

CHAPTER

73

**ENGINE FUEL AND
CONTROL**

(GE90-100 SERIES ENGINES)

777-200/300 AIRCRAFT MAINTENANCE MANUAL

CHAPTER 73 ENGINE FUEL AND CONTROL

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1 thru 6	SEP 05/2018		914	Jul 25/2018		405	Sep 05/2017	
73-CONTENTS			915	Jul 25/2018		406	Sep 05/2017	
1	Jul 25/2018		916	BLANK		407	Sep 05/2017	
2	Jul 25/2018		73-11-00			408	Jan 05/2015	
3	Jul 25/2018		601	Jan 05/2016		409	Sep 05/2017	
4	Jul 25/2018		602	Sep 05/2017		410	Sep 05/2017	
5	Jul 25/2018		603	Sep 05/2017		411	Sep 05/2017	
6	Jul 25/2018		604	Sep 05/2017		412	BLANK	
7	Jul 25/2018		605	Sep 05/2017		73-11-03		
8	BLANK		606	Sep 05/2017		401	Sep 05/2016	
73-00-00			73-11-01			402	Sep 05/2017	
201	Sep 05/2016		401	Jan 05/2016		403	Sep 05/2017	
202	Sep 05/2017		402	Sep 05/2017		404	Sep 05/2017	
203	Sep 05/2017		403	Sep 05/2017		405	Sep 05/2017	
204	Sep 05/2017		404	Sep 05/2017		406	Sep 05/2017	
205	Sep 05/2017		405	Sep 05/2017		407	Sep 05/2017	
206	Sep 05/2017		406	Sep 05/2017		408	May 05/2018	
73-00-00			407	Sep 05/2017		409	Sep 05/2017	
601	Jan 05/2016		408	Sep 05/2017		410	Sep 05/2017	
602	Sep 05/2017		409	Sep 05/2017		411	Sep 05/2017	
603	Sep 05/2017		410	Sep 05/2017		412	BLANK	
604	Sep 05/2017		411	Sep 05/2017		73-11-04		
73-00-00			412	Sep 05/2017		401	May 05/2017	
901	Jul 25/2018		413	Sep 05/2017		402	Sep 05/2017	
902	Jul 25/2018		414	Sep 05/2017		403	Sep 05/2017	
903	Jul 25/2018		415	Sep 05/2017		404	Sep 05/2017	
904	Jul 25/2018		416	Sep 05/2017		405	Sep 05/2017	
905	Jul 25/2018		417	Sep 05/2017		406	Sep 05/2017	
906	Jul 25/2018		418	Sep 05/2017		407	May 05/2018	
907	Jul 25/2018		419	Sep 05/2017		408	Sep 05/2017	
908	Jul 25/2018		420	BLANK		409	Sep 05/2017	
909	Jul 25/2018		73-11-02			410	BLANK	
910	Jul 25/2018		401	Sep 05/2016		73-11-04		
911	Jul 25/2018		402	Sep 05/2017		601	Jul 25/2018	
912	Jul 25/2018		403	Sep 05/2017		602	Jul 25/2018	
913	Jul 25/2018		404	Sep 05/2017		603	Jul 25/2018	

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604	Jan 05/2018		435	Sep 05/2017		471	Sep 05/2017	
73-11-05			436	Sep 05/2017		472	Sep 05/2017	
401	May 05/2017		437	Sep 05/2017		473	Sep 05/2017	
402	Sep 05/2017		438	Sep 05/2017		474	Sep 05/2017	
403	Sep 05/2017		439	Sep 05/2017		475	Sep 05/2017	
404	Sep 05/2017		440	Sep 05/2017		476	Sep 05/2017	
405	Sep 05/2017		441	Sep 05/2017		477	Sep 05/2017	
406	Sep 05/2017		442	Sep 05/2017		478	Sep 05/2017	
407	Sep 05/2017		443	Sep 05/2017		479	Sep 05/2017	
408	Sep 05/2017		444	Sep 05/2017		480	Sep 05/2017	
409	Sep 05/2017		445	Sep 05/2017		481	Sep 05/2017	
410	Sep 05/2017		446	Sep 05/2017		482	Sep 05/2017	
411	Sep 05/2017		447	Sep 05/2017		483	Sep 05/2017	
412	Sep 05/2017		448	Sep 05/2017		484	Sep 05/2017	
413	Sep 05/2017		449	Sep 05/2017		485	Sep 05/2017	
414	Sep 05/2017		450	Sep 05/2017		486	Sep 05/2017	
415	Sep 05/2017		451	Sep 05/2017		487	Sep 05/2017	
416	Sep 05/2017		452	Sep 05/2017		488	Sep 05/2017	
417	Sep 05/2017		453	Sep 05/2017		489	Sep 05/2017	
418	Sep 05/2017		454	Sep 05/2017		490	Sep 05/2017	
419	Sep 05/2017		455	Sep 05/2017		491	Sep 05/2017	
420	Sep 05/2017		456	Sep 05/2017		492	Sep 05/2017	
421	Sep 05/2017		457	Sep 05/2017		493	Sep 05/2017	
422	Sep 05/2017		458	Sep 05/2017		494	Sep 05/2017	
423	Sep 05/2017		459	Sep 05/2017		495	Sep 05/2017	
424	Sep 05/2017		460	Sep 05/2017		496	Sep 05/2017	
425	Sep 05/2017		461	Sep 05/2017		497	Sep 05/2017	
426	Sep 05/2017		462	Sep 05/2017		498	Sep 05/2017	
427	Sep 05/2017		463	Sep 05/2017		498.1	Sep 05/2017	
428	Sep 05/2017		464	Sep 05/2017		498.2	Sep 05/2017	
429	Sep 05/2017		465	Sep 05/2017		498.3	Sep 05/2017	
430	Sep 05/2017		466	Sep 05/2017		498.4	BLANK	
431	Sep 05/2017		467	Sep 05/2017		73-11-05		
432	Sep 05/2017		468	Sep 05/2017		801	Jan 05/2016	
433	Sep 05/2017		469	Sep 05/2017		802	Sep 05/2017	
434	Sep 05/2017		470	Sep 05/2017		803	Sep 05/2017	

