thermocouple 1 [6].
  - (f) Remove the gasket [2] from the EGT thermocouple 2 [3] or EGT thermocouple 1 [6].
  - (g) Make sure you install all necessary protection covers.

———— END OF TASK ————

EFFECTIVITY  
LOM ALL

**49-71-21**



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### Exhaust Gas Temperature Thermocouple Installation

Figure 401/49-71-21-990-801

EFFECTIVITY  
LOM ALL

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TASK 49-71-21-400-801

3. Exhaust Gas Temperature Thermocouple Installation

(Figure 401)

A. **References**

Reference	Title
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)
49-61-00-700-801	APU BITE Procedure (P/B 201)

B. **Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Gasket	49-71-21-02-015	LOM ALL
3	EGT thermocouple 2	49-71-21-02-010	LOM ALL
6	EGT thermocouple 1	49-71-21-02-010	LOM ALL

C. **Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

D. **Access Panels**

Number	Name/Location
315A	APU Cowl Door

E. **Procedure**

SUBTASK 49-71-21-420-001



**CAUTION** REMOVE THE PROTECTION COVERS FROM THE OPENINGS AS NECESSARY. IF YOU DO NOT REMOVE THE PROTECTION COVERS, DAMAGE TO THE APU CAN OCCUR.

- (1) Do these steps to install the EGT thermocouple 2 [3] or EGT thermocouple 1 [6]:
  - (a) Install the gasket [2] on the EGT thermocouple 2 [3] or EGT thermocouple 1 [6].
  - (b) Put the EGT thermocouple 2 [3] or EGT thermocouple 1 [6] in the turbine exhaust port.
  - (c) Turn the EGT thermocouple 2 [3] or EGT thermocouple 1 [6] counterclockwise until the flange fully engages the two studs.
  - (d) Tighten the two nuts [1] to 40 pound-inches (4.5 newton-meters).
  - (e) Connect the two EGT leads [5] to the EGT thermocouple 2 [3] or EGT thermocouple 1 [6].  
NOTE: The alumel stud on the EGT thermocouple is larger than the chromel stud. Make sure the two EGT leads are connected to the correct studs.
  - (f) Install the two nuts [4] on the EGT thermocouple 2 [3] or EGT thermocouple 1 [6].  
NOTE: There are two different nuts that attach the two EGT leads to each thermocouple.  
The nut for the alumel stud is larger than the nut for the chromel stud.
    - 1) Tighten the nut [4] for the alumel stud to 24-40 pound-inches (2.7-4.5 newton-meters).

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- 2) Tighten the nut [4] for the chromel stud to 15-20 pound-inches (1.7-2.3 newton-meters).

**F. Exhaust Gas Temperature Thermocouple Installation Test**

SUBTASK 49-71-21-860-003

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-71-21-860-004

- (2) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.

SUBTASK 49-71-21-740-001

- (3) Do the installation test for the EGT thermocouple 1 or EGT thermocouple 2:
  - (a) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
  - (b) Do this task: APU BITE Procedure, TASK 49-61-00-700-801.
    - 1) If maintenance message(s) show for the APU EGT indicating system, EGT thermocouple 1 or EGT thermocouple 2, refer to the applicable Maintenance Message Index in the FIM.
  - (c) If it is not necessary to do other tasks, do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

**G. Put the Airplane Back to Its Usual Condition**

SUBTASK 49-71-21-410-002

- (1) To close the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the Auxiliary Power Unit (APU) compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.

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LOM ALL

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(h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

— EFFECTIVITY —  
**LOM ALL**

**49-71-21**



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DATA MEMORY MODULE - REMOVAL/INSTALLATION

**1. General**

- A. This procedure has these tasks:
  - (1) A removal of the data memory module
  - (2) An installation of the data memory module.
- B. The data memory module (DMM) is installed on the compressor inlet section of the APU.
- C. If you must remove the DMM and the electronic control unit (ECU) at the same time, you must replace the ECU first and do the ECU installation test. If you do not do the ECU installation test before you remove the DMM, you will lose the data for the APU.

**TASK 49-72-11-000-801**

**2. Data Memory Module Removal**

(Figure 401)

**A. General**

- (1) The data memory module contains the Auxiliary Power Unit (APU) data.

NOTE: Reference Honeywell SB 131-49-8079 (APU DATA MEMORY MODULE WITH NON-COMPLIANT COMPONENT) for detailed information (if applicable).

**B. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left

**C. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**D. Prepare for the Removal**

SUBTASK 49-72-11-860-001

- (1) Make sure that the APU master switch on the P5 forward overhead panel is OFF and install a DO-NOT-OPERATE tag.

SUBTASK 49-72-11-860-002

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

**F/O Electrical System Panel, P6-2**

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-72-11-010-002

- (3) To open the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Support the APU panel (cowl door) under the center latch.

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LOM ALL

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**AIRCRAFT MAINTENANCE MANUAL**

- (b) Open the three latches.  
NOTE: Use this sequence: forward latch, aft latch, middle latch.
- (c) Open the APU Cowl Door, 315A.
- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

**E. Data Memory Module Removal**

SUBTASK 49-72-11-020-001



**CAUTION**

DO NOT REMOVE THE DATA MEMORY MODULE AND THE ELECTRONIC CONTROL UNIT AT THE SAME TIME. IF YOU REMOVE THE DATA MEMORY MODULE AND THE ELECTRONIC CONTROL UNIT AT THE SAME TIME, YOU WILL LOSE DATA FOR THE APU.

- (1) Do these steps to remove the data memory module [2]:
  - (a) Disconnect the electrical connector (P11) [1] from the data memory module [2].
  - (b) Remove the bolts [3] and washers [4] that attach the data memory module [2] to the bracket.
  - (c) Remove the data memory module [2] from the bracket.
  - (d) Make sure that you install all necessary protection covers.



**CAUTION**

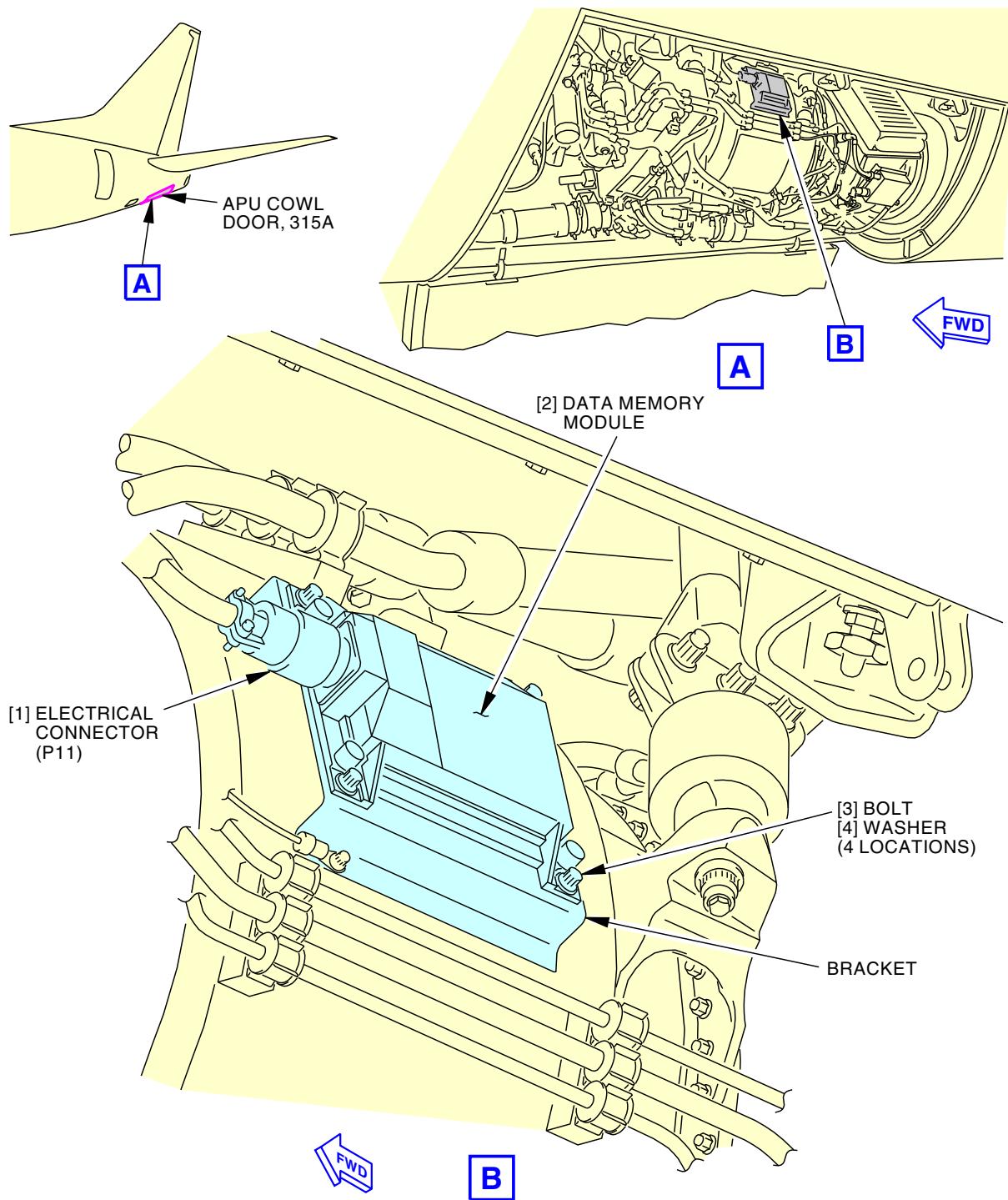
IF YOU WILL SUBSEQUENTLY USE THE REMOVED DATA MEMORY MODULE ON A DIFFERENT APU, SEND IT TO THE APU MANUFACTURER TO BE CORRECTLY PREPARED.

- (e) If the Data Memory Module (DMM) will be installed on a different APU, send it to Honeywell to be erased.  
NOTE: If a DMM is removed, it needs to be erased before it is used again on a different APU. If a removed DMM is used on another aircraft/APU (without being erased), the Electronic Control Unit (ECU) will erroneously detect that a new APU has been installed, and it will upload the old DMM information to the new ECU.

— END OF TASK —

EFFECTIVITY  
LOM ALL

**49-72-11**



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**Data Memory Module Installation**  
**Figure 401/49-72-11-990-801**

 EFFECTIVITY  
 LOM ALL

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**TASK 49-72-11-400-801**

**3. Data Memory Module Installation**

(Figure 401)

**A. General**

- (1) The data memory module contains the Auxiliary Power Unit (APU) data.

NOTE: Reference Honeywell SB 131-49-8079 (APU DATA MEMORY MODULE WITH NON-COMPLIANT COMPONENT) for detailed information (if applicable).

**B. References**

Reference	Title
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)
49-61-00-700-801	APU BITE Procedure (P/B 201)

**C. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Data memory module	49-72-11-02-005	LOM ALL

**D. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left

**E. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**F. Procedure**

SUBTASK 49-72-11-420-001



**CAUTION**  
REMOVE ANY INSTALLED PROTECTION COVERS FROM THE OPENINGS.  
IF YOU DO NOT REMOVE THE PROTECTION COVERS, DAMAGE TO THE  
APU CAN OCCUR.



**CAUTION**  
DO NOT INSTALL A DATA MEMORY MODULE FROM A DIFFERENT APU OR A  
DATA MEMORY MODULE WITH APU DATA. IF YOU DO NOT USE A BLANK  
DATA MEMORY MODULE, LOSS OF DATA OR INCORRECT DATA CAN  
OCCUR.

- (1) Do these steps to install the data memory module [2]:
- Install the data memory module [2] on the bracket with the washers [4] and bolts [3].
    - Tighten the bolts [3] to 50 in-lb (5.6 N·m).
  - Connect the electrical connector (P11) [1] to the data memory module [2].

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**LOM ALL**

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**G. Data Memory Module Installation Test**

SUBTASK 49-72-11-860-003

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-72-11-860-004

- (2) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.

SUBTASK 49-72-11-740-001

- (3) Do the installation test for the data memory module [2]:
  - (a) Set the APU master switch on the P5 forward overhead panel to the ON position.  
NOTE: It is not necessary to start the APU to load the APU data to the blank data memory module.
  - (b) After 30 seconds, set the APU master switch on the P5 forward overhead panel to the OFF position.  
NOTE: The time period to load the APU data to the blank data memory module is 10 seconds.
  - (c) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
  - (d) Do this task: APU BITE Procedure, TASK 49-61-00-700-801.
    - 1) If maintenance message(s) show for the APU indicating system or the data memory module, refer to the applicable Maintenance Message Index in the Fault Isolation Manual (FIM).
  - (e) If it is not necessary to do other tasks, do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

**H. Put the Airplane Back to Its Usual Condition**

SUBTASK 49-72-11-410-002

- (1) To close the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.

EFFECTIVITY	LOM ALL
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(g) Close the APU Cowl Door, 315A.

(h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

— EFFECTIVITY —  
**LOM ALL**

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EXHAUST DUCT MUFFLER - REMOVAL/INSTALLATION

**1. General**

- A. This procedure has these tasks:
- (1) A removal of the exhaust duct muffler
  - (2) An installation of the exhaust duct muffler.

**TASK 49-81-11-000-801**

**2. Exhaust Duct Muffler Removal**

(Figure 401)

**A. References**

<u>Reference</u>	<u>Title</u>
49-81-31-000-801	Aft Fairing Assembly Removal (P/B 401)

**B. Location Zones**

<u>Zone</u>	<u>Area</u>
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

**C. Access Panels**

<u>Number</u>	<u>Name/Location</u>
315A	APU Cowl Door
318BR	Tailcone Access Door

**D. Prepare for the Removal**

SUBTASK 49-81-11-860-001

- (1) Make sure the APU master switch on the P5 forward overhead panel is OFF and install a DO-NOT-OPERATE tag.

SUBTASK 49-81-11-860-002

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-81-11-010-003

- (3) To open the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.

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- (b) Open the three latches.  
**NOTE:** Use this sequence: forward latch, aft latch, middle latch.
- (c) Open the APU Cowl Door, 315A.
- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

SUBTASK 49-81-11-010-002

- (4) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
318BR	Tailcone Access Door

## E. Exhaust Duct Muffler Removal

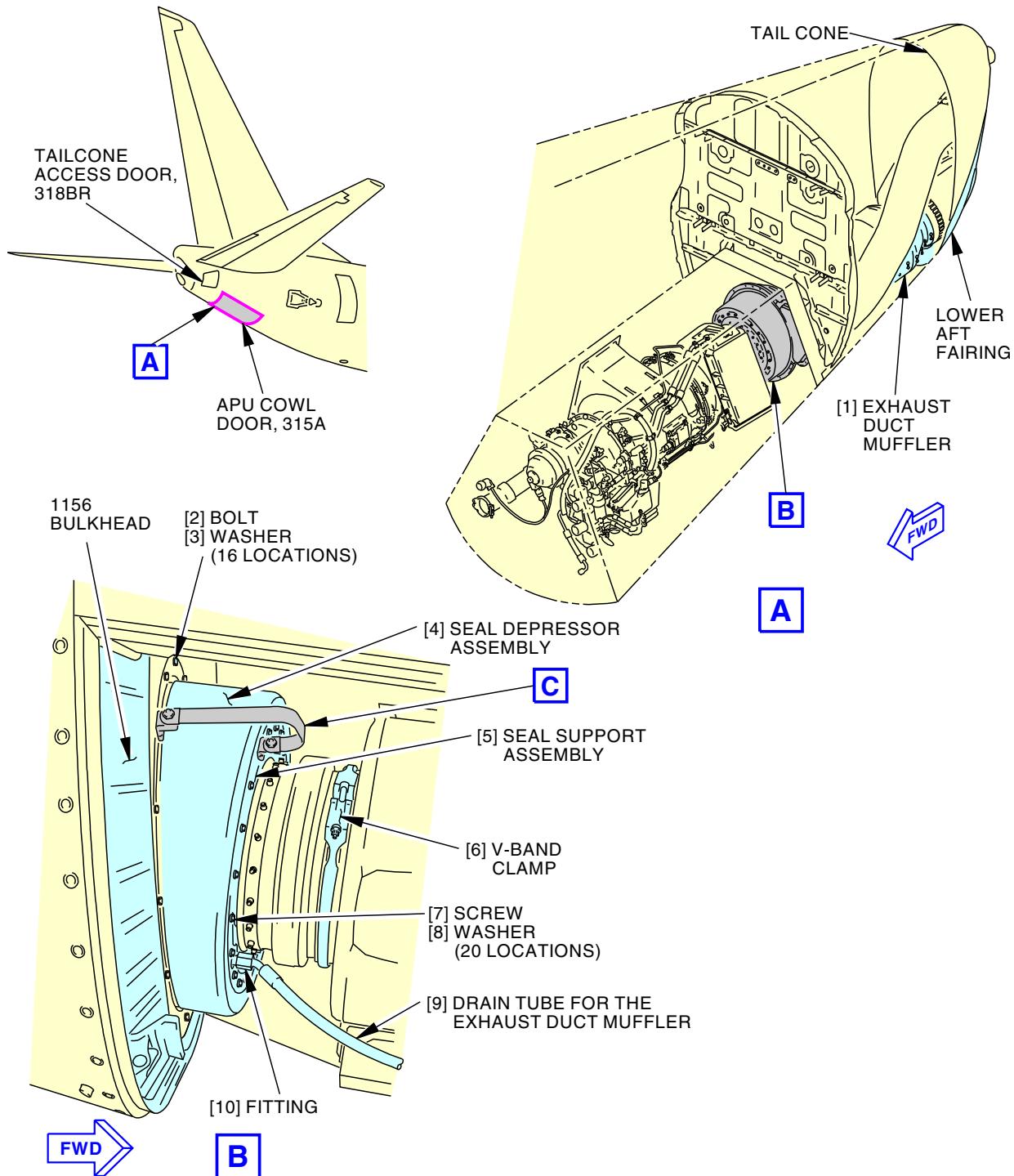
SUBTASK 49-81-11-020-005

- (1) Do these steps to remove the exhaust duct muffler [1]:
  - (a) Disconnect the jumper [12] from the exhaust duct muffler [1]:
    - 1) Remove the screw [7] and washer [8] that attach the bracket [11] with the jumper [12] to the exhaust duct muffler [1].
    - 2) Move the bracket [11] with the jumper [12] away from the exhaust duct muffler [1].
    - 3) Install the washer [8] and screw [7] to the seal support assembly [5].
  - (b) Disconnect the drain tube [9] from the fitting [10] on the exhaust duct muffler [1].
  - (c) Remove the V-band clamp [6] from the exhaust duct muffler [1].
  - (d) Remove the lower aft fairing. To remove it, do this task: Aft Fairing Assembly Removal, TASK 49-81-31-000-801.  
**NOTE:** It is not necessary to remove the upper aft fairing.
  - (e) Slowly remove the exhaust duct muffler [1] from the tail cone compartment.  
**NOTE:** The weight of the exhaust duct muffler [1] is approximately 60 pounds (27.3 kg).
  - (f) Install the plugs on the drain tube [9] and fitting [10].
  - (g) Make sure you install all necessary protection covers.

———— END OF TASK ————

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LOM ALL

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**Exhaust Duct Muffler Installation**  
**Figure 401/49-81-11-990-802 (Sheet 1 of 2)**

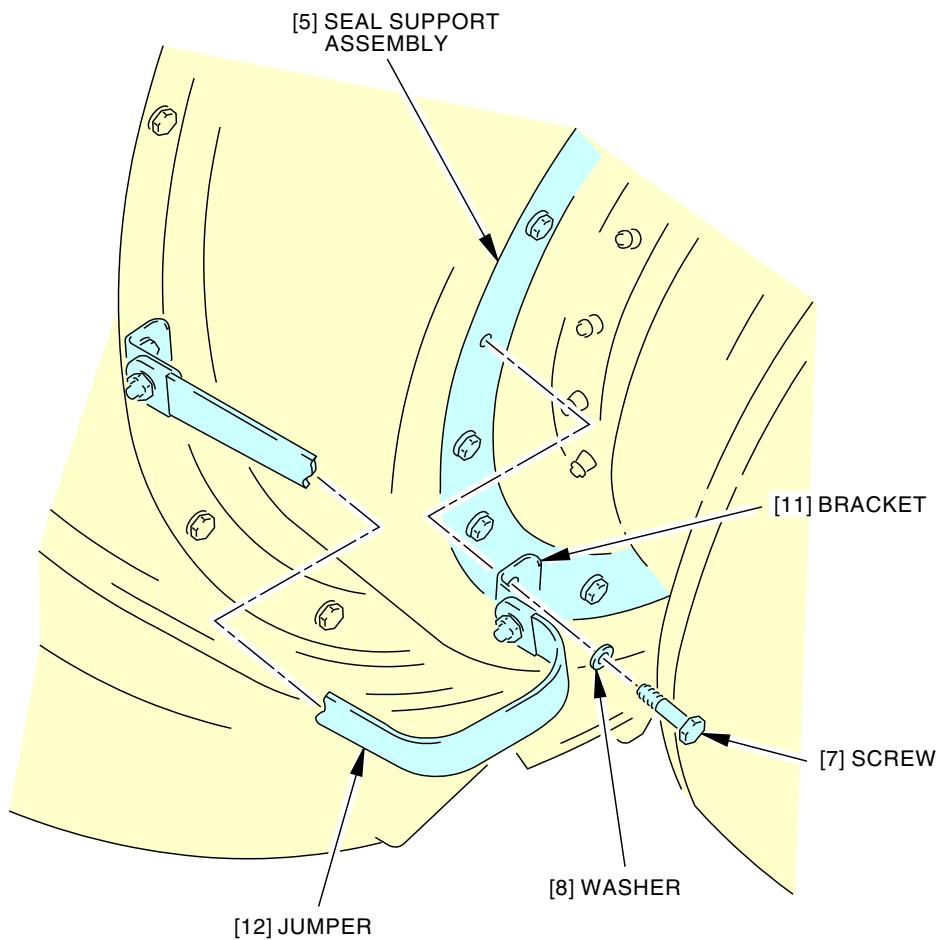
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Exhaust Duct Muffler Installation  
Figure 401/49-81-11-990-802 (Sheet 2 of 2)

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**TASK 49-81-11-400-801**

**3. Exhaust Duct Muffler Installation**

(Figure 401)

**A. References**

Reference	Title
49-81-31-400-801	Aft Fairing Assembly Installation (P/B 401)
SWPM 20-20-00	ELECTRICAL BONDING PROCESSES

**B. Tools/Equipment**

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

Reference	Description
COM-1550	Bonding Meter - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659
STD-3906	Mallet - Rubber

**C. Consumable Materials**

Reference	Description	Specification
B00130	Alcohol - Isopropyl	TT-I-735
D00006	Compound - Antiseize, Pure Nickel Special - Never-Seez NSBT-8N/-16N	
D00173	Grease - Aircraft and Instrument, Fuel And Oxidizer Resistant	MIL-PRF-27617 (Supersedes MIL-G-27617)
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CLA)
G50222	Brush - Tampico Fiber, Non-Metallic	

**D. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Exhaust duct muffler	49-81-00-01A-075	LOM ALL
5	Seal support assembly	49-81-11-01A-020	LOM ALL

**E. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right



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F. Access Panels

Number	Name/Location
315A	APU Cowl Door
318BR	Tailcone Access Door

G. Exhaust Duct Muffler Installation

SUBTASK 49-81-11-420-005



**CAUTION**  
REMOVE THE PROTECTION COVERS FROM THE OPENINGS AS NECESSARY. IF YOU DO NOT REMOVE THE PROTECTION COVERS, DAMAGE TO THE APU CAN OCCUR.

- (1) Do these steps to install the exhaust duct muffler [1]:
  - (a) Remove the plug from the fitting [10] on the exhaust duct muffler [1].
  - (b) Loosen the 16 bolts [2] that attach the seal depressor assembly [4] to the 1156 bulkhead.
  - (c) Loosen the 20 screws [7] that attach the seal support assembly [5] to the exhaust duct muffler [1].
  - (d) Lubricate the inner mating surfaces of the seal depressor assembly [4] with a light coat of grease, D00173.
  - (e) Carefully put the exhaust duct muffler [1] into the tail cone compartment and through the seal depressor assembly [4].  
NOTE: The weight of the exhaust duct muffler is approximately 60 lb (27.2 kg).
  - (f) Pull or push the exhaust duct muffler [1] forward through the seal depressor assembly [4] until the exhaust duct muffler [1] touches the Auxiliary Power Unit (APU).
    - 1) Make sure that the exhaust duct muffler [1] flange is aligned with the APU flange.  
NOTE: The exhaust duct muffler [1] is in the correct position when the drain fitting is aligned with the center line on the tail cone assembly.
  - (g) Install the lower aft fairing, do this task: Aft Fairing Assembly Installation, TASK 49-81-31-400-801.
  - (h) Make sure that the exhaust duct muffler [1] touches the APU.
  - (i) Put the v-band clamp [6] on the exhaust duct muffler [1].
  - (j) Lightly tap the outer periphery of the v-band clamp [6] with a rubber mallet, STD-3906, to seat the v-band clamp [6].
  - (k) Tighten the nuts on both sides of the v-band clamp [6] to 70 in-lb (7.9 N·m) - 90 in-lb (10.2 N·m).
  - (l) Repeat the steps to lightly tap the outer periphery and torque nuts of the v-band clamp [6] until the nuts on both sides of the v-band clamp [6] retains the torque value.
  - (m) Tighten the 20 screws [7] on the seal support assembly [5] to 35.0 in-lb (4.0 N·m).
  - (n) Tighten the 16 bolts [2] on the seal depressor assembly [4] to 35.0 in-lb (4.0 N·m).
  - (o) Remove the plug from the drain tube [9].
  - (p) Apply a thin layer of Pure Nickel Special compound, D00006, on the threads of the fitting [10].
  - (q) Connect the drain tube [9] to the fitting [10] on the exhaust duct muffler [1].
  - (r) Connect the jumper [12] to the exhaust duct muffler [1]:

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- 1) Remove the screw [7] and washer [8] that attach the bracket [11] with the jumper [12] to the seal support assembly [5].
  - 2) Clean the faying surfaces of the seal support assembly [5] and bracket [11]:
    - a) Apply alcohol, B00130, to a tampico fiber brush, G50222, or cotton wiper, G00034.
    - b) Use a small amount of pressure on the tampico fiber brush, G50222, or cotton wiper, G00034, while you clean the faying surfaces of the seal support assembly [5] and bracket [11].
    - c) Continue to clean the surfaces until there is no visible residue on the surfaces.
  - 3) Connect the bracket [11] with the jumper [12] to the seal support assembly [5] with the washer [8] and screw [7].
  - 4) Make sure that the position of the bracket [11] does not cause the jumper [12] to twist or turn.
- (s) Measure the electrical bonding resistance across each faying surface between the exhaust duct muffler [1] and the airplane structure (SWPM 20-20-00).
  - 1) Use an intrinsically safe approved bonding meter, COM-1550
  - 2) Make sure that the electrical bonding resistance is 0.001 ohm (1.0 milliohm) or less.

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

SUBTASK 49-81-11-860-003

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

### F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

### F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-81-11-860-004

- (2) Remove the DO-NOT-OPERATE tag from the APU master switch, on the P5 forward overhead panel.

SUBTASK 49-81-11-410-003

- (3) To close the access panel, do these steps:

#### Number    Name/Location

315A      APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.

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(g) Close the APU Cowl Door, 315A.

(h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

SUBTASK 49-81-11-410-002

(4) Close this access panel:

**Number      Name/Location**

318BR      Tailcone Access Door

———— END OF TASK ————

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EXHAUST DUCT MUFFLER - INSPECTION/CHECK

**1. General**

- A. This procedure contains scheduled maintenance task data.
- B. This procedure has these tasks:
  - (1) Exhaust Duct Muffler General Visual Inspection
  - (2) Exhaust Duct Muffler Inspection.
    - (a) The exhaust duct muffler must be removed from the airplane to inspect the exhaust duct muffler seal.
  - (3) Exhaust Duct Muffler Seal Inspection

**TASK 49-81-11-200-802**

**2. Exhaust Duct Muffler General Visual Inspection**

**A. Location Zones**

Zone	Area
315	APU Compartment - Left
316	APU Compartment - Right
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

**B. Procedure**

SUBTASK 49-81-11-210-002

- (1) Do these steps to visually inspect the exhaust duct muffler:
  - (a) Visually examine the front area and inner surfaces of the exhaust duct muffler that you can get access from the APU compartment for cracks and damage.
    - 1) If you find cracks or damage on the exhaust duct muffler, do this task: Exhaust Duct Muffler Inspection, TASK 49-81-11-200-801.

———— END OF TASK ————

**TASK 49-81-11-200-801**

**3. Exhaust Duct Muffler Inspection**

(Figure 601)

**A. References**

Reference	Title
49-16-11-100-801	Clean the APU Drains (P/B 701)
49-81-11 P/B 401	EXHAUST DUCT MUFFLER - REMOVAL/INSTALLATION
49-81-11-000-801	Exhaust Duct Muffler Removal (P/B 401)
49-81-11-400-801	Exhaust Duct Muffler Installation (P/B 401)

**B. Consumable Materials**

Reference	Description	Specification
A00160	Sealant - Firewall - Hydraulic Fluid Resistant	BMS5-63
G00440	Lockwire - MS20995C41, Corrosion Resistant	NASM20995
	Steel - 0.041 Inch (1.0414 mm) Diameter	



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C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Exhaust duct muffler	49-81-00-01A-075	LOM ALL
2	Hi-lok	49-81-11-01A-040	LOM ALL
3	Collar	49-81-11-01A-045	LOM ALL
4	Upper insulation blanket	49-81-11-01A-025	LOM ALL
8	Lower insulation blanket	49-81-11-01A-030	LOM ALL

D. Location Zones

Zone	Area
315	APU Compartment - Left
316	APU Compartment - Right
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

E. Procedure

SUBTASK 49-81-11-020-003

- (1) Remove the exhaust duct muffler [1] (TASK 49-81-11-000-801).

SUBTASK 49-81-11-020-004

- (2) Do these steps to remove the upper insulation blanket [4] and lower insulation blanket [8] from the exhaust duct muffler [1]:

NOTE: The rear insulation blanket on the aft end cap comes with the rivets.



BE CAREFUL WITH THE INSULATION BLANKET. DO NOT LET THE BLANKET TOUCH ANY SHARP EDGES. DAMAGE TO THE INSULATION BLANKET CAN OCCUR.

- (a) Remove the 34 lacings [13] from the upper insulation blanket [4] and lower insulation blanket [8].
- (b) Remove the upper insulation blanket [4] and lower insulation blanket [8] from the exhaust duct muffler [1].

SUBTASK 49-81-11-210-001

- (3) Do these steps to inspect the exhaust duct muffler [1]:

- (a) Visually examine the upper insulation blanket [4], rear insulation blanket [7] and lower insulation blanket [8] for burns, holes and tears.
- 1) If you find burns, holes or tears, replace the insulation blanket(s).
- (b) Visually examine the external surfaces of the exhaust duct muffler [1] for cracks and missing parts.
- 1) Cracks are not permitted on these components:
- a) bellows assembly [11]
  - b) forward end cap [10]
  - c) Outer liner of the exhaust duct muffler [1]
  - d) aft liner extension [6]
  - e) aft end cap [5].



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- 2) Make sure the 20 hi-loks [2] and 20 collars [3] are installed on the bellows assembly [11].

NOTE: The 20 hi-loks and 20 collars attach the bellows assembly, forward end cap and acoustic liner together.

- 3) One or two missing rivets are permitted on the aft liner extension [6].

- (c) Visually examine the internal surfaces of the exhaust duct muffler [1] for cracks, tears, punctures and missing parts.

- 1) If it is necessary to examine the seven baffles [16] and acoustic liner [15], do these steps to get access to the seven baffles:

- a) Remove the 20 hi-loks [2] and 20 collars [3] that attach the bellows assembly [11] and acoustic liner [15] to the exhaust duct muffler [1].
- b) Discard the 20 hi-loks [2] and 20 collars [3].
- c) Remove the bellows assembly [11] and acoustic liner [15].
- d) Cracks, tears and punctures are permitted on the seven baffles [16] and the acoustic liner [15].
- e) If there are missing pieces of the baffle and the liner, replace the exhaust duct muffler [1] (PAGEBLOCK 49-81-11/401).
- f) Put the acoustic liner [15] and bellows assembly [11] into the forward end cap [10] and the exhaust duct muffler [1] and align the 20 holes.
- g) Apply a thin coat of sealant, A00160, to the threads of the 20 new hi-loks [2].
- h) Install the 20 hi-loks [2] to the inner surface of the exhaust duct muffler [1] and 20 new collars [3] to the outer surface.

- 2) If the acoustic liner [15] was not removed, make sure that the 20 hi-loks [2] installed on the acoustic liner [15] are in good condition.

- (d) Do this task: Exhaust Duct Muffler Seal Inspection, TASK 49-81-11-200-803.

- (e) Visually examine the drain tube [9] for blockage of unwanted materials.

- 1) If you find blockage of unwanted materials, remove or clean the drain tube [9]. Do this task: Clean the APU Drains, TASK 49-16-11-100-801.

**SUBTASK 49-81-11-420-006**

- (4) If the exhaust duct muffler [1] has damage that is more than the permitted limits, you must replace the exhaust duct muffler [1] (TASK 49-81-11-400-801).

**SUBTASK 49-81-11-420-003**

- (5) Do these steps to install the upper insulation blanket [4] and lower insulation blanket [8] on the exhaust duct muffler [1]:

NOTE: The rear insulation blanket on the aft end cap comes with the rivets.

- (a) Put the upper insulation blanket [4] and lower insulation blanket [8] on the exhaust duct muffler [1].

- (b) Make sure that you align the 68 lacing studs [14] along the exhaust duct muffler [1].

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**CAUTION**

DO NOT USE THE LACINGS TO MOVE THE ENDS OF THE INSULATION BLANKET TOGETHER. DO NOT TIGHTEN THE LACINGS TOO MUCH. DAMAGE TO THE INSULATION BLANKET AND THE LACING STUDS CAN OCCUR.

- (c) While one person holds the upper insulation blanket [4] and lower insulation blanket [8] together, install the 34 lacings [13] with MS20995C41 lockwire, G00440.

NOTE: You can use 0.032 inch inconel or 0.040 inch inconel lockwire.

NOTE: You install each lacing by a minimum of one full turn around each lacing stud. Make three to six twists at the end of the lockwire and bend the twists back or under the lockwire to hold the lacing in position.

- (d) Make sure the distance between the upper insulation blanket [4] and lower insulation blanket [8] is less than 0.15 in. (3.8 mm).
- (e) Make sure the 34 lacings [13] are not broken.

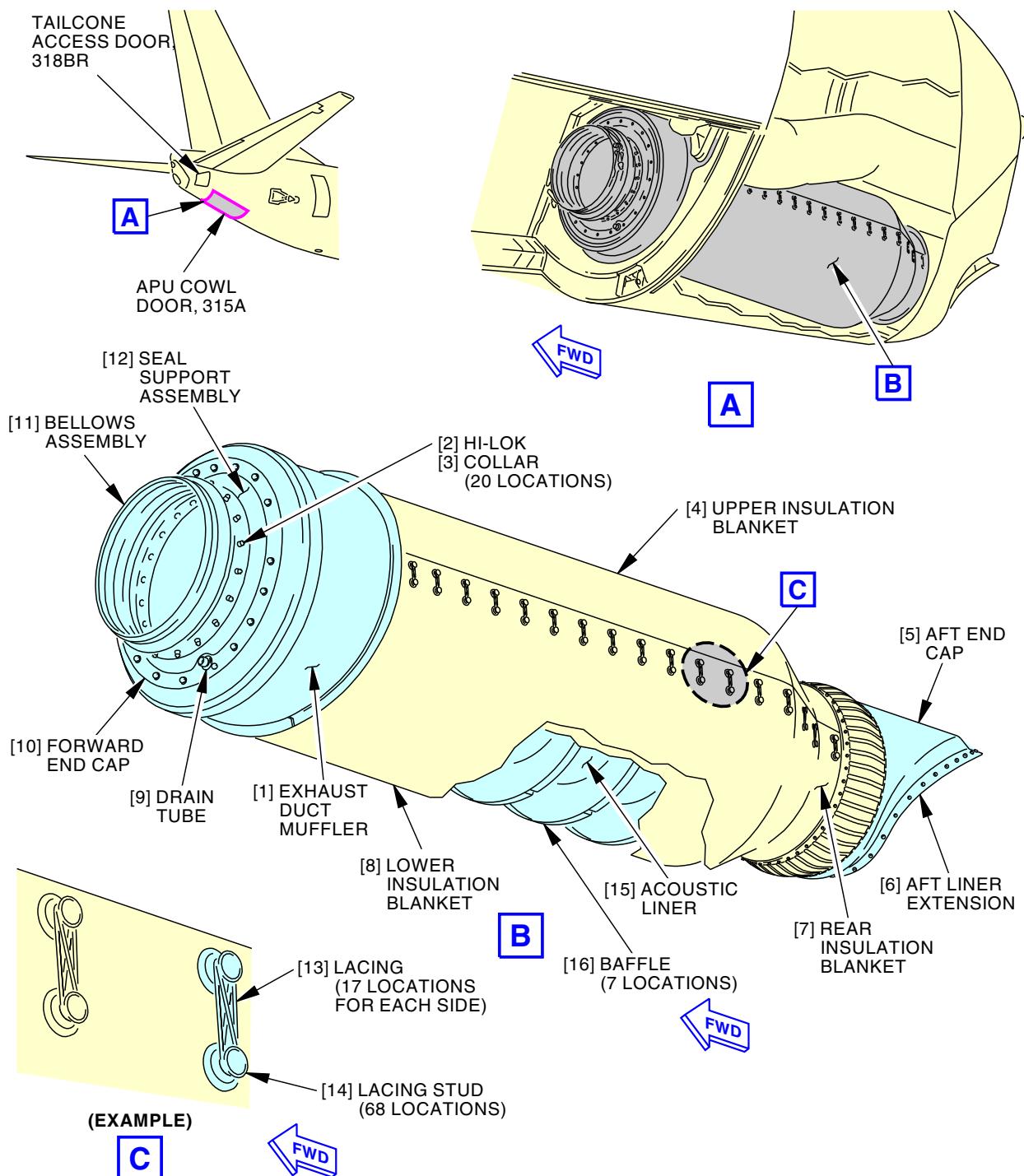
SUBTASK 49-81-11-420-004

- (6) Install the exhaust duct muffler [1] (TASK 49-81-11-400-801).

———— END OF TASK ————

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**Exhaust Duct Muffler Inspection**  
**Figure 601/49-81-11-990-801**

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**TASK 49-81-11-200-803**

**4. Exhaust Duct Muffler Seal Inspection**

(Figure 602)

NOTE: This procedure is a scheduled maintenance task.

**A. References**

Reference	Title
49-81-11-000-801	Exhaust Duct Muffler Removal (P/B 401)
49-81-11-400-801	Exhaust Duct Muffler Installation (P/B 401)

**B. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
12	Seal support assembly	49-81-11-01A-020	LOM ALL

**C. Location Zones**

Zone	Area
315	APU Compartment - Left
316	APU Compartment - Right
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

**D. Exhaust Duct Muffler Seal Inspection**

SUBTASK 49-81-11-000-001



BE CAREFUL WHEN YOU MOVE THE EXHAUST DUCT MUFFLER AFT TO PREVENT DAMAGE TO THE SEAL SUPPORT ASSEMBLY. IF YOU DO NOT OBEY, DAMAGE TO THE SEAL SUPPORT ASSEMBLY CAN OCCUR.