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804	Sep 05/2017		403	Sep 05/2017		403	Sep 05/2017	
805	Sep 05/2017		404	Sep 05/2017		404	Sep 05/2017	
806	Sep 05/2017		405	Sep 05/2017		405	Sep 05/2017	
807	Sep 05/2017		406	Sep 05/2017		406	May 05/2017	
808	Sep 05/2017		407	Sep 05/2017		407	Sep 05/2017	
809	Sep 05/2017		408	BLANK		408	May 05/2015	
810	Sep 05/2017		73-21-08			409	Sep 05/2017	
811	Sep 05/2017		401	Jan 05/2016		410	Sep 05/2017	
812	BLANK		402	Sep 05/2017		411	Sep 05/2017	
73-11-07			403	Sep 05/2017		412	BLANK	
401	Jan 05/2016		404	Sep 05/2017		73-21-14		
402	Sep 05/2017		405	May 05/2017		401	Jan 05/2016	
403	Sep 05/2017		406	May 05/2017		402	Sep 05/2017	
404	Sep 05/2017		407	Sep 05/2017		403	Sep 05/2017	
405	Sep 05/2017		408	May 05/2015		404	Sep 05/2017	
406	Sep 05/2017		409	Sep 05/2017		405	Sep 05/2017	
407	Sep 05/2017		410	Sep 05/2017		406	Sep 05/2017	
408	Sep 05/2017		411	Sep 05/2017		407	Sep 05/2017	
409	Sep 05/2017		412	BLANK		408	Sep 05/2017	
410	Jan 05/2015		73-21-08			409	Sep 05/2017	
411	Sep 05/2017		601	Jan 05/2016		410	Sep 05/2017	
412	Sep 05/2017		602	Sep 05/2017		411	Sep 05/2017	
73-21-00			603	Sep 05/2017		412	Sep 05/2017	
601	Jan 05/2016		604	BLANK		413	Sep 05/2017	
602	Sep 05/2017		73-21-08			414	Sep 05/2017	
603	Sep 05/2017		801	Jul 25/2018		415	Sep 05/2017	
604	Sep 05/2017		802	Sep 05/2017		416	May 05/2017	
605	Sep 05/2017		803	Jul 25/2018		417	Sep 05/2017	
606	Sep 05/2017		804	Sep 05/2017		418	Sep 05/2017	
607	May 05/2015		805	Sep 05/2017		419	Sep 05/2017	
608	Jan 05/2016		806	Sep 05/2017		420	Sep 05/2017	
609	Sep 05/2017		807	Sep 05/2017		421	Sep 05/2017	
610	Sep 05/2017		808	BLANK		422	Jan 05/2018	
73-21-06			73-21-09			423	Sep 05/2017	
401	Sep 05/2017		401	Jan 05/2016		424	Sep 05/2017	
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201	Jan 05/2017		404	May 05/2015		405	Sep 05/2017	
202	Jan 05/2017		405	Sep 05/2017		406	Sep 05/2017	
203	Jan 05/2016		406	BLANK		407	Sep 05/2017	
204	Jan 05/2017		73-21-22			408	Sep 05/2017	
205	May 05/2018		201	May 05/2015		409	Sep 05/2017	
206	May 05/2018		202	Jan 05/2015		410	Sep 05/2017	
207	May 05/2018		73-21-22			411	Sep 05/2017	
208	May 05/2018		401	Jan 05/2015		412	Sep 05/2017	
209	May 05/2018		402	Sep 05/2017		413	Sep 05/2017	
210	May 05/2018		403	Sep 05/2017		414	May 05/2017	
73-21-15			404	May 05/2015		415	Sep 05/2017	
401	Sep 05/2017		405	Sep 05/2017		416	Sep 05/2017	
402	Sep 05/2017		406	Jan 05/2015		417	Sep 05/2017	
403	Sep 05/2017		73-21-55			418	Jan 05/2018	
404	May 05/2017		401	May 05/2018		419	Jan 05/2018	
405	Sep 05/2017		402	May 05/2018		420	BLANK	
406	Sep 05/2017		403	May 05/2018		73-21-63		
407	Sep 05/2017		404	May 05/2018		601	Jan 05/2015	
408	Sep 05/2017		405	May 05/2018		602	Jan 05/2015	
73-21-19			406	Sep 05/2017		603	Sep 05/2017	
201	Jan 05/2015		407	May 05/2018		604	Sep 05/2017	
202	Jan 05/2015		408	Sep 05/2017		73-21-63		
73-21-19			409	Sep 05/2017		801	Jan 05/2017	
401	Sep 05/2017		410	BLANK		802	Jan 05/2015	
402	May 05/2018		73-21-62			803	Sep 05/2017	
403	Sep 05/2017		401	Sep 05/2017		804	Sep 05/2017	
404	Sep 05/2017		402	Jan 05/2016		73-21-64		
405	May 05/2015		403	Sep 05/2017		401	Jan 05/2016	
406	Sep 05/2017		404	Jan 05/2016		402	Sep 05/2017	
73-21-20			405	Sep 05/2017		403	Sep 05/2017	
201	May 05/2016		406	Jan 05/2016		404	Sep 05/2017	
202	Jan 05/2015		73-21-63			405	Sep 05/2017	
73-21-21			401	Sep 05/2017		406	Sep 05/2017	
401	Sep 05/2017		402	Sep 05/2017		407	Sep 05/2017	
402	Sep 05/2017		403	Sep 05/2017		408	May 05/2016	
403	Sep 05/2017		404	Sep 05/2017		409	Sep 05/2017	