- (1) Move the exhaust duct muffler [1] aft to examine the seal support assembly [12] (TASK 49-81-11-000-801).

NOTE: The complete removal of the exhaust duct muffler is not necessary.

SUBTASK 49-81-11-200-001

- (2) Visually examine the seal support assembly [12] for tears, deformation or wear damage.

SUBTASK 49-81-11-200-002

- (3) Visually examine the inner surfaces of the seal support assembly [12] for damage.

SUBTASK 49-81-11-960-001

- (4) If you see damage that is not permitted, replace the seal support assembly [12].

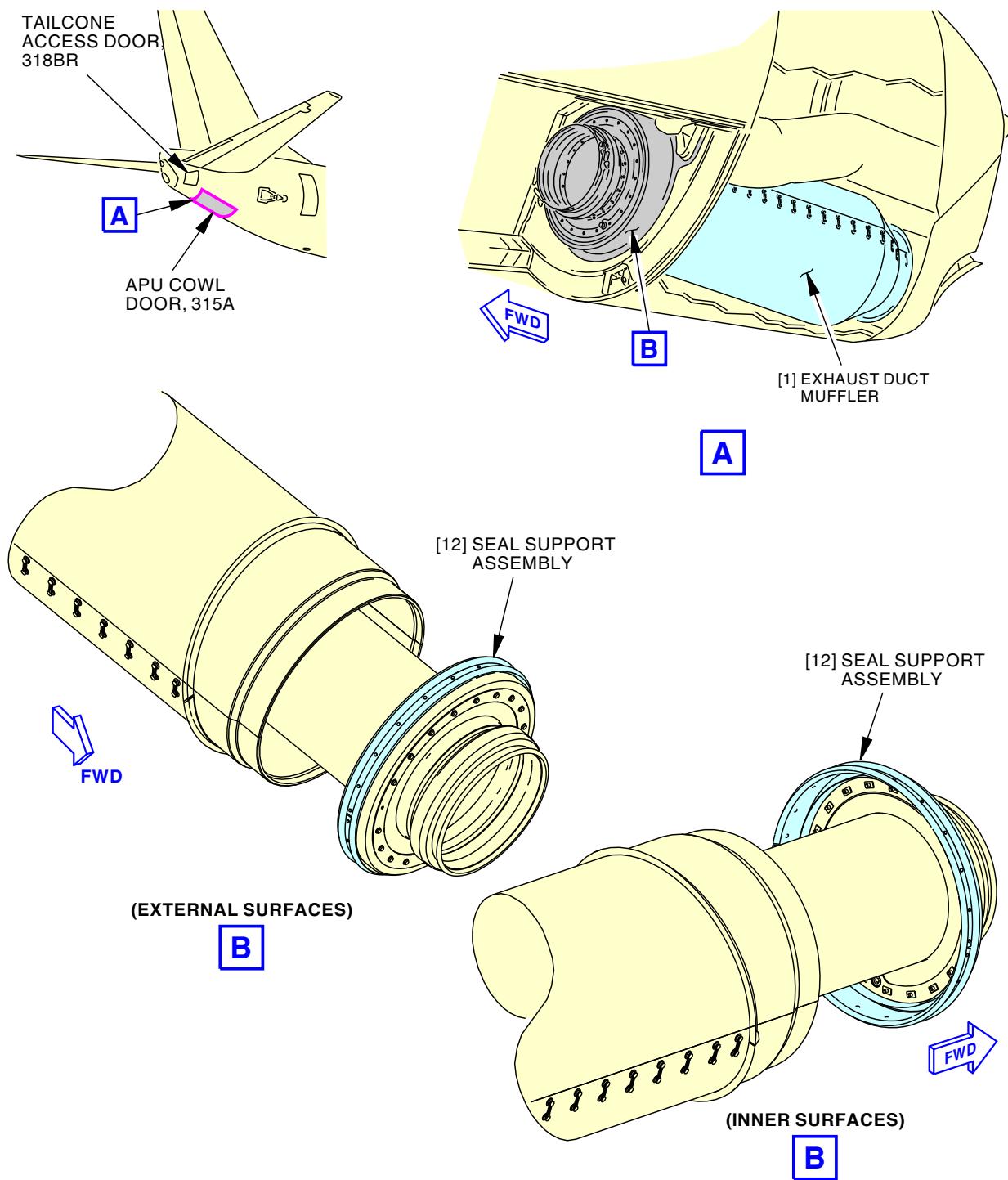
SUBTASK 49-81-11-400-001

- (5) Install the exhaust duct muffler [1] (TASK 49-81-11-400-801).

— END OF TASK —



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**Exhaust Duct Muffler Seal Inspection**  
**Figure 602/49-81-11-990-804**

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EXHAUST DUCT MUFFLER - CLEANING/PAINTING

**1. General**

- A. This procedure has the task to clean the exhaust duct muffler. To clean the exhaust duct muffler, it must be removed from the airplane.

**TASK 49-81-11-100-801**

**2. Exhaust Duct Muffler Cleaning**

**A. References**

Reference	Title
49-81-11-000-801	Exhaust Duct Muffler Removal (P/B 401)
49-81-11-400-801	Exhaust Duct Muffler Installation (P/B 401)

**B. Tools/Equipment**

Reference	Description
STD-1057	Air Source - Regulated, Dry Filtered, Compressed 60-105 PSIG (414-723.9 KPa)(22 SCFM)

**C. Consumable Materials**

Reference	Description	Specification
B00012	Cleaner - Alkaline - Turco Jet Clean C	BAC5744
B00541	Cleaner - General Purpose Household Detergent	
B00666	Solvent - Methyl Propyl Ketone	BMS11-9
G00440	Lockwire - MS20995C41, Corrosion Resistant Steel - 0.041 Inch (1.0414 mm) Diameter	NASM20995
G50222	Brush - Tampico Fiber, Non-Metallic	

**D. Location Zones**

Zone	Area
315	APU Compartment - Left
316	APU Compartment - Right

**E. Prepare for the Cleaning**

**SUBTASK 49-81-11-020-001**

- (1) Do this task: Exhaust Duct Muffler Removal, TASK 49-81-11-000-801.

**F. Procedure**

**SUBTASK 49-81-11-020-002**

- (1) Do these steps to remove the upper and lower insulation blankets from the exhaust duct muffler:

NOTE: The rear insulation blanket on the aft end cap is installed permanently with rivets.



BE CAREFUL WITH THE INSULATION BLANKETS. THE BLANKETS CAN BE EASILY DAMAGED. DO NOT LET THE BLANKETS TOUCH SHARP EDGES. DAMAGE TO THE BLANKETS CAN OCCUR.

- (a) Remove the 34 lacings from the upper insulation blanket and lower insulation blanket.  
(b) Remove the upper and lower insulation blankets from the exhaust duct muffler.

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SUBTASK 49-81-11-110-001

- (2) Do these steps to clean the exhaust duct muffler:



**CAUTION** THE REAR INSULATION BLANKET MUST BE DRY TO FUNCTION CORRECTLY AS A FIRE-RESISTANT MATERIAL. DAMAGE TO THE REAR INSULATION BLANKET CAN OCCUR FROM FLUID CONTAMINATION.

- (a) Make sure the rear insulation blanket is dry when you clean the exhaust duct muffler.



**WARNING** DO NOT GET THE SOLVENT IN YOUR MOUTH, OR IN YOUR EYES OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE SOLVENT. PUT ON A PROTECTIVE SPLASH GOGGLE AND GLOVES WHEN YOU USE THE SOLVENT. KEEP THE SOLVENT AWAY FROM SPARKS, FLAME AND HEAT. THE SOLVENT IS A POISONOUS AND FLAMMABLE MATERIAL WHICH CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

- (b) Flush the exhaust duct muffler with approximately 1 gal (3.8 l) of solvent, B00666.

- 1) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057 to dry the exhaust duct muffler.

NOTE: It is recommended that you use a pressure of 60 psig (413.7 kPa)-90 psig (620.5 kPa) of air or nitrogen to dry the exhaust duct muffler.

- (c) Clean the exhaust duct muffler with the alkaline Turco Jet Clean C cleaner, B00012:

- 1) Apply heat and mix the alkaline solution until the temperature is 175°F (79°C).

NOTE: Refer to the manufacturer's mixture instructions for the alkaline solution.

- 2) Put the forward end of the exhaust duct muffler in the alkaline solution until the solution level does not touch the rear insulation blanket for approximately five minutes.

- 3) Use atampico fiber brush, G50222 to clean all the unwanted materials off the internal areas (exhaust duct liner) of the forward and aft end of the exhaust duct muffler.

- 4) Remove the exhaust duct muffler from the alkaline solution.

- (d) Clean the exhaust duct muffler with the general purpose household detergent cleaner, B00541:

- 1) Apply heat and mix the detergent solution until the temperature is 175°F (79°C).

NOTE: Refer to the manufacturer's mixture instructions for the detergent solution.

- 2) Put the forward end of the exhaust duct muffler in the detergent solution until the solution level does not touch the rear insulation blanket for approximately five minutes.

- 3) Use atampico fiber brush, G50222 to clean all the unwanted materials off the internal areas (exhaust duct liner) of the forward and aft end of the exhaust duct muffler.

- 4) Remove the exhaust duct muffler from the detergent solution.

- 5) Remove the detergent solution from the exhaust duct muffler with water.

NOTE: You can apply the water as a spray or use a water hose.

- 6) Drain the water from the exhaust duct muffler.

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- (e) Examine the drain fitting on the exhaust duct muffler for blockage of unwanted materials.
  - 1) If you find blockage of unwanted materials, remove the blockage or repair the problems that you find.
- (f) Dry the exhaust duct muffler:
  - 1) Put the exhaust duct muffler in a hot air environment at 150°F (66°C) for approximately five hours.
  - 2) Remove the exhaust duct muffler from the hot air environment.
  - 3) Permit the temperature of the exhaust duct muffler to decrease to 65°F (18°C)-75°F (24°C).

SUBTASK 49-81-11-420-002

- (3) Do these steps to install the upper and lower insulation blankets on the exhaust duct muffler:

NOTE: The rear insulation blanket on the aft end cap is installed permanently with rivets.

- (a) Put the upper and lower insulation blankets on the exhaust duct muffler.
- (b) Make sure you align the 68 lacing studs along the exhaust duct muffler.



**DO NOT USE THE LACINGS TO MOVE THE ENDS OF THE INSULATION BLANKETS TOGETHER. DO NOT TIGHTEN THE LACINGS TOO MUCH. DAMAGE TO THE INSULATION BLANKETS AND THE LACING STUDS CAN OCCUR.**

- (c) While one person holds the upper and lower insulation blankets together, install the 34 lacings with MS20995C41 lockwire, G00440.

NOTE: You can use 0.032 inch inconel or 0.040 inch inconel lockwire.

NOTE: You install each lacing by a minimum of one full turn around each lacing stud. Make three to six twists at the end of the lockwire and bend the twists back or under the lockwire to hold the lacing in position.
- (d) Make sure the distance between the upper and lower insulation blankets is less than 0.15 inch (3.8 mm).
- (e) Make sure the 34 lacings are not broken.

SUBTASK 49-81-11-420-001

- (4) Do this task: Exhaust Duct Muffler Installation, TASK 49-81-11-400-801.

———— END OF TASK ————

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EXHAUST DUCT MUFFLER DRAIN FITTING - CLEANING/PAINTING

**1. General**

- A. This procedure contains scheduled maintenance task data.
- B. This procedure has the task to clean the drain fitting for the exhaust duct muffler. The drain fitting is installed on the bottom of the exhaust duct muffler.

**TASK 49-81-12-100-801**

**2. Exhaust Duct Muffler Drain Fitting Cleaning**

(Figure 701)

**A. References**

Reference	Title
49-81-11-000-801	Exhaust Duct Muffler Removal (P/B 401)
49-81-11-400-801	Exhaust Duct Muffler Installation (P/B 401)

**B. Tools/Equipment**

Reference	Description
STD-1057	Air Source - Regulated, Dry Filtered, Compressed 60-105 PSIG (414-723.9 KPa)(22 SCFM)
STD-1222	Bit - Drill, 0.062-0.065 Inch Diameter
STD-4049	Container - Fuel Resistant, 1 Gallon (4 Liter)

**C. Consumable Materials**

Reference	Description	Specification
D00006	Compound - Antiseize, Pure Nickel Special - Never-Seez NSBT-8N/-16N	

**D. Location Zones**

Zone	Area
315	APU Compartment - Left
316	APU Compartment - Right

**E. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**F. Prepare for the Cleaning**

SUBTASK 49-81-12-860-001

- (1) Make sure the APU master switch on the P5 forward overhead panel is OFF and attach a DO-NOT-OPERATE tag.

SUBTASK 49-81-12-860-002

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

**F/O Electrical System Panel, P6-2**

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT

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SUBTASK 49-81-12-010-002

- (3) To open the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.
- (b) Open the three latches.  
**NOTE:** Use this sequence: forward latch, aft latch, middle latch.
- (c) Open the APU Cowl Door, 315A.
- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

## G. Procedure

SUBTASK 49-81-12-160-001

- (1) Do these steps to clean the drain fitting [1] for the exhaust duct muffler:

**NOTE:** There is no operational checkout for the drain fitting on the exhaust duct muffler. You must clean the drain fitting to make sure there is no blockage of unwanted materials in the exhaust duct muffler.

- (a) Put the 1 gallon (4 l) fuel resistant container, STD-4049 below the exhaust duct muffler.



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

- (b) Disconnect the drain tube [2] from the drain fitting [1] on the exhaust duct muffler.
- (c) Drain the water and fuel from the drain tube [2] and exhaust duct muffler into the 1 gallon (4 l) fuel resistant container, STD-4049.
- (d) Examine the drain tube [2] and the drain fitting [1] for damaged threads and cracks.
- (e) Install a plug on the drain tube [2].
- (f) Use a 0.062-0.065 inch diameter drill bit, STD-1222 or equivalent tool to clear the drain fitting hole for blockage.
  - 1) If you find blockage of unwanted materials, remove the blockage.
  - 2) If there is too much blockage in the exhaust duct muffler, then do these steps:
    - a) Do this task: Exhaust Duct Muffler Removal, TASK 49-81-11-000-801.
    - b) If you can get access to the blockage of unwanted materials, remove the blockage or carefully flush with water from the aft end of the exhaust duct muffler.
    - c) If you remove the blockage, re-install the exhaust duct muffler. To re-install it, do this task: Exhaust Duct Muffler Installation, TASK 49-81-11-400-801.

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- d) If there is no access to the blockage of unwanted materials, then replace the exhaust duct muffler.

These are the tasks:

Exhaust Duct Muffler Removal, TASK 49-81-11-000-801,

Exhaust Duct Muffler Installation, TASK 49-81-11-400-801.

- (g) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057 to blow the air through the drain fitting [1].

NOTE: It is recommended that you use a pressure of 60-90 psig (414-620 kPa) of air or nitrogen to blow the air through the drain fitting.

- (h) Apply a thin layer of Pure Nickel Special compound, D00006 on the threads of the drain fitting [1].

- (i) Connect the drain tube [2] to the drain fitting [1] on the exhaust duct muffler.

- (j) Remove the 1 gallon (4 l) fuel resistant container, STD-4049.

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

SUBTASK 49-81-12-860-003

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-81-12-860-004

- (2) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.

SUBTASK 49-81-12-410-002

- (3) To close the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.

- (b) Disconnect the two hold-open rods from the two brackets.

- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.

- (d) Install the retainer pin in the rod end of the forward hold-open rod.

- (e) Install the retainer pin to the spring clip on the aft hold-open rod.

- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.

- 1) Make sure that the installation of fire shield has not shifted.

- 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.

- (g) Close the APU Cowl Door, 315A.

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(h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

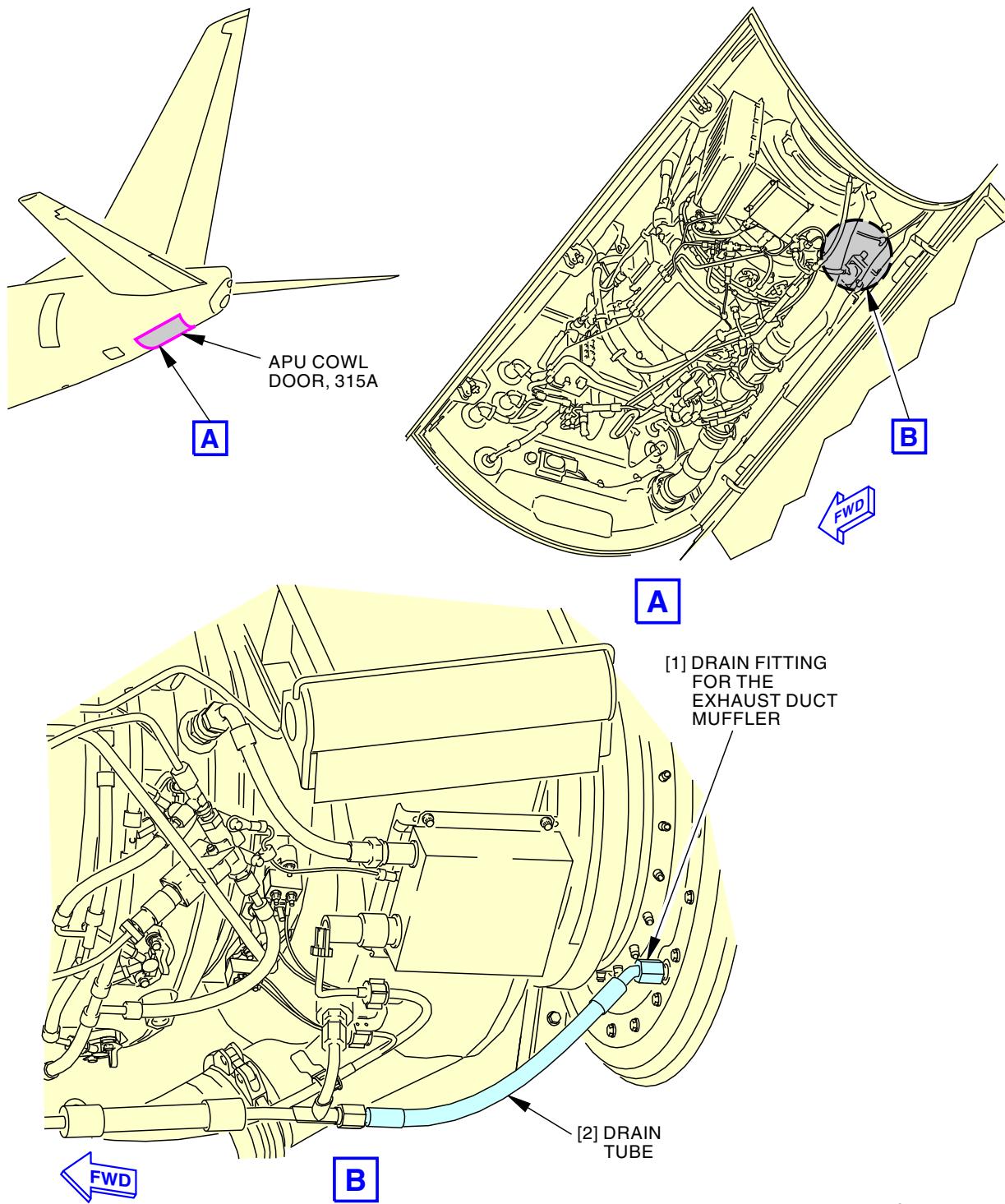
———— END OF TASK ————

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**Exhaust Duct Muffler Drain Fitting Cleaning**  
Figure 701/49-81-12-990-801

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EXHAUST DUCT INSULATION BLANKET - INSPECTION/CHECK

**1. General**

- A. This procedure has the task to visually inspect the exhaust duct insulation blanket.

**TASK 49-81-13-200-801**

**2. Exhaust Duct Insulation Blanket General Visual Inspection**

**A. References**

<u>Reference</u>	<u>Title</u>
49-81-11-200-801	Exhaust Duct Muffler Inspection (P/B 601)

**B. Location Zones**

<u>Zone</u>	<u>Area</u>
318	Tail Cone Compartment - Right

**C. Access Panels**

<u>Number</u>	<u>Name/Location</u>
318BR	Tailcone Access Door

**D. Prepare for the Inspection**

SUBTASK 49-81-13-860-001

- (1) Make sure the APU master switch on the P5 forward overhead panel is OFF and install a DO-NOT-OPERATE tag.

SUBTASK 49-81-13-860-002

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-81-13-010-002

- (3) Open this access panel:

**Number      Name/Location**

318BR      Tailcone Access Door

**E. Exhaust Duct Insulation Blanket General Visual Inspection**

SUBTASK 49-81-13-210-001

- (1) Do these steps to visually inspect the exhaust duct insulation blanket:

- (a) Visually examine the exhaust duct insulation blanket for burns, holes and tears:

- 1) If you find burns, holes or tears, do this task: Exhaust Duct Muffler Inspection, TASK 49-81-11-200-801.

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

SUBTASK 49-81-13-410-002

- (1) Close this access panel:

**Number      Name/Location**

318BR      Tailcone Access Door

SUBTASK 49-81-13-860-003

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

**F/O Electrical System Panel, P6-2**

**Row    Col    Number    Name**

B       19     C01344    APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

**Row    Col    Number    Name**

A       14     C00033    AUX POWER UNIT CONT

SUBTASK 49-81-13-860-004

- (3) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.

———— END OF TASK ————

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EXHAUST DUCT INSULATION BLANKET - REPAIRS

**1. General**

- A. This procedure has the task to repair temporarily the exhaust duct insulation blanket. You must inspect the repaired area(s) of the exhaust duct insulation blanket in 60 day intervals or until the exhaust duct insulation blanket is replaced. It is recommended that you replace the exhaust duct insulation blanket in six months.
- B. You must remove the exhaust duct muffler from the airplane to repair the three insulation blankets.
- C. You must do the repairs temporarily on the cold face side (external/outer) surfaces of the insulation blanket only. Damage to the insulation blanket includes punctures, tears and cracks. The repair uses dimpled foil with a metal gage of 0.003 in. (0.08 mm)-0.005 in. (0.13 mm) thick stainless steel, the dimpled foil is cut to a patch and the sealant attaches the stainless steel patch to the insulation blanket.

**TASK 49-81-13-300-801**

**2. Exhaust Duct Insulation Blanket Repair**

(Figure 801)

**A. References**

Reference	Title
49-81-11-000-801	Exhaust Duct Muffler Removal (P/B 401)
49-81-11-400-801	Exhaust Duct Muffler Installation (P/B 401)

**B. Tools/Equipment**

Reference	Description
STD-810	Spatula - Fillet Smoothing, Hardwood or Plastic
STD-1080	Brush - Paint

**C. Consumable Materials**

Reference	Description	Specification
A00160	Sealant - Firewall - Hydraulic Fluid Resistant	BMS5-63
A50096	Sealant - Firewall - Hydraulic Fluid Resistant	BMS5-63 Type II
B00184	Solvent - Presealing, Cleaning Solvent	BMS11-7
B00666	Solvent - Methyl Propyl Ketone	BMS11-9
C00944	Primer - Firewall - Dapco No. 1-100	BMS5-63 Type I
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)
G00744	Cloth - Emery	

**D. Location Zones**

Zone	Area
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

**E. Prepare for the Repair**

**SUBTASK 49-81-13-020-001**

- (1) Remove the exhaust duct muffler [1]. To remove it, do this task: Exhaust Duct Muffler Removal, TASK 49-81-11-000-801.

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### F. Damage Limits

SUBTASK 49-81-13-800-001

- (1) If the damage to the insulation blankets [2], [3], [4] is in these damage limits, you can repair the insulation blankets:
  - (a) There is no damage to the hot face side (inner surfaces of the insulation blanket that are adjacent to the exhaust duct muffler).
  - (b) A hole in the cold face side (external/outer surfaces of the insulation blanket) is less than 1.5 in. (38.1 mm) in diameter.
  - (c) A tear or crack in the cold face side is less than 23.5 in. (0.6 m) in length (from the radial direction) and less than 6 in. (152.4 mm) in length (from the longitudinal direction).
  - (d) There is a minimum of 1 in. (25.4 mm) of no damage in all directions between the damaged area(s).
  - (e) There is a minimum of 1 in. (25.4 mm) of no damage between a lacing stud (capstan) or the edge of the insulation blanket and the damaged area(s).
  - (f) Lacing stud (capstan) damage is not permitted.
  - (g) There are no missing core insulation material and no fluid contamination in the insulation blanket.
  - (h) There is no overlap between two insulation blanket patches.

### G. Insulation Blanket Repair

SUBTASK 49-81-13-220-001

- (1) Measure the damaged area(s) of the insulation blanket.
  - (a) Make sure the damaged area(s) of the insulation blanket is in the damage limits.

SUBTASK 49-81-13-341-001

- (2) Do these steps to repair the damaged area(s) of the insulation blanket:



DO NOT LET THE SHARP METAL EDGES CUT YOU. PUT ON GLOVES.  
INJURIES TO PERSONS CAN OCCUR.

**WARNING**

- (a) If there are ragged and sharp edges around the damaged area of the insulation blanket, trim and remove the ragged and sharp edges and loose materials that you can find.
- (b) If there is a crack or tear in the damaged area of the insulation blanket, use a punch or blank stop hole of approximately 0.12 in. (3.0 mm)-0.16 in. (4.1 mm) in diameter at each end of the crack to prevent crack growth.
- (c) Cut a patch from a clean dimpled foil that can overlap the damaged area by 1 in. (25.4 mm) in all directions.

NOTE: The dimpled foil is a metal gage thickness of 0.003 in. (0.08 mm)-0.005 in. (0.13 mm) stainless steel sheet per AMS 5510. You can get the dimpled foil from Arrowhead Products (4411 Katella Avenue, Los Alamitos, CA 90720) or Exotic Metals Forming Company LLC, Aircraft Services (5411 S. 226th Street, Kent, WA 98032).

- (d) Make sure that the patch must be the same shape as the damaged area but do not bend the dimpled foil more than one time.

NOTE: If you bend the dimpled foil more than one time, it will weaken the strength of the material.

EFFECTIVITY  
LOM ALL

**49-81-13**



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**AIRCRAFT MAINTENANCE MANUAL**

- (e) If it is necessary, deburr the edges of the damaged area of the insulation blanket and the patch with an emery cloth, G00744 or equivalent.
- (f) Clean the damaged area of the insulation blanket and the patch with solvent, B00184 or solvent, B00666 and a cotton wiper, G00034 but make sure that the solvent does not touch or go through the core insulation material.
- (g) Dry the surface of the damaged area of the insulation blanket and the patch with a cotton wiper, G00034.  
NOTE: You must apply the Dapco No. 1-100 primer, C00944 and sealant, A00160 in four hours after you clean the damaged area and the patch.  
NOTE: There is no primer if you use the sealant, A50096.
- (h) If you use sealant, A00160, then you must use Dapco No. 1-100 primer, C00944 to prepare the damaged area of the insulation blanket and the patch as follows:
  - 1) Use a paint brush, STD-1080 to apply a thin layer of Dapco No. 1-100 primer, C00944 to the damaged area surface of the insulation blanket and the faying surface of the patch.
  - 2) Let the Dapco No. 1-100 primer, C00944 dry for one hour but not longer than two hours.  
NOTE: A chalky color on the damaged area surface of the insulation blanket and the faying surface of the patch shows when the Dapco No. 1-100 primer, C00944 is dry.
- (i) Use a hardwood or plastic fillet smoothing spatula, STD-810 to apply a sufficient amount of sealant, A00160 or sealant, A50096 to fill the empty area between the core insulation material, damaged area of the insulation blanket and the faying surface of the patch.  
NOTE: The maximum thickness of the sealant between the damaged area of the insulation blanket and the patch is 0.125 in. (3.2 mm).
- (j) Remove the unwanted sealant from the damaged area of the insulation blanket and the patch with a cotton wiper, G00034.
- (k) Let the sealant dry for a minimum of 48 hours at 70°F (21.1°C)-80°F (26.7°C).  
NOTE: You can use a heat lamp to decrease the time for the sealant to dry. The time to dry with a heat lamp is four hours at 120°F (48.9°C).

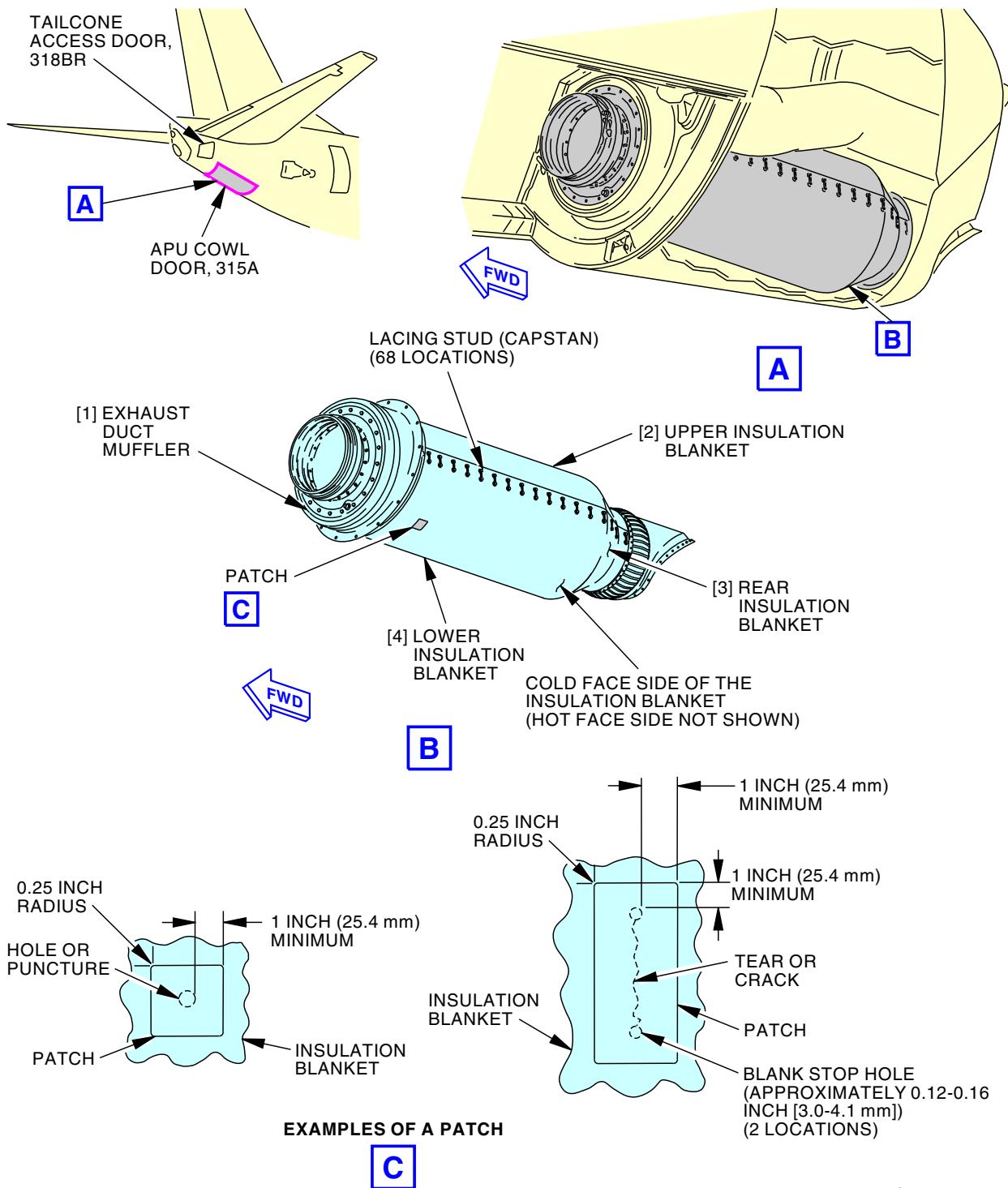
SUBTASK 49-81-13-420-001

- (3) Install the exhaust duct muffler [1]. To install it, do this task: Exhaust Duct Muffler Installation, TASK 49-81-11-400-801.

— END OF TASK —

EFFECTIVITY  
LOM ALL

**49-81-13**



U38357 S0000194709\_V2

**Exhaust Duct Insulation Blanket Repair**  
**Figure 801/49-81-13-990-801**

 EFFECTIVITY  
 LOM ALL

**49-81-13**

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AFT FAIRING ASSEMBLY - REMOVAL/INSTALLATION

**1. General**

- A. This procedure has these tasks:
  - (1) A removal of the aft fairing assembly
  - (2) An installation of the aft fairing assembly.
- B. The aft fairing assembly has two parts. The upper aft fairing attaches the eductor inlet duct to the tail cone. The lower aft fairing attaches the exhaust duct muffler to the tail cone. You must remove the lower aft fairing before you can remove the upper aft fairing.

**TASK 49-81-31-000-801**

**2. Aft Fairing Assembly Removal**

(Figure 401)

**A. Consumable Materials**

Reference	Description	Specification
G00077	Foam - Flame Retardant Rigid Urethane	BMS8-133
G00472	Twine - Impregnated Fibrous, Lacing And Tying	MIL-T-713

**B. Location Zones**

Zone	Area
211	Flight Compartment - Left
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

**C. Access Panels**

Number	Name/Location
318BR	Tailcone Access Door

**D. Prepare for the Removal**

SUBTASK 49-81-31-860-001

- (1) Make sure the APU master switch on the P5 forward overhead panel is OFF and install a DO-NOT-OPERATE tag.

**LOM 402, 404, 406, 407, 411, 412, 415, 416, 422-434, 437-447, 450-999; LOM 420 POST SB 737-33-1146**

SUBTASK 49-81-31-860-005

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

**CAPT Electrical System Panel, P18-3**

Row	Col	Number	Name
B	13	C00115	EXT LIGHTING ANTI COLLISION WHITE

**LOM ALL**

SUBTASK 49-81-31-860-002

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

**F/O Electrical System Panel, P6-2**

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

EFFECTIVITY  
**LOM ALL**

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**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-81-31-010-001

- (4) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
318BR	Tailcone Access Door

**E. Aft Fairing Assembly Removal**

SUBTASK 49-81-31-020-001

- (1) Do these steps to remove the lower aft fairing [6]:

- Remove the 39 screws [4] and 39 washers [5] that attach the lower aft fairing [6] to the tail cone.
- Remove the nine screws [7] and nine washers [8] that attach the lower aft fairing [6] to the upper aft fairing [1].
- Remove the lower aft fairing [6].
- Use a twine, G00472 or equivalent to temporarily attach the exhaust duct muffler to the support structure or put a foam, G00077 pad below the aft end of the exhaust duct muffler to hold the muffler in position.

NOTE: Do not temporarily attach or hold the exhaust duct muffler in position if you must remove the exhaust duct muffler.

SUBTASK 49-81-31-020-002

- (2) Do these steps to remove the upper aft fairing [1]:

NOTE: You must remove the lower aft fairing [6] before you can remove the upper aft fairing [1].

**LOM 420 PRE SB 737-33-1146**

- (a) Remove the 11 screws [2] and 11 washers [3] that attach the upper aft fairing [1] to the tail cone.

**LOM 402, 404, 406, 407, 411, 412, 415, 416, 422-434, 437-447, 450-999; LOM 420 POST SB 737-33-1146**

- Remove the 5 screws [9] and 5 washers [10].
- Remove the 8 screws [11] and 8 washers [12] and pull out the housing [13].
- Disconnect the electrical connector [14].
- Remove the 6 screws [2] and 6 washers [3] that attach the upper aft fairing [1] to the tail cone.

**LOM ALL**

- Remove the upper aft fairing [1].
- Use a twine, G00472 or equivalent to temporarily attach the eductor inlet duct to the support structure.

NOTE: Do not temporarily attach the eductor inlet duct to the support structure if you must remove the eductor inlet duct.

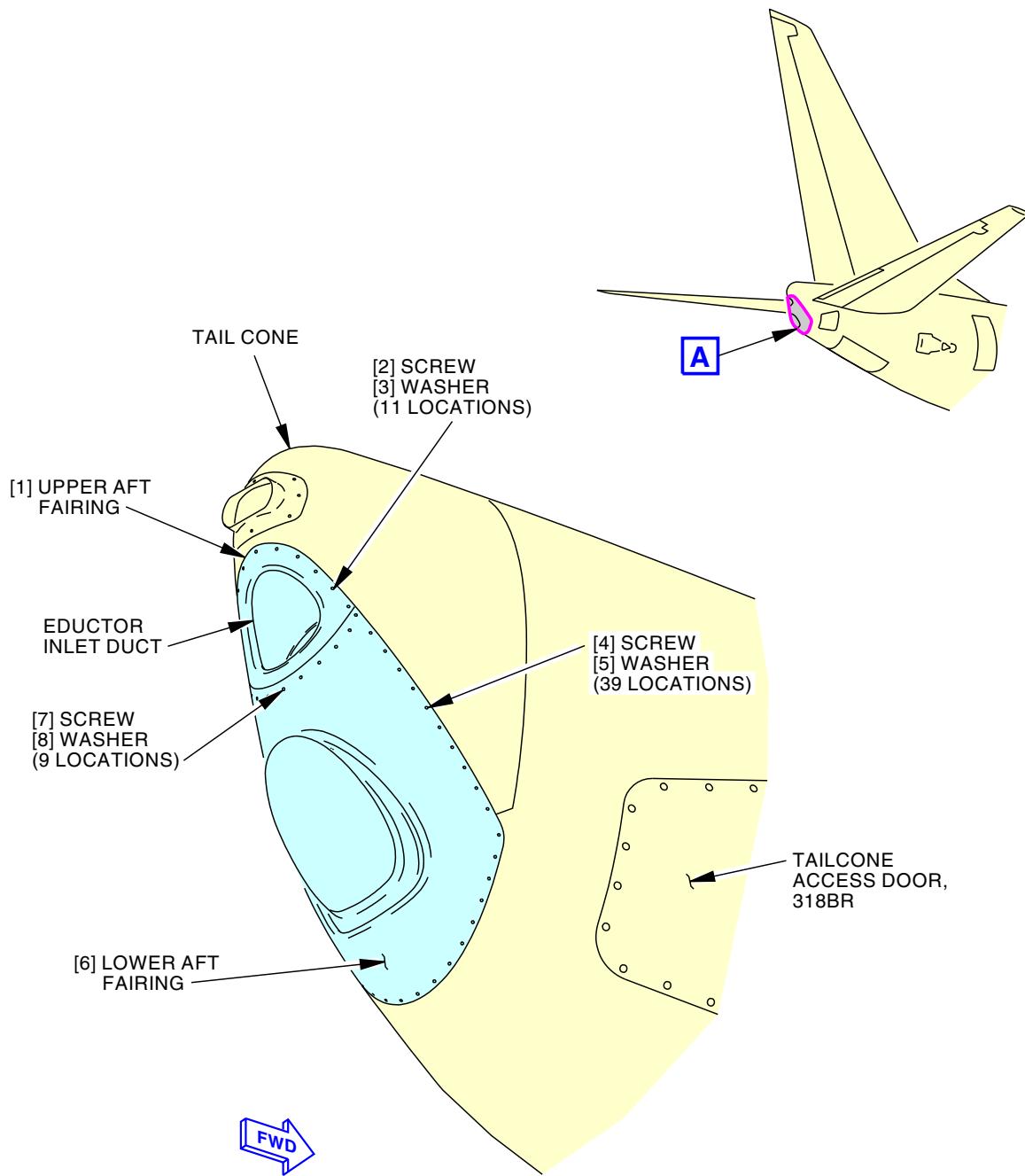
———— END OF TASK ————

— EFFECTIVITY —  
LOM ALL

**49-81-31**



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



A

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Aft Fairing Assembly Installation  
Figure 401/49-81-31-990-801 (Sheet 1 of 2)

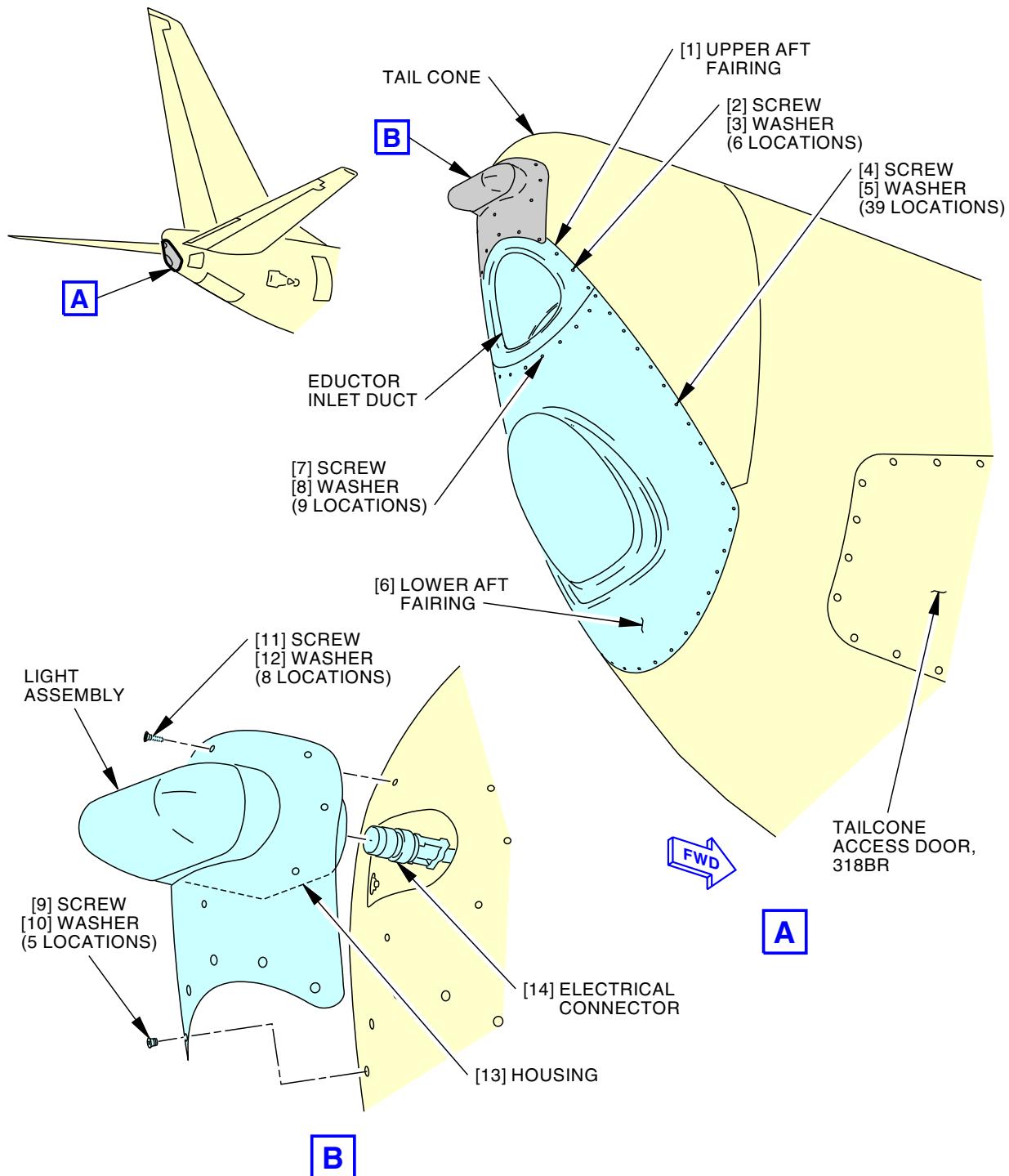
EFFECTIVITY  
LOM 420 PRE SB 737-33-1146

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ECCN 9E991 BOEING PROPRIETARY - See title page for details

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**Aft Fairing Assembly Installation**  
Figure 401/49-81-31-990-801 (Sheet 2 of 2)

EFFECTIVITY  
LOM 402, 404, 406, 407, 411, 412, 415, 416, 422-434,  
437-447, 450-999; LOM 420 POST SB 737-33-1146

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ECCN 9E991 BOEING PROPRIETARY - See title page for details



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AIRCRAFT MAINTENANCE MANUAL

**TASK 49-81-31-400-801**

**3. Aft Fairing Assembly Installation**

(Figure 401)

**A. References**

Reference	Title
SWPM 20-60-01	Cleaning of Electrical Connectors
SWPM 20-60-06	Standard Wiring Practices Manual

**B. Tools/Equipment**

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

Reference	Description
COM-1550	Bonding Meter - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659
STD-1057	Air Source - Regulated, Dry Filtered, Compressed 60-105 PSIG (414-723.9 KPa)(22 SCFM)
STD-1064	Scraper - Phenolic, Hard Resin

**C. Consumable Materials**

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
B00130	Alcohol - Isopropyl	TT-I-735
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CLA)

**D. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Upper aft fairing	49-81-31-01-040 53-53-00-20-580	LOM ALL
6	Lower aft fairing	49-81-31-01-045 53-53-00-20-480 53-53-00-20-515	LOM ALL LOM ALL LOM 402, 404, 406, 407, 411, 412, 415, 416, 420

**E. Location Zones**

Zone	Area
211	Flight Compartment - Left
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

EFFECTIVITY  
LOM ALL

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**F. Access Panels**

<b>Number</b>	<b>Name/Location</b>
318BR	Tailcone Access Door

**G. Procedure**

SUBTASK 49-81-31-420-001

- (1) Do these steps to install the upper aft fairing [1]:
  - (a) Remove the temporary materials (cord or equivalent), if installed, from the eductor inlet duct.
  - (b) Put the eductor inlet duct in the upper aft fairing [1].

**LOM 420 PRE SB 737-33-1146**

- (c) Install the upper aft fairing [1] to the tail cone with the 11 washers [3] and 11 screws [2].

NOTE: The screws for the upper aft fairing [1] must be tightened in the correct sequence. The correct sequence is to start at the bottom screw location, then the left adjacent side and then the right adjacent side until all the screws are tightened at the top of the upper aft fairing [1].

**LOM 402, 404, 406, 407, 411, 412, 415, 416, 422-434, 437-447, 450-999; LOM 420 POST SB 737-33-1146**

- (d) Install the upper aft fairing [1] to the tail cone with the 6 washers [3] and 6 screws [2].
- (e) Clean the electrical connector [14] (SWPM 20-60-01).
- (f) Connect the electrical connector [14] (SWPM 20-60-06).
- (g) With the electrical bonding (intrinsically safe approved bonding meter, COM-1550), make sure the resistance between the electrical connector braid and the housing measures no more than 0.003 ohms.
- (h) Put the housing [13] in the fuselage.
- (i) Install the 8 washers [12] and 8 screws [11].
- (j) Install the 5 washers [10] and 5 screws [9].

**LOM 464**

- 1) If the holes of the housing [13] and the holes of the eductor inlet duct misaligned, then align the holes with preload.
  - a) Keep the preload to a minimum.

**LOM 402, 404, 406, 407, 411, 412, 415, 416, 422-434, 437-447, 450-999; LOM 420 POST SB 737-33-1146**

- (k) With the electrical bonding (intrinsically safe approved bonding meter, COM-1550), make sure the resistance between the metal components of the anticolision light housing and the APU eductor fairing surface measures no more than 0.001 ohms.

**LOM ALL**

- (l) If the lens is dirty, clean it with a clean, soft, dry cotton wiper, G00034.

SUBTASK 49-81-31-420-002

- (2) Do these steps to install the lower aft fairing [6]:

- (a) Do the procedure in this task to install the upper aft fairing [1].

NOTE: You must install the upper aft fairing [1] before you can install the lower aft fairing [6].

EFFECTIVITY  
LOM ALL

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**AIRCRAFT MAINTENANCE MANUAL**

- (b) Do these steps to clean the surfaces of the lower aft fairing [6]:
- 1) Remove the remaining sealant from the surfaces of the lower aft fairing [6] with a hard resin phenolic scraper, STD-1064 or an equivalent tool.
  - 2) Clean the surfaces of the lower aft fairing [6] with alcohol, B00130 and a cotton wiper, G00034.
  - 3) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057 to dry the surfaces of the lower aft fairing [6].
- NOTE: It is recommended that you use a pressure of 60-90 psig (414-620 kPa) of air or nitrogen to dry the surfaces of the lower aft fairing [6].
- (c) Remove the temporary materials (cord, foam pad or equivalent), if installed, from the exhaust duct muffler.
- (d) Put the exhaust duct muffler in the lower aft fairing [6].
- (e) Install the lower aft fairing [6] to the tail cone with the 39 washers [5] and 39 screws [4].
- NOTE: The screws for the lower aft fairing [6] must be tightened in the correct sequence. The correct sequence is to start at the bottom screw location, then the left adjacent side and then the right adjacent side until all the screws are tightened at the top of the lower aft fairing [6].
- (f) Install the lower aft fairing [6] to the upper aft fairing [1] with the nine washers [8] and nine screws [7].
- (g) Apply the sealant, A00247 around the edge surfaces of the lower aft fairing [6].
- (h) Remove the unwanted sealant from the lower aft fairing [6] with a cotton wiper, G00034.

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

SUBTASK 49-81-31-410-002

- (1) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
318BR	Tailcone Access Door

SUBTASK 49-81-31-860-003

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

**LOM 402, 404, 406, 407, 411, 412, 415, 416, 422-434, 437-447, 450-999; LOM 420 POST SB  
737-33-1146**

SUBTASK 49-81-31-860-006

- (3) 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>
B	13	C00115	EXT LIGHTING ANTI COLLISION WHITE

**LOM ALL**

EFFECTIVITY  
**LOM ALL**

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**AIRCRAFT MAINTENANCE MANUAL**

SUBTASK 49-81-31-860-004

- (4) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.

———— END OF TASK ————

— EFFECTIVITY —  
**LOM ALL**

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AIRCRAFT MAINTENANCE MANUAL  
EDUCTOR HOUSING - INSPECTION/CHECK

**1. General**

- A. This procedure contains scheduled maintenance task data.
- B. This procedure has the task to do an inspection of the eductor housing. The eductor housing is installed on the aft end of the power section assembly and forward of the turbine exhaust port.

**TASK 49-81-41-200-801**

**2. Eductor Housing Inspection**

(Figure 601)

**NOTE:** This procedure is a scheduled maintenance task.

**A. References**

Reference	Title
49-11-00 P/B 401	APU POWER PLANT - REMOVAL/INSTALLATION

**B. Tools/Equipment**

Reference	Description
STD-1057	Air Source - Regulated, Dry Filtered, Compressed 60-105 PSIG (414-723.9 KPa)(22 SCFM)

**C. Consumable Materials**

Reference	Description	Specification
B00130	Alcohol - Isopropyl	TT-I-735
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)

**D. Location Zones**

Zone	Area
315	APU Compartment - Left
316	APU Compartment - Right

**E. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**F. Prepare for the Inspection**

**SUBTASK 49-81-41-010-002**

- (1) To open the access panel, do these steps:

Number	Name/Location
315A	APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.
- (b) Open the three latches.  
**NOTE:** Use this sequence: forward latch, aft latch, middle latch.
- (c) Open the APU Cowl Door, 315A.
- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.

EFFECTIVITY
LOM ALL

**49-81-41**



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**AIRCRAFT MAINTENANCE MANUAL**

- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

**G. Procedure**

SUBTASK 49-81-41-210-001

- (1) Do these steps to inspect the eductor housing [1] (Figure 601):

- (a) Visually examine the eductor housing [1] for missing and damaged bolts and nuts.

NOTE: You examine all of the sides of the eductor housing [1] that you can get access from the APU compartment.

- 1) If you find missing or damaged bolts and nuts, install the missing parts or replace the damaged parts.

- (b) Visually examine the eductor housing [1] for cracks and surface contamination.

- 1) No cracks are permitted. Replace the eductor housing [1] if you find cracks on the eductor housing.

NOTE: You replace the eductor housing with the APU removed from the airplane.  
Reference Honeywell Engine Manual 49-22-00 and Honeywell IPC 49-26-93.

- 2) If you find external surface contamination, clean the eductor housing:

- a) Clean the surfaces of the eductor housing with alcohol, B00130 and a cotton wiper, G00034.

- b) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057 to dry the surfaces of the eductor housing.

NOTE: It is recommended that you use a pressure of 60-90 psig (414-620 kPa) of air or nitrogen to dry the surfaces of the eductor housing.

SUBTASK 49-81-41-210-002

- (2) Do these steps to inspect the APU exciter support bracket on the eductor housing Figure 601:

- (a) Visually examine the exciter support bracket (including the weld joint).

- 1) Cracks less than 67% (2/3) of the bracket are permitted

NOTE: Repair the crack the next time the eductor housing is removed from the APU during a shop visit. Cracks cannot be repaired with the APU on the airplane.

- 2) If you see a crack that is more than 67% (2/3) of the bracket or more than 67% (2/3) of the weld joint, you must remove the APU (PAGEBLOCK 49-11-00/401).

- 3) If the crack (any length) extends into the plenum, you must remove the APU (PAGEBLOCK 49-11-00/401).

**H. Put the Airplane Back to Its Usual Condition**

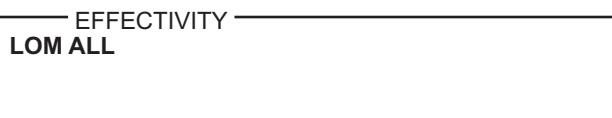
SUBTASK 49-81-41-410-002

- (1) To close the access panel, do these steps:

Number      Name/Location

315A            APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.



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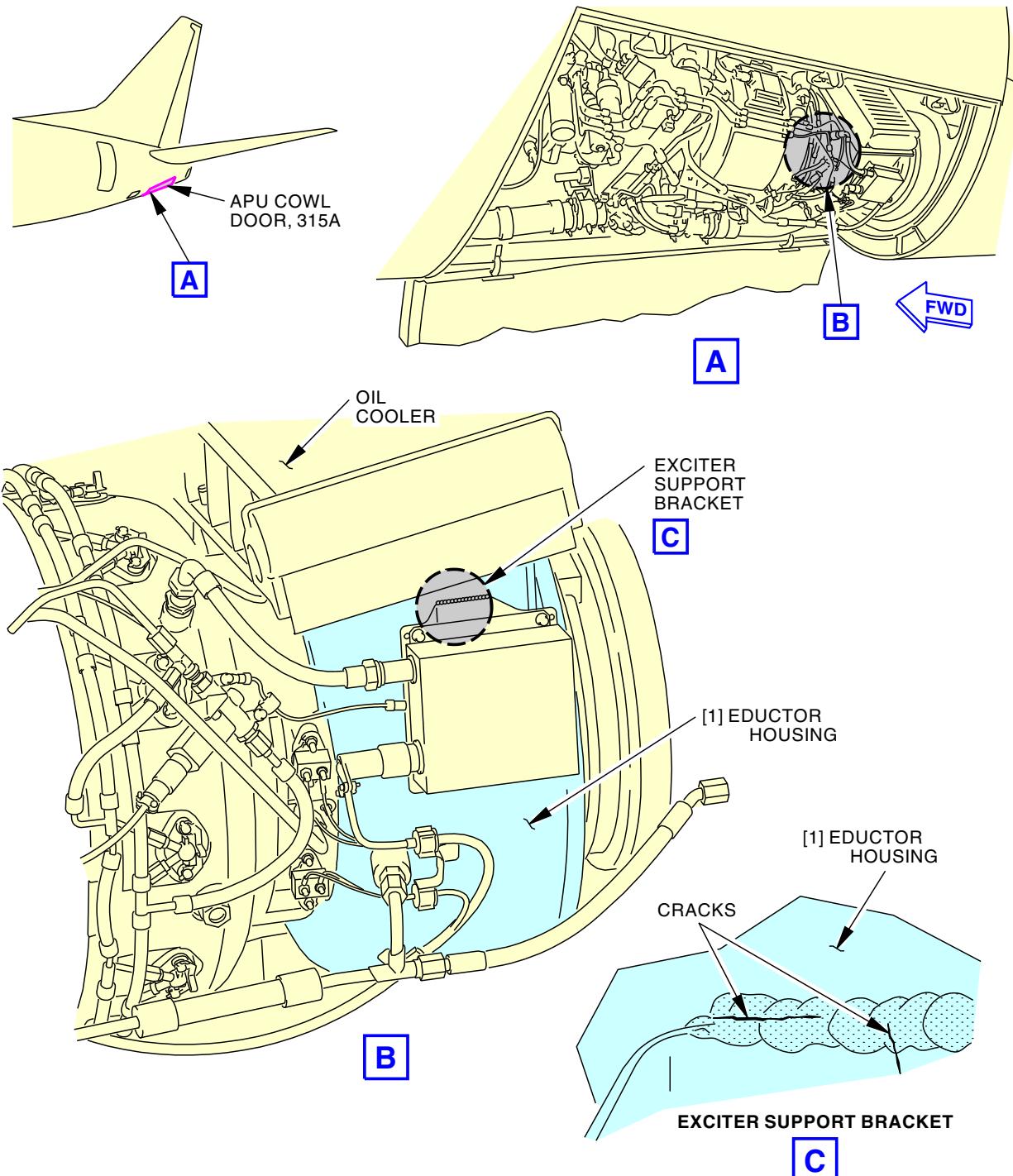
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

EFFECTIVITY  
LOM ALL

**49-81-41**



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**Eductor Housing Inspection**  
**Figure 601/49-81-41-990-801**

 EFFECTIVITY  
 LOM ALL

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**LUBE MODULE - REMOVAL/INSTALLATION**

**1. General**

- A. This procedure has these tasks:
  - (1) A removal of the lube module (fuel control unit installed on the APU)
  - (2) An installation of the lube module (fuel control unit installed on the APU)
  - (3) A removal of the lube module (fuel control unit removed from the APU)
  - (4) An installation of the lube module (fuel control unit removed from the APU).
- B. The lube module is installed on the APU gearbox.
- C. There are two procedures available for the removal and installation of the lube module. Each procedure is optional to the other. You can remove the lube module with the fuel control unit installed on the APU or the fuel control unit removed from the APU.

**TASK 49-91-11-000-801**

**2. Lube Module Removal**

**A. Lube Module Removal**

SUBTASK 49-91-11-020-001

- (1) Do one of these tasks to remove the lube module:
  - (a) Do this task: Lube Module Removal (Fuel Control Unit Installed on the APU),  
TASK 49-91-11-000-802.
  - (b) Do this task: Lube Module Removal (Fuel Control Unit Removed from the APU),  
TASK 49-91-11-000-803.

———— END OF TASK ————

**TASK 49-91-11-400-801**

**3. Lube Module Installation**

**A. Lube Module Installation**

SUBTASK 49-91-11-420-001

- (1) Do one of these tasks to install the lube module:
  - (a) Do this task: Lube Module Installation (Fuel Control Unit Installed on the APU),  
TASK 49-91-11-400-802.
  - (b) Do this task: Lube Module Installation (Fuel Control Unit Removed from the APU),  
TASK 49-91-11-400-803.

———— END OF TASK ————

**TASK 49-91-11-000-802**

**4. Lube Module Removal (Fuel Control Unit Installed on the APU)**

(Figure 401)

**A. Tools/Equipment**

Reference	Description
STD-203	Container - Oil Resistant, 1 U.S.-Gal (3.8 l)
STD-858	Tag - DO NOT OPERATE
STD-4049	Container - Fuel Resistant, 1 Gallon (4 Liter)

EFFECTIVITY  
LOM ALL

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**B. Consumable Materials**

<b>Reference</b>	<b>Description</b>	<b>Specification</b>
G00472	Twine - Impregnated Fibrous, Lacing And Tying	MIL-T-713

**C. Expendables/Parts**

<b>AMM Item</b>	<b>Description</b>	<b>AIPC Reference</b>	<b>AIPC Effectivity</b>
4	Fuel control unit	49-31-11-02-035	LOM ALL
16	Seal plate	49-91-11-02-015	LOM ALL

**D. Location Zones**

<b>Zone</b>	<b>Area</b>
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**E. Access Panels**

<b>Number</b>	<b>Name/Location</b>
315A	APU Cowl Door

**F. Prepare for the Removal**

SUBTASK 49-91-11-860-001

- (1) Make sure that the Auxiliary Power Unit (APU) master switch, on the P5 forward overhead panel, is in the OFF position.
  - (a) Install a DO NOT OPERATE tag, STD-858.

SUBTASK 49-91-11-860-002

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

**F/O Electrical System Panel, P6-2**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-91-11-010-005

- (3) To open the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Support the APU panel (cowl door) under the center latch.

- (b) Open the three latches.

NOTE: Use this sequence: forward latch, aft latch, middle latch.

- (c) Open the APU Cowl Door, 315A.

- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.

- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.

- (f) Disconnect the two hold-open rods from the two spring clips.

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- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

## G. Lube Module Removal

SUBTASK 49-91-11-020-002

- (1) Do these steps to disconnect the three electrical connector (P22) [3], electrical connector (P15) [8], electrical connector (P24) [9]:
  - (a) Disconnect the electrical connector (P22) [3] from the fuel control unit [4].
  - (b) Disconnect the electrical connector (P15) [8] from the oil temperature sensor.
    - 1) Remove the lockwire from the electrical connector (P15) [8].
  - (c) Disconnect the electrical connector (P24) [9] from the oil filter indicator.

NOTE: The oil filter indicator is also referred to as the filter bypass switch for the starter-generator.
  - (d) Install the caps on the electrical connectors to prevent contamination.

SUBTASK 49-91-11-020-003

- (2) Do these steps to disconnect the fuel control unit [4] from the lube module [7]:
  - (a) Put the 1 gallon (4 l) fuel resistant container, STD-4049 under the fuel supply tube [2].



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



**CAUTION**  
USE TWO WRENCHES TO LOOSEN THE TUBE COUPLING NUTS. USE ONE TO HOLD THE FITTING, AND THE OTHER TO LOOSEN THE COUPLING NUT. IF YOU DO NOT USE TWO WRENCHES, DAMAGE TO THE TUBES AND FITTING CAN OCCUR.

- (b) Disconnect the fuel supply tube [2] from the fitting [1] on the 1088 bulkhead.
- (c) Drain the fuel from the fuel supply tube [2] into the 1 gallon (4 l) fuel resistant container, STD-4049.
- (d) Install the plugs on the fuel supply tube [2] and fitting [1] on the 1088 bulkhead.
- (e) Remove the 1 gallon (4 l) fuel resistant container, STD-4049.
- (f) Remove the coupling clamp [6] that attaches the fuel control unit [4] to the lube module [7].
- (g) Put the 1 U.S.-gal (3.81 l) oil resistant container, STD-203, below the fuel control unit [4].
- (h) Carefully pull the fuel control unit [4] away from the lube module [7].
- (i) Move the fuel control unit [4] to the left side and near a support structure.

NOTE: The four fuel tubes will safely hold the fuel control unit while you attach twine, G00472, or equivalent to the fuel control unit and the support structure.

NOTE: The engine wire harness must not be used as a support structure for the fuel control unit. You can use the hinge on the oil fill cap as a support structure.
- (j) Use twine, G00472, or equivalent to temporarily attach the fuel control unit [4] to the support structure.

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- (k) Remove the packing [5] from the fuel control unit [4].  
1) Discard the packing [5].

SUBTASK 49-91-11-020-004



**DO NOT TOUCH THE COMPONENTS OF THE OIL SYSTEM IF THE APU IS HOT. THESE COMPONENTS STAY HOTTER THAN OTHER COMPONENTS.  
HOT COMPONENTS CAN BURN YOU.**

- (3) Do these steps to remove the lube module [7]:
- (a) Put the 1 U.S.-gal (3.81 l) oil resistant container, STD-203, below the lube module [7].
  - (b) Release the engine wire harness from the two spring clips [10].
  - (c) Open the quick-release clamp [12] on the bracket [11].
    - 1) Release the engine wire harness from the quick-release clamp [12].
  - (d) For wiring harness P/N 3888449-2, disconnect the ground jumper [19] from the bracket [11].
  - (e) Loosen the five bolts [15] that attach the lube module [7] to the APU gearbox.
  - (f) Make sure that the lube module [7] does not touch the fuel control unit [4] during the lube module removal.
  - (g) Carefully remove the lube module [7].
- NOTE: The lube module weighs approximately 9 lb (4.1 kg).
- (h) Remove the packing [18] from the lube module [7].
    - 1) Discard the packing [18].
  - (i) Use the 1 U.S.-gal (3.81 l) oil resistant container, STD-203, to drain the oil from the APU gearbox and lube module [7].
  - (j) Remove the three bolts [13] and three washers [14] that attach the bracket [11] to the lube module [7].
  - (k) Remove the bracket [11].
  - (l) Make sure that you install all necessary protection covers.
  - (m) Remove the 1 U.S.-gal (3.81 l) oil resistant container, STD-203.

SUBTASK 49-91-11-020-005

- (4) Do these steps to remove the seal plate [16] for the lube module:

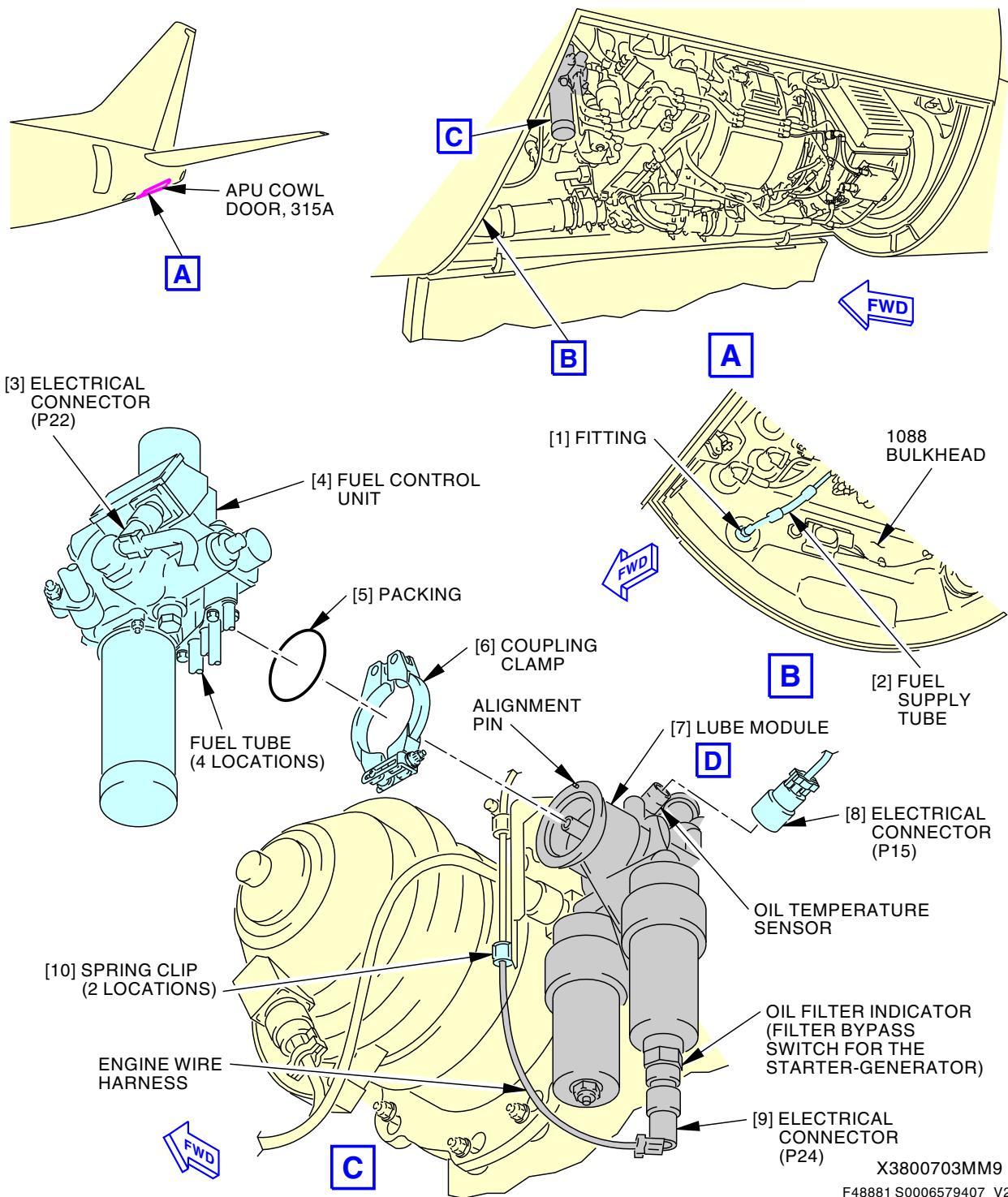
NOTE: It is necessary to replace the seal plate if you find signs of oil leakage around the lube module.

- (a) Remove the two screws [17] that attach the seal plate [16] to the lube module [7].
- (b) Remove the seal plate [16].
  - 1) Replace the seal plate [16].

———— END OF TASK ————

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LOM ALL

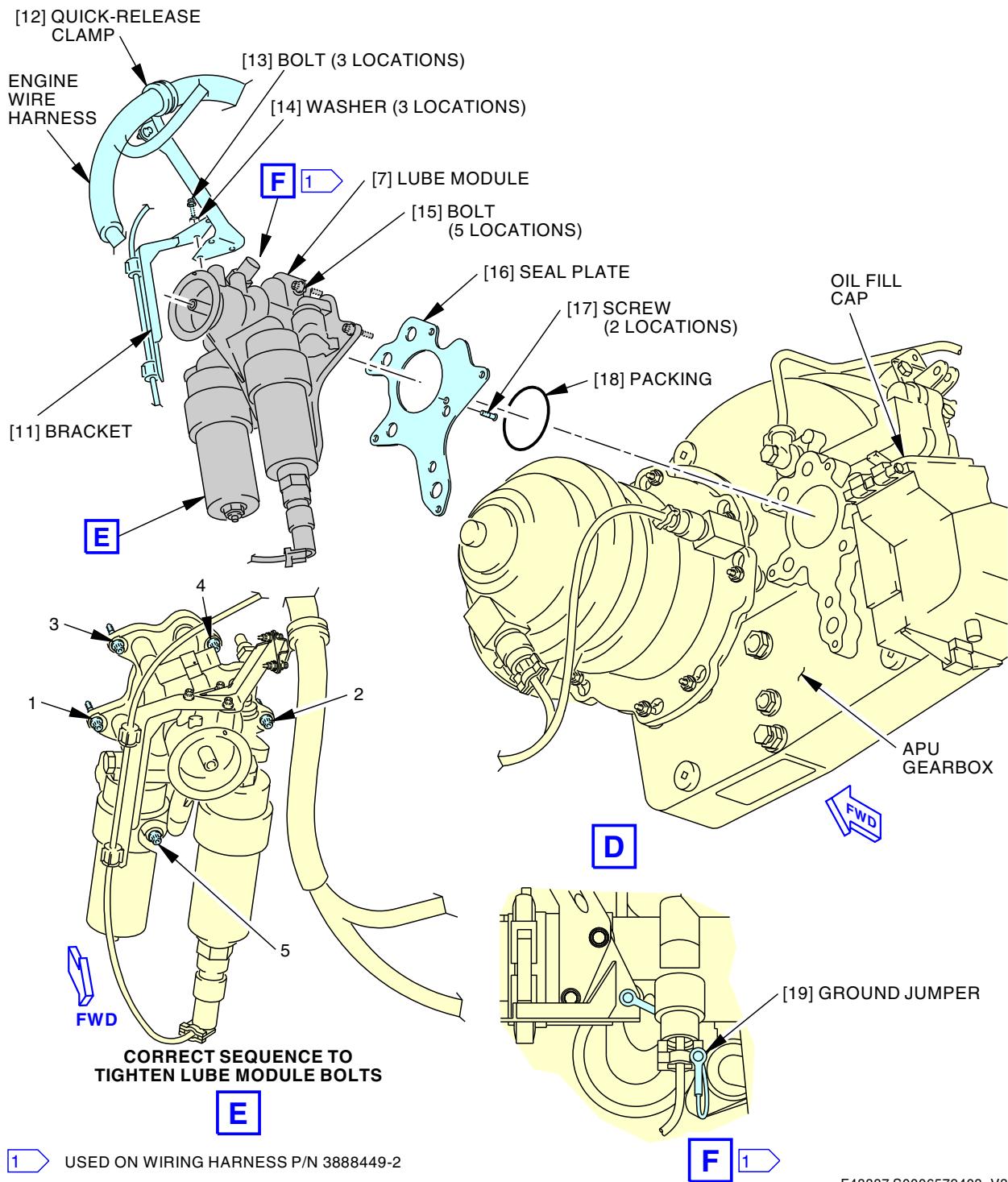
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**Lube Module Installation**  
Figure 401/49-91-11-990-801 (Sheet 1 of 2)

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**Lube Module Installation**  
**Figure 401/49-91-11-990-801 (Sheet 2 of 2)**

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**TASK 49-91-11-400-802**

**5. Lube Module Installation (Fuel Control Unit Installed on the APU)**

(Figure 401)

**A. References**

Reference	Title
12-13-31-610-803	Fill the APU Gearbox (P/B 301)
20-10-44-400-801	Lockwire, Cotter Pins, and Lockrings - Installation (P/B 401)
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)
49-61-00-700-801	APU BITE Procedure (P/B 201)
SWPM 20-20-00	ELECTRICAL BONDING PROCESSES

**B. Tools/Equipment**

Reference	Description
STD-592	Meter - Milliohms, Range from 0.001 to 100 milliohms
STD-858	Tag - DO NOT OPERATE

**C. Consumable Materials**

Reference	Description	Specification
B00130	Alcohol - Isopropyl	TT-I-735
D00341	Lubricant - Polyphenyl Ether, Vacuum Pump - Santovac 5	
D00504	Grease - Petrolatum	VV-P-236
D50011	Grease - Perfluoropolyether - Christo-lube MCG111	
D50055	Oil - Aircraft Turbine Engine Oil for AE 131-9[B] APU (AMM 12-13-31/301)	
G50021	Pad - General Purpose Scrubbing - Scotch-Brite 96W	
G51860	Lockwire - MS20995C10, Corrosion Resistant Steel - 0.010 Inch (0.254 mm) Diameter	

**D. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Fuel supply tube	49-31-11-02-030	LOM ALL
4	Fuel control unit	49-31-11-02-035	LOM ALL
5	Packing	49-31-11-02-005	LOM ALL
7	Lube module	49-91-11-02-005	LOM ALL
16	Seal plate	49-91-11-02-015	LOM ALL
18	Packing	49-91-11-02-120	LOM ALL

**E. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right



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F. Access Panels

Number	Name/Location
315A	APU Cowl Door

G. Lube Module Installation

SUBTASK 49-91-11-420-002

- (1) If the seal plate [16] was removed from the lube module [7], install the seal plate [16]:
  - (a) Lubricate the new seal plate [16] with a light coat of aircraft turbine engine oil, D50055.
  - (b) Install the seal plate [16] on the lube module [7] with the two screws [17].
    - 1) Tighten the two screws [17].

SUBTASK 49-91-11-420-003



**CAUTION**

REMOVE THE PROTECTION COVERS FROM THE OPENINGS AS NECESSARY. IF YOU DO NOT REMOVE THE PROTECTION COVERS, DAMAGE TO THE APU CAN OCCUR.

- (2) Do these steps to install the lube module [7]:
  - (a) If the seal plate [16] for the lube module is not lubricated, lubricate the seal plate [16] with a light coat of aircraft turbine engine oil, D50055.
  - (b) Install the bracket [11] on the lube module [7] with the three washers [14] and three bolts [13].
    - 1) For wiring harness P/N 3888449-2, connect the ground jumper [19] to the bracket [11].
      - a) Clean the mating surfaces of the ground jumper [19] and bracket [11] with alcohol, B00130, and Scotch-Brite 96W pad, G50021.
    - 2) Tighten the three bolts [13] to 50 in-lb (5.6 N·m).
  - (c) For wiring harness P/N 3888449-2, measure the electrical bonding resistance between the ground jumper [19] and bracket [11] (SWPM 20-20-00).
    - a) Use a milliohm meter .001 to 100 milliohms, STD-592.
    - b) Make sure that the electrical bonding resistance is 0.008 ohm (8.0 milliohm) or less.
  - (d) Lubricate the new packing [18] with a light coat of Santovac 5 lubricant, D00341, or aircraft turbine engine oil, D50055.
  - (e) Install the packing [18] in the groove of the drive spline for the lube module [7].
  - (f) Make sure that the lube module [7] does not touch the fuel control unit [4] during the lube module installation.
  - (g) Carefully install the lube module [7] in the Auxiliary Power Unit (APU) gearbox.

NOTE: The lube module weighs approximately 9 lb (4.1 kg).



**CAUTION**

TIGHTEN THE LUBE MODULE BOLTS IN THE CORRECT SEQUENCE. IF YOU DO NOT TIGHTEN THE BOLTS IN THE CORRECT ORDER, OIL LEAKAGE CAN OCCUR.

- (g) Tighten the five bolts [15] in the sequence given to 120 in-lb (13.6 N·m).

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- (h) Put the engine wire harness into the quick-release clamp [12] on the bracket [11].

NOTE: Grommets are installed on the engine wire harness to correctly position the engine wire harness on the quick-release clamp and two spring clips.

- 1) Close the quick-release clamp [12].

- (i) Put the engine wire harness into the two spring clips [10].

SUBTASK 49-91-11-420-004

- (3) Do these steps to connect the fuel control unit [4] to the lube module [7]:

- (a) Lubricate the drive spline for the fuel control unit [4] with a light coat of aircraft turbine engine oil, D50055.
- (b) Lubricate the new packing [5] with a light coat of Santovac 5 lubricant, D00341, or grease, D00504.
- (c) Install the packing [5] on the fuel control unit [4].
- (d) Put the coupling clamp [6] on the lube module [7].
- (e) Remove the temporary materials (cord or equivalent) that attach the fuel control unit [4] to the support structure.
- (f) Carefully put the fuel control unit [4] in its position on the lube module [7].
- (g) Open the coupling clamp [6] to permit the hole on the flange of the fuel control unit [4] to engage the alignment pin on the lube module flange.
- (h) Make sure that the alignment pin on the lube module [7] is aligned and engages the hole on the flange of the fuel control unit [4].
- (i) Put the coupling clamp [6] over the flanges of the fuel control unit [4] and lube module [7].
- 1) Tighten the part number 234-591-3030 coupling clamp [6] to  $60 \pm 5$  in-lb (6.78  $\pm 0.56$  N·m).
  - 2) Tighten the part number 234-511-9059 coupling clamp [6] to 20 in-lb (2.26 N·m).
- (j) Remove the plugs from the fuel supply tube [2] and fitting [1] on the 1088 bulkhead.
- (k) If Christo-lube MCG111 grease, D50011, is not used on the fitting [1], do these steps:
- 1) Apply a thin layer of aircraft turbine engine oil, D50055, on the threads of the fitting [1].