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410	Sep 05/2017		224	Sep 05/2017		425	Sep 05/2017	
411	Jan 05/2015		225	Sep 05/2017		426	Sep 05/2017	
412	BLANK		226	Sep 05/2017		427	Sep 05/2017	
73-21-67			227	Sep 05/2017		428	Sep 05/2017	
401	Sep 05/2017		228	Sep 05/2017		429	Sep 05/2017	
402	Sep 05/2017		229	Sep 05/2017		430	Sep 05/2017	
403	Sep 05/2017		230	Sep 05/2017		431	Sep 05/2017	
404	Sep 05/2017		231	Sep 05/2017		432	Sep 05/2017	
405	Sep 05/2017		232	Sep 05/2017		433	Sep 05/2017	
406	Sep 05/2017		233	Sep 05/2017		434	Sep 05/2017	
407	Sep 05/2017		234	Sep 05/2017		435	Sep 05/2017	
408	BLANK		73-22-01			436	Sep 05/2017	
73-22-00			401	Jan 05/2015		437	Sep 05/2017	
201	Sep 05/2017		402	Sep 05/2017		438	Sep 05/2017	
202	Sep 05/2017		403	Sep 05/2017		439	Sep 05/2017	
203	Sep 05/2017		404	Sep 05/2017		440	Sep 05/2017	
204	Sep 05/2017		405	Sep 05/2017		441	Sep 05/2017	
205	Sep 05/2017		406	Sep 05/2017		442	Sep 05/2017	
206	Sep 05/2017		407	Sep 05/2017		443	Sep 05/2017	
207	Sep 05/2017		408	Sep 05/2017		444	Sep 05/2017	
208	Sep 05/2017		409	Sep 05/2017		445	Sep 05/2017	
209	Sep 05/2017		410	Sep 05/2017		446	Sep 05/2017	
210	Sep 05/2017		411	Sep 05/2017		447	Sep 05/2017	
211	Sep 05/2017		412	Sep 05/2017		448	Sep 05/2017	
212	Sep 05/2017		413	Sep 05/2017		449	Sep 05/2017	
213	Sep 05/2017		414	Sep 05/2017		450	Sep 05/2017	
214	Sep 05/2017		415	Sep 05/2017		451	Sep 05/2017	
215	Sep 05/2017		416	Sep 05/2017		452	Sep 05/2017	
216	Sep 05/2017		417	Sep 05/2017		453	Sep 05/2017	
217	Sep 05/2017		418	Sep 05/2017		454	Sep 05/2017	
218	Sep 05/2017		419	Sep 05/2017		455	Sep 05/2017	
219	Sep 05/2017		420	Sep 05/2017		456	Sep 05/2017	
220	Sep 05/2017		421	Sep 05/2017		457	Sep 05/2017	
221	Sep 05/2017		422	Sep 05/2017		458	Sep 05/2017	
222	Sep 05/2017		423	Sep 05/2017		459	Sep 05/2017	
223	Sep 05/2017		424	Sep 05/2017		460	Sep 05/2017	

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461	Sep 05/2017		497	Sep 05/2017				
462	Sep 05/2017		498	Sep 05/2017				
463	Sep 05/2017		498.1	Sep 05/2017				
464	Sep 05/2017		498.2	Sep 05/2017				
465	Sep 05/2017		498.3	Sep 05/2017				
466	Sep 05/2017		498.4	Sep 05/2017				
467	Sep 05/2017		498.5	Sep 05/2017				
468	Sep 05/2017		498.6	Sep 05/2017				
469	Sep 05/2017		73-31-00					
470	Sep 05/2017		601	Sep 05/2017				
471	Sep 05/2017		602	Sep 05/2017				
472	Sep 05/2017		603	Jan 05/2015				
473	Sep 05/2017		604	BLANK				
474	Sep 05/2017		73-31-01					
475	Sep 05/2017		401	Jan 05/2016				
476	Sep 05/2017		402	Sep 05/2017				
477	Sep 05/2017		403	Sep 05/2017				
478	Sep 05/2017		404	Sep 05/2017				
479	Sep 05/2017		405	Sep 05/2017				
480	Sep 05/2017		406	May 05/2015				
481	Sep 05/2017		407	Sep 05/2017				
482	Sep 05/2017		408	Sep 05/2017				
483	Sep 05/2017							
484	Sep 05/2017							
485	Sep 05/2017							
486	Sep 05/2017							
487	Sep 05/2017							
488	Sep 05/2017							
489	Sep 05/2017							
490	Sep 05/2017							
491	Sep 05/2017							
492	Sep 05/2017							
493	Sep 05/2017							
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<u>FUEL - INSPECTION/CHECK</u>		73-00-00		601	ARO ALL
Fuel Leakage Examination (at the AGB Fuel Adapters (Wet Motor)) TASK 73-00-00-200-801-H01				601	ARO ALL
<u>FUEL - DDG MAINTENANCE PROCEDURES</u>		73-00-00		901	ARO ALL
MMEL 73-21-6 (DDG) Preparation - Engine Fuel Shutoff Valve Indication Systems Inoperative TASK 73-00-00-040-804-H01				901	ARO ALL
MMEL 73-21-6 (DDG) Restoration - Engine Fuel Shutoff Valve Indication Systems Inoperative TASK 73-00-00-440-802-H01				902	ARO ALL
MMEL 73-21-08 (DDG) Preparation - Hydro-Mechanical Unit Airframe Shutoff Valve Start/Run Coil Inoperative TASK 73-00-00-040-806-H00				903	ARO ALL
MMEL 73-21-08 (DDG) Restoration - Hydro-Mechanical Unit Airframe Shutoff Valve Start/Run Coil Inoperative TASK 73-00-00-440-804-H00				911	ARO ALL
MMEL 73-34-1 (DDG) Preparation - Engine Fuel Filter Warning Indications Inoperative TASK 73-00-00-040-803-H01				911	ARO ALL
MMEL 73-34-1 (DDG) Restoration - Engine Fuel Filter Warning Indications Inoperative TASK 73-00-00-440-801-H01				914	ARO ALL
<u>FUEL DISTRIBUTION SYSTEM - INSPECTION/CHECK</u>		73-11-00		601	ARO ALL
Fuel Distribution System Inspection TASK 73-11-00-210-801-H01				601	ARO ALL
Fuel Filter Contamination (Scheduled Maintenance Requirement) Inspection TASK 73-11-00-700-801-H01				604	ARO ALL