**CAUTION**

USE TWO WRENCHES TO LOOSEN THE TUBE COUPLING NUTS.  
USE ONE TO HOLD THE FITTING, AND THE OTHER TO LOOSEN  
THE COUPLING NUT. IF YOU DO NOT USE TWO WRENCHES,  
DAMAGE TO THE TUBES AND FITTING CAN OCCUR.

- 2) Connect the fuel supply tube [2] to the fitting [1] on the 1088 bulkhead.
    - a) Tighten the fuel supply tube [2] to 470 in-lb (53 N·m) - 510 in-lb (58 N·m).
- (l) If Christo-lube MCG111 grease, D50011, is used on the fitting [1], do these steps:
- 1) Lubricate the external threads of the fitting [1] with Christo-lube MCG111 grease, D50011.
- NOTE: The grease should be applied to the external threads only. The grease should not be applied to the internal threads or sealing surface of the fitting.
- 2) Connect the fuel supply tube [2] to the fitting [1] on the 1088 bulkhead.
    - a) Tighten the fuel supply tube [2] to 266 in-lb (30 N·m) - 294 in-lb (33 N·m).

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SUBTASK 49-91-11-420-005

- (4) Do these steps to connect the electrical connector (P22) [3], electrical connector (P15) [8], and electrical connector (P24) [9]:
- Remove the caps from the electrical connectors.
  - Connect the electrical connector (P24) [9] to the oil filter indicator.  
**NOTE:** The oil filter indicator is also referred to as the filter bypass switch for the starter-generator.
  - Connect the electrical connector (P15) [8] to the oil temperature sensor.
    - Install the MS20995C10 lockwire, G51860, on the electrical connector (P15) [8] (TASK 20-10-44-400-801).
  - Connect the electrical connector (P22) [3] to the fuel control unit [4].

SUBTASK 49-91-11-610-001

- (5) Do this task: Fill the APU Gearbox, TASK 12-13-31-610-803.

## H. Lube Module Installation Test

SUBTASK 49-91-11-860-003

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-91-11-860-004

- (2) Remove the DO NOT OPERATE tag, STD-858, from the APU master switch, on the P5 forward overhead panel.

SUBTASK 49-91-11-710-001

- (3) Do the installation test for the lube module [7]:

- Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
- Operate the APU for a minimum of five minutes.
- During the APU operation, examine the lube module [7] and fuel control unit [4] for signs of oil and fuel leakage.
- If there is oil or fuel leakage, do these steps to repair the leakage:
  - Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.
  - Install a DO NOT OPERATE tag, STD-858, on the APU master switch, on the P5 forward overhead panel.
  - Repair the cause of the oil or fuel leakage.
  - Remove the DO NOT OPERATE tag, STD-858, from the APU master switch, on the P5 forward overhead panel.
  - Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
  - During the APU operation, examine the lube module [7] and fuel control unit [4] for signs of oil and fuel leakage.





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- 7) If there is oil or fuel leakage, do the leakage repair again.
- (e) Do this task: APU BITE Procedure, TASK 49-61-00-700-801.
  - 1) If maintenance message(s) show for the APU oil system, APU fuel system, lube module [7] or fuel control unit [4], refer to the applicable Maintenance Message Index in the Fault Isolation Manual (FIM).
- (f) If it is not necessary to do other tasks, do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

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

SUBTASK 49-91-11-410-006

- (1) To close the access panel, do these steps:

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

315A	APU Cowl Door
------	---------------

- |     |  |
|-----|--|
| (a) | Remove the two retainer pins from the two hold-open rods in the APU compartment.   |
| (b) | Disconnect the two hold-open rods from the two brackets.   |
| (c) | Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.   |
| (d) | Install the retainer pin in the rod end of the forward hold-open rod.  |
| (e) | Install the retainer pin to the spring clip on the aft hold-open rod.  |
| (f) | Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance. <ol style="list-style-type: none"><li>1) Make sure that the installation of fire shield has not shifted.</li><li>2) If it is necessary, hand form the insulation blanket to obtain a better clearance.</li></ol> |
| (g) | Close the APU Cowl Door, 315A.   |
| (h) | Close the three latches.   |

NOTE: Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

### TASK 49-91-11-000-803

#### 6. Lube Module Removal (Fuel Control Unit Removed from the APU) (Figure 401)

##### A. References

<u>Reference</u>	<u>Title</u>
49-31-11-000-801	Fuel Control Unit Removal (P/B 401)

##### B. Tools/Equipment

<u>Reference</u>	<u>Description</u>
STD-203	Container - Oil Resistant, 1 U.S.-Gal (3.8 l)
STD-858	Tag - DO NOT OPERATE

##### C. Expendables/Parts

<u>AMM Item</u>	<u>Description</u>	<u>AIPC Reference</u>	<u>AIPC Effectivity</u>
16	Seal plate	49-91-11-02-015	LOM ALL

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**D. Location Zones**

<b>Zone</b>	<b>Area</b>
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**E. Access Panels**

<b>Number</b>	<b>Name/Location</b>
315A	APU Cowl Door

**F. Prepare for the Removal**

SUBTASK 49-91-11-860-005

- (1) Make sure that the Auxiliary Power Unit (APU) master switch, on the P5 forward overhead panel, is in the OFF position.
  - (a) Install a DO NOT OPERATE tag, STD-858.

SUBTASK 49-91-11-860-006

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

**F/O Electrical System Panel, P6-2**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-91-11-010-006

- (3) To open the access panel, do these steps:

**Number**      **Name/Location**

315A      APU Cowl Door

- (a) Support the APU panel (cowl door) under the center latch.

- (b) Open the three latches.

NOTE: Use this sequence: forward latch, aft latch, middle latch.

- (c) Open the APU Cowl Door, 315A.

- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.

- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.

- (f) Disconnect the two hold-open rods from the two spring clips.

- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.

- (h) Install the two retainer pins in the two rod ends.

**G. Lube Module Removal**

SUBTASK 49-91-11-020-006

- (1) Do these steps to disconnect the electrical connector (P15) [8], electrical connector (P24) [9]:

- (a) Disconnect the electrical connector (P15) [8] from the oil temperature sensor.

- 1) Remove the lockwire from the electrical connector (P15) [8].

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- (b) Disconnect the electrical connector (P24) [9] from the oil filter indicator.

NOTE: The oil filter indicator is also referred to as the filter bypass switch for the starter-generator.

- (c) Install the caps on the electrical connectors to prevent contamination.

SUBTASK 49-91-11-020-007

- (2) Do this task: Fuel Control Unit Removal, TASK 49-31-11-000-801.

SUBTASK 49-91-11-020-008



**WARNING**

DO NOT TOUCH THE COMPONENTS OF THE OIL SYSTEM IF THE APU IS HOT. THESE COMPONENTS STAY HOTTER THAN OTHER COMPONENTS.  
HOT COMPONENTS CAN BURN YOU.

- (3) Do these steps to remove the lube module [7]:

- (a) Put the 1 U.S.-gal (3.81 l) oil resistant container, STD-203 below the lube module [7].

- (b) Release the engine wire harness from the two spring clips [10].

- (c) Open the quick-release clamp [12] on the bracket [11].

- 1) Release the engine wire harness from the quick-release clamp [12].

- (d) Loosen the five bolts [15] that attach the lube module [7] to the APU gearbox.

- (e) Carefully remove the lube module [7].

NOTE: The lube module weighs approximately 9 lb (4.1 kg).

- (f) Remove the packing [18] from the lube module [7].

- 1) Discard the packing [18].

- (g) Use the 1 U.S.-gal (3.81 l) oil resistant container, STD-203, to drain the oil from the APU gearbox and lube module [7].

- (h) Remove the three bolts [13] and three washers [14] that attach the bracket [11] to the lube module [7].

- (i) Disconnect the ground jumper [19] from the bracket [11].

- (j) Remove the bracket [11].

- (k) Make sure you install all necessary protection covers.

- (l) Remove the 1 U.S.-gal (3.81 l) oil resistant container, STD-203.

SUBTASK 49-91-11-020-009

- (4) Do these steps to remove the seal plate [16] for the lube module:

NOTE: It is necessary to replace the seal plate if you find signs of oil leakage around the lube module.

- (a) Remove the two screws [17] that attach the seal plate [16] to the lube module [7].

- (b) Remove the seal plate [16].

- 1) Replace the seal plate [16].

———— END OF TASK ————

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**TASK 49-91-11-400-803**

**7. Lube Module Installation (Fuel Control Unit Removed from the APU)**

(Figure 401)

**A. References**

Reference	Title
12-13-31-610-803	Fill the APU Gearbox (P/B 301)
20-10-44-400-801	Lockwire, Cotter Pins, and Lockrings - Installation (P/B 401)
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)
49-31-11-400-801	Fuel Control Unit Installation (P/B 401)
49-61-00-700-801	APU BITE Procedure (P/B 201)
SWPM 20-20-00	ELECTRICAL BONDING PROCESSES

**B. Tools/Equipment**

Reference	Description
STD-592	Meter - Milliohms, Range from 0.001 to 100 milliohms
STD-858	Tag - DO NOT OPERATE

**C. Consumable Materials**

Reference	Description	Specification
B00130	Alcohol - Isopropyl	TT-I-735
D00341	Lubricant - Polyphenyl Ether, Vacuum Pump - Santovac 5	
D50055	Oil - Aircraft Turbine Engine Oil for AE 131-9[B] APU (AMM 12-13-31/301)	
G50021	Pad - General Purpose Scrubbing - Scotch-Brite 96W	
G51860	Lockwire - MS20995C10, Corrosion Resistant Steel - 0.010 Inch (0.254 mm) Diameter	

**D. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
7	Lube module	49-91-11-02-005	LOM ALL
16	Seal plate	49-91-11-02-015	LOM ALL
18	Packing	49-91-11-02-120	LOM ALL

**E. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**F. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**G. Lube Module Installation**

SUBTASK 49-91-11-420-006

- (1) If the seal plate [16] was removed from the lube module [7], install the seal plate:

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- (a) Lubricate the new seal plate [16] with a light coat of aircraft turbine engine oil, D50055.
- (b) Install the seal plate [16] on the lube module [7] with the two screws [17].
  - 1) Tighten the two screws [17].

SUBTASK 49-91-11-420-007



**CAUTION**

REMOVE THE PROTECTION COVERS FROM THE OPENINGS IF NECESSARY. IF YOU DO NOT REMOVE THE PROTECTION COVERS, DAMAGE TO THE EQUIPMENT CAN OCCUR.

- (2) Do these steps to install the lube module [7]:
  - (a) If the seal plate [16] for the lube module is not lubricated, lubricate the seal plate with a light coat of aircraft turbine engine oil, D50055.
  - (b) Install the bracket [11] on the lube module [7] with the three washers [14] and three bolts [13].
    - 1) For wiring harness P/N 3888449-2, connect the ground jumper [19] to the bracket [11].
      - a) Clean the mating surfaces of the ground jumper [19] and bracket [11] with alcohol, B00130, and Scotch-Brite 96W pad, G50021.
    - 2) Tighten the three bolts [13] to 50 in-lb (5.6 N·m).
    - 3) For wiring harness P/N 3888449-2, measure the electrical bonding resistance between the ground jumper [19] and bracket [11] (SWPM 20-20-00).
      - a) Use milliohm meter .001 to 100 milliohms, STD-592.
      - b) Make sure that the electrical bonding resistance is 0.008 ohm (8.0 milliohm) or less.
  - (c) Lubricate the new packing [18] with a light coat of Santovac 5 lubricant, D00341, or aircraft turbine engine oil, D50055.
  - (d) Install the packing [18] in the groove of the drive spline for the lube module [7].
  - (e) Install the lube module [7] in the Auxiliary Power Unit (APU) gearbox.

NOTE: The lube module weighs approximately 9 lb (4 kg).



**CAUTION**

TIGHTEN THE LUBE MODULE BOLTS IN THE CORRECT SEQUENCE. IF YOU DO NOT TIGHTEN THE BOLTS IN THE CORRECT ORDER, OIL LEAKAGE CAN OCCUR.

- (f) Tighten the five bolts [15] in the sequence given to 120 in-lb (13.6 N·m).
  - (g) Put the engine wire harness into the quick-release clamp [12] on the bracket [11].
- NOTE: Grommets are installed on the engine wire harness to correctly position the engine wire harness on the quick-release clamp and the two spring clips.
- 1) Close the quick-release clamp [12].
- (h) Put the engine wire harness into the two spring clips [10].

SUBTASK 49-91-11-420-008

- (3) Do this task: Fuel Control Unit Installation, TASK 49-31-11-400-801.

SUBTASK 49-91-11-420-009

- (4) Do these steps to connect the electrical connector (P15) [8], electrical connector (P24) [9]:

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- (a) Remove the caps from the electrical connectors.
- (b) Connect the electrical connector (P15) [8] to the oil temperature sensor.
  - 1) Install the MS20995C10 lockwire, G51860, on the electrical connector (P15) [8] (TASK 20-10-44-400-801).
- (c) Connect the electrical connector (P24) [9] to the oil filter indicator.

NOTE: The oil filter indicator is also referred to as the filter bypass switch for the starter-generator.

SUBTASK 49-91-11-610-002

- (5) Do this task: Fill the APU Gearbox, TASK 12-13-31-610-803.

## H. Lube Module Installation Test

SUBTASK 49-91-11-860-007

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-91-11-860-008

- (2) Remove the DO NOT OPERATE tag, STD-858, from the APU master switch, on the P5 forward overhead panel.

SUBTASK 49-91-11-710-002

- (3) Do the installation test for the lube module:

- (a) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
- (b) Operate the APU for a minimum of five minutes.
- (c) During the APU operation, examine the lube module and fuel control unit for signs of oil and fuel leakage.
- (d) If you find oil or fuel leakage, do these steps to repair the leakage:
  - 1) Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.
  - 2) Install a DO NOT OPERATE tag, STD-858, to the APU master switch, on the P5 forward overhead panel.
  - 3) Repair the cause of the oil or fuel leakage.
  - 4) Remove the DO NOT OPERATE tag, STD-858, from the APU master switch, on the P5 forward overhead panel.
  - 5) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
  - 6) During the APU operation, examine the lube module and fuel control unit for signs of oil and fuel leakage.
  - 7) If you find oil or fuel leakage, do the leakage repair again.
- (e) Do this task: APU BITE Procedure, TASK 49-61-00-700-801.
  - 1) If maintenance message(s) show for the APU oil system, APU fuel system, lube module or fuel control unit, refer to the applicable Maintenance Message Index in the FIM.

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- (f) If it is not necessary to do other tasks, do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

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

SUBTASK 49-91-11-410-007

- (1) To close the access panel, do these steps:

Number      Name/Location

315A      APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

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LUBE MODULE - INSPECTION/CHECK

**1. General**

- A. This procedure contains scheduled maintenance task data.
- B. This procedure has the task to do an inspection of the lube module and the two electrical connectors.

**TASK 49-91-11-200-801**

**2. Lube Module Inspection**

**A. References**

Reference	Title
49-91-11-000-801	Lube Module Removal (P/B 401)
49-91-11-400-801	Lube Module Installation (P/B 401)

**B. Location Zones**

Zone	Area
315	APU Compartment - Left
316	APU Compartment - Right

**C. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**D. Prepare for the Inspection**

SUBTASK 49-91-11-010-007

- (1) To open the access panel, do these steps:

Number	Name/Location
315A	APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.
- (b) Open the three latches.  
*NOTE:* Use this sequence: forward latch, aft latch, middle latch.
- (c) Open the APU Cowl Door, 315A.
- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

**E. Procedure**

SUBTASK 49-91-11-210-001

- (1) Do these steps to inspect the lube module and the two electrical connectors:
  - (a) Visually examine the lube module and the two electrical connectors for tightness and damage.
  - (b) Visually examine the oil lines for general condition and security.

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- (c) Visually examine the lube module for oil leakage.
- (d) If there are signs of oil leakage from the lube module, replace the lube module. These are the tasks:
  - Lube Module Removal, TASK 49-91-11-000-801
  - Lube Module Installation, TASK 49-91-11-400-801
- (e) If there is no oil leakage, the lube module is satisfactory.

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

SUBTASK 49-91-11-410-005

- (1) To close the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

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OIL FILTER ELEMENTS - REMOVAL/INSTALLATION

**1. General**

- A. This procedure has these tasks:
  - (1) A removal of the lube filter element
  - (2) An installation of the lube filter element
  - (3) A removal of the starter-generator filter element
  - (4) An installation of the starter-generator filter element.
- B. The starter-generator filter element is also referred to as the starter-generator scavenge filter element.
- C. The oil filter elements are installed on the lube module.

**TASK 49-91-12-000-801**

**2. Oil Filter Elements Removal**

**A. Oil Filter Elements Removal**

SUBTASK 49-91-12-020-001

- (1) Do these tasks to remove the oil filter elements:
  - (a) Do this task: Lube Filter Element Removal, TASK 49-91-12-000-802.
  - (b) Do this task: Starter-Generator Filter Element Removal, TASK 49-91-12-000-803.

———— END OF TASK ————

**TASK 49-91-12-400-801**

**3. Oil Filter Elements Installation**

**A. Oil Filter Elements Installation**

SUBTASK 49-91-12-420-001

- (1) Do these tasks to install the oil filter elements:
  - (a) Do this task: Lube Filter Element Installation, TASK 49-91-12-400-802.
  - (b) Do this task: Starter-Generator Filter Element Installation, TASK 49-91-12-400-803.

———— END OF TASK ————

**TASK 49-91-12-000-802**

**4. Lube Filter Element Removal**

(Figure 401)

**A. Tools/Equipment**

Reference	Description
STD-203	Container - Oil Resistant, 1 U.S.-Gal (3.8 l)

**B. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

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C. Access Panels

<u>Number</u>	<u>Name/Location</u>
315A	APU Cowl Door

D. Prepare for the Removal

SUBTASK 49-91-12-860-001

- (1) Make sure the APU master switch on the P5 forward overhead panel is OFF and install a DO-NOT-OPERATE tag.

SUBTASK 49-91-12-860-002

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

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-91-12-010-003

- (3) To open the access panel, do these steps:

Number    Name/Location

315A      APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.
- (b) Open the three latches.  
*NOTE:* Use this sequence: forward latch, aft latch, middle latch.
- (c) Open the APU Cowl Door, 315A.
- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

E. Lube Filter Element Removal

SUBTASK 49-91-12-020-002



**WARNING**

DO NOT TOUCH THE COMPONENTS OF THE OIL SYSTEM IF THE APU IS HOT. THESE COMPONENTS STAY HOTTER THAN OTHER COMPONENTS. HOT COMPONENTS CAN BURN YOU.



**WARNING**

DO NOT LET HOT OIL GET ON YOU. PUT ON PROTECTIVE CLOTHES, GOGGLES, AND EQUIPMENT OR LET THE APU BECOME COOL. HOT OIL CAN BURN YOU.

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(WARNING PRECEDES)



**WARNING**

DO NOT LET THE OIL STAY ON YOUR SKIN. YOU CAN ABSORB POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.



**CAUTION**

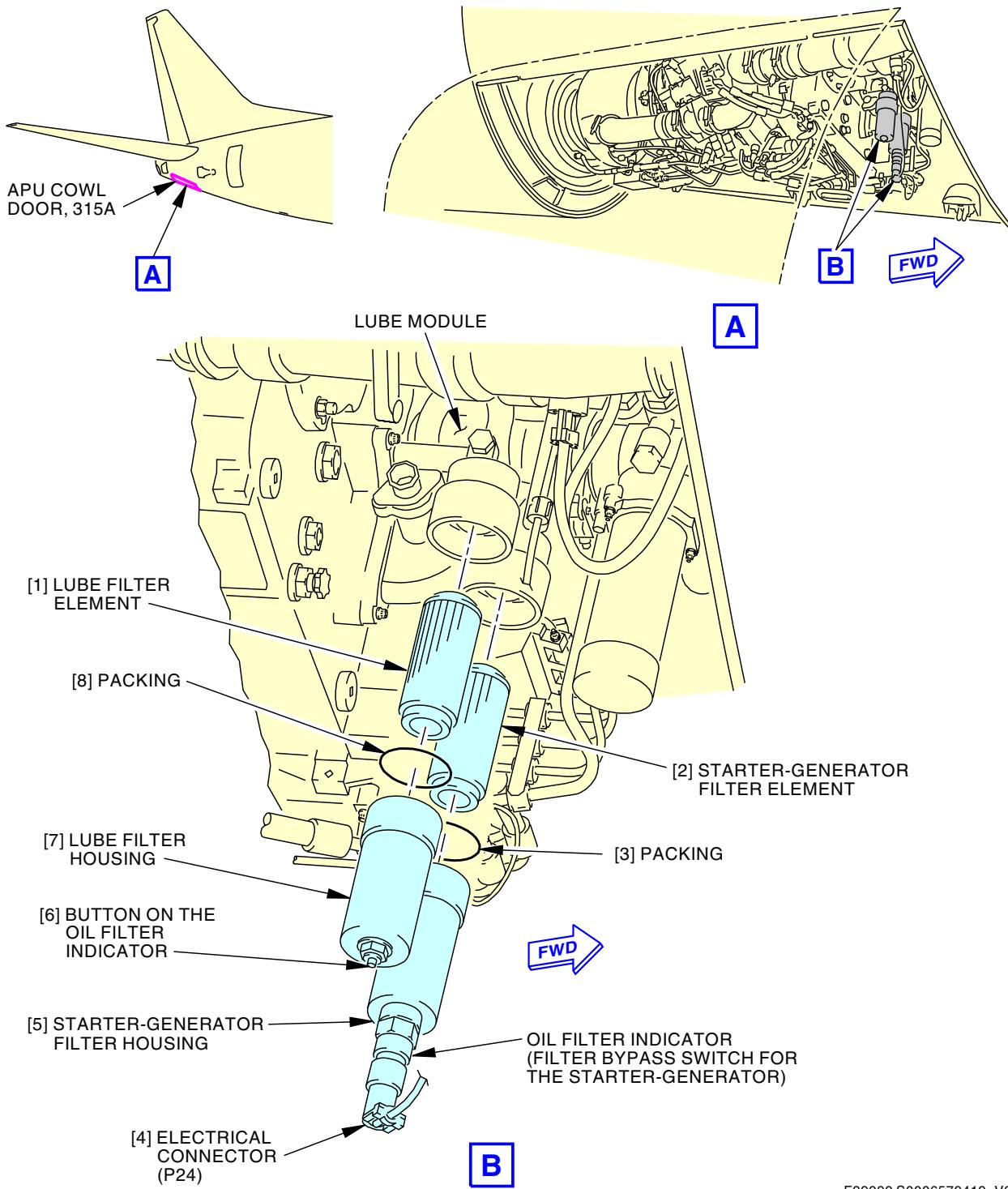
DO NOT LET OIL GET ON THE APU OR OTHER COMPONENTS.  
IMMEDIATELY CLEAN THE OIL WHEN IT FALLS ON THEM. OIL CAN CAUSE DAMAGE TO PAINT AND RUBBER.

- (1) Do these steps to remove the lube filter element [1]:
  - (a) Put the 1 U.S.-gal (3.81 l) oil resistant container, STD-203 below the lube module.
  - (b) Remove the lube filter housing [7].
  - (c) Remove the packing [8] from the lube filter housing [7].
    - 1) Discard the packing [8].
  - (d) Remove the lube filter element [1].
    - 1) Discard the lube filter element [1].
  - (e) Make sure you install all necessary protection covers.
  - (f) Remove the 1 U.S.-gal (3.81 l) oil resistant container, STD-203.

———— END OF TASK ————

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**Oil Filter Elements Installation**  
**Figure 401/49-91-12-990-801**

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**TASK 49-91-12-400-802**

**5. Lube Filter Element Installation**

(Figure 401)

**A. References**

Reference	Title
12-13-31-200-801	APU Oil Level Inspection (P/B 301)
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)
49-61-00-700-801	APU BITE Procedure (P/B 201)

**B. Tools/Equipment**

Reference	Description
STD-1057	Air Source - Regulated, Dry Filtered, Compressed 60-105 PSIG (414-723.9 KPa)(22 SCFM)

**C. Consumable Materials**

Reference	Description	Specification
B00130	Alcohol - Isopropyl	TT-I-735
D00341	Lubricant - Polyphenyl Ether, Vacuum Pump - Santovac 5	
D50055	Oil - Aircraft Turbine Engine Oil for AE 131-9[B] APU (AMM 12-13-31/301)	
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)

**D. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Lube filter element	49-91-12-02-070	LOM ALL
7	Lube filter housing	49-91-12-02-055	LOM ALL
8	Packing	49-91-12-02-065	LOM ALL

**E. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**F. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**G. Procedure**

SUBTASK 49-91-12-110-001

- (1) Do these steps to clean the lube filter housing [7]:
  - (a) Clean the lube filter housing [7] with alcohol, B00130, and a cotton wiper, G00034.

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- (b) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057, to dry the lube filter housing [7].

NOTE: It is recommended that you use a pressure of 60-90 psig (414-620 kPa) of air or nitrogen to dry the lube filter housing [7].

SUBTASK 49-91-12-420-002



**CAUTION**

REMOVE THE PROTECTION COVERS FROM THE OPENINGS WHEN NECESSARY. IF YOU DO NOT REMOVE THE PROTECTION COVERS, DAMAGE TO THE APU CAN OCCUR.

- (2) Do these steps to install the lube filter element [1]:

- (a) If the button [6] on the oil filter element has extended, turn the lube filter housing [7] with the opening in the down position and push in the button.

NOTE: A locking ball in the oil filter indicator prevents the button to be pushed in if the opening is in the up position.

**LOM ALL POST AEROCONTROLEX S; LUBE MODULE POST-AEROCONTROLEX SB  
4131020-49-01**

NOTE: There are three locations on the lube filter housing with an etched "INVERT TO RESET" marking.

**LOM ALL**

- (b) Lubricate the packing [8] with a light coat of Santovac 5 lubricant, D00341, or aircraft turbine engine oil, D50055.
- (c) Install the packing [8] on the lube filter housing [7].
- (d) Lubricate the packing on the new lube filter element [1] with a light coat of Santovac 5 lubricant, D00341, or aircraft turbine engine oil, D50055.
- (e) Install the lube filter element [1] in the lube module.
- (f) Install the lube filter housing [7] on the lube module.
- 1) Tighten the lube filter housing [7] to 30-40 inch-pounds (3.4-4.5 newton-meters).
- (g) Make sure the APU oil system is full. To check the oil level, do this task: APU Oil Level Inspection, TASK 12-13-31-200-801.

**H. Lube Filter Element Installation Test**

SUBTASK 49-91-12-860-003

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-91-12-860-004

- (2) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.

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SUBTASK 49-91-12-790-001

- (3) Do the installation test for the lube filter element:
  - (a) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
  - (b) Operate the APU for a minimum of five minutes.
  - (c) During the APU operation, examine the lube filter housing for signs of oil leakage.
  - (d) If you find oil leakage, do these steps to repair the leakage:
    - 1) Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.
    - 2) Install a DO-NOT-OPERATE tag to the APU master switch on the P5 forward overhead panel.
    - 3) Repair the cause of the oil leakage.
    - 4) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.
    - 5) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
    - 6) During the APU operation, examine the lube filter housing for signs of oil leakage.
    - 7) If you find oil leakage, do the leakage repair again.
  - (e) Do this task: APU BITE Procedure, TASK 49-61-00-700-801.
    - 1) Make sure that it passes. If it does not pass, refer to the FIM and do the applicable procedure(s) to correct the problem.
  - (f) If it is not necessary to do other tasks, do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

SUBTASK 49-91-12-640-001

- (4) Make sure the APU oil system is full. To check the oil level, do this task: APU Oil Level Inspection, TASK 12-13-31-200-801.

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

SUBTASK 49-91-12-410-003

- (1) To close the access panel, do these steps:

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

315A	APU Cowl Door
------	---------------

- (a) Remove the two retainer pins from the two hold-open rods in the Auxiliary Power Unit (APU) compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.



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- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

**TASK 49-91-12-000-803**

**6. Starter-Generator Filter Element Removal**

(Figure 401)

**A. Tools/Equipment**

<b>Reference</b>	<b>Description</b>
STD-203	Container - Oil Resistant, 1 U.S.-Gal (3.8 l)

**B. Location Zones**

<b>Zone</b>	<b>Area</b>
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**C. Access Panels**

<b>Number</b>	<b>Name/Location</b>
315A	APU Cowl Door

**D. Prepare for the Removal**

SUBTASK 49-91-12-860-005

- (1) Make sure that the APU master switch on the P5 forward overhead panel is OFF and install a DO-NOT-OPERATE tag.

SUBTASK 49-91-12-860-006

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

**F/O Electrical System Panel, P6-2**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-91-12-010-004

- (3) To open the access panel, do these steps:

**Number**    **Name/Location**

315A      APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.

- (b) Open the three latches.

NOTE: Use this sequence: forward latch, aft latch, middle latch.

- (c) Open the APU Cowl Door, 315A.

- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.

- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.

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- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

**E. Starter-Generator Filter Element Removal**

SUBTASK 49-91-12-020-003



**WARNING**

DO NOT TOUCH THE COMPONENTS OF THE OIL SYSTEM IF THE APU IS HOT. THESE COMPONENTS STAY HOTTER THAN OTHER COMPONENTS. HOT COMPONENTS CAN BURN YOU.



**WARNING**

DO NOT LET HOT OIL GET ON YOU. PUT ON PROTECTIVE CLOTHES, GOGGLES, AND EQUIPMENT OR LET THE APU BECOME COOL. HOT OIL CAN BURN YOU.



**WARNING**

DO NOT LET THE OIL STAY ON YOUR SKIN. YOU CAN ABSORB POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.



**CAUTION**

DO NOT LET OIL GET ON THE APU OR OTHER COMPONENTS. IMMEDIATELY CLEAN THE OIL WHEN IT FALLS ON THEM. OIL CAN CAUSE DAMAGE TO PAINT AND RUBBER.

- (1) Do these steps to remove the starter-generator filter element [2]:
  - (a) Put the 1 U.S.-gal (3.81 l) oil resistant container, STD-203 below the lube module.
  - (b) Disconnect the electrical connector (P24) [4] from the oil filter indicator.  
*NOTE:* The oil filter indicator is also referred to as the filter bypass switch for the starter-generator.
  - (c) Remove the starter-generator filter housing [5].
  - (d) Remove the packing [3] from the starter-generator filter housing [5].
    - 1) Discard the packing [3].
  - (e) Remove the starter-generator filter element [2].
    - 1) Discard the starter-generator filter element [2].
  - (f) Make sure that you install all necessary protection covers.
  - (g) Remove the 1 U.S.-gal (3.81 l) oil resistant container, STD-203.

———— END OF TASK ————

**TASK 49-91-12-400-803**

**7. Starter-Generator Filter Element Installation**

(Figure 401)

**A. References**

Reference	Title
12-13-31-200-801	APU Oil Level Inspection (P/B 301)

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(Continued)

Reference	Title
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)
49-61-00-700-801	APU BITE Procedure (P/B 201)

**B. Tools/Equipment**

Reference	Description
STD-1057	Air Source - Regulated, Dry Filtered, Compressed 60-105 PSIG (414-723.9 KPa)(22 SCFM)

**C. Consumable Materials**

Reference	Description	Specification
B00130	Alcohol - Isopropyl	TT-I-735
D00341	Lubricant - Polyphenyl Ether, Vacuum Pump - Santovac 5	
D50055	Oil - Aircraft Turbine Engine Oil for AE 131-9[B] APU (AMM 12-13-31/301)	
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)

**D. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Filter element	49-91-12-02-070	LOM ALL
3	Packing	49-91-12-02-065	LOM ALL
5	Filter housing	49-91-12-02-060	LOM ALL

**E. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**F. Access Panels**

Number	Name/Location
315A	APU Cowl Door

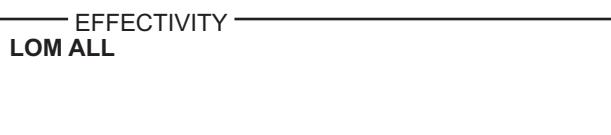
**G. Procedure**

SUBTASK 49-91-12-110-002

- (1) Do these steps to clean the starter-generator filter housing [5]:

- (a) Clean the starter-generator filter housing [5] with alcohol, B00130 and a cotton wiper, G00034.
- (b) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057 to dry the starter-generator filter housing [5].

NOTE: It is recommended that you use a pressure of 60-90 psig (414-620 kPa) of air or nitrogen to dry the starter-generator filter housing [5].



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SUBTASK 49-91-12-420-003



**CAUTION**

REMOVE THE PROTECTION COVERS FROM THE OPENINGS AS NECESSARY. IF YOU DO NOT REMOVE THE PROTECTION COVERS, DAMAGE TO THE APU CAN OCCUR.

- (2) Do these steps to install the starter-generator filter element [2]:
- Lubricate the packing [3] with a light coat of Santovac 5 lubricant, D00341 or aircraft turbine engine oil, D50055.
  - Install the packing [3] on the starter-generator filter housing [5].
  - Lubricate the packing on the new starter-generator filter element [2] with a light coat of Santovac 5 lubricant, D00341 or aircraft turbine engine oil, D50055.
  - Install the starter-generator filter element [2] in the lube module.
  - Install the starter-generator filter housing [5] on the lube module.
    - Tighten the starter-generator filter housing [5] to 30 in-lb (3.4 N·m) to 40 in-lb (4.5 N·m).
  - Connect the electrical connector (P24) [4] to the oil filter indicator.  
NOTE: The oil filter indicator is also referred to as the filter bypass switch for the starter-generator.
  - Make sure that the APU oil system is full. To check the oil level, do this task: APU Oil Level Inspection, TASK 12-13-31-200-801.

## H. Starter-Generator Filter Element Installation Test

SUBTASK 49-91-12-860-007

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-91-12-860-008

- (2) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.

SUBTASK 49-91-12-710-001

- (3) Do the installation test for the starter-generator filter element:
- Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
  - Operate the APU for a minimum of five minutes.
  - During the APU operation, examine the starter-generator filter housing for signs of oil leakage.
  - If you find oil leakage, do these steps to repair the leakage:
    - Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.
    - Install a DO-NOT-OPERATE tag to the APU master switch on the P5 forward overhead panel.

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- 3) Repair the cause of the oil leakage.
  - 4) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.
  - 5) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
  - 6) During the APU operation, examine the starter-generator filter housing for signs of oil leakage.
  - 7) If you find oil leakage, do the leakage repair again.
- (e) Do this task: APU BITE Procedure, TASK 49-61-00-700-801.
- 1) Make sure that it passes. If it does not pass, refer to the FIM and do the applicable procedure(s) to correct the problem.
- (f) If it is not necessary to do other tasks, do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

SUBTASK 49-91-12-640-002

- (4) Make sure that the APU oil system is full. To check the oil level, do this task: APU Oil Level Inspection, TASK 12-13-31-200-801.

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

SUBTASK 49-91-12-410-004

- (1) To close the access panel, do these steps:

**Number**      **Name/Location**

315A      APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the Auxiliary Power Unit (APU) compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.

- (g) Close the APU Cowl Door, 315A.

- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

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**OIL FILTER INDICATOR - SERVICING**

**1. General**

- A. This procedure has the task to do the servicing of the oil filter indicator on the lube filter housing. When the red button on the oil filter indicator has extended, the lube filter element is clogged. To put the oil filter indicator back to its serviceable condition, you must turn the lube filter housing with the opening in the down position and push in the red button. A locking ball in the oil filter indicator prevents the red button to be pushed in if the opening is in the up position.

**LOM ALL POST AEROCONTROLEX S; LUBE MODULE POST-AEROCONTROLEX SB 4131020-49-01**

- B. There are three locations on the lube filter housing with an etched "INVERT TO RESET" marking.

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- C. The lube filter element is clogged when the red button is extended from the surface of the oil filter indicator. If the red button is flush with or below the surface of the oil filter indicator, the lube filter element is not clogged.

**TASK 49-91-13-600-801**

**2. Oil Filter Indicator Servicing**

**A. References**

<b>Reference</b>	<b>Title</b>
49-91-12-000-802	Lube Filter Element Removal (P/B 401)
49-91-12-400-802	Lube Filter Element Installation (P/B 401)
49-91-13-000-802	Oil Filter Indicator Removal (Lube Filter Housing) (P/B 401)
49-91-13-400-802	Oil Filter Indicator Installation (Lube Filter Housing) (P/B 401)
49-91-81-200-801	Magnetic Drain Plug Inspection (P/B 601)

**B. Location Zones**

<b>Zone</b>	<b>Area</b>
316	APU Compartment - Right

**C. Access Panels**

<b>Number</b>	<b>Name/Location</b>
315A	APU Cowl Door

**D. Prepare for the Servicing of the Oil Filter Indicator**

**SUBTASK 49-91-13-010-003**

- (1) To open the access panel, do these steps:

<b>Number</b>	<b>Name/Location</b>
315A	APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.
- (b) Open the three latches.  
*NOTE:* Use this sequence: forward latch, aft latch, middle latch.
- (c) Open the APU Cowl Door, 315A.
- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.

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- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

**E. Procedure**



**MAKE SURE TO RESET THE OIL FILTER. IF YOU DO NOT OBEY, DAMAGE TO THE APU CAN OCCUR.**

**CAUTION**

SUBTASK 49-91-13-610-001

- (1) Do these steps to put the oil filter indicator back to the serviceable condition:
  - (a) Make sure the button on the oil filter indicator has extended.
  - (b) Do this task: Magnetic Drain Plug Inspection, TASK 49-91-81-200-801.
  - (c) Replace the lube filter element. These are the tasks:
    - Lube Filter Element Removal, TASK 49-91-12-000-802
    - Lube Filter Element Installation, TASK 49-91-12-400-802
  - (d) If the button extends again, replace the oil filter indicator on the lube filter housing. These are the tasks:
    - Oil Filter Indicator Removal (Lube Filter Housing), TASK 49-91-13-000-802
    - Oil Filter Indicator Installation (Lube Filter Housing), TASK 49-91-13-400-802

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

SUBTASK 49-91-13-410-003

- (1) To close the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

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OIL FILTER INDICATOR - REMOVAL/INSTALLATION

**1. General**

- A. This procedure has these tasks:
  - (1) A removal of the oil filter indicator (lube filter housing)
  - (2) An installation of the oil filter indicator (lube filter housing)
  - (3) A removal of the oil filter indicator (starter-generator filter housing)
  - (4) An installation of the oil filter indicator (starter-generator filter housing).
- B. There are two oil filter indicators on the APU. One oil filter indicator is installed on the lube filter housing. The other oil filter indicator is installed on the starter-generator filter housing.
- C. The oil filter indicator on the starter-generator filter housing is also referred to as the filter bypass switch for the starter-generator.