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TASK 73-11-01-400-801-H01				
<u>FUEL FILTER ELEMENT - REMOVAL/INSTALLATION</u>	73-11-02		401	ARO ALL
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TASK 73-11-02-000-801-H01				
Fuel Filter Element Installation			408	ARO ALL
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Fuel Filter Bowl Assembly Installation			408	ARO ALL
TASK 73-11-03-400-801-H01				
<u>INTERSTAGE FUEL STRAINER ASSEMBLY – CLEANING/INSPECTION</u>	73-11-04		601	ARO ALL
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TASK 73-11-04-200-801-H00				
<u>INTERSTAGE FUEL STRAINER ASSEMBLY - REMOVAL/INSTALLATION</u>	73-11-04		401	ARO ALL
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TASK 73-11-04-000-801-H01				
Interstage Fuel Strainer Assembly Installation			406	ARO ALL
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<u>FUEL NOZZLE - REMOVAL/INSTALLATION</u>	73-11-05		401	ARO ALL
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<u>FUEL CONTROL SYSTEM - INSPECTION/CHECK</u>		73-21-00		601	ARO ALL
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Moeller Lockrings Inspection (EEC (FADEC) PS3 and P3B Pressure Sense Fittings) TASK 73-21-00-210-801-H01				608	ARO ALL
<u>T12 SENSOR - REMOVAL/INSTALLATION</u>		73-21-06		401	ARO ALL
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Control Alternator (Stator) Removal TASK 73-21-08-000-801-H01				401	ARO ALL
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<u>CONTROL ALTERNATOR ROTOR - REMOVAL/INSTALLATION</u>	73-21-09		401	ARO ALL
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EEC (FADEC) Software Installation (with a Portable Data Loader (PDL)) TASK 73-21-15-000-802-H01			205	ARO ALL
<u>EEC (FADEC) - REMOVAL/INSTALLATION</u>	73-21-15		401	ARO ALL
EEC (FADEC) Removal TASK 73-21-15-000-801-H01			401	ARO ALL
EEC (FADEC) Installation TASK 73-21-15-400-801-H01			405	ARO ALL
<u>ENGINE RATING PLUG - MAINTENANCE PRACTICES</u>	73-21-19		201	ARO ALL
Engine Rating Data Check TASK 73-21-19-400-802-H01			201	ARO ALL
<u>ENGINE RATING PLUG - REMOVAL/INSTALLATION</u>	73-21-19		401	ARO ALL
Engine Rating Plug Removal TASK 73-21-19-000-801-H01			401	ARO ALL

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T3 Sensor Assembly Installation TASK 73-21-64-400-801-H01			408	ARO ALL
<u>FUEL MANIFOLD PRESSURE SENSOR - REMOVAL/INSTALLATION</u>	73-21-67		401	ARO ALL
Fuel Manifold Pressure Sensor Removal TASK 73-21-67-000-801-H01			401	ARO ALL
Fuel Manifold Pressure Sensor Installation TASK 73-21-67-400-801-H01			405	ARO ALL
<u>ELECTRICAL HARNESSSES - MAINTENANCE PRACTICES</u>	73-22-00		201	ARO ALL
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EEC (FADEC) Electrical Harnesses (W701-W704, W707-W709, and W717-W719) Removal TASK 73-22-01-000-802-H01			401	ARO ALL
EEC (FADEC) Electrical Harnesses (W701-W704, W707-W709, and W717-W719) Installation TASK 73-22-01-400-802-H01			443	ARO ALL
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Fuel Flow Indicating System Inspection TASK 73-31-00-210-801-H01			601	ARO ALL
<u>FUEL FLOW TRANSMITTER - REMOVAL/INSTALLATION</u>	73-31-01		401	ARO ALL
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Fuel Flow Transmitter Installation TASK 73-31-01-400-801-H01			406	ARO ALL

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FUEL - MAINTENANCE PRACTICES

1. General

A. This procedure contains this task:

- (1) Fuel Supply System (with Hydraulic Fluid) Contamination Cleaning.

TASK 73-00-00-170-801-H00

2. Fuel Supply System (with Hydraulic Fluid) Contamination Cleaning

(Figure 201)

A. **General**

- (1) This task provides the instructions to remove hydraulic fluid contaminant from the fuel supply system.

B. **References**

Reference	Title
12-11-02-650-801	Fuel Tank Sump Drain Valve - Tank Entry (P/B 301)
24-11-06-000-801	IDG Fuel/Oil Heat Exchanger Removal (P/B 401)
24-11-06-400-801	IDG Fuel/Oil Heat Exchanger Installation (P/B 401)
28-26-00-650-801	Pressure Defueling (P/B 201)
70-41-00-910-803-H00	Lockwire Installation (P/B 201)
71-00-00-800-833-H00	Power Plant Test Reference Table (P/B 501)
72-00-00-290-804-H01	Combustion Section and High Pressure Turbine Section Stage One Nozzle Leading Edge Inspection (P/B 601)
72-00-00-290-805-H01	High Pressure Turbine Section Stage One Nozzle (Except the Leading Edge) and Stage 1 Shroud Inspection (P/B 601)
72-00-00-290-806-H01	High Pressure Turbine Section Rotor (Stage 1 and 2 blades), Stage 2 Nozzle and Stage 2 Shroud Inspection (P/B 601)
73-11-01-000-801-H01	Main Fuel Pump Removal (P/B 401)
73-11-01-400-801-H01	Main Fuel Pump Installation (P/B 401)
73-11-02-000-801-H01	Fuel Filter Element Removal (P/B 401)
73-11-02-400-801-H01	Fuel Filter Element Installation (P/B 401)
73-11-07-000-801-H01	Main Fuel Supply Hose Removal (P/B 401)
73-11-07-400-801-H01	Main Fuel Supply Hose Installation (P/B 401)
73-21-14-000-801-H01	Hydromechanical Unit Removal (P/B 401)
73-21-14-400-801-H01	Hydromechanical Unit Installation (P/B 401)
79-21-01-000-803-H00	Main Fuel/Oil Heat Exchanger Removal (P/B 401)
79-21-01-400-801-H01	Main Fuel/Oil Heat Exchanger Installation (P/B 401)
FIM 28-11 TASK 806	Hydraulic Fluid Leakage in Fuel Tank - Fault Isolation

C. **Tools/Equipment**

Reference	Description
STD-1054	Container - Fuel Resistant, 5-Gallon (19-Liter)

D. **Consumable Materials**

Reference	Description	Specification
D00552 [C02-019]	Oil - Engine Lubricating	GE Spec. D50TF1

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E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
22	Preformed packing	73-21-14-05-050	ARO ALL

F. Fuel Supply System (with Hydraulic Fluid) Contamination Cleaning

SUBTASK 73-00-00-680-002-H00

- (1) If the engine fuel supply is contaminated with hydraulic fluid, do the steps that follow:

NOTE: Hydraulic fluid contains phosphorous. Phosphorous contact with hot section hardware can cause corrosion on hot metal surfaces such as the combustor and turbines. Phosphorous can also damage fluorosilicone elastomers such as O-rings and other seals.

**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**

DO NOT OPERATE THE ENGINE UNTIL YOU REMOVE THE HYDRAULIC FLUID CONTAMINATION FROM THE AIRPLANE FUEL SYSTEM. IF YOU OPERATE THE ENGINE WITH HYDRAULIC FLUID CONTAMINATION, DAMAGE TO THE ENGINE CAN OCCUR.

**CAUTION**

DO NOT PUT FUEL THAT HAS COME FROM THE ENGINE BACK INTO THE FUEL SYSTEM. PUT THE UNWANTED FUEL IN APPROVED CONTAINERS. TALK WITH THE LOCAL SAFETY DEPARTMENT OR AUTHORITIES FOR THE PROCEDURES TO DISCARD THIS HAZARDOUS AGENT.

- (a) Get a fuel sample and find the contamination level of hydraulic fluid and/or Phosphorous in the fuel.

NOTE: No unwanted material in the fuel sample is permitted

- 1) Do this task: Pressure Defueling, TASK 28-26-00-650-801.
- 2) Do this task: Fuel Tank Sump Drain Valve - Tank Entry, TASK 12-11-02-650-801.
 - a) Let the fuel to drain from the affected tank sump.
- 3) Get the fuel sample.
- 4) Continue the drain until the affected fuel tank and affected sumps are empty.

NOTE: This will remove any hydraulic fluid that has settled.

**WARNING**

DO NOT GET HYDRAULIC FLUID ON YOUR SKIN, IN YOUR MOUTH OR IN YOUR EYES. HYDRAULIC FLUID IS POISONOUS AND CAN GO THROUGH YOUR SKIN AND INTO YOUR BODY. FLUSH HYDRAULIC FLUID FROM YOUR EYES, MOUTH OR SKIN WITH WATER. GET MEDICAL AID IF YOU GET HYDRAULIC FLUID IN YOUR EYES OR MOUTH.

- (b) Correct the cause of the hydraulic fluid leak (FIM 28-11 TASK 806).

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- (c) Drain the main fuel supply line.

NOTE: A large volume of fuel will drain from the fuel supply system. To prevent a fuel spill, you must use a minimum of two containers to drain the fuel system.