**TASK 49-91-13-000-801**

**2. Oil Filter Indicator Removal**

**A. Oil Filter Indicator Removal**

SUBTASK 49-91-13-020-001

- (1) Do these tasks to remove the oil filter indicator:
  - (a) Do this task: Oil Filter Indicator Removal (Lube Filter Housing), TASK 49-91-13-000-802.
  - (b) Do this task: Oil Filter Indicator Removal (Starter-Generator Filter Housing), TASK 49-91-13-000-803.

— END OF TASK —

**TASK 49-91-13-400-801**

**3. Oil Filter Indicator Installation**

**A. Oil Filter Indicator Installation**

SUBTASK 49-91-13-420-001

- (1) Do these tasks to install the oil filter indicator:
  - (a) Do this task: Oil Filter Indicator Installation (Lube Filter Housing), TASK 49-91-13-400-802.
  - (b) Do this task: Oil Filter Indicator Installation (Starter-Generator Filter Housing), TASK 49-91-13-400-803.

— END OF TASK —

**TASK 49-91-13-000-802**

**4. Oil Filter Indicator Removal (Lube Filter Housing)**

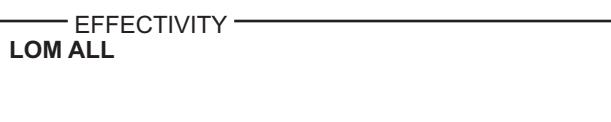
(Figure 401)

**A. References**

Reference	Title
49-91-12-000-802	Lube Filter Element Removal (P/B 401)

**B. Location Zones**

Zone	Area
211	Flight Compartment - Left



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(Continued)

Zone	Area
315	APU Compartment - Left
316	APU Compartment - Right

**C. Prepare for the Removal**

SUBTASK 49-91-13-020-002

- (1) Do this task: Lube Filter Element Removal, TASK 49-91-12-000-802.

**D. Oil Filter Indicator Removal**

SUBTASK 49-91-13-020-003



**CAUTION**

DO NOT USE MAGNETIC TOOLS AROUND THE OIL FILTER INDICATOR.  
THERE ARE INTERNAL MAGNETS IN THE OIL FILTER INDICATOR. DAMAGE  
TO THE OIL FILTER INDICATOR CAN OCCUR.

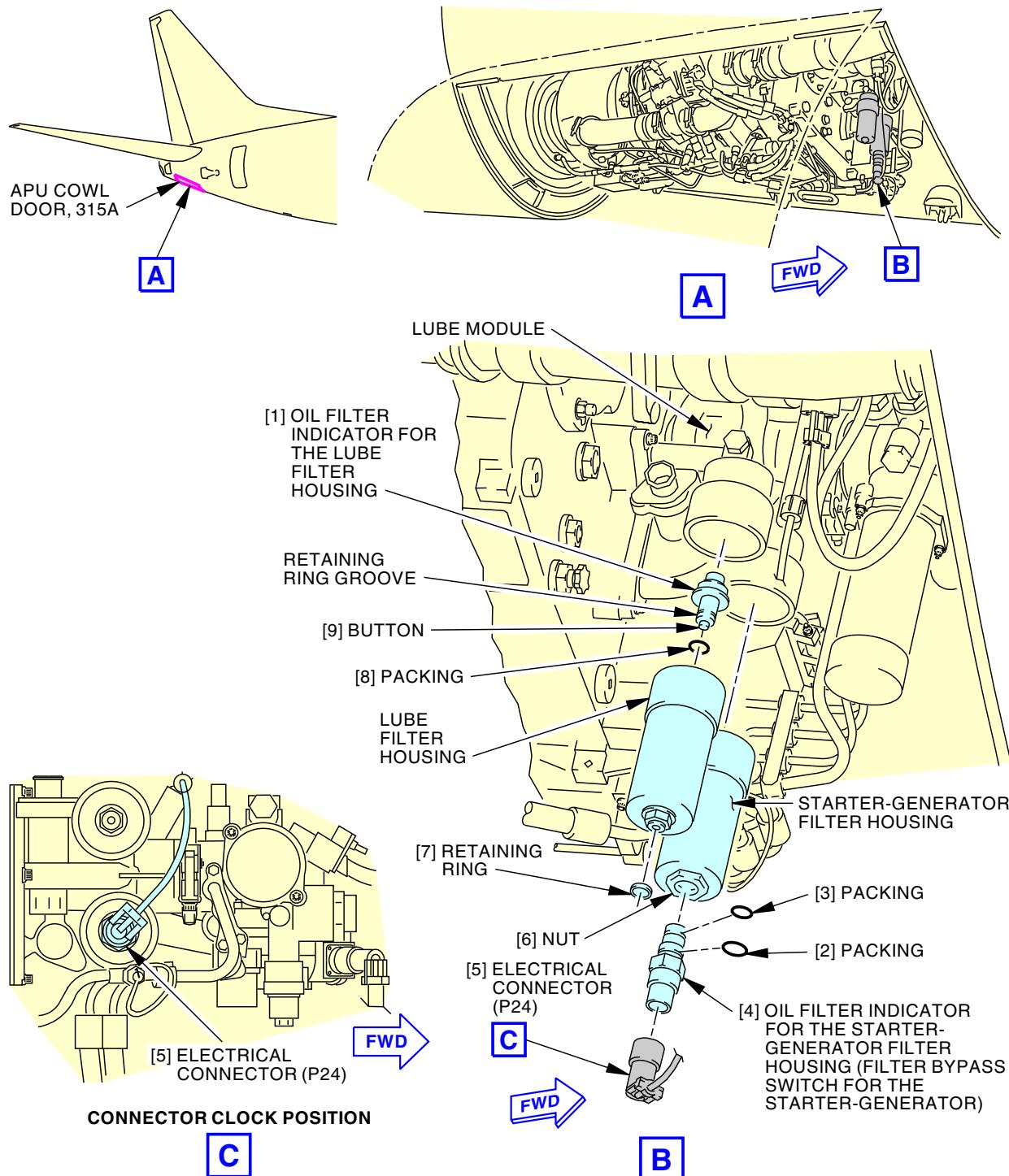
- (1) Do these steps to remove the oil filter indicator [1] for the lube filter housing:

- (a) Remove the retaining ring [7] that attaches the oil filter indicator [1] to the lube filter housing.
- (b) Remove the oil filter indicator [1].
- (c) Remove the packing [8] from the oil filter indicator [1].
  - 1) Discard the packing [8].
- (d) Make sure you install all necessary protection covers.

— END OF TASK —

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**Oil Filter Indicator Installation**  
**Figure 401/49-91-13-990-801**

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**TASK 49-91-13-400-802**

**5. Oil Filter Indicator Installation (Lube Filter Housing)**

(Figure 401)

**A. References**

Reference	Title
49-91-12-400-802	Lube Filter Element Installation (P/B 401)

**B. Tools/Equipment**

Reference	Description
STD-1057	Air Source - Regulated, Dry Filtered, Compressed 60-105 PSIG (414-723.9 kPa)(22 SCFM)

**C. Consumable Materials**

Reference	Description	Specification
B00130	Alcohol - Isopropyl	TT-I-735
D00341	Lubricant - Polyphenyl Ether, Vacuum Pump - Santovac 5	
D50055	Oil - Aircraft Turbine Engine Oil for AE 131-9[B] APU (AMM 12-13-31/301)	
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)

**D. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Oil filter indicator	49-91-13-02-060	LOM ALL
8	Packing	49-91-13-02-070	LOM ALL

**E. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**F. Procedure**

SUBTASK 49-91-13-110-001

(1) Do these steps to clean the lube filter housing:

- (a) Clean the lube filter housing with alcohol, B00130, and a cotton wiper, G00034.
- (b) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057, to dry the lube filter housing.

NOTE: It is recommended that you use a pressure of 60-90 psig (414-620 kPa) of air or nitrogen to dry the lube filter housing.

SUBTASK 49-91-13-420-002



**CAUTION**

REMOVE THE PROTECTION COVERS FROM THE OPENINGS AS NECESSARY. IF YOU DO NOT REMOVE THE PROTECTION COVERS, DAMAGE TO THE APU CAN OCCUR.

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(CAUTION PRECEDES)



**CAUTION**

DO NOT USE MAGNETIC TOOLS AROUND THE OIL FILTER INDICATOR.  
THERE ARE INTERNAL MAGNETS IN THE OIL FILTER INDICATOR. DAMAGE  
TO THE OIL FILTER INDICATOR CAN OCCUR.

- (2) Do these steps to install the oil filter indicator [1] for the lube filter housing:
- Lubricate the packing [8] with a light coat of Santovac 5 lubricant, D00341, or aircraft turbine engine oil, D50055.
  - Install the packing [8] on the oil filter indicator [1].
  - Put the oil filter indicator [1] in the lube filter housing.
  - Push the oil filter indicator [1] into the lube filter housing until the retaining ring groove shows on the outer surface of the lube filter housing.
  - Install the retaining ring [7] on the retaining ring groove.
  - Push the button [9] in to put the oil filter indicator [1] back to the serviceable condition.

NOTE: You must turn the lube filter housing with the opening in the down position to push in the button. A locking ball in the oil filter indicator [1] prevents the button to be pushed in if the opening is in the up position.

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4131020-49-01**

NOTE: There are three locations on the lube filter housing with an etched "INVERT TO RESET" marking.

**LOM ALL**

SUBTASK 49-91-13-420-003

- (3) Do this task: Lube Filter Element Installation, TASK 49-91-12-400-802.

———— END OF TASK ————

**TASK 49-91-13-000-803**

**6. Oil Filter Indicator Removal (Starter-Generator Filter Housing)**

(Figure 401)

**A. References**

Reference	Title
49-91-12-000-803	Starter-Generator Filter Element Removal (P/B 401)

**B. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**C. Prepare for the Removal**

SUBTASK 49-91-13-020-004

- (1) Do this task: Starter-Generator Filter Element Removal, TASK 49-91-12-000-803.

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D. Oil Filter Indicator Removal

SUBTASK 49-91-13-020-005



**CAUTION**

DO NOT USE MAGNETIC TOOLS AROUND THE OIL FILTER INDICATOR.  
THERE ARE INTERNAL MAGNETS IN THE OIL FILTER INDICATOR. DAMAGE  
TO THE OIL FILTER INDICATOR CAN OCCUR.

- (1) Do these steps to remove the oil filter indicator [4] for the starter-generator filter housing:
  - (a) Hold the nut [6] on the starter-generator filter housing while you loosen the nut on the oil filter indicator [4].  
*NOTE:* The oil filter indicator [4] is also referred to as the filter bypass switch for the starter-generator.
  - (b) Remove the oil filter indicator [4].
  - (c) Remove the packing [2] and packing [3] from the oil filter indicator [4].
    - 1) Discard the packing [2] and packing [3].
  - (d) Make sure you install all necessary protection covers.

— END OF TASK —

**TASK 49-91-13-400-803**

7. **Oil Filter Indicator Installation (Starter-Generator Filter Housing)**

(Figure 401)

A. References

Reference	Title
49-91-12-400-803	Starter-Generator Filter Element Installation (P/B 401)

B. Tools/Equipment

Reference	Description
STD-1057	Air Source - Regulated, Dry Filtered, Compressed 60-105 PSIG (414-723.9 KPa)(22 SCFM)

C. Consumable Materials

Reference	Description	Specification
B00130	Alcohol - Isopropyl	TT-I-735
D00341	Lubricant - Polyphenyl Ether, Vacuum Pump - Santovac 5	
D50055	Oil - Aircraft Turbine Engine Oil for AE 131-9[B] APU (AMM 12-13-31/301)	
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)
G01048	Lockwire - MS20995C32, Corrosion Resistant Steel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Packing	49-91-13-02-080	LOM ALL
3	Packing	49-91-13-02-075	LOM ALL

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(Continued)

AMM Item	Description	AIPC Reference	AIPC Effectivity
4	Oil filter indicator	49-91-13-02-065	LOM ALL

**E. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**F. Procedure**

SUBTASK 49-91-13-110-002

- (1) Do these steps to clean the starter-generator filter housing:

- (a) Clean the starter-generator filter housing with alcohol, B00130 and a cotton wiper, G00034.
  - (b) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057 to dry the starter-generator filter housing.

NOTE: It is recommended that you use a pressure of 60-90 psig (414-620 kPa) of air or nitrogen to dry the starter-generator filter housing.

SUBTASK 49-91-13-420-004



**CAUTION**

REMOVE THE PROTECTION COVERS FROM THE OPENINGS AS NECESSARY. IF YOU DO NOT REMOVE THE PROTECTION COVERS, DAMAGE TO THE APU CAN OCCUR.



**CAUTION**

DO NOT USE MAGNETIC TOOLS AROUND THE OIL FILTER INDICATOR. THERE ARE INTERNAL MAGNETS IN THE OIL FILTER INDICATOR. DAMAGE TO THE OIL FILTER INDICATOR CAN OCCUR.

- (2) Do these steps to install the oil filter indicator [4] for the starter-generator filter housing:

- (a) Lubricate the new packing [2] and new packing [3] with a light coat of Santovac 5 lubricant, D00341 or aircraft turbine engine oil, D50055.
    - (b) Install the packing [3] on the oil filter indicator [4].
- NOTE: The oil filter indicator [4] is also referred to as the filter bypass switch for the starter-generator.
- (c) Install the packing [2] on the oil filter indicator [4].
    - (d) Put the oil filter indicator [4] in the starter-generator filter housing.
    - (e) Hold the nut [6] on the starter-generator filter housing while you tighten the nut on the oil filter indicator [4] to 110-120 pound-inches (12.4-13.5 newton-meters).
    - (f) Install the MS20995C32 lockwire, G01048 to the nut on the oil filter indicator [4].

SUBTASK 49-91-13-420-005

- (3) Do this task: Starter-Generator Filter Element Installation, TASK 49-91-12-400-803.
  - (a) Make sure the oil filter indicator [4] aligns with the electrical connector (P24) [5] at the 2 o'clock position.

— END OF TASK —

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LOM ALL

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OIL FILTER INDICATOR - INSPECTION/CHECK

**1. General**

- A. This procedure has this task:
- (1) An inspection of the oil filter indicator.

**TASK 49-91-13-200-801**

**2. Oil Filter Indicator Inspection**

(Figure 601)

**A. References**

Reference	Title
49-91-13-600-801	Oil Filter Indicator Servicing (P/B 301)

**B. Location Zones**

Zone	Area
316	APU Compartment - Right

**C. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**D. Prepare for the Inspection**

SUBTASK 49-91-13-010-004

- (1) To open the access panel, do these steps:

Number	Name/Location
315A	APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.
- (b) Open the three latches.  
*NOTE:* Use this sequence: forward latch, aft latch, middle latch.
- (c) Open the APU Cowl Door, 315A.
- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

**E. Oil Filter Indicator Inspection**

SUBTASK 49-91-13-210-001

- (1) Do these steps to inspect the oil filter indicator [1] on the lube filter housing [2]:

- (a) Visually examine the red button [3] on the oil filter indicator [1].
- (b) If the red button [3] on the oil filter indicator [1] has extended, do this task: Oil Filter Indicator Servicing, TASK 49-91-13-600-801.

*NOTE:* The lube filter element is clogged when the red button is extended from the surface of the oil filter indicator. If the red button is flush with or below the surface of the oil filter indicator, the lube filter element is not clogged.

EFFECTIVITY
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- (c) If the red button [3] on the oil filter indicator [1] has not extended, the oil filter indicator [1] is satisfactory.

NOTE: The lube filter element is not clogged.

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

SUBTASK 49-91-13-410-004

- (1) To close the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
- 1) Make sure that the installation of fire shield has not shifted.
- 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

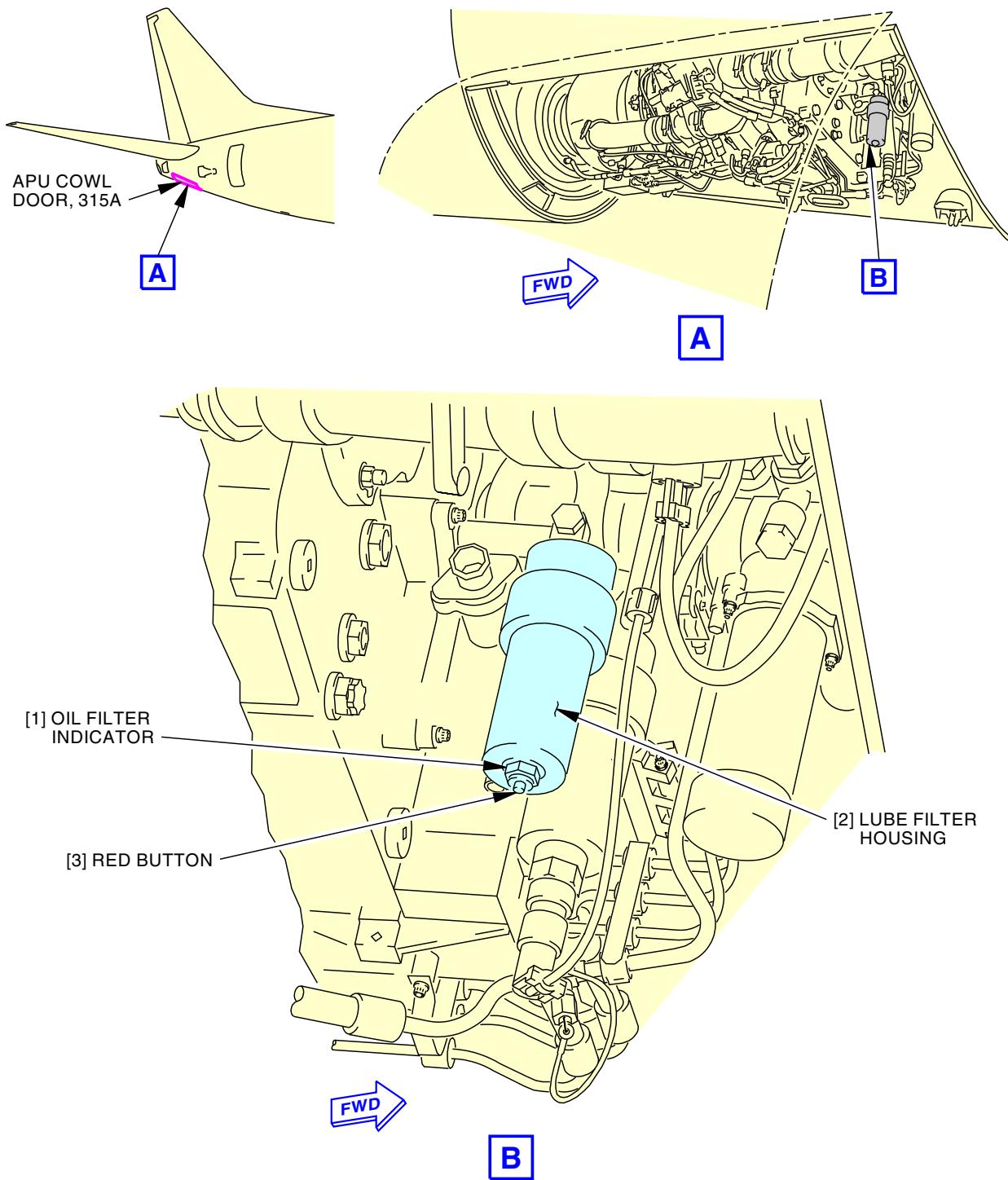
———— END OF TASK ————

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LOM ALL

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**Oil Filter Indicator Inspection**  
Figure 601/49-91-13-990-802

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TEMPERATURE CONTROL VALVE - REMOVAL/INSTALLATION

**1. General**

- A. This procedure has these tasks:
  - (1) A removal of the temperature control valve
  - (2) An installation of the temperature control valve.
- B. The temperature control valve is installed on the APU gearbox.

**TASK 49-91-21-000-801**

**2. Temperature Control Valve Removal**

(Figure 401)

**A. Tools/Equipment**

Reference	Description
STD-203	Container - Oil Resistant, 1 U.S.-Gal (3.8 l)

**B. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
8	Seal plate	49-91-21-02-005	LOM ALL

**C. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left

**D. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**E. Prepare for the Removal**

SUBTASK 49-91-21-860-001

- (1) Make sure the APU master switch on the P5 forward overhead panel is OFF and install a DO-NOT-OPERATE tag.

SUBTASK 49-91-21-860-002

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

**F/O Electrical System Panel, P6-2**

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-91-21-010-002

- (3) To open the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.

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- (b) Open the three latches.  
**NOTE:** Use this sequence: forward latch, aft latch, middle latch.
- (c) Open the APU Cowl Door, 315A.
- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

## F. Temperature Control Valve Removal

SUBTASK 49-91-21-020-001



DO NOT TOUCH THE COMPONENTS OF THE OIL SYSTEM IF THE APU IS HOT. THESE COMPONENTS STAY HOTTER THAN OTHER COMPONENTS.

**WARNING**

HOT COMPONENTS CAN BURN YOU.

- (1) Do these steps to disconnect the supply and return tubes [1], [2] for the oil cooler:
  - (a) Put the 1 U.S.-gal (3.81 l) oil resistant container, STD-203 below the APU gearbox.
  - (b) Loosen the two nuts [4] that attach the supply and return tubes [1], [2] for the oil cooler to the temperature control valve [3].
  - (c) Turn the two tube retainers on the supply and return tubes [1], [2] counterclockwise until the flanges disengage from the two studs.
  - (d) Disconnect the supply and return tubes [1], [2] from the temperature control valve [3].
  - (e) Use the 1 U.S.-gal (3.81 l) oil resistant container, STD-203 to drain the oil from the supply and return tubes [1], [2].
  - (f) Remove the four packings [5] from the supply and return tubes [1], [2].
    - 1) Discard the four packings [5].

SUBTASK 49-91-21-020-002

- (2) Do these steps to remove the temperature control valve [3]:
  - (a) Loosen the two nuts [7] that attach the temperature control valve [3] to the APU gearbox.
  - (b) Turn the temperature control valve [3] clockwise until the flanges disengage from the two studs.
  - (c) Remove the temperature control valve [3].
  - (d) Use the 1 U.S.-gal (3.81 l) oil resistant container, STD-203 to drain the oil from the temperature control valve [3].
  - (e) Make sure you install all necessary protection covers.
  - (f) Remove the 1 U.S.-gal (3.81 l) oil resistant container, STD-203.

SUBTASK 49-91-21-020-003

- (3) Do these steps to remove the seal plate [8] for the temperature control valve:

**NOTE:** It is necessary to replace the seal plate [8] if you find signs of oil leakage around the temperature control valve [3].

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LOM ALL

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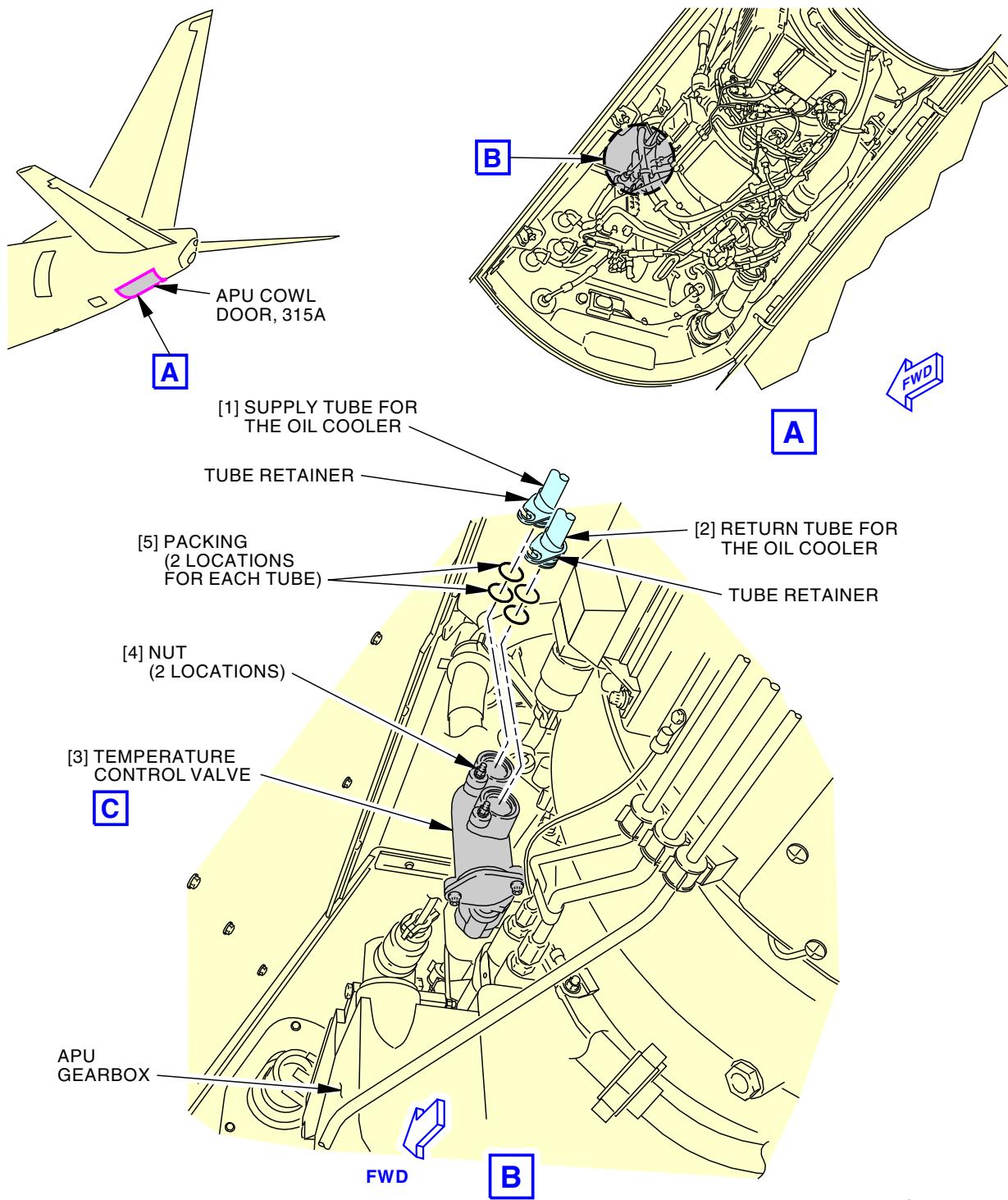
**737-600/700/800/900**  
**AIRCRAFT MAINTENANCE MANUAL**

- (a) Remove the two screws [6] that attach the seal plate [8] to the temperature control valve [3].
- (b) Remove the seal plate [8].
  - 1) Replace the seal plate [8] if you find damage that can cause an oil leakage.

———— END OF TASK ————

— EFFECTIVITY —  
**LOM ALL**

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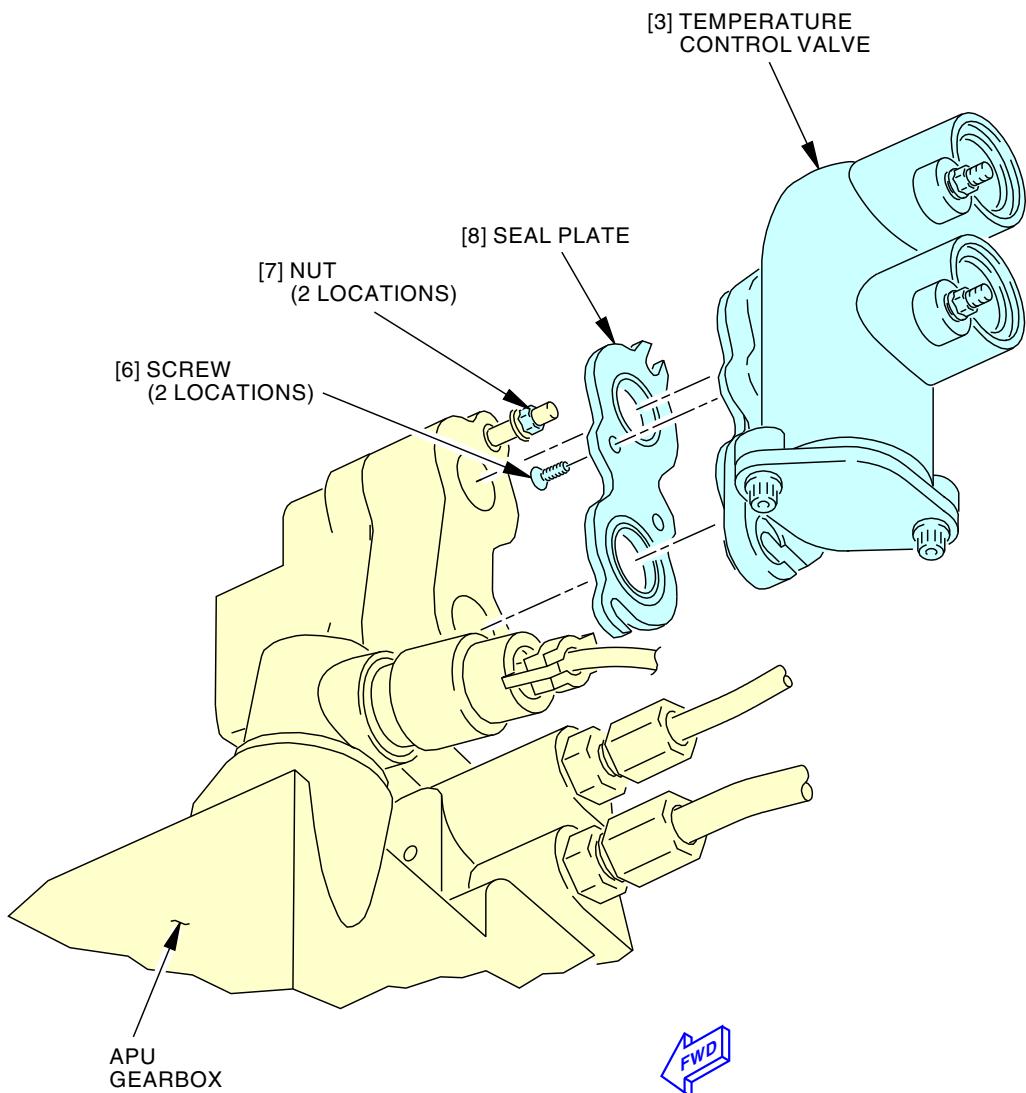
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**Temperature Control Valve Installation**  
**Figure 401/49-91-21-990-801 (Sheet 1 of 2)**

EFFECTIVITY  
**LOM ALL**

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Temperature Control Valve Installation  
Figure 401/49-91-21-990-801 (Sheet 2 of 2)

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**TASK 49-91-21-400-801**

**3. Temperature Control Valve Installation**

(Figure 401)

**A. References**

Reference	Title
12-13-31-200-801	APU Oil Level Inspection (P/B 301)
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)
49-61-00-700-801	APU BITE Procedure (P/B 201)

**B. Consumable Materials**

Reference	Description	Specification
D00341	Lubricant - Polyphenyl Ether, Vacuum Pump - Santovac 5	
D50055	Oil - Aircraft Turbine Engine Oil for AE 131-9[B] APU (AMM 12-13-31/301)	

**C. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Temperature control valve	49-91-21-02-045	LOM ALL
5	Packing	49-91-21-02-015	LOM ALL
8	Seal plate	49-91-21-02-005	LOM ALL

**D. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left

**E. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**F. Procedure**

SUBTASK 49-91-21-420-001

- (1) If the seal plate [8] was removed from the temperature control valve [3], install the seal plate [8]:
  - (a) Lubricate the new seal plate [8] with a light coat of aircraft turbine engine oil, D50055.
  - (b) Install the seal plate [8] on the temperature control valve [3] with the two screws [6].
    - 1) Tighten the two screws [6] to 30 in-lb (3.4 N·m) - 34 in-lb (3.8 N·m).

SUBTASK 49-91-21-420-002



**CAUTION** REMOVE THE PROTECTION COVERS FROM THE OPENINGS AS NECESSARY. IF YOU DO NOT REMOVE THE PROTECTION COVERS, DAMAGE TO THE APU CAN OCCUR.

- (2) Do these steps to install the temperature control valve [3]:
  - (a) If the seal plate [8] is not lubricated, lubricate the seal plate with a light coat of aircraft turbine engine oil, D50055.
  - (b) Install the temperature control valve [3] on the APU gearbox.

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**LOM ALL**

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- (c) Make sure the top flange of the temperature control valve [3] engages the top stud.
- (d) Turn the temperature control valve [3] counterclockwise until the bottom flange fully engages the bottom stud.
- (e) Tighten the two nuts [7] to 40 in-lb (4.5 N·m).

SUBTASK 49-91-21-420-003



**CAUTION**

MAKE SURE THAT THE SUPPLY AND RETURN TUBES ARE FULLY AGAINST THE TEMPERATURE CONTROL VALVE. TUBE RETAINERS MUST BE NEAR FLUSH WITH THE TEMPERATURE CONTROL VALVE HOUSING. DAMAGE TO THE APU CAN OCCUR.

- (3) Do these steps to connect the supply tube [1] and return tube [2] for the oil cooler:
  - (a) Lubricate the four new packings [5] with a light coat of Santovac 5 lubricant, D00341 or aircraft turbine engine oil, D50055.
  - (b) Install the four packings [5] on the supply tube [1] and return tube [2].
  - (c) Connect the supply tube [1] and return tube [2] to the temperature control valve [3].
  - (d) Turn the two tube retainers on the supply tube [1] and return tube [2] clockwise until the flanges engage the two studs.
  - (e) Tighten the two nuts [4] to 40 in-lb (4.5 N·m).

## G. Temperature Control Valve Installation Test

SUBTASK 49-91-21-860-003

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-91-21-860-004

- (2) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.

SUBTASK 49-91-21-710-001

- (3) Do the installation test for the temperature control valve:
  - (a) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
  - (b) Operate the APU for a minimum of five minutes.
  - (c) During the APU operation, examine the temperature control valve for signs of oil leakage.
  - (d) If you find oil leakage, do these steps to repair the leakage:
    - 1) Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.
    - 2) Install a DO-NOT-OPERATE tag to the APU master switch on the P5 forward overhead panel.
    - 3) Repair the cause of the oil leakage.
    - 4) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.

EFFECTIVITY  
LOM ALL

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- 5) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
- 6) During the APU operation, examine the temperature control valve for signs of oil leakage.
- 7) If you find oil leakage, do the leakage repair again.
- (e) Make sure the BUS TRANS switch on the P5 forward overhead panel is in the AUTO position.
- (f) Make sure the APU GEN OFF BUS light on the P5 forward overhead panel is on.
- (g) Set the two APU GEN switches on the P5 forward overhead panel to the ON position.
- (h) Put a maximum electrical load on the APU starter-generator.
- (i) Operate the APU in the loaded condition for 15 minutes.
- (j) Do this task: APU BITE Procedure, TASK 49-61-00-700-801.
  - 1) Look at the INPUT MONITORING page on the control display unit (CDU) display for the APU oil temperature (OIL TEMP).
    - a) With an electrical load applied on the APU, the oil temperature is less than 250°F (121°C).
  - 2) If maintenance message(s) show for the APU lubrication system, refer to the applicable Maintenance Message Index in the FIM.
- (k) Remove the electrical load from the APU starter-generator.
- (l) Set the two APU GEN switches to the OFF position.
- (m) Operate the APU in the no load condition for a minimum of one minute.
- (n) If it is not necessary to do other tasks, do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

**SUBTASK 49-91-21-640-001**

- (4) Make sure the APU oil system is full. To check the oil level, do this task: APU Oil Level Inspection, TASK 12-13-31-200-801.

**H. Put the Airplane Back to Its Usual Condition**

**SUBTASK 49-91-21-410-002**

- (1) To close the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the Auxiliary Power Unit (APU) compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.



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(h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

— EFFECTIVITY —  
**LOM ALL**

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**OIL COOLER - REMOVAL/INSTALLATION**

**1. General**

- A. This procedure has these tasks:
  - (1) A removal of the oil cooler
  - (2) An installation of the oil cooler.
- B. The oil cooler is installed on the eductor housing.

**TASK 49-91-41-000-801**

**2. Oil Cooler Removal**

(Figure 401)

**A. Tools/Equipment**

<b>Reference</b>	<b>Description</b>
STD-203	Container - Oil Resistant, 1 U.S.-Gal (3.8 l)
STD-858	Tag - DO NOT OPERATE

**B. Location Zones**

<b>Zone</b>	<b>Area</b>
211	Flight Compartment - Left
315	APU Compartment - Left

**C. Access Panels**

<b>Number</b>	<b>Name/Location</b>
315A	APU Cowl Door

**D. Prepare for the Removal**

**SUBTASK 49-91-41-860-001**

- (1) Make sure that the APU master switch, on the P5 forward overhead panel, is in the OFF position.
  - (a) Install the DO NOT OPERATE tag, STD-858, on the APU master switch.

**SUBTASK 49-91-41-860-002**

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

**F/O Electrical System Panel, P6-2**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
A	14	C00033	AUX POWER UNIT CONT

**SUBTASK 49-91-41-010-003**

- (3) To open the access panel, do these steps:

**Number**      **Name/Location**

315A      APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.
- (b) Open the three latches.

**NOTE:** Use this sequence: forward latch, aft latch, middle latch.

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LOM ALL

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- (c) Open the APU Cowl Door, 315A.
- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

**E. Oil Cooler Removal**

SUBTASK 49-91-41-020-001



**WARNING**

DO NOT TOUCH THE COMPONENTS OF THE OIL SYSTEM IF THE APU IS HOT. THESE COMPONENTS STAY HOTTER THAN OTHER COMPONENTS. HOT COMPONENTS CAN BURN YOU.



**WARNING**

DO NOT LET HOT OIL GET ON YOU. PUT ON GOGGLE AND PROTECTIVE EQUIPMENT OR LET THE APU BECOME COOL. LET 5 MINUTES GO BY AFTER AN APU SHUTDOWN TO LET THE OIL SYSTEM PRESSURE GO TO ZERO. IF YOU OPEN THE OIL SYSTEM WHEN IT HAS PRESSURE, A SPRAY OF HOT OIL CAN BURN YOU.



**WARNING**

DO NOT LET OIL STAY ON YOUR SKIN. YOU CAN ABSORB POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.



**CAUTION**

DO NOT LET OIL GET ON THE APU OR OTHER COMPONENTS. IMMEDIATELY CLEAN THE OIL WHEN IT FALLS ON THEM. OIL CAN CAUSE DAMAGE TO PAINT AND RUBBER.

- (1) Do these steps to disconnect the supply tube [1] and return tube [3] for the oil cooler [7]:
  - (a) Put the 1 U.S.-gal (3.81 l) oil resistant container, STD-203, below the oil cooler [7].
  - (b) Loosen the nut [6] that attaches the supply tube [1] to the oil cooler [7].
  - (c) Turn the tube retainer on the supply tube [1] counterclockwise until the flange disengages from the stud.
  - (d) Loosen the nut [5] that attaches the return tube [3] to the oil cooler [7].
  - (e) Turn the tube retainer on the return tube [3] counterclockwise until the flange disengages from the stud.
  - (f) Disconnect the supply tube [1] from the oil cooler [7].
  - (g) Disconnect the return tube [3] from the oil cooler [7].
  - (h) Drain the oil from the supply tube [1] and return tube [3] into the 1 U.S.-gal (3.81 l) oil resistant container, STD-203.
  - (i) Remove the two packings [2] from the supply tube [1].
    - 1) Discard the two packings [2].
  - (j) Remove the two packings [4] from the return tube [3].