- 1) Put a 5-gallon (19-liter) fuel resistant container, STD-1054 below the main fuel supply line.
- 2) Disconnect the main fuel supply line (TASK 73-11-07-000-801-H01).
- 3) Drain the main fuel supply line to the engine into the 5-gallon (19-liter) fuel resistant container, STD-1054.
- 4) Install the main fuel supply line (TASK 73-11-07-400-801-H01).

- (d) Drain the engine fuel system.

- 1) Drain the hydromechanical unit (HMU) as follows (Figure 201):
 - a) Put a 5-gallon (19-liter) fuel resistant container, STD-1054 below the drain port of the HMU.
 - b) Remove the lockwire from the drain plug [21].
 - c) Remove the drain plug [21].



DO NOT PUT FUEL THAT HAS COME FROM THE ENGINE BACK INTO THE FUEL SYSTEM. PUT THE UNWANTED FUEL IN APPROVED CONTAINERS. TALK WITH THE LOCAL SAFETY DEPARTMENT OR AUTHORITIES FOR THE PROCEDURES TO DISCARD THIS HAZARDOUS AGENT.

- d) Let the fuel drain into the 5-gallon (19-liter) fuel resistant container, STD-1054.
- e) Remove the preformed packing [22] from the drain plug [21] and discard it.
- 2) Install the drain plug [21] in the drain port of the HMU as follows:
 - a) Apply oil, D00552 [C02-019] on a new preformed packing [22].
 - b) Install the new preformed packing [22] on the drain plug [21].
 - c) Install the drain plug [21] in the drain port on the HMU.
 - d) Tighten the drain plug [21] to 38-42 pound-inches (4-5 Newton-meters).
 - e) Attach the drain plug [21] to the HMU with lockwire (TASK 70-41-00-910-803-H00).
- 3) Drain the fuel filter (TASK 73-11-01-000-801-H01).
- 4) Drain the Main fuel pump (TASK 73-11-01-000-801-H01).



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- (e) Fill the affected fuel tank with a small quantity of non-contaminated (clean) fuel.
- (f) Let the fuel sit in the tank for a minimum of 2 hours to permit any hydraulic fluid settle.

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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.



DO NOT GET HYDRAULIC FLUID ON YOUR SKIN, IN YOUR MOUTH OR IN YOUR EYES. HYDRAULIC FLUID IS POISONOUS AND CAN GO THROUGH YOUR SKIN AND INTO YOUR BODY. FLUSH HYDRAULIC FLUID FROM YOUR EYES, MOUTH OR SKIN WITH WATER. GET MEDICAL AID IF YOU GET HYDRAULIC FLUID IN YOUR EYES OR MOUTH.



DO NOT PUT FUEL THAT HAS COME FROM THE ENGINE BACK INTO THE FUEL SYSTEM. PUT THE UNWANTED FUEL IN APPROVED CONTAINERS. TALK WITH THE LOCAL SAFETY DEPARTMENT OR AUTHORITIES FOR THE PROCEDURES TO DISCARD THIS HAZARDOUS AGENT.

- (g) Empty the affected fuel tank and the affected sumps to remove any hydraulic fluid that has settled.

SUBTASK 73-00-00-960-001-H00

- (2) Use the spectrochemical analysis (ASTM D3605 or ASTM D5708) to help determine the amount of Phosphorous in the fuel.
- (a) If the hydraulic fluid contamination that causes a Phosphorous level of more than 500 PPM, do the steps that follow:

NOTE: 485 PPM of phosphorus is equivalent to 0.5 percent hydraulic fluid contamination.

- 1) Replace the HMU (TASK 73-21-14-000-801-H01 and TASK 73-21-14-400-801-H01).
- 2) Replace the Main Fuel Pump (TASK 73-11-01-000-801-H01 and TASK 73-11-01-400-801-H01).
- 3) Replace the fuel adapter seals on the Main Fuel/Oil Heat Exchanger (TASK 79-21-01-000-803-H00 and TASK 79-21-01-400-801-H01).
- 4) Replace the fuel adapter seals on the IDG Fuel/Oil Heat Exchanger (TASK 24-11-06-000-801 and TASK 24-11-06-400-801).
- 5) Replace the fuel filter element (TASK 73-11-02-000-801-H01 and TASK 73-11-02-400-801-H01).
- 6) Carefully monitor for fuel system maintenance messages for the next 500 hours of engine operation. Monitor maintenance messages daily.
- 7) Carefully monitor the relationship between the EGT sector values.

NOTE: Changes in the relationship between the EGT sector values may show problems with the operation of the fuel system components that include the HMU or fuel nozzles.

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G. Put the Airplane Back to Its Usual Condition

SUBTASK 73-00-00-650-001-H00



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) Fill the affected fuel tank with non-contaminated (clean) fuel.

SUBTASK 73-00-00-610-001-H00

- (2) Do all the necessary return-to-service tasks for the maintenance actions taken in paragraph (F)(2).
- (a) Do this task: Power Plant Test Reference Table, TASK 71-00-00-800-833-H00.