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LOM ALL

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- 1) Discard the two packings [4].
- (k) Make sure that all necessary protection covers are installed.

SUBTASK 49-91-41-020-002

- (2) Do these steps to remove the oil cooler [7]:
  - (a) Install the plugs or covers in the oil cooler [7] ports.  
NOTE: This will prevent oil spillage during the removal.
  - (b) Loosen the eight bolts [11] that attach the oil cooler [7] to the eductor housing.
  - (c) Push up on the oil cooler [7] until the oil cooler flange disengages from the eductor housing flange.
  - (d) Remove the oil cooler [7].  
NOTE: The oil cooler with the oil weighs approximately 20 lb (9.1 kg).
  - (e) Remove the plugs or covers from the oil cooler [7] ports.
  - (f) Drain the oil from the oil cooler [7] into the 1 U.S.-gal (3.81 l) oil resistant container, STD-203.
  - (g) Make sure that all necessary protection covers are installed.
  - (h) Remove the 1 U.S.-gal (3.81 l) oil resistant container, STD-203.

SUBTASK 49-91-41-020-003

- (3) Do these steps to remove the fire shield [9] for the oil cooler:

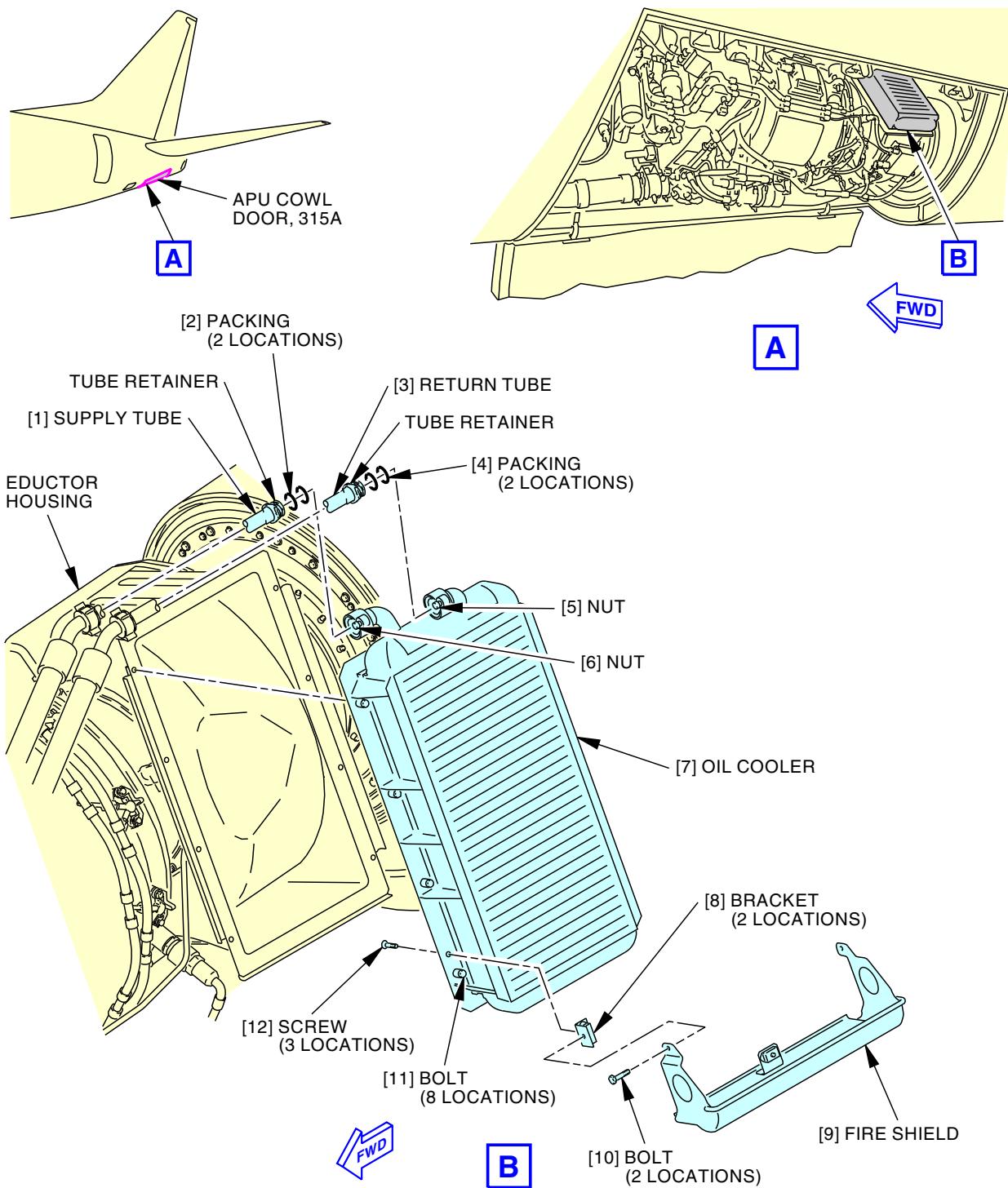
NOTE: It is necessary to remove the fire shield from the defective oil cooler. You must install the same fire shield to the new or serviceable oil cooler.

- (a) Remove the three screws [12] that attach the fire shield [9] to the oil cooler [7].
- (b) Remove the two bolts [10] that attach the two brackets [8] to the oil cooler [7].
- (c) Remove the fire shield [9] and two brackets [8].

———— END OF TASK ————

EFFECTIVITY  
LOM ALL

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**Oil Cooler Installation**  
**Figure 401/49-91-41-990-801**

 EFFECTIVITY  
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**TASK 49-91-41-400-801**

**3. Oil Cooler Installation**

(Figure 401)

**A. References**

Reference	Title
12-13-31-610-803	Fill the APU Gearbox (P/B 301)
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)

**B. Tools/Equipment**

Reference	Description
STD-858	Tag - DO NOT OPERATE

**C. Consumable Materials**

Reference	Description	Specification
D00341	Lubricant - Polyphenyl Ether, Vacuum Pump - Santovac 5	
D50055	Oil - Aircraft Turbine Engine Oil for AE 131-9[B] APU (AMM 12-13-31/301)	

**D. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Packing	49-11-01-02-015	LOM ALL
4	Packing	49-11-01-02-015	LOM ALL
7	Oil cooler	49-91-41-02-035	LOM ALL

**E. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left

**F. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**G. Oil Cooler Installation**

SUBTASK 49-91-41-420-003

- (1) Do these steps to install the fire shield [9] to the new or serviceable oil cooler [7]:
  - (a) Install the two brackets [8] and fire shield [9] on the oil cooler [7] with the two bolts [10].
    - 1) Tighten the two bolts [10] to 30 in-lb (3.4 N·m).
  - (b) Install the three screws [12] that attach the two brackets [8] and fire shield [9] to the oil cooler [7].
    - 1) Tighten the three screws [12] to 22 in-lb (2.5 N·m).



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SUBTASK 49-91-41-420-001



**CAUTION**

REMOVE ANY INSTALLED PROTECTION COVERS FROM THE OPENINGS.  
IF YOU DO NOT REMOVE THE PROTECTION COVERS, DAMAGE TO THE  
APU CAN OCCUR.

- (2) Do these steps to install the oil cooler [7]:



**CAUTION**

DO NOT MIX TWO TYPES OF OIL WHEN YOU ADD THE OIL IN THE  
APU. IT IS PERMITTED TO MIX DIFFERENT BRANDS OF OIL WITH THE  
SAME TYPE OF OIL WHEN YOU ADD THE OIL IN THE APU. A MIXTURE  
OF TWO TYPES OF OIL IN THE APU CAN CAUSE DAMAGE TO THE  
APU.



**CAUTION**

BE CAREFUL NOT TO OVERFILL THE OIL COOLER TO PREVENT AN  
OIL SPILL. OIL CAN CAUSE DAMAGE TO PAINT AND RUBBER.

- (a) Slowly fill the oil cooler [7] with 2.0 qt (1.9 l) of the same type of oil that is already in the APU gearbox.  
*NOTE:* The oil capacity of the oil cooler is 2.4 qt (2.3 l).
- (b) Install the plugs or covers in the oil cooler [7] ports to prevent an oil spill.
- (c) Install the oil cooler [7] on the eductor housing.
- (d) Make sure that the flange on the bottom of the oil cooler [7] engages the eductor housing flange.
- (e) Tighten the eight bolts [11] to 50 in-lb (5.6 N·m).

SUBTASK 49-91-41-420-002

- (3) Do these steps to connect the supply tube [1] and return tube [3] for the oil cooler [7]:

- (a) Remove the plugs or covers from the oil cooler [7] ports.
- (b) Lubricate the two new packings [2] and two new packings [4] with a light coat of Santovac 5 lubricant, D00341, or aircraft turbine engine oil, D50055.
- (c) Install the two packings [2] on the supply tube [1].
- (d) Install the two packings [4] on the return tube [3].
- (e) Connect the return tube [3] to the oil cooler [7].
- (f) Connect the supply tube [1] to the oil cooler [7].
- (g) Turn the tube retainer on the supply tube [1] clockwise until the flange engages the stud.
- (h) Tighten the nut [6] to 40 in-lb (4.5 N·m).
- (i) Turn the tube retainer on the return tube [3] clockwise until the flange engages the stud.
- (j) Tighten the nut [5] to 40 in-lb (4.5 N·m).

SUBTASK 49-91-41-610-001

- (4) Do this task: Fill the APU Gearbox, TASK 12-13-31-610-803.

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**H. Oil Cooler Installation Test**

SUBTASK 49-91-41-860-003

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-91-41-860-004

- (2) Remove the DO NOT OPERATE tag from the APU master switch, on the P5 forward overhead panel.

SUBTASK 49-91-41-790-001

- (3) Do the installation test for the oil cooler [7]:

- (a) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
- (b) Operate the APU for a minimum of five minutes.
- (c) During the APU operation, examine the oil cooler [7] for signs of oil leakage.
- (d) If oil leakage is found, do these steps to repair the leakage:
  - 1) Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.
  - 2) Install a DO NOT OPERATE tag, STD-858, to the APU master switch, on the P5 forward overhead panel.
  - 3) Repair the cause of the oil leakage.
  - 4) Remove the DO NOT OPERATE tag from the APU master switch, on the P5 forward overhead panel.
  - 5) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
  - 6) During the APU operation, examine the oil cooler for signs of oil leakage.
  - 7) If oil leakage is found, do the leakage repair again.
- (e) If it is not necessary to do other tasks, do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

SUBTASK 49-91-41-610-002

- (4) Do this task: Fill the APU Gearbox, TASK 12-13-31-610-803.

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

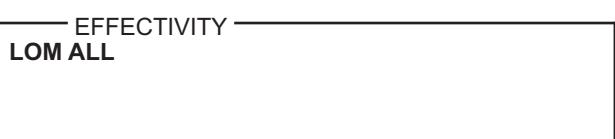
SUBTASK 49-91-41-410-004

- (1) To close the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the Auxiliary Power Unit (APU) compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.



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- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

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OIL COOLER - INSPECTION/CHECK

**1. General**

- A. This procedure has this task:
  - (1) An inspection of the oil cooler.
- B. The oil cooler is installed on the eductor housing.

**TASK 49-91-41-200-801**

**2. Oil Cooler Inspection**

(Figure 601)

**A. References**

Reference	Title
49-91-41-000-801	Oil Cooler Removal (P/B 401)
49-91-41-400-801	Oil Cooler Installation (P/B 401)

**B. Tools/Equipment**

Reference	Description
STD-203	Container - Oil Resistant, 1 U.S.-Gal (3.8 l)
STD-1057	Air Source - Regulated, Dry Filtered, Compressed 60-105 PSIG (414-723.9 KPa)(22 SCFM)
STD-1087	Source - Steam, Saturated

**C. Consumable Materials**

Reference	Description	Specification
B00130	Alcohol - Isopropyl	TT-I-735
D00341	Lubricant - Polyphenyl Ether, Vacuum Pump - Santovac 5	
D50055	Oil - Aircraft Turbine Engine Oil for AE 131-9[B] APU (AMM 12-13-31/301)	
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CLA)

**D. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Packing	49-11-01-02-015	LOM ALL
4	Packing	49-11-01-02-015	LOM ALL
7	Oil cooler	49-91-41-02-035	LOM ALL

**E. Location Zones**

Zone	Area
315	APU Compartment - Left
316	APU Compartment - Right

**F. Access Panels**

Number	Name/Location
315A	APU Cowl Door



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**G. Prepare for the Inspection**

SUBTASK 49-91-41-010-004

- (1) To open the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.
- (b) Open the three latches.  
*NOTE:* Use this sequence: forward latch, aft latch, middle latch.
- (c) Open the APU Cowl Door, 315A.
- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

**H. Oil Cooler Inspection**

SUBTASK 49-91-41-210-001

- (1) Do these steps to inspect the oil cooler [7]:

- (a) Visually examine the oil cooler [7], supply tube [1], and return tube [3] for oil leakage.
  - 1) Examine all the areas of the oil cooler [7] that can be seen (without removal of the oil cooler [7]).
  - 2) If signs of oil leakage are found, replace the oil cooler [7], do these tasks:
    - Oil Cooler Removal, TASK 49-91-41-000-801
    - Oil Cooler Installation, TASK 49-91-41-400-801.
  - 3) If signs of oil leakage from the supply tube [1] are found, repair the oil leakage:
    - a) Put the 1 U.S.-gal (3.81 l) oil resistant container, STD-203, below the oil cooler [7].
    - b) Loosen the nut [6] that attach the supply tube [1] to the oil cooler [7].
    - c) Turn the tube retainer on the supply tube [1] in the counterclockwise direction until the flange disengages from the stud.
    - d) Disconnect the supply tube [1] from the oil cooler [7].
    - e) Drain the oil from the supply tube [1] into the 1 U.S.-gal (3.81 l) oil resistant container, STD-203.
    - f) Remove the two packings [2] from the supply tube [1].
    - g) Discard the two packings [2].
    - h) Lubricate the two new packings [2] with a light coat of Santovac 5 lubricant, D00341, or aircraft turbine engine oil, D50055.
    - i) Install the two packings [2] on the supply tube [1].
    - j) Connect the supply tube [1] to the oil cooler [7].



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- k) Turn the tube retainer on the supply tube [1] in the clockwise direction until the flange engages with the stud.
  - l) Tighten the nut [6] to 40 in-lb (4.5 N·m).
  - m) If signs of oil leakage are found again, repair or replace the supply tube [1].
  - n) If signs of oil leakage are found again, replace the oil cooler [7], do these tasks:
    - Oil Cooler Removal, TASK 49-91-41-000-801
    - Oil Cooler Installation, TASK 49-91-41-400-801.
- 4) If signs of oil leakage from the return tube [3] are found, repair the oil leakage:
    - a) Put the 1 U.S.-gal (3.81 l) oil resistant container, STD-203, below the oil cooler [7].
    - b) Loosen the nut [5] that attach the return tube [3] to the oil cooler [7].
    - c) Turn the tube retainer on the return tube [3] in the counterclockwise direction until the flange disengages from the stud.
    - d) Disconnect the return tube [3] from the oil cooler [7].
    - e) Drain the oil from the return tube [3] into the 1 U.S.-gal (3.81 l) oil resistant container, STD-203.
    - f) Remove the two packings [4] from the return tube [3].
    - g) Discard the two packings [4].
    - h) Lubricate the two new packings [4] with a light coat of Santovac 5 lubricant, D00341, or aircraft turbine engine oil, D50055.
    - i) Install the two packings [4] on the return tube [3].
    - j) Connect the return tube [3] to the oil cooler [7].
    - k) Turn the tube retainer on the return tube [3] in the clockwise direction until the flange engages with the stud.
    - l) Tighten the nut [5] to 40 in-lb (4.5 N·m).
    - m) If signs of oil leakage are found again, repair or replace the return tube [3].
    - n) If signs of oil leakage are found again, replace the oil cooler [7], do these tasks:
      - Oil Cooler Removal, TASK 49-91-41-000-801
      - Oil Cooler Installation, TASK 49-91-41-400-801.
- (b) Visually examine the oil cooler [7] for missing and damaged parts.
    - 1) If missing or damaged parts are found, install the missing parts or replace the damaged parts.
  - (c) Visually examine the oil cooler [7] for cracks, blockage of unwanted materials, and surface contamination.
    - 1) No cracks are permitted.
    - 2) If blockage of unwanted materials is found, remove the blockage.
    - 3) If external surface contamination is found, clean the oil cooler [7]:
      - a) Clean the surfaces of the oil cooler [7] with alcohol, B00130, and cotton wiper, G00034.

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- b) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057, to dry the surfaces of the oil cooler [7].

NOTE: It is recommended to use a pressure of 60 psig (414 kPa) - 90 psig (621 kPa) of air or nitrogen to dry the surfaces of the oil cooler.

- 4) If more than 25 percent of the total area for the air fins on the oil cooler [7] with internal surface contamination and blockage of unwanted materials are found, replace the oil cooler [7] or steam clean the oil cooler [7], do these tasks:

- Oil Cooler Removal, TASK 49-91-41-000-801
- Oil Cooler Installation, TASK 49-91-41-400-801.

- a) Do these steps in this task to steam clean the oil cooler [7]:

<1> Remove the oil cooler, do this task: Oil Cooler Removal, TASK 49-91-41-000-801.

<2> Make sure that the plugs or covers are installed in the oil cooler [7] ports and tape, as necessary, to prevent any internal contamination.



**CAUTION**

MAKE SURE THAT THE STEAM PRESSURE DOES NOT CAUSE DAMAGE OR BEND THE ALUMINUM FINS ON THE OIL COOLER. DAMAGE TO THE OIL COOLER CAN OCCUR.

<3> Use the steam source, STD-1087, to clean the surfaces of the air fins and oil cooler.

<a> Steam clean with a pressure high enough to be effective but not more than 70 psig (483 kPa).

<4> Clean the surfaces of the air fins and oil cooler [7].

<a> Remove the unwanted water with alcohol, B00130, and cotton wiper, G00034.

<5> Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057, to dry the surfaces of the oil cooler [7].

NOTE: It is recommended to use a pressure of 60 psig (414 kPa) - 90 psig (621 kPa) of air or nitrogen to dry the surfaces of the oil cooler [7].

<6> Install the oil cooler, do this task: Oil Cooler Installation, TASK 49-91-41-400-801.

- (d) Visually examine these components of the oil cooler [7]:

- 1) Air fins for bends.

- a) If the following conditions are true, needle-nosed pliers can be used to make the air fins straight:

<1> On any one row, less than 50% of fins are folded

<2> There are no adjacent rows of folded fins

<3> The total number of folded fins is less than the equivalent of one row

<4> You can get access to the folded fins.

- 2) Two side plates for gouges and dents:

a) Gouges not more than 0.03 in. (0.76 mm) in depth.

b) Gouges not longer than 4.2 in. (106.7 mm).

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- c) The width of the gouges is not more than 0.65 in. (16.5 mm).
- d) Dents not more than 0.06 in. (1.52 mm) in depth.
- e) Dents not longer than the width of the side plate.
- f) If the visual inspection is not in the limits, replace the oil cooler [7], do these tasks:
  - Oil Cooler Removal, TASK 49-91-41-000-801
  - Oil Cooler Installation, TASK 49-91-41-400-801.

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

SUBTASK 49-91-41-410-003

- (1) To close the access panel, do these steps:

**Number**      **Name/Location**

315A      APU Cowl Door

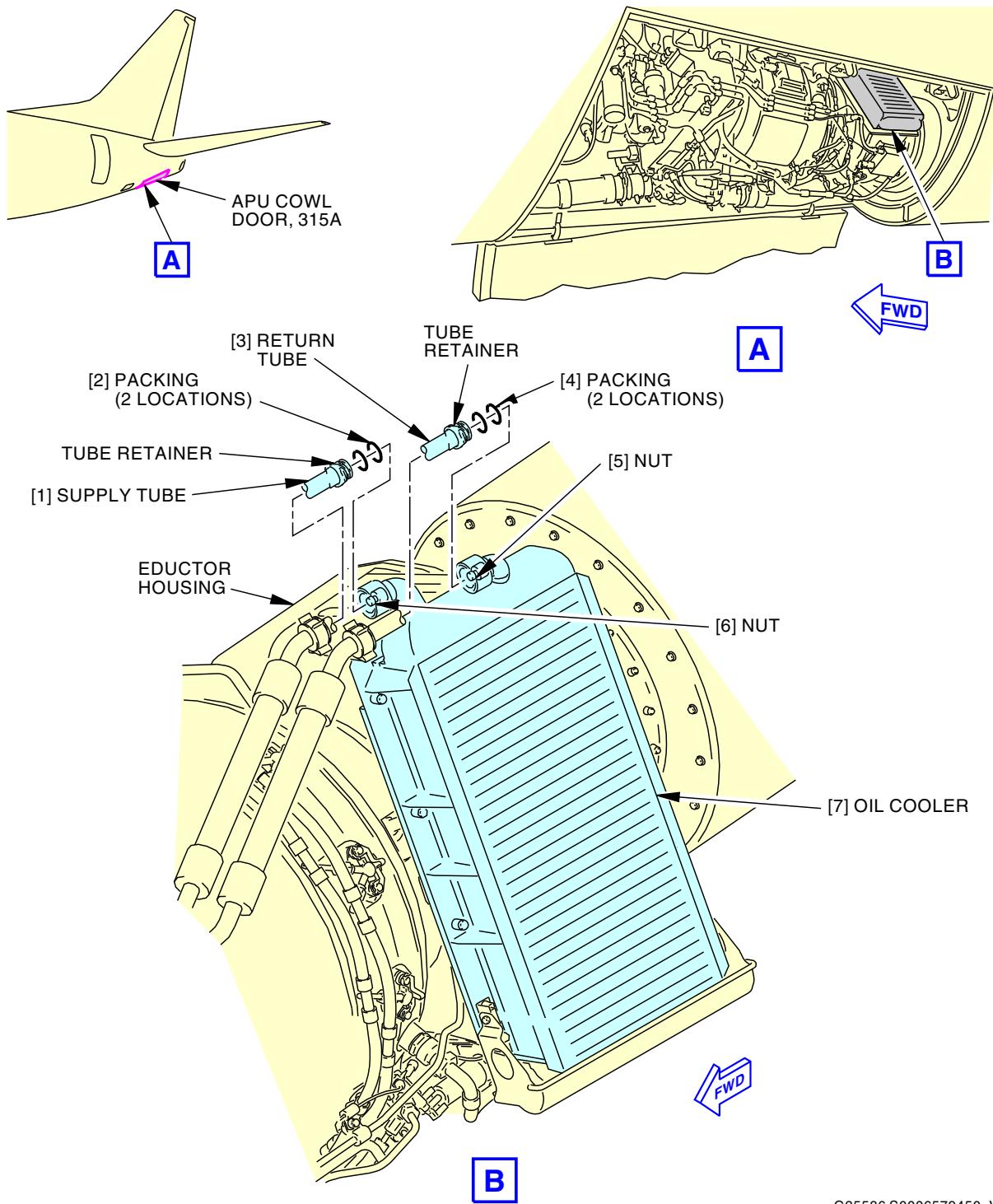
- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

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**Oil Cooler Inspection**  
**Figure 601/49-91-41-990-802**

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EDUCTOR INLET DUCT - REMOVAL/INSTALLATION

**1. General**

- A. This procedure has these tasks:
  - (1) A removal of the eductor inlet duct
  - (2) An installation of the eductor inlet duct.
- B. The eductor inlet duct is installed between the 1156 bulkhead and the upper aft fairing.

**TASK 49-91-71-000-801**

**2. Eductor Inlet Duct Removal**

(Figure 401)

**A. References**

Reference	Title
49-81-11-000-801	Exhaust Duct Muffler Removal (P/B 401)
49-81-31-000-801	Aft Fairing Assembly Removal (P/B 401)

**B. Tools/Equipment**

Reference	Description
STD-858	Tag - DO NOT OPERATE

**C. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

**D. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**E. Prepare for the Removal**

SUBTASK 49-91-71-860-005

- (1) Make sure the APU master switch on the P5 forward overhead panel is OFF and install a DO NOT OPERATE tag, STD-858.

SUBTASK 49-91-71-860-006

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

**F/O Electrical System Panel, P6-2**

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT

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SUBTASK 49-91-71-010-005

- (3) To open the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.
- (b) Open the three latches.  
*NOTE:* Use this sequence: forward latch, aft latch, middle latch.
- (c) Open the APU Cowl Door, 315A.
- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

**F. Eductor Inlet Duct Removal**

SUBTASK 49-91-71-020-001

- (1) Do these steps to remove the eductor inlet duct [10]:

- (a) Remove the exhaust duct muffler. To remove it, do this task: Exhaust Duct Muffler Removal, TASK 49-81-11-000-801.
- (b) Remove the 11 screws [1] and 11 washers [2] that attach the eductor sleeve [3] to the eductor inlet duct [10].
- (c) Remove the eductor sleeve [3].
- (d) Loosen the 16 bolts [7] and four screws [4] that attach the support ring bracket [6] to the 1156 bulkhead.
- (e) Remove the upper aft fairing [9]. To remove it, do this task: Aft Fairing Assembly Removal, TASK 49-81-31-000-801.
- (f) Remove the 13 screws [11] and 13 washers [12] that attach the eductor inlet duct [10] to the 1156 bulkhead.
- (g) Slowly remove the eductor inlet duct [10] from the tail cone compartment.  
*NOTE:* The weight of the eductor inlet duct [10] is approximately 9 lb (4.1 kg).
- (h) Make sure you install all necessary protection covers.

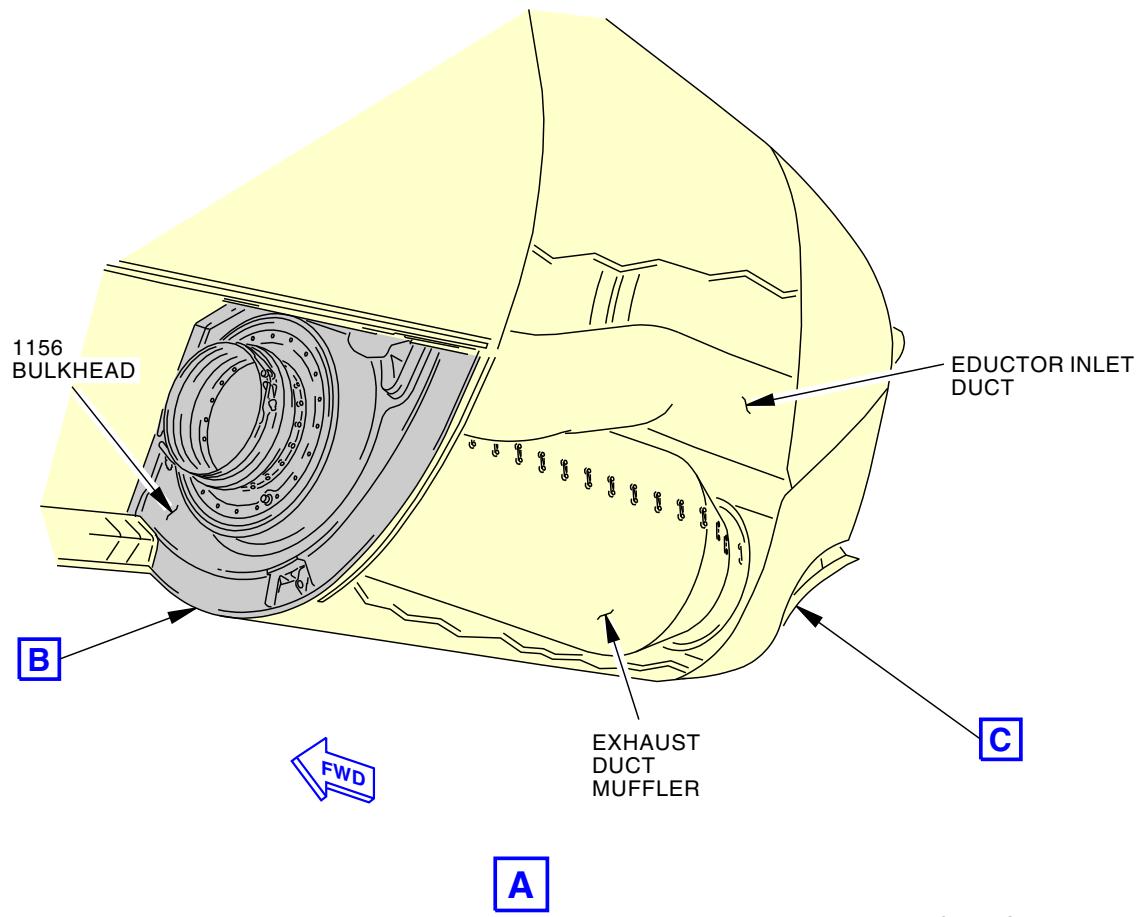
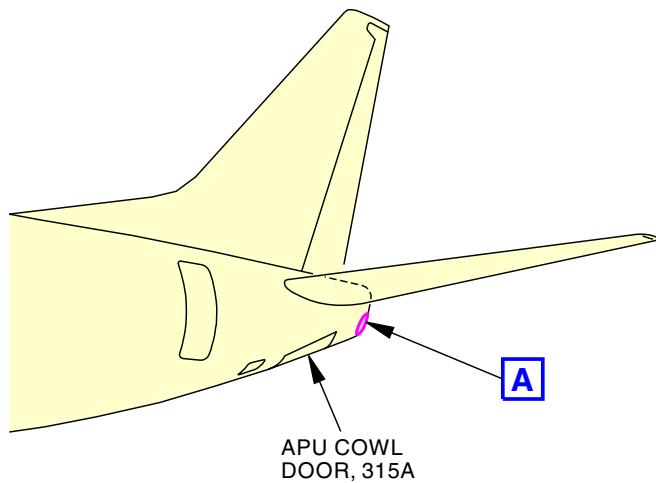
———— END OF TASK ————

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Eductor Inlet Duct Installation  
Figure 401/49-91-71-990-801 (Sheet 1 of 2)

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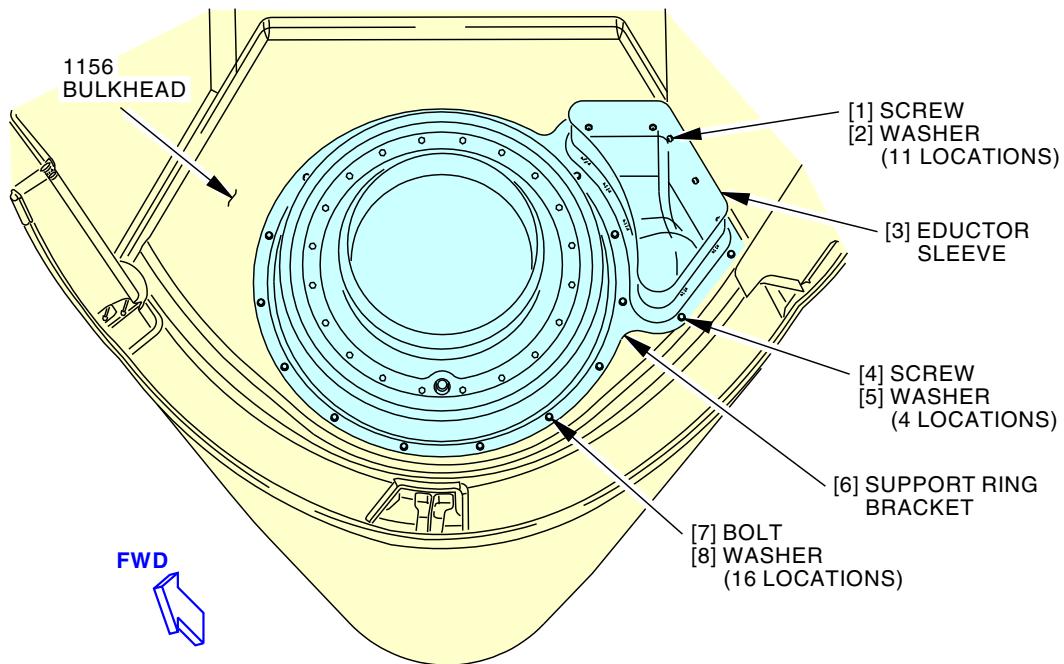
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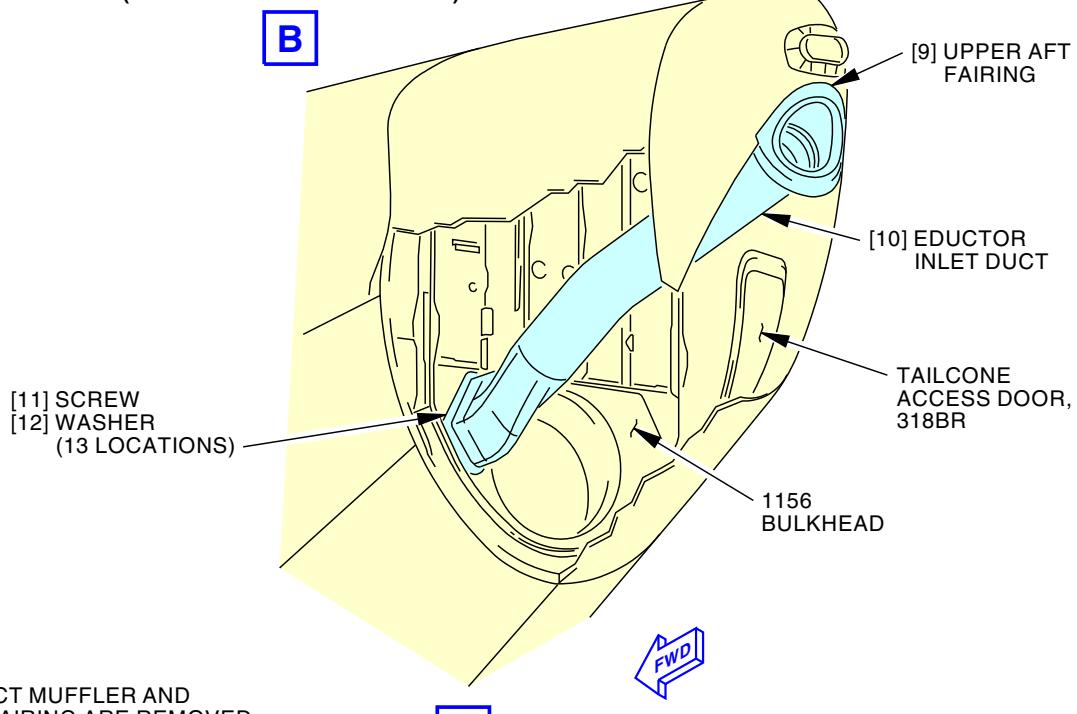
ECCN 9E991 BOEING PROPRIETARY - See title page for details



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(VIEW IN THE AFT DIRECTION)



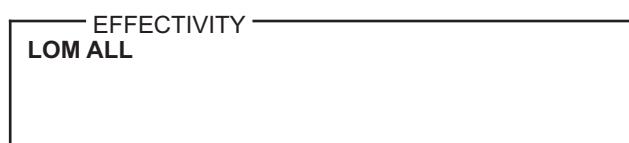
NOTE:

EXHAUST DUCT MUFFLER AND  
LOWER AFT FAIRING ARE REMOVED.



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Eductor Inlet Duct Installation  
Figure 401/49-91-71-990-801 (Sheet 2 of 2)



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ECCN 9E991 BOEING PROPRIETARY - See title page for details

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**TASK 49-91-71-400-801**

**3. Eductor Inlet Duct Installation**

(Figure 401)

**A. References**

Reference	Title
49-81-11-400-801	Exhaust Duct Muffler Installation (P/B 401)
49-81-31-400-801	Aft Fairing Assembly Installation (P/B 401)

**B. Consumable Materials**

Reference	Description	Specification
D50060	Grease - Fluorosilicone, Chemical Resistant Valve Lubricant - Dow Corning 3452	

**C. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
9	Upper aft fairing	49-81-31-01-040 53-53-00-20-510	LOM ALL
10	Eductor inlet duct	49-91-71-01A-005	LOM ALL

**D. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

**E. Access Panels**

Number	Name/Location
315A	APU Cowl Door
318BR	Tailcone Access Door

**F. Procedure**

SUBTASK 49-91-71-420-001



**CAUTION** REMOVE THE PROTECTION COVERS FROM THE OPENINGS AS NECESSARY. IF YOU DO NOT REMOVE THE PROTECTION COVERS, DAMAGE TO THE APU CAN OCCUR.

(1) Do these steps to install the eductor inlet duct [10]:

(a) If the eductor inlet duct [10] is a new part or a different part that was not removed from this airplane, then do these steps:

1) Remove the two screws [1] and two washers [2] that attach the eductor sleeve [3] to the eductor inlet duct [10] temporarily.

NOTE: The eductor sleeve [3] is a part of the eductor inlet duct [10].

a) Discard the two screws [1] and two washers [2].

2) Remove the eductor sleeve [3].

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- (b) Optional: Apply a thin layer of Dow Corning 3452 grease, D50060, around the inner diameter of the eductor duct seal.  
NOTE: The eductor duct seal is installed at the aft end of the eductor inlet duct [10].
- (c) Carefully put the eductor inlet duct [10] into the tail cone compartment and through the 1156 bulkhead.  
NOTE: The weight of the eductor inlet duct [10] is approximately 9 lb (4.1 kg).
- (d) Install the upper aft fairing [9]. To install it, do this task: Aft Fairing Assembly Installation, TASK 49-81-31-400-801.
- (e) Install the 13 washers [12] and 13 screws [11] that attach the eductor inlet duct [10] to the 1156 bulkhead.
- (f) Tighten the 16 bolts [7] and four screws [4] that attach the support ring bracket [6] to the 1156 bulkhead.
- (g) Install the eductor sleeve [3] to the eductor inlet duct [10] with the 11 washers [2] and 11 screws [1].
- (h) Install the exhaust duct muffler. Do this task: Exhaust Duct Muffler Installation, TASK 49-81-11-400-801.

**G. Put the Airplane Back to Its Usual Condition**

SUBTASK 49-91-71-860-007

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-91-71-860-008

- (2) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.

SUBTASK 49-91-71-410-009

- (3) To close the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the Auxiliary Power Unit (APU) compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.

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(g) Close the APU Cowl Door, 315A.

(h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

SUBTASK 49-91-71-410-004

(4) Close this access panel:

**Number      Name/Location**

318BR      Tailcone Access Door

———— END OF TASK ————

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EDUCTOR INLET DUCT - INSPECTION/CHECK

**1. General**

- A. This procedure contains scheduled maintenance task data.
- B. This procedure has the task to inspect the eductor inlet duct.
- C. The eductor inlet duct is installed between the left side of the 1156 bulkhead and the upper fairing assembly on the tail cone.

**TASK 49-91-71-200-801**

**2. Eductor Inlet Duct Inspection**

NOTE: This procedure is a scheduled maintenance task.

**A. References**

Reference	Title
49-91-71-000-801	Eductor Inlet Duct Removal (P/B 401)
49-91-71-400-801	Eductor Inlet Duct Installation (P/B 401)

**B. Location Zones**

Zone	Area
315	APU Compartment - Left
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

**C. Access Panels**

Number	Name/Location
315A	APU Cowl Door
318BR	Tailcone Access Door

**D. Prepare for the Inspection**

SUBTASK 49-91-71-860-001

- (1) Make sure the APU master switch on the P5 forward overhead panel is OFF and install a DO-NOT-OPERATE tag.

SUBTASK 49-91-71-860-002

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

**F/O Electrical System Panel, P6-2**

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-91-71-010-006

- (3) To open the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.

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- (b) Open the three latches.  
**NOTE:** Use this sequence: forward latch, aft latch, middle latch.
- (c) Open the APU Cowl Door, 315A.
- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

SUBTASK 49-91-71-010-002

- (4) Open this access door:

<u>Number</u>	<u>Name/Location</u>
318BR	Tailcone Access Door

## E. Procedure

SUBTASK 49-91-71-210-001

- (1) Do these steps to inspect the eductor inlet duct from the APU compartment and tail cone compartment (Figure 601):
  - (a) Visually examine the forward end and inner surfaces of the eductor inlet duct that you can get access for blockage and contamination.
    - 1) If you find blockage or contamination, remove the blockage or contamination from the eductor inlet duct.
  - (b) Visually examine the inner and outer surfaces of the eductor inlet duct for holes and cracks.
    - 1) If you can see holes or cracks, replace the eductor inlet duct. These are the tasks:
      - Eductor Inlet Duct Removal, TASK 49-91-71-000-801,
      - Eductor Inlet Duct Installation, TASK 49-91-71-400-801.
  - (c) Visually examine the inner and outer surfaces of the eductor inlet duct for separations of the fiberglass material.
    - 1) Separations of one or two plies of fiberglass material are permitted.
    - 2) If you see separations of more than two plies of fiberglass material, replace the eductor inlet duct. These are the tasks:
      - Eductor Inlet Duct Removal, TASK 49-91-71-000-801,
      - Eductor Inlet Duct Installation, TASK 49-91-71-400-801.

SUBTASK 49-91-71-210-002

- (2) Do these steps to inspect the eductor inlet duct from the upper fairing assembly on the tail cone (Figure 601):
  - (a) Visually examine the aft end and inner surfaces of the eductor inlet duct that you can get access for blockage and contamination.
    - 1) If you find blockage or contamination, remove the blockage or contamination from the eductor inlet duct.
  - (b) Visually examine the inner surfaces of the eductor inlet duct for holes and cracks.

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- 1) If you can see holes or cracks, replace the eductor inlet duct. These are the tasks
  - Eductor Inlet Duct Removal, TASK 49-91-71-000-801,
  - Eductor Inlet Duct Installation, TASK 49-91-71-400-801.
- (c) Visually examine the inner surfaces of the eductor inlet duct for separations of the fiberglass material.
  - 1) Separations of one or two plies of fiberglass material are permitted.
  - 2) If you see separations of more than two plies of fiberglass material, replace the eductor inlet duct. These are the tasks:
    - Eductor Inlet Duct Removal, TASK 49-91-71-000-801,
    - Eductor Inlet Duct Installation, TASK 49-91-71-400-801.
- (d) Visually examine the inner surfaces of the eductor inlet duct for damaged painted surfaces which include signs of paint peeling and missing paint from the APU compartment and upper fairing assembly on the tail cone.
  - 1) Signs of paint peeling and/or missing paint are permitted on the inner surfaces of the eductor inlet duct. The APU can continue in service with no further maintenance action.

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

SUBTASK 49-91-71-410-007

- (1) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
318BR	Tailcone Access Door

SUBTASK 49-91-71-410-008

- (2) To close the access panel, do these steps:

<u>Number</u>	<u>Name/Location</u>
315A	APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

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SUBTASK 49-91-71-860-003

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-91-71-860-004

- (4) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.

———— END OF TASK ————

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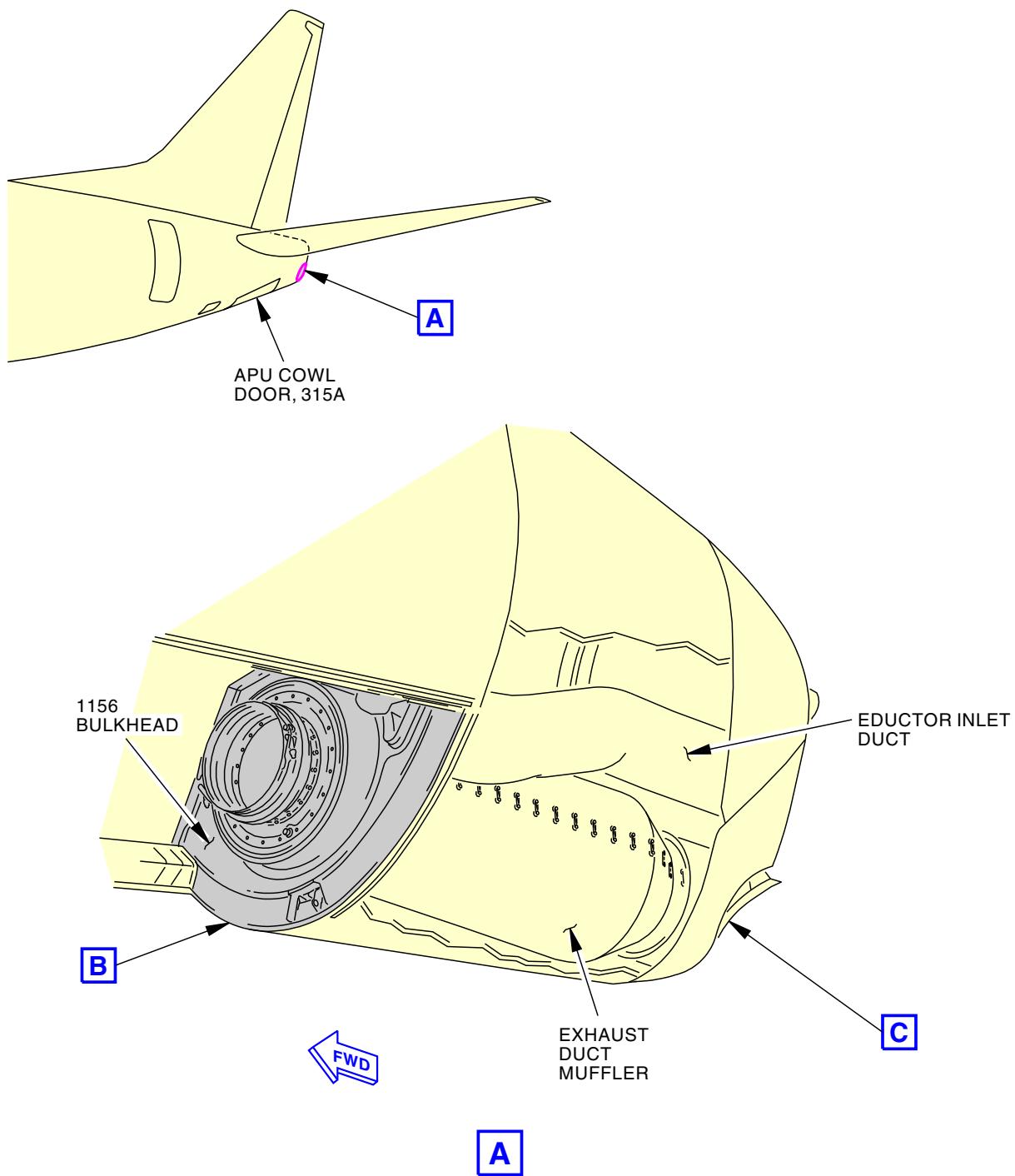
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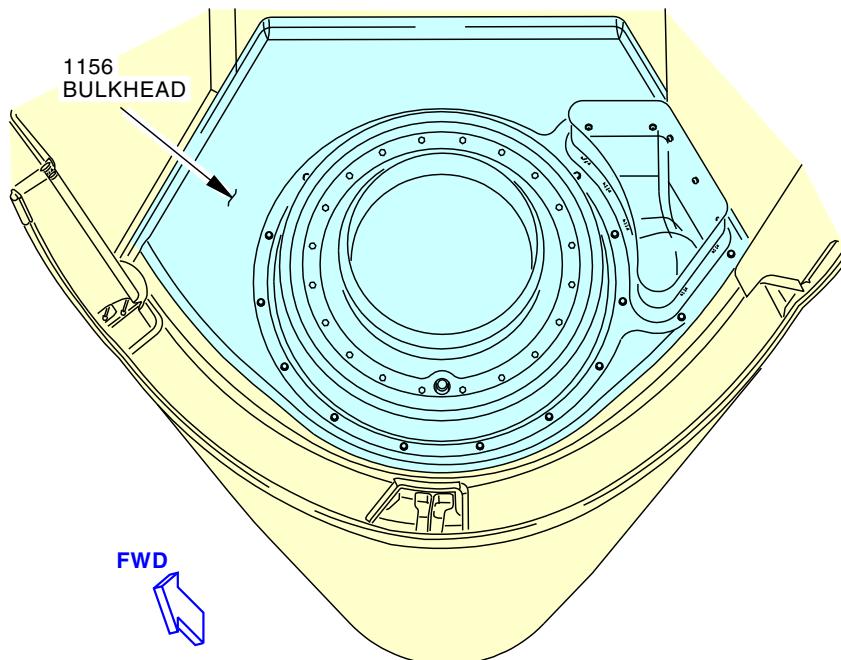


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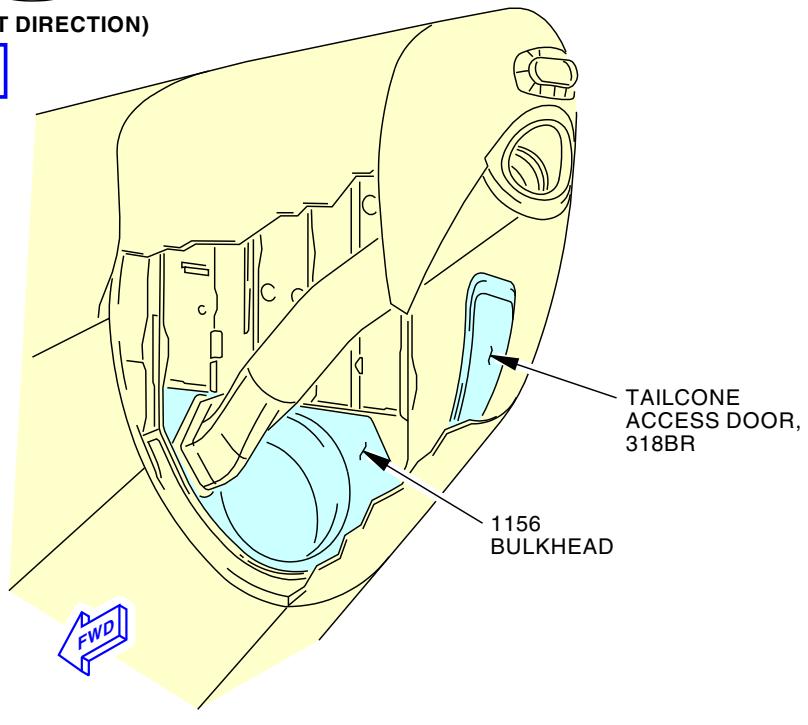
Eductor Inlet Duct Inspection  
Figure 601/49-91-71-990-802 (Sheet 1 of 2)

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(VIEW IN THE AFT DIRECTION)

**B****C****NOTE:**

EXHAUST DUCT MUFFLER AND  
LOWER AFT FAIRING ARE REMOVED.

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**Eductor Inlet Duct Inspection**  
**Figure 601/49-91-71-990-802 (Sheet 2 of 2)**

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MAGNETIC DRAIN PLUG - REMOVAL/INSTALLATION

**1. General**

- A. This procedure has these tasks:
  - (1) A removal of the magnetic drain plug assembly
  - (2) An installation of the magnetic drain plug assembly.
- B. The magnetic drain plug assembly is installed on the front of the APU gearbox. The magnetic drain plug assembly has a magnetic element and a plug.
- C. When you remove the plug from the APU gearbox, the oil will drain from the APU gearbox. When you examine the oil for metal particles, you remove the magnetic element and leave the plug on the APU gearbox to prevent the oil from draining out of the APU gearbox.
- D. In this procedure, the magnetic drain plug assembly is referred to as the plug assembly.

**TASK 49-91-81-000-801**

**2. Magnetic Drain Plug Removal**

(Figure 401)

**A. Tools/Equipment**

<b>Reference</b>	<b>Description</b>
STD-858	Tag - DO NOT OPERATE
STD-1055	Container - Oil Resistant, 5 Gallon (19 Liter)

**B. Location Zones**

<b>Zone</b>	<b>Area</b>
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**C. Access Panels**

<b>Number</b>	<b>Name/Location</b>
315A	APU Cowl Door

**D. Prepare for the Removal**

SUBTASK 49-91-81-860-001

- (1) Make sure that the Auxiliary Power Unit (APU) master switch ,on the P5 forward overhead panel, is OFF.
  - (a) Install a DO NOT OPERATE tag, STD-858.

SUBTASK 49-91-81-860-002

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

**F/O Electrical System Panel, P6-2**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<b>Row</b>	<b>Col</b>	<b>Number</b>	<b>Name</b>
A	14	C00033	AUX POWER UNIT CONT

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SUBTASK 49-91-81-010-003

- (3) To open the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Support the APU panel (cowl door) under the center latch.

- (b) Open the three latches.

NOTE: Use this sequence: forward latch, aft latch, middle latch.

- (c) Open the APU Cowl Door, 315A.

- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.

- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.

- (f) Disconnect the two hold-open rods from the two spring clips.

- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.

- (h) Install the two retainer pins in the two rod ends.

## E. Magnetic Drain Plug Removal

SUBTASK 49-91-81-020-001



**WARNING**

DO NOT TOUCH THE COMPONENTS OF THE OIL SYSTEM IF THE APU IS HOT. THESE COMPONENTS STAY HOTTER THAN OTHER COMPONENTS. HOT COMPONENTS CAN BURN YOU.

- (1) Do these steps to remove the plug assembly [4]:

NOTE: The plug assembly has the magnetic element and the plug.

- (a) Put the oil resistant container (5 gal)(19 Liter), STD-1055, below the plug assembly [4].

- (b) Remove the magnetic element [3] from the plug [5].

- 1) Push in on the magnetic element [3] and turn the magnetic element [3] in the counterclockwise direction to remove the magnetic element [3] from the plug [5].

- (c) Remove the packings [2] from the magnetic element [3].

- 1) Discard the packings [2].



**CAUTION**

IF OIL LEVEL IS AT TOP OF OIL LEVEL SIGHT GLASS, OIL CAN FLOW OUT WHEN FILL CAP IS LOOSENERED. HOT OIL CAN BURN SKIN.

- (d) Pull the latch handle away from the oil fill cap.

- (e) Loosen the oil fill cap to help the oil drain from the APU gearbox.

- (f) Remove the lockwire from the plug [5].

- (g) Remove the plug [5] from the APU gearbox.

- (h) Use the oil resistant container (5 gal)(19 Liter), STD-1055, to drain the oil from the APU gearbox.

- (i) Remove the packing [1] from the plug [5].

- 1) Discard the packing [1].

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- (j) Close the oil fill cap.
- (k) Engage the latch handle on the oil fill cap.
- (l) Make sure you install all necessary protection covers.
- (m) Remove the oil resistant container (5 gal)(19 Liter), STD-1055.

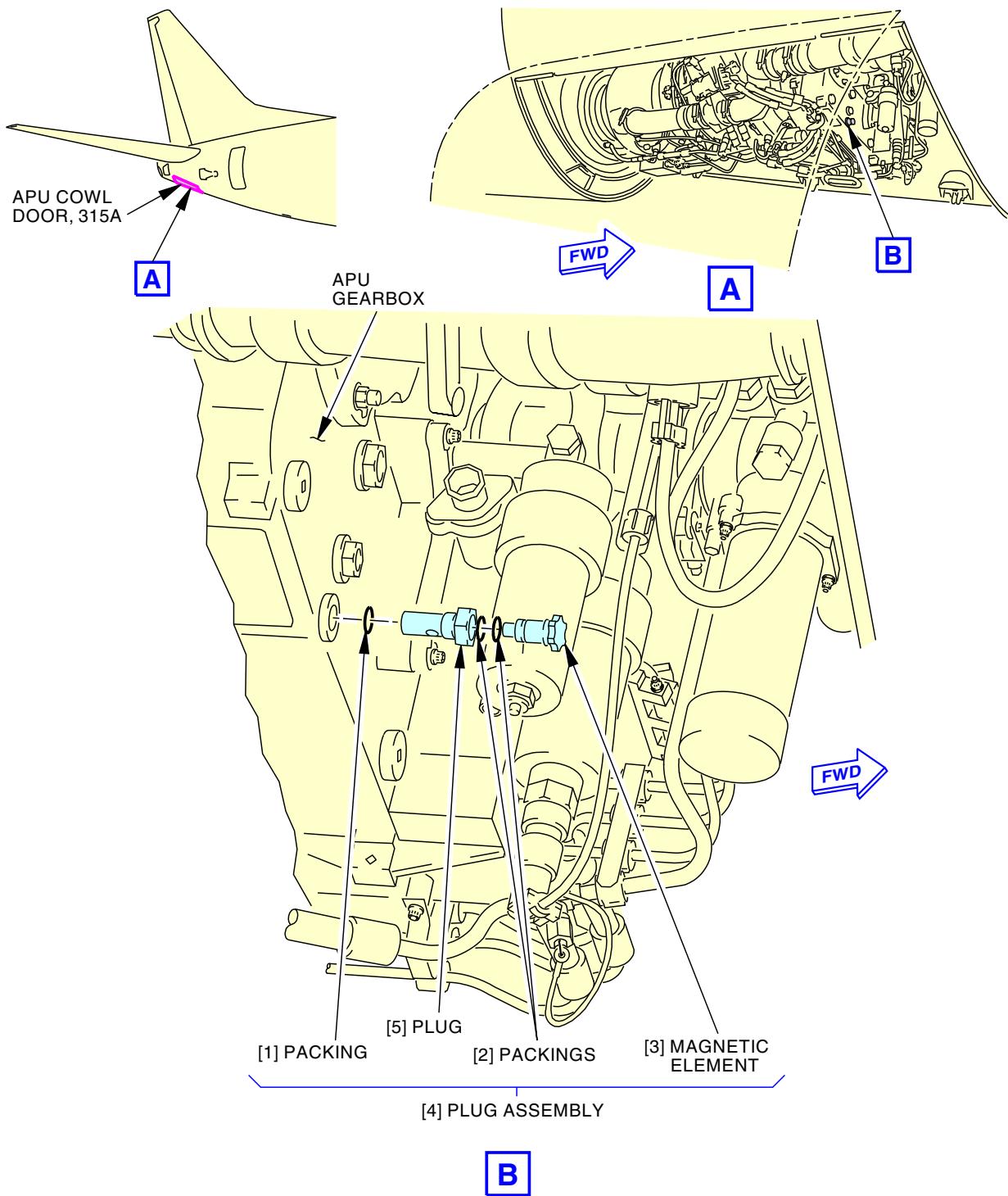
———— END OF TASK ————

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**Magnetic Drain Plug Installation**  
Figure 401/49-91-81-990-801

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**TASK 49-91-81-400-801**

**3. Magnetic Drain Plug Installation**

(Figure 401)

**A. References**

Reference	Title
12-13-31-610-803	Fill the APU Gearbox (P/B 301)
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)

**B. Consumable Materials**

Reference	Description	Specification
D00341	Lubricant - Polyphenyl Ether, Vacuum Pump - Santovac 5	
D50055	Oil - Aircraft Turbine Engine Oil for AE 131-9[B] APU (AMM 12-13-31/301)	
G50225	Lockwire - MS20995C20, Corrosion Resistant Steel - 0.020 Inch (0.508 mm) Diameter	NASM20995

**C. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Packing	49-91-81-02-035	LOM ALL
2	Packing	49-91-81-02-030	LOM ALL
4	Plug assembly	49-91-81-02-025	LOM ALL

**D. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**E. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**F. Magnetic Drain Plug Installation**

SUBTASK 49-91-81-420-001



REMOVE ANY INSTALLED PROTECTION COVERS FROM THE OPENINGS.  
IF YOU DO NOT REMOVE THE PROTECTION COVERS, DAMAGE TO THE  
APU CAN OCCUR.

- (1) Do these steps to install the plug assembly [4]:

NOTE: The plug assembly has the magnetic element and the plug. First install the plug in the Auxiliary Power Unit (APU) gearbox then install the magnetic element.

- (a) Lubricate the new packing [1] and new packings [2] with a light coat of Santovac 5 lubricant, D00341, or aircraft turbine engine oil, D50055.
- (b) Install the packing [1] on the plug [5].
- (c) Install the packings [2] on the magnetic element [3].
- (d) Install the plug [5] in the APU gearbox.

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- 1) Tighten the plug [5] to  $85 \pm 5$  in-lb ( $9.6 \pm 0.6$  N·m).
- (e) Install the MS20995C20 lockwire, G50225, on the plug [5].
- (f) Install the magnetic element [3] in the plug [5].
  - 1) Push in on the magnetic element [3] and turn in the clockwise direction to install the magnetic element [3] in the plug [5].

SUBTASK 49-91-81-610-001

- (2) Do this task: Fill the APU Gearbox, TASK 12-13-31-610-803.

**G. Magnetic Drain Plug Installation Test**

SUBTASK 49-91-81-860-003

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-91-81-860-004

- (2) Remove the DO NOT OPERATE tag, from the APU master switch, on the P5 forward overhead panel.

SUBTASK 49-91-81-790-001

- (3) Do the installation test for the plug assembly [4]:
  - (a) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
  - (b) Operate the APU for a minimum of five minutes.
  - (c) During the APU operation, examine the plug assembly for signs of oil leakage.
  - (d) If you find oil leakage, do these steps to repair the leakage:
    - 1) Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.
    - 2) Install a DO NOT OPERATE tag, to the APU master switch, on the P5 forward overhead panel.
    - 3) Repair the cause of the oil leakage.
    - 4) Remove the DO NOT OPERATE tag, from the APU master switch, on the P5 forward overhead panel.
    - 5) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
    - 6) During the APU operation, examine the plug assembly for signs of oil leakage.
    - 7) If you find oil leakage, do the leakage repair again.
  - (e) If it is not necessary to do other tasks, do this task: APU Usual Shutdown, TASK 49-11-00-860-802.





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**H. Put the Airplane Back to Its Usual Condition**

SUBTASK 49-91-81-410-004

- (1) To close the access panel, do these steps:

**Number**      **Name/Location**

315A      APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

**NOTE:** Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

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MAGNETIC DRAIN PLUG - INSPECTION/CHECK

**1. General**

- A. This procedure has the task to inspect the magnetic element for the magnetic drain plug.
- B. The magnetic drain plug is installed on the front of the APU gearbox. The magnetic drain plug has a magnetic element and a plug.
- C. The magnetic element retains metal particles from the engine oil. The magnetic element is used to isolate internal engine problems.

**TASK 49-91-81-200-801**

**2. Magnetic Drain Plug Inspection**

(Figure 601)

**A. References**

Reference	Title
49-11-00-000-801	APU Power Plant Removal (P/B 401)
49-11-00-400-801	APU Power Plant Installation (P/B 401)
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)

**B. Tools/Equipment**

Reference	Description
STD-1057	Air Source - Regulated, Dry Filtered, Compressed 60-105 PSIG (414-723.9 KPa)(22 SCFM)

**C. Consumable Materials**

Reference	Description	Specification
B00130	Alcohol - Isopropyl	TT-I-735
D00341	Lubricant - Polyphenyl Ether, Vacuum Pump - Santovac 5	
D50055	Oil - Aircraft Turbine Engine Oil for AE 131-9[B] APU (AMM 12-13-31/301)	
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)

**D. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Plug assembly	49-91-81-02-025	LOM ALL
2	Packing	49-91-81-02-030	LOM ALL

**E. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

**F. Access Panels**

Number	Name/Location
315A	APU Cowl Door

EFFECTIVITY  
LOM ALL

**49-91-81**

D633A101-LOM



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G. Prepare for the Inspection

SUBTASK 49-91-81-860-005

- (1) Make sure that the APU master switch, on the P5 forward overhead panel, is in the OFF position and install a DO-NOT-OPERATE tag.

SUBTASK 49-91-81-860-006

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-91-81-010-004

- (3) To open the access panel, do these steps:

Number      Name/Location

315A            APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.  
(b) Open the three latches.  
NOTE: Use this sequence: forward latch, aft latch, middle latch.  
(c) Open the APU Cowl Door, 315A.  
(d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.  
(e) Remove the retainer pin from the spring clip on the aft hold-open rod.  
(f) Disconnect the two hold-open rods from the two spring clips.  
(g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.  
(h) Install the two retainer pins in the two rod ends.

SUBTASK 49-91-81-020-002



**WARNING**

DO NOT TOUCH THE COMPONENTS OF THE OIL SYSTEM IF THE APU IS HOT. THESE COMPONENTS STAY HOTTER THAN OTHER COMPONENTS. HOT COMPONENTS CAN BURN YOU.

- (4) Do these steps to remove the magnetic element [3] from the plug:

- (a) Remove the magnetic element [3] from the plug.

NOTE: Push in on the magnetic element and turn the magnetic element counterclockwise for the removal.

NOTE: The plug assembly (magnetic drain plug) has the magnetic element and the plug.

EFFECTIVITY  
LOM ALL

**49-91-81**



**737-600/700/800/900**  
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## H. Magnetic Drain Plug Inspection

SUBTASK 49-91-81-210-001

- (1) Do these steps to inspect the magnetic element [3] for metal particles:

NOTE: Metal particles on the magnetic element give an indication of internal damage to the engine. If you see metal particles on the magnetic element, examine the engine to find the cause and quantity of the damage.

- (a) If the magnetic element is free of metal particles, the APU is satisfactory.
- (b) A small quantity of metal particles that are not silver color are permitted.
- (c) Silver color particles are not permitted.

NOTE: Silver color particles give an indication of damage to the APU.

- 1) If you find silver color particles, replace the APU, do these tasks:
  - APU Power Plant Removal, TASK 49-11-00-000-801
  - APU Power Plant Installation, TASK 49-11-00-400-801

- (d) If you find a medium quantity of metal particles that are not silver color, then do these steps:

- 1) Clean the magnetic element [3] with alcohol, B00130, and a cotton wiper, G00034.
- 2) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057, to dry the magnetic element.

NOTE: It is recommended that you use a pressure of 30-60 psig (207-414 kPa) of air or nitrogen to dry the magnetic element.

- 3) Install the magnetic element [3]:
  - a) Remove and discard the packing [2] from the magnetic element [3].
  - b) Lubricate the new packings [2] with a light coat of Santovac 5 lubricant, D00341, or aircraft turbine engine oil, D50055.
  - c) Install the packings [2] on the magnetic element [3].
  - d) Install the plug assembly [1] in the APU gearbox.

NOTE: Push in on the magnetic element and turn the magnetic element clockwise for the installation.

NOTE: The plug assembly [1] (magnetic drain plug) has the magnetic element and the plug. You install the magnetic element with the packing [2] to the plug in the APU gearbox.

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch, on the P5 forward overhead panel.
- 5) Remove the safety tags and close these circuit breakers:

### F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

### F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 6) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
- 7) Operate the APU for a minimum of 15 minutes.

EFFECTIVITY  
LOM ALL

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- 8) Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.
- 9) Install a DO-NOT-OPERATE tag to the APU master switch on the P5 forward overhead panel.
- 10) Open these circuit breakers and install safety tags:

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT



**WARNING** DO NOT TOUCH THE COMPONENTS OF THE OIL SYSTEM IF THE

APU IS HOT. THESE COMPONENTS STAY HOTTER THAN OTHER  
COMPONENTS. HOT COMPONENTS CAN BURN YOU.

- 11) Remove the magnetic element [3] from the plug:
  - a) Remove the magnetic element [3] from the plug.

NOTE: Push in on the magnetic element and turn the magnetic element counterclockwise for the removal.

NOTE: The plug assembly [1] (magnetic drain plug) has the magnetic element and the plug.
  - b) Remove and discard the packing [2] from the magnetic element [3].
- 12) Examine the magnetic element [3] for metal particles.
- 13) More metal particles on the magnetic element are not permitted.
  - a) If you find more metal particles, replace the APU, do these tasks:
    - APU Power Plant Removal, TASK 49-11-00-000-801
    - APU Power Plant Installation, TASK 49-11-00-400-801
- 14) If no more metal particles are found, the APU is satisfactory.
- (e) A large quantity of metal particles is not permitted.

NOTE: A large quantity of metal particles give an indication of internal damage to the engine.

  - 1) If you find a large quantity of metal particles, replace the APU, do these tasks:
    - APU Power Plant Removal, TASK 49-11-00-000-801
    - APU Power Plant Installation, TASK 49-11-00-400-801
- (f) If it is not installed, install the magnetic element [3]:
  - 1) Remove and discard the packing [2] from the magnetic element [3].
  - 2) Lubricate the new packings [2] with a light coat of Santovac 5 lubricant, D00341, or aircraft turbine engine oil, D50055.
  - 3) Install the packings [2] on the magnetic element [3].



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**AIRCRAFT MAINTENANCE MANUAL**

- 4) Install the plug assembly [1] in the APU gearbox.

NOTE: Push in on the magnetic element and turn the magnetic element clockwise for the installation.

NOTE: The plug assembly [1] (magnetic drain plug) has the magnetic element and the plug. You install the magnetic element with the packing [2] to the plug in the APU gearbox.

**I. Magnetic Drain Plug Installation Test**

SUBTASK 49-91-81-860-007

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-91-81-860-008

- (2) Remove the DO-NOT-OPERATE tag from the APU master switch, on the P5 forward overhead panel.

SUBTASK 49-91-81-790-002

- (3) Do the installation test for the magnetic drain plug:
- Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
  - Operate the APU for a minimum of five minutes.
  - During the APU operation, examine the magnetic drain plug for signs of oil leakage.
  - If you find oil leakage, do these steps to repair the leakage:
    - Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.
    - Install a DO-NOT-OPERATE tag to the APU master switch, on the P5 forward overhead panel.
    - Repair the cause of the oil leakage.
    - Remove the DO-NOT-OPERATE tag from the APU master switch, on the P5 forward overhead panel.
    - Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
    - During the APU operation, examine the magnetic drain plug for signs of oil leakage.
    - If you find oil leakage, do the leakage repair again.
  - If it is not necessary to do other tasks, do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

**J. Put the Airplane Back to Its Usual Condition**

SUBTASK 49-91-81-410-003

- (1) To close the access panel, do these steps:

<u>Number</u>	<u>Name/Location</u>
315A	APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the APU compartment.

EFFECTIVITY  
LOM ALL

**49-91-81**



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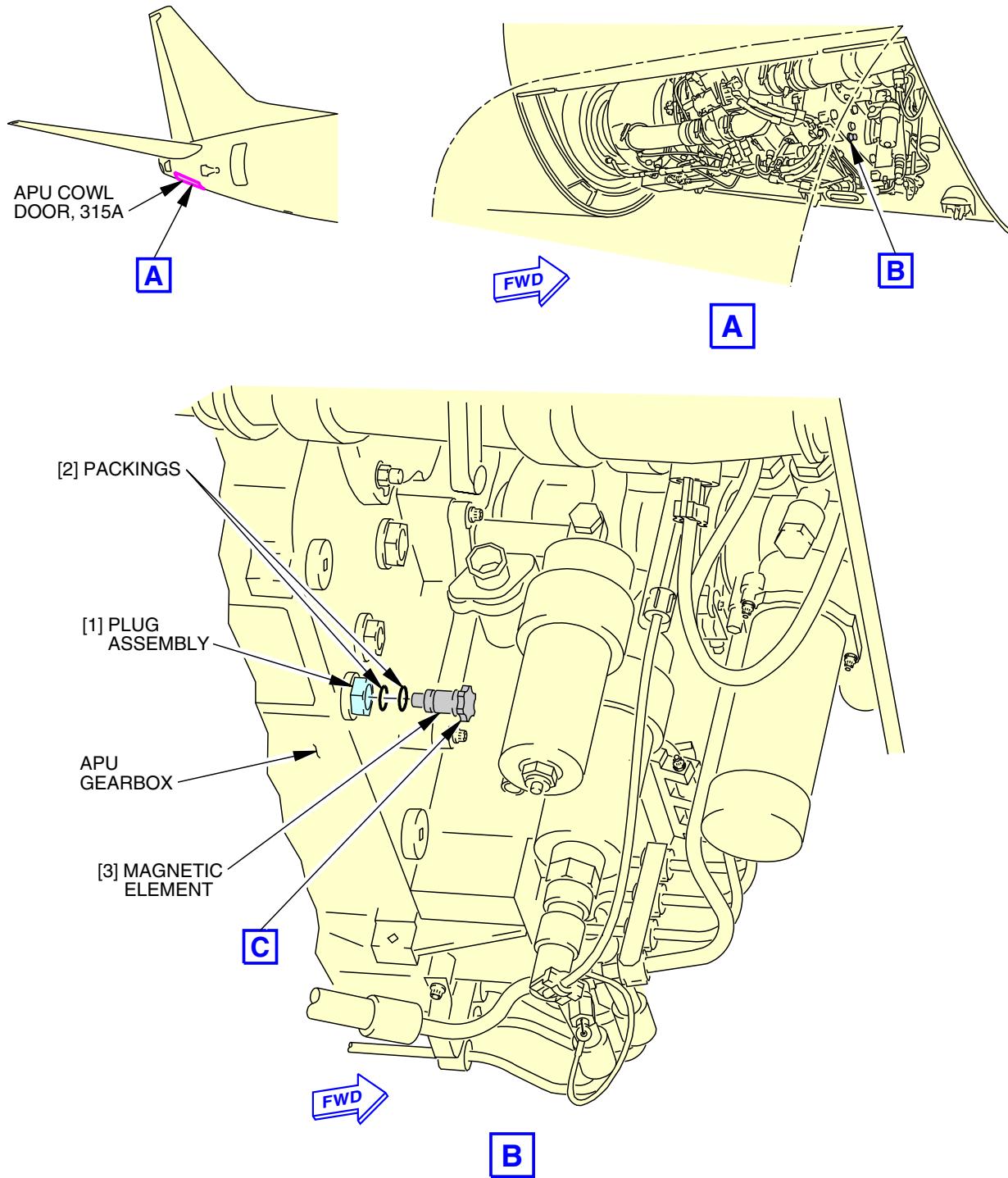
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

EFFECTIVITY  
LOM ALL

**49-91-81**



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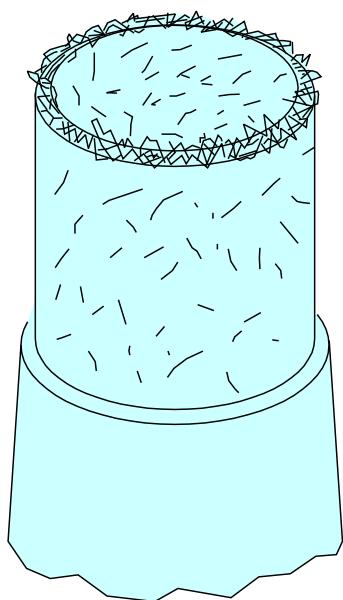
**Magnetic Drain Plug Inspection**  
**Figure 601/49-91-81-990-802 (Sheet 1 of 2)**

 EFFECTIVITY  
 LOM ALL

**49-91-81**



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SMALL QUANTITY OF  
METAL PARTICLES

C



MEDIUM QUANTITY OF  
METAL PARTICLES

C



LARGE QUANTITY OF  
METAL PARTICLES

C

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**Magnetic Drain Plug Inspection**  
Figure 601/49-91-81-990-802 (Sheet 2 of 2)

EFFECTIVITY  
LOM ALL

**49-91-81**



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OIL LEVEL SENSOR - REMOVAL/INSTALLATION

**1. General**

- A. This procedure has these tasks:
  - (1) A removal of the oil level sensor
  - (2) An installation of the oil level sensor.
- B. The oil level sensor is installed in the APU gearbox.

**TASK 49-94-11-000-801**

**2. Oil Level Sensor Removal**

(Figure 401)

**A. Location Zones**

<u>Zone</u>	<u>Area</u>
211	Flight Compartment - Left
315	APU Compartment - Left

**B. Access Panels**

<u>Number</u>	<u>Name/Location</u>
315A	APU Cowl Door

**C. Prepare for the Removal**

SUBTASK 49-94-11-860-001

- (1) Make sure the APU master switch on the P5 forward overhead panel is OFF and install a DO-NOT-OPERATE tag.

SUBTASK 49-94-11-860-002

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-94-11-010-002

- (3) To open the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.
- (b) Open the three latches.  
*NOTE: Use this sequence: forward latch, aft latch, middle latch.*
- (c) Open the APU Cowl Door, 315A.
- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.