SUBTASK 73-00-00-200-001-H00

- (3) After hydraulic fluid contamination of the engine fuel supply system, do the steps that follows:
- (a) After 50(+/- 10) hours of operation, do the borescope inspection for corrosion in the fuel nozzles, combustor and high pressure turbine. These are the tasks:
- 1) Do this task: Combustion Section and High Pressure Turbine Section Stage One Nozzle Leading Edge Inspection, TASK 72-00-00-290-804-H01
 - 2) Do this task: High Pressure Turbine Section Stage One Nozzle (Except the Leading Edge) and Stage 1 Shroud Inspection, TASK 72-00-00-290-805-H01
 - 3) Do this task: High Pressure Turbine Section Rotor (Stage 1 and 2 blades), Stage 2 Nozzle and Stage 2 Shroud Inspection, TASK 72-00-00-290-806-H01
- (b) Do a visual inspection of the fuel system for fuel leakage.
- 1) Review the fuel system maintenance messages and correct any fuel system maintenance messages found.
- (c) Do the above steps again after 250 (+/-50) hours of operation and again after 500 (+/-50) hours of operation.
- (d) If no corrosion, damage, fuel leakage or fuel system maintenance messages have been found, no more action is necessary.
- (e) If you find corrosion, damage, fuel leakage or fuel system maintenance messages, do the steps that follows:
- 1) Do the applicable corrective actions for each.
 - 2) Do the above steps at 500 (+/-50) hours of operation until there is no more damage, leaks or fuel system maintenance messages.

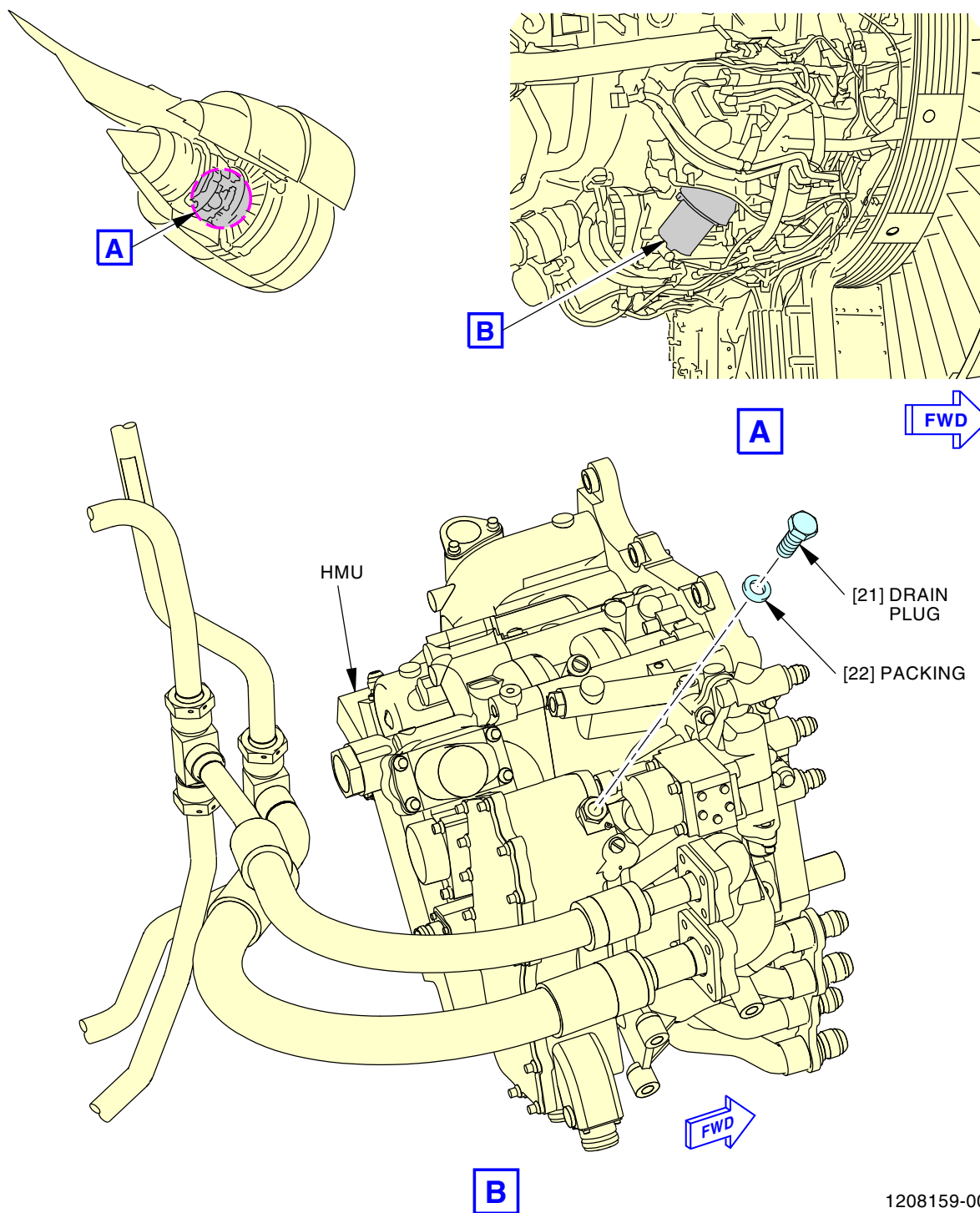
————— **END OF TASK** —————

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HMU Drain Plug Installation
Figure 201/73-00-00-990-802-H00

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FUEL - INSPECTION/CHECK

1. General

A. This procedure has one task:

- (1) The examination for fuel leakage at the AGB fuel adapters.

TASK 73-00-00-200-801-H01

2. Fuel Leakage Examination (at the AGB Fuel Adapters (Wet Motor))

A. General

- (1) This task is to examine the accessory gearbox (AGB) fuel adapters for fuel leakage.
- (2) This task contains the data to estimate the condition of the HMU, Main Fuel Pump, Main Fuel/Oil Heat Exchanger, and the IDG Fuel/Oil Heat Exchanger installation to the AGB fuel adapters.
- (3) You must open the thrust reversers to get access to the AGB.