EFFECTIVITY	LOM ALL
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- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

**D. Oil Level Sensor Removal**

SUBTASK 49-94-11-020-001



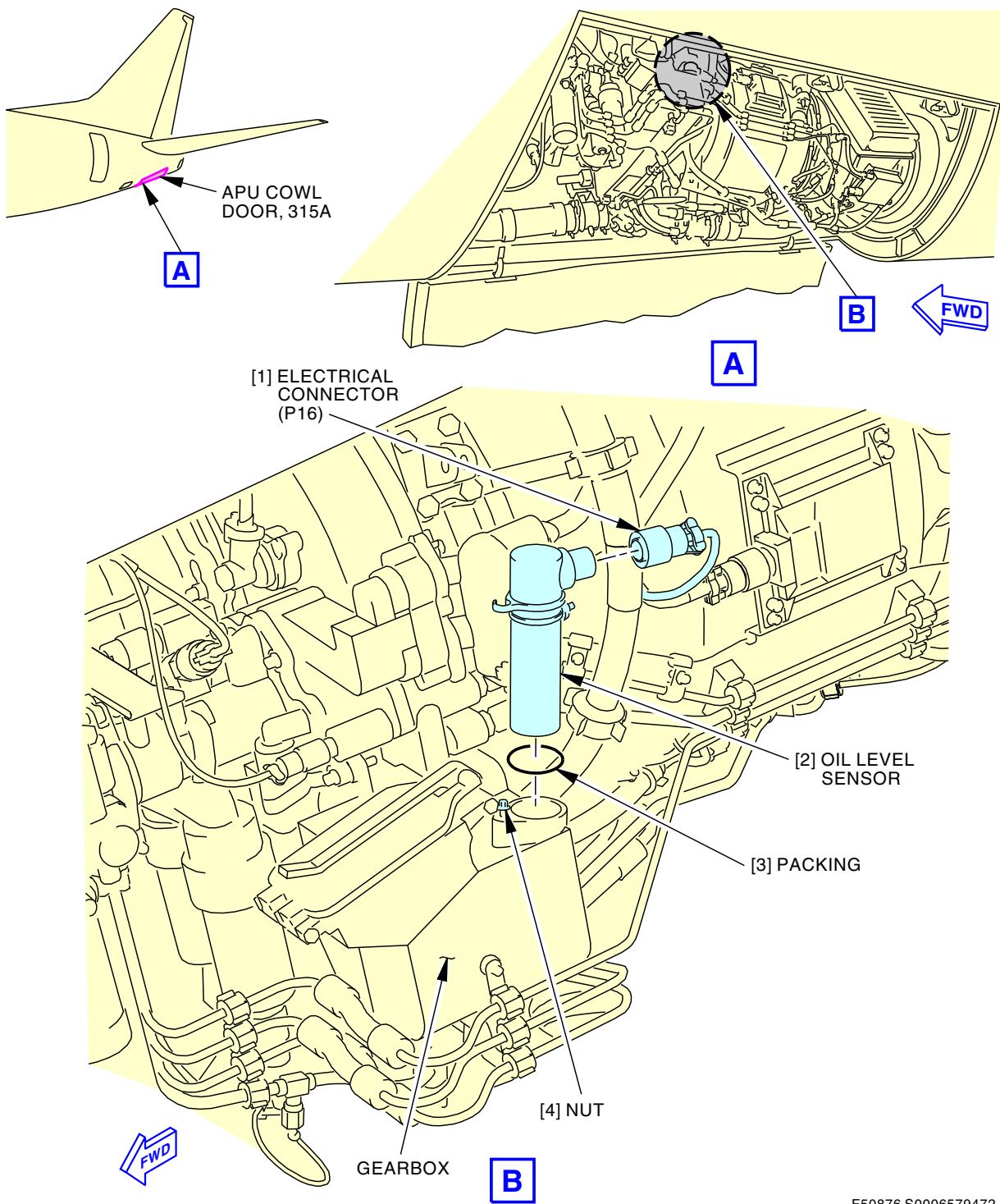
**DO NOT TOUCH THE COMPONENTS OF THE OIL SYSTEM IF THE APU IS HOT. THESE COMPONENTS STAY HOTTER THAN OTHER COMPONENTS.  
HOT COMPONENTS CAN BURN YOU.**

- (1) Do these steps to remove the oil level sensor [2]:
  - (a) Disconnect the electrical connector (P16) [1] from the oil level sensor [2].
  - (b) Loosen the nut [4] on the APU gearbox.
  - (c) Turn the oil level sensor [2] counterclockwise until the flange disengages from the stud.
  - (d) Remove the oil level sensor [2].
  - (e) Remove the packing [3] from the oil level sensor [2].
    - 1) Discard the packing [3].
  - (f) Make sure you install all necessary protection covers.

———— END OF TASK ————

EFFECTIVITY  
LOM ALL

**49-94-11**



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**Oil Level Sensor Installation**  
**Figure 401/49-94-11-990-801**

 EFFECTIVITY  
 LOM ALL

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**TASK 49-94-11-400-801**

**3. Oil Level Sensor Installation**

(Figure 401)

**A. References**

Reference	Title
12-13-31-610-803	Fill the APU Gearbox (P/B 301)
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)
49-61-00-700-801	APU BITE Procedure (P/B 201)

**B. Consumable Materials**

Reference	Description	Specification
D00341	Lubricant - Polyphenyl Ether, Vacuum Pump - Santovac 5	
D50055	Oil - Aircraft Turbine Engine Oil for AE 131-9[B] APU (AMM 12-13-31/301)	

**C. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Oil level sensor	49-94-11-02-010	LOM ALL
3	Packing	49-94-11-02-015	LOM ALL

**D. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left

**E. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**F. Procedure**

SUBTASK 49-94-11-420-001



REMOVE THE PROTECTION COVERS FROM THE OPENINGS AS NECESSARY. IF YOU DO NOT REMOVE THE PROTECTION COVERS, DAMAGE TO THE APU CAN OCCUR.

(1) Do these steps to install the oil level sensor [2]:

- (a) Lubricate the new packing [3] with a light coat of Santovac 5 lubricant, D00341 or aircraft turbine engine oil, D50055.
- (b) Install the packing [3] on the oil level sensor [2].
- (c) Hold the oil level sensor [2] in the vertical position near the APU gearbox while you connect the electrical connector (P16) [1] to the oil level sensor [2].
- (d) Install the oil level sensor [2] in the APU gearbox.
- (e) Turn the oil level sensor [2] clockwise until the flange fully engages the stud.
- (f) Tighten the nut [4] to 40 pound-inches (4.5 newton-meters).



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**G. Oil Level Sensor Installation Test**

SUBTASK 49-94-11-860-003

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-94-11-860-004

- (2) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.

SUBTASK 49-94-11-790-001

- (3) Do the installation test for the oil level sensor:

- (a) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
- (b) Operate the APU for a minimum of five minutes.
- (c) During the APU operation, examine the oil level sensor for signs of oil leakage.
- (d) If you find oil leakage, do these steps to repair the leakage:
  - 1) Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.
  - 2) Install a DO-NOT-OPERATE tag to the APU master switch on the P5 forward overhead panel.
  - 3) Repair the cause of the oil leakage.
    - a) If it is necessary, do this task: Fill the APU Gearbox, TASK 12-13-31-610-803.
  - 4) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.
  - 5) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
  - 6) During the APU operation, examine the oil level sensor for signs of oil leakage.
  - 7) If you find oil leakage, do the leakage repair again.
- (e) If it is not necessary to do other tasks, do this task: APU Usual Shutdown, TASK 49-11-00-860-802.
- (f) Do this task: APU BITE Procedure, TASK 49-61-00-700-801.
  - 1) Look at the OIL QUANTITY REPORT page on the CDU display for the oil level.
    - a) Make sure the OIL QUANTITY REPORT page shows FULL for the oil level.

**H. Put the Airplane Back to Its Usual Condition**

SUBTASK 49-94-11-410-002

- (1) To close the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the Auxiliary Power Unit (APU) compartment.
- (b) Disconnect the two hold-open rods from the two brackets.



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- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

EFFECTIVITY  
LOM ALL

**49-94-11**



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AIRCRAFT MAINTENANCE MANUAL

OIL TEMPERATURE SENSOR - REMOVAL/INSTALLATION

**1. General**

- A. This procedure has these tasks:
  - (1) A removal of the oil temperature sensor
  - (2) An installation of the oil temperature sensor.
- B. The oil temperature sensor is installed on the lube module.

**TASK 49-94-21-000-801**

**2. Oil Temperature Sensor Removal**

(Figure 401)

**A. Location Zones**

<u>Zone</u>	<u>Area</u>
211	Flight Compartment - Left
315	APU Compartment - Left

**B. Access Panels**

<u>Number</u>	<u>Name/Location</u>
315A	APU Cowl Door

**C. Prepare for the Removal**

SUBTASK 49-94-21-860-001

- (1) Make sure that the APU master switch, on the P5 forward overhead panel, is OFF and install a DO-NOT-OPERATE tag.

SUBTASK 49-94-21-860-002

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-94-21-010-002

- (3) To open the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.
- (b) Open the three latches.  
*NOTE:* Use this sequence: forward latch, aft latch, middle latch.
- (c) Open the APU Cowl Door, 315A.
- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.

EFFECTIVITY	LOM ALL
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**49-94-21**



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- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

**D. Oil Temperature Sensor Removal**

SUBTASK 49-94-21-020-001



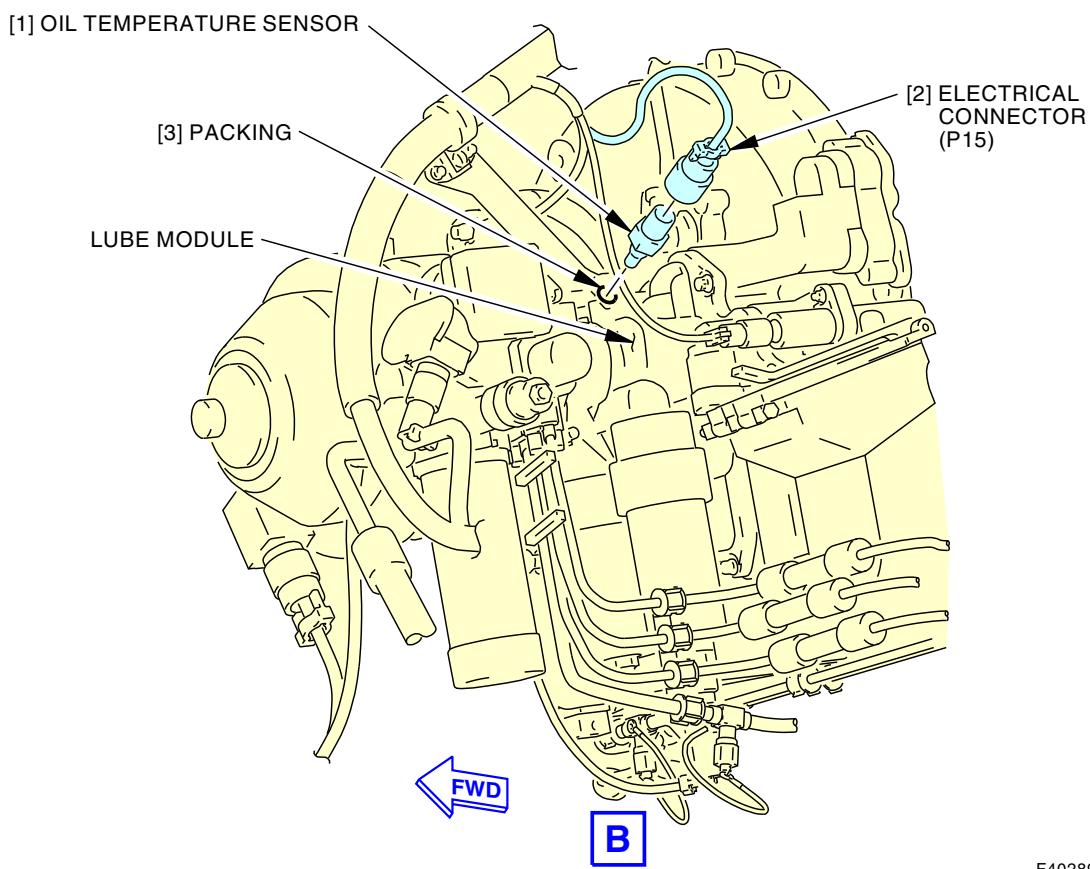
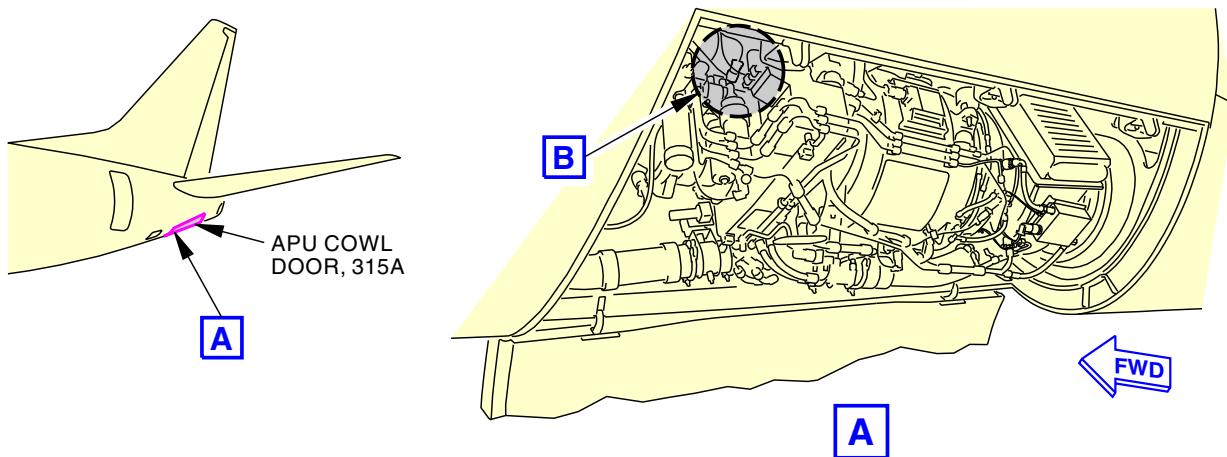
**DO NOT TOUCH THE COMPONENTS OF THE OIL SYSTEM IF THE APU IS HOT. THESE COMPONENTS STAY HOTTER THAN OTHER COMPONENTS. HOT COMPONENTS CAN BURN YOU.**

- (1) Do these steps to remove the oil temperature sensor [1]:
  - (a) Disconnect the electrical connector (P15) [2] from the oil temperature sensor [1].
    - 1) Remove the lockwire from the electrical connector (P15) [2].
  - (b) Remove the oil temperature sensor [1] from the lube module.
  - (c) Remove the packing [3] from the oil temperature sensor [1].
    - 1) Discard the packing [3].
  - (d) Make sure that you install all necessary protection covers.

———— END OF TASK ————

EFFECTIVITY  
LOM ALL

**49-94-21**



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**Oil Temperature Sensor Installation**  
Figure 401/49-94-21-990-801EFFECTIVITY  
LOM ALL**49-94-21**

D633A101-LOM

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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TASK 49-94-21-400-801

3. Oil Temperature Sensor Installation

(Figure 401)

A. References

Reference	Title
20-10-44-400-801	Lockwire, Cotter Pins, and Lockrings - Installation (P/B 401)
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)
49-61-00-700-801	APU BITE Procedure (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00341	Lubricant - Polyphenyl Ether, Vacuum Pump - Santovac 5	
D50055	Oil - Aircraft Turbine Engine Oil for AE 131-9[B] APU (AMM 12-13-31/301)	
G01048	Lockwire - MS20995C32, Corrosion Resistant Steel - 0.032 Inch (0.8128 mm) Diameter	NASM20995
G51860	Lockwire - MS20995C10, Corrosion Resistant Steel - 0.010 Inch (0.254 mm) Diameter	

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Oil temperature sensor	49-94-21-02-055	LOM ALL
3	Packing	49-94-21-02-060	LOM ALL

D. Location Zones

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left

E. Access Panels

Number	Name/Location
315A	APU Cowl Door

F. Oil Temperature Sensor Installation

SUBTASK 49-94-21-420-001



REMOVE THE PROTECTION COVERS FROM THE OPENINGS AS NECESSARY. IF YOU DO NOT REMOVE THE PROTECTION COVERS, DAMAGE TO THE APU CAN OCCUR.

(1) Do these steps to install the oil temperature sensor [1]:

- (a) Lubricate the new packing [3] with a light coat of Santovac 5 lubricant, D00341, or aircraft turbine engine oil, D50055.
- (b) Install the packing [3] on the oil temperature sensor [1].
- (c) Install the oil temperature sensor [1] on the lube module.
  - 1) Tighten the oil temperature sensor [1] to 65 in-lb (7.3 N·m) - 70 in-lb (7.9 N·m).
- (d) Install the MS20995C32 lockwire, G01048, on the oil temperature sensor [1].

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LOM ALL

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- (e) Connect the electrical connector (P15) [2] to the oil temperature sensor [1].  
1) Install the MS20995C10 lockwire, G51860, on the electrical connector (P15) [2] (TASK 20-10-44-400-801).

**G. Oil Temperature Sensor Installation Test**

SUBTASK 49-94-21-860-003

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-94-21-860-004

- (2) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.

SUBTASK 49-94-21-710-001

- (3) Do the installation test for the oil temperature sensor:  
(a) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.  
(b) Operate the APU for a minimum of five minutes.  
(c) During the APU operation, examine the oil temperature sensor for signs of oil leakage.  
(d) If you find oil leakage, do these steps to repair the leakage:  
1) Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.  
2) Install a DO-NOT-OPERATE tag to the APU master switch on the P5 forward overhead panel.  
3) Repair the cause of the oil leakage.  
4) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.  
5) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.  
6) During the APU operation, examine the oil temperature sensor for signs of oil leakage.  
7) If you find oil leakage, do the leakage repair again.  
(e) Do this task: APU BITE Procedure, TASK 49-61-00-700-801.  
1) If maintenance message(s) show for the APU oil indicating system or the oil temperature sensor, refer to the applicable Maintenance Message Index in the FIM.  
(f) If it is not necessary to do other tasks, do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

**H. Put the Airplane Back to Its Usual Condition**

SUBTASK 49-94-21-410-002

- (1) To close the access panel, do these steps:

<u>Number</u>	<u>Name/Location</u>
315A	APU Cowl Door

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- (a) Remove the two retainer pins from the two hold-open rods in the Auxiliary Power Unit (APU) compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

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LOW OIL PRESSURE SWITCH - REMOVAL/INSTALLATION

**1. General**

- A. This procedure has these tasks:
  - (1) A removal of the low oil pressure switch
  - (2) An installation of the low oil pressure switch.
- B. The low oil pressure switch is referred to as the oil pressure switch.
- C. The oil pressure switch is installed on the APU gearbox.

**TASK 49-94-22-000-801**

**2. Low Oil Pressure Switch Removal**

(Figure 401)

**A. Tools/Equipment**

<u>Reference</u>	<u>Description</u>
STD-203	Container - Oil Resistant, 1 U.S.-Gal (3.8 l)

**B. Location Zones**

<u>Zone</u>	<u>Area</u>
211	Flight Compartment - Left
315	APU Compartment - Left

**C. Access Panels**

<u>Number</u>	<u>Name/Location</u>
315A	APU Cowl Door

**D. Prepare for the Removal**

SUBTASK 49-94-22-860-001

- (1) Make sure the APU master switch on the P5 forward overhead panel is OFF and install a DO-NOT-OPERATE tag.

SUBTASK 49-94-22-860-002

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-94-22-010-002

- (3) To open the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Support the Auxiliary Power Unit (APU) panel (cowl door) under the center latch.
- (b) Open the three latches.

NOTE: Use this sequence: forward latch, aft latch, middle latch.

- (c) Open the APU Cowl Door, 315A.

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- (d) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.
- (e) Remove the retainer pin from the spring clip on the aft hold-open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

**E. Low Oil Pressure Switch Removal**

SUBTASK 49-94-22-020-001



**WARNING**

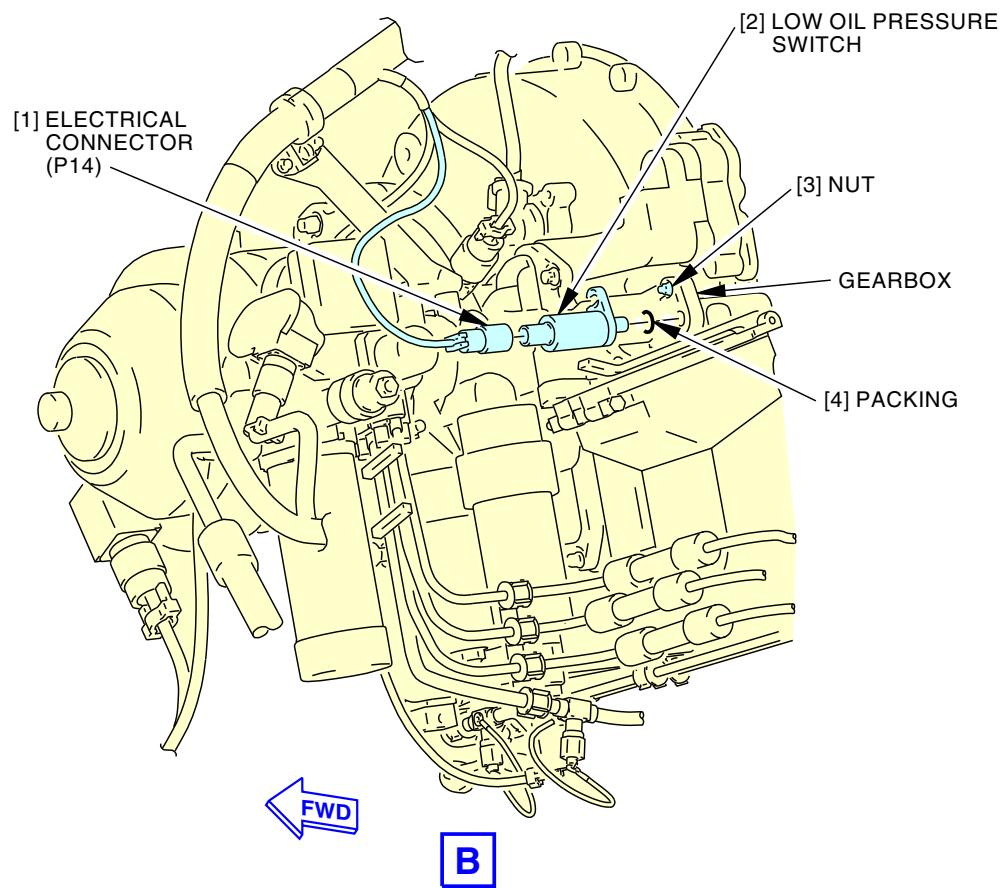
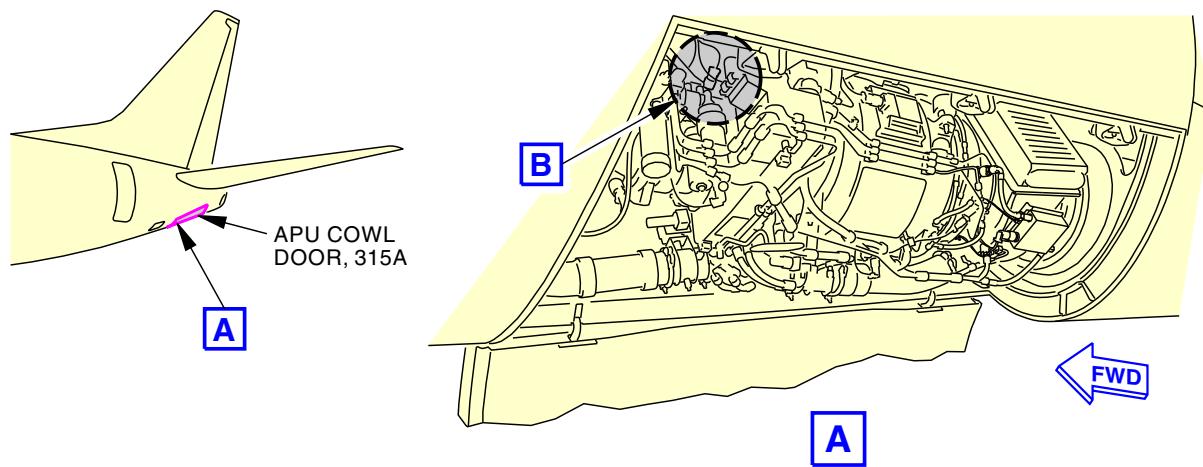
DO NOT TOUCH THE COMPONENTS OF THE OIL SYSTEM IF THE APU IS HOT. THESE COMPONENTS STAY HOTTER THAN OTHER COMPONENTS. HOT COMPONENTS CAN BURN YOU.

- (1) Do these steps to remove the oil pressure switch [2]:
  - (a) Disconnect the electrical connector (P14) [1] from the oil pressure switch [2].
    - 1) Install a cap on the electrical connector (P14) [1] to prevent contamination.
  - (b) Put the 1 U.S.-gal (3.81 l) oil resistant container, STD-203 below the oil pressure switch [2].
  - (c) Loosen the nut [3] on the APU gearbox.
  - (d) Turn the oil pressure switch [2] clockwise until the flange disengages from the stud.
  - (e) Remove the oil pressure switch [2] from the APU gearbox.
  - (f) Remove the packing [4] from the oil pressure switch [2].
    - 1) Discard the packing [4].
  - (g) Make sure you install all necessary protection covers.
  - (h) Remove the 1 U.S.-gal (3.81 l) oil resistant container, STD-203.

———— END OF TASK ————

EFFECTIVITY  
LOM ALL

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**Low Oil Pressure Switch Installation**  
**Figure 401/49-94-22-990-801**

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**TASK 49-94-22-400-801**

**3. Low Oil Pressure Switch Installation**

(Figure 401)

**A. References**

Reference	Title
12-13-31-200-801	APU Oil Level Inspection (P/B 301)
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)
49-61-00-700-801	APU BITE Procedure (P/B 201)

**B. Consumable Materials**

Reference	Description	Specification
D00341	Lubricant - Polyphenyl Ether, Vacuum Pump - Santovac 5	
D50055	Oil - Aircraft Turbine Engine Oil for AE 131-9[B] APU (AMM 12-13-31/301)	

**C. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Oil pressure switch	49-94-22-02-010	LOM ALL
4	Packing	49-94-22-02-015	LOM ALL

**D. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left

**E. Access Panels**

Number	Name/Location
315A	APU Cowl Door

**F. Procedure**

SUBTASK 49-94-22-420-001



REMOVE THE PROTECTION COVERS FROM THE OPENINGS AS NECESSARY. IF YOU DO NOT REMOVE THE PROTECTION COVERS, DAMAGE TO THE APU CAN OCCUR.

- (1) Do these steps to install the oil pressure switch [2]:
  - (a) Lubricate the new packing [4] with a light coat of Santovac 5 lubricant, D00341 or aircraft turbine engine oil, D50055.
  - (b) Install the packing [4] on the oil pressure switch [2].
  - (c) Install the oil pressure switch [2] on the APU gearbox.
  - (d) Turn the oil pressure switch [2] counterclockwise until the flange fully engages the stud.
  - (e) Tighten the nut [3] to 40 pound-inches (4.5 newton-meters).
  - (f) Remove the cap from the electrical connector (P14) [1].
  - (g) Connect the electrical connector (P14) [1] to the oil pressure switch [2].
  - (h) Make sure the APU oil system is full. To check the oil level, do this task: APU Oil Level Inspection, TASK 12-13-31-200-801.

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**G. Low Oil Pressure Switch Installation Test**

SUBTASK 49-94-22-860-003

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-94-22-860-004

- (2) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.

SUBTASK 49-94-22-740-001

- (3) Do the installation test for the oil pressure switch:
  - (a) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
  - (b) Operate the APU for a minimum of five minutes.
  - (c) During the APU operation, examine the oil pressure switch for signs of oil leakage.
  - (d) If you find oil leakage, do these steps to repair the leakage:
    - 1) Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.
    - 2) Install a DO-NOT-OPERATE tag to the APU master switch on the P5 forward overhead panel.
    - 3) Repair the cause of the oil leakage.
    - 4) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.
    - 5) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
    - 6) During the APU operation, examine the oil pressure switch for signs of oil leakage.
    - 7) If you find oil leakage, do the leakage repair again.
  - (e) Do this task: APU BITE Procedure, TASK 49-61-00-700-801.
    - 1) If maintenance message(s) show for the APU oil indicating system or the oil pressure switch, refer to the applicable Maintenance Message Index in the FIM.
  - (f) If it is not necessary to do other tasks, do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

**H. Put the Airplane Back to Its Usual Condition**

SUBTASK 49-94-22-410-002

- (1) To close the access panel, do these steps:

**Number      Name/Location**

315A      APU Cowl Door

- (a) Remove the two retainer pins from the two hold-open rods in the Auxiliary Power Unit (APU) compartment.
- (b) Disconnect the two hold-open rods from the two brackets.
- (c) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.

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- (d) Install the retainer pin in the rod end of the forward hold-open rod.
- (e) Install the retainer pin to the spring clip on the aft hold-open rod.
- (f) Make sure that the APU cowl door insulation blanket and the oil cooler fire shield have sufficient clearance.
  - 1) Make sure that the installation of fire shield has not shifted.
  - 2) If it is necessary, hand form the insulation blanket to obtain a better clearance.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

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LOM ALL

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OIL SIGHT GLASS - REMOVAL/INSTALLATION

1. **General**

- A. This procedure has these tasks:
  - (1) A removal of the APU oil sight glass.
  - (2) An installation of the APU oil sight glass.
- B. The oil sight glass is installed on the APU gearbox.

**TASK 49-94-51-000-801**

2. **Oil Sight Glass Removal**

(Figure 401)

A. **References**

<u>Reference</u>	<u>Title</u>
12-13-31-610-801	Drain the APU Oil (P/B 301)

B. **Tools/Equipment**

<u>Reference</u>	<u>Description</u>
STD-858	Tag - DO NOT OPERATE

C. **Location Zones**

<u>Zone</u>	<u>Area</u>
211	Flight Compartment - Left
315	APU Compartment - Left

D. **Access Panels**

<u>Number</u>	<u>Name/Location</u>
315A	APU Cowl Door

E. **Prepare for the Removal**

SUBTASK 49-94-51-860-001

- (1) Make sure that the Auxiliary Power Unit (APU) master switch on the P5 forward overhead panel is OFF and install a DO NOT OPERATE tag, STD-858.

SUBTASK 49-94-51-860-002

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-94-51-010-002

- (3) Do these steps to get access to the oil sight glass [1]:

- (a) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
315A	APU Cowl Door

- (b) Support the APU access door under the centre latch.

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LOM ALL

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- (c) Open the three latches. Use this sequence: forward latch, aft latch and middle latch.
- (d) Remove the retainer pin from the rod end of the forward hold-open rod on this access panel.
- (e) Remove the retainer pin from the spring clip on the aft hold open rod.
- (f) Disconnect the two hold-open rods from the two spring clips.
- (g) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
- (h) Install the two retainer pins in the two rod ends.

SUBTASK 49-94-51-680-001

- (4) Do this task: Drain the APU Oil, TASK 12-13-31-610-801.

**F. Oil Sight Glass Removal**

SUBTASK 49-94-51-000-001



**WARNING**

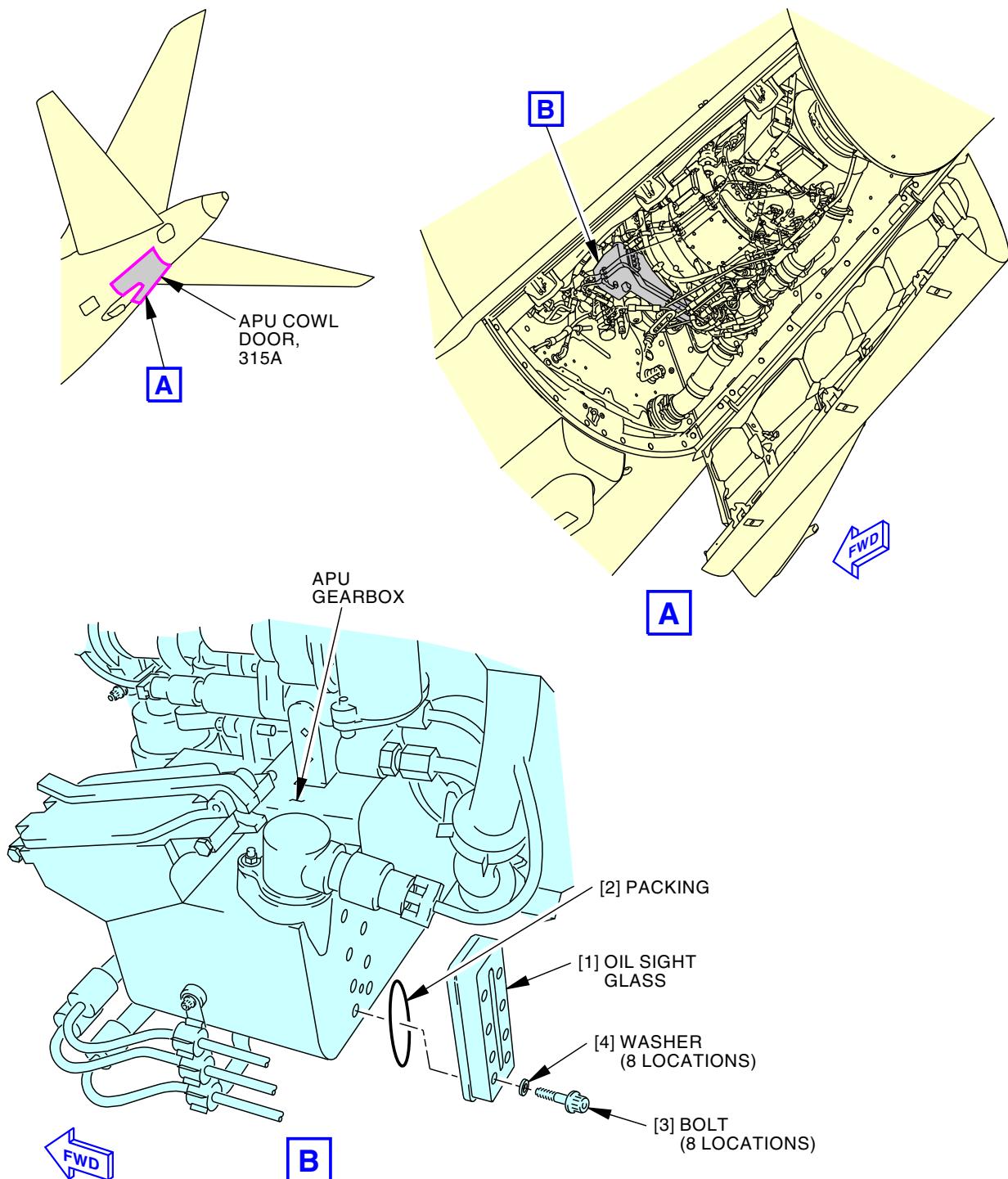
DO NOT TOUCH THE COMPONENTS OF THE OIL SYSTEM IF THE APU IS HOT. THESE COMPONENTS STAY HOTTER THAN OTHER COMPONENTS.  
HOT COMPONENTS CAN BURN YOU.

- (1) Do these steps to remove the oil sight glass [1]:
  - (a) Remove the bolts [3] and washers [4] that attach the oil sight glass [1] to the gearbox housing.
  - (b) Remove the oil sight glass [1] and packing [2] from the gearbox housing.
  - (c) Discard the packing [2].

———— END OF TASK ————

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LOM ALL

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**APU Gearbox Sight Glass Installation**  
**Figure 401/49-94-51-990-801**

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TASK 49-94-51-400-801

3. Oil Sight Glass Installation

A. References

Reference	Title
12-13-31-200-801	APU Oil Level Inspection (P/B 301)
12-13-31-610-803	Fill the APU Gearbox (P/B 301)
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)

B. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

C. Consumable Materials

Reference	Description	Specification
D00341	Lubricant - Polyphenyl Ether, Vacuum Pump - Santovac 5	
D50055	Oil - Aircraft Turbine Engine Oil for AE 131-9[B] APU (AMM 12-13-31/301)	

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Oil sight glass	49-94-51-02-060	LOM ALL
2	Packing	49-94-51-02-065	LOM ALL

E. Location Zones

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left

F. Access Panels

Number	Name/Location
315A	APU Cowl Door

G. Oil Sight Glass Installation

SUBTASK 49-94-51-400-002



REMOVE THE PROTECTION COVERS FROM THE OPENINGS AS NECESSARY. IF YOU DO NOT REMOVE THE PROTECTION COVERS, DAMAGE TO THE APU CAN OCCUR.

- (1) Do these steps to install the oil sight glass [1]:
  - (a) Lubricate the new packing [2] with a light coat of Santovac 5 lubricant, D00341, or aircraft turbine engine oil, D50055.
  - (b) Install the new packing [2] on the oil sight glass [1].
  - (c) Install the bolts [3] and washers [4].
  - (d) Tighten the bolts [3] to 50 in-lb (5.6 N·m).

SUBTASK 49-94-51-640-001

- (2) Do this task: Fill the APU Gearbox, TASK 12-13-31-610-803.

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LOM ALL

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**H. Oil Sight Glass Installation Test**

SUBTASK 49-94-51-000-002

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

**F/O Electrical System Panel, P6-2**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

**F/O Electrical System Panel, P6-4**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 49-94-51-020-001

- (2) Remove the DO NOT OPERATE tag, STD-858 from the Auxiliary Power Unit (APU) master switch on the P5 forward overhead panel.

SUBTASK 49-94-51-200-001

- (3) If you drain or flush the oil from the APU gearbox, do a leak check of the plug assembly and oil sight glass [1].
  - (a) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
  - (b) During the APU operation, examine the plug assembly and oil sight glass [1] for signs of oil leakage.
  - (c) If you find oil leakage, do these steps to repair the leakage:
    - 1) Do this task APU Usual Shutdown, TASK 49-11-00-860-802.
    - 2) Install the DO NOT OPERATE tag, STD-858 to the APU master switch on the P5 overhead panel.
    - 3) Repair the cause of the leakage.
    - 4) Remove the DO NOT OPERATE tag, STD-858 from the APU master switch on the P5 forward overhead panel.
    - 5) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
    - 6) During the APU operation, examine the plug assembly and oil sight glass [1] for signs of oil leakage.
    - 7) If you find oil leakage, do the leakage repair again.
  - (d) If there is no oil leakage, do this task: APU Usual Shutdown, TASK 49-11-00-860-802.
  - (e) Make sure the APU oil system is full (APU Oil Level Inspection, TASK 12-13-31-200-801).

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

SUBTASK 49-94-51-410-001

- (1) Do these steps:

- (a) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
315A	APU Cowl Door

- (b) Remove the two retainer pins from the two hold-open rods in the APU compartment.
  - (c) Disconnect the two hold-open rods from the two brackets.
  - (d) Put the two hold-open rods in the two spring clips on the APU Cowl Door, 315A.
  - (e) Install the retainer pin in the rod end of the forward hold-open rod.



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**AIRCRAFT MAINTENANCE MANUAL**

- (f) Install the retainer pin to the spring clip on the aft hold-open rod.
- (g) Close the APU Cowl Door, 315A.
- (h) Close the three latches. Use this sequence: middle latch, aft latch, forward latch.

———— END OF TASK ————

— EFFECTIVITY —  
**LOM ALL**

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AIRCRAFT MAINTENANCE MANUAL

OIL SIGHT GLASS - CLEANING/PAINTING

**1. General**

- A. This procedure has this task:
  - (1) Oil sight glass cleaning.
- B. The oil sight glass is installed on the APU gearbox.

**TASK 49-94-51-100-801**

**2. Oil Sight Glass - Cleaning/Painting**

**A. References**

Reference	Title
49-94-51-000-801	Oil Sight Glass Removal (P/B 401)
49-94-51-400-801	Oil Sight Glass Installation (P/B 401)

**B. Tools/Equipment**

Reference	Description
STD-1057	Air Source - Regulated, Dry Filtered, Compressed 60-105 PSIG (414-723.9 KPa)(22 SCFM)

**C. Location Zones**

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left

**D. Oil Sight Glass Cleaning/Painting**

SUBTASK 49-94-51-000-003

- (1) Do this task: Oil Sight Glass Removal, TASK 49-94-51-000-801.

SUBTASK 49-94-51-100-001

- (2) Do these steps to clean the oil sight glass:
  - (a) Use a mild detergent and soft fibre bristled brush to remove contamination.
  - (b) Rinse the parts with water at 80°F (27°C) to 110°F (43°C).



MAKE SURE YOU USE THE APPROVED SAFETY EQUIPMENT FOR YOUR EYES WHEN YOU USE COMPRESSED AIR. DO NOT LET THE AIR BLOW IN YOUR EYES OR ON YOUR SKIN. THIS WILL HELP PREVENT INJURY TO PERSONS.

- (c) Use the compressed 60-105 PSIG dry filtered regulated air source, STD-1057 to remove all moisture from the oil sight glass until it is dry.

SUBTASK 49-94-51-400-003

- (3) Do this task: Oil Sight Glass Installation, TASK 49-94-51-400-801.

— END OF TASK —

EFFECTIVITY  
LOM ALL

**49-94-51**