B. References

Reference	Title
24-11-06-000-801	IDG Fuel/Oil Heat Exchanger Removal (P/B 401)
24-11-06-400-801	IDG Fuel/Oil Heat Exchanger Installation (P/B 401)
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
27-81-00-860-805	Retract the Leading Edge Slats (P/B 201)
71-00-00-800-812-H01	Wet Motor (P/B 201)
71-11-04-010-814-H00	Open the Fan Cowl Panel (Selection) (P/B 201)
71-11-04-410-814-H00	Close the Fan Cowl Panel (Selection) (P/B 201)
73-11-01-000-801-H01	Main Fuel Pump Removal (P/B 401)
73-11-01-400-801-H01	Main Fuel Pump Installation (P/B 401)
73-21-14-000-801-H01	Hydromechanical Unit Removal (P/B 401)
73-21-14-400-801-H01	Hydromechanical Unit Installation (P/B 401)
78-31-00-010-816-H00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-806-H00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)
78-31-00-410-816-H00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-805-H00	Thrust Reverser Activation After Ground Maintenance (P/B 201)
79-21-01-000-803-H00	Main Fuel/Oil Heat Exchanger Removal (P/B 401)
79-21-01-400-801-H01	Main Fuel/Oil Heat Exchanger Installation (P/B 401)

C. Consumable Materials

Reference	Description	Specification
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A

D. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

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E. Access Panels

Number	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

F. Examine for Fuel Leakage at the AGB Fuel Adapters

SUBTASK 73-00-00-010-001-H01



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO OPEN THE THRUST REVERSER(S). IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR

- (1) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:

- (a) Do this task: Retract the Leading Edge Slats, TASK 27-81-00-860-805.
- (b) Do this task: Leading Edge Slat - Deactivation, TASK 27-81-00-040-801.
- (c) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-806-H00.
- (d) For the left and right fan cowl panels, do this task:

Open the Fan Cowl Panel (Selection), TASK 71-11-04-010-814-H00

<u>Number</u>	<u>Name/Location</u>
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine

- (e) For the left and right thrust reversers, do this task:

Open the Thrust Reverser (Selection), TASK 78-31-00-010-816-H00

<u>Number</u>	<u>Name/Location</u>
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

SUBTASK 73-00-00-790-001-H01

- (2) Examine for fuel wetting between the AGB fuel adapters and the fuel components on the AGB:

- (a) Identify the component where there is wetting between the AGB fuel adapter and the component:
 - 1) Main Fuel Pump (MFP)
 - 2) Hydromechanical unit (HMU)
 - 3) IDG Fuel/Oil Heat Exchanger, or

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- 4) Main Fuel/Oil Heat Exchanger
- (b) Clean the AGB fuel adapter at the leakage location with a clean cotton wiper, G00034.

SUBTASK 73-00-00-790-002-H01

- (3) If fuel wetting is found, wet motor the engine for one minute at maximum motoring speed (Wet Motor, TASK 71-00-00-800-812-H01). Look for fuel leakage at the AGB fuel adapter while the engine motors.
 - (a) If you see fuel weepage or leakage during the wet motor procedure, do the sub-task below: Repair the fuel leakage (SUBTASK 73-00-00-360-001-H01).
 - (b) Stop the engine.

SUBTASK 73-00-00-790-003-H01

- (4) After the engine stops, look for fuel weepage or leakage at the AGB fuel adapter.
 - (a) If you find wetting but you see no drops, or the leakage rate is not more than 1 drop in 2 minutes, the engine is serviceable.
 - (b) If you see fuel leakage at more than 1 drop in 2 minutes, do the sub-task below: Repair the fuel leakage (SUBTASK 73-00-00-360-001-H01).

SUBTASK 73-00-00-360-001-H01

- (5) Repair the fuel leakage.
 - (a) Make sure that the component is not loose at the interface with the fuel adapter.
 - 1) If the component is loose, tighten the component. Use the applicable torque method and values as given in the AMM task to install the component: MFP (Main Fuel Pump Installation, TASK 73-11-01-400-801-H01), (Hydromechanical Unit Installation, TASK 73-21-14-400-801-H01), IDG Fuel/Oil Heat Exchanger Installation, TASK 24-11-06-400-801 , or (Main Fuel/Oil Heat Exchanger Installation, TASK 79-21-01-400-801-H01).
 - 2) Do the wet motor procedure for 1 minute again (Wet Motor, TASK 71-00-00-800-812-H01). If you find the leakage is still more than 1 drop in 2 minutes, then continue below.
 - (b) If the component is not loose or the leakage rate is still more than the limit, remove the component and replace all of the seals between the component and the adapter. Use the applicable removal and installation tasks:
 - 1) These are the tasks: Main Fuel Pump Removal, TASK 73-11-01-000-801-H01 and Main Fuel Pump Installation, TASK 73-11-01-400-801-H01.
 - 2) These are the tasks: Hydromechanical Unit Removal, TASK 73-21-14-000-801-H01 and Hydromechanical Unit Installation, TASK 73-21-14-400-801-H01
 - 3) These are the tasks: IDG Fuel/Oil Heat Exchanger Removal, TASK 24-11-06-000-801 and IDG Fuel/Oil Heat Exchanger Installation, TASK 24-11-06-400-801.
 - 4) These are the tasks: Main Fuel/Oil Heat Exchanger Removal, TASK 79-21-01-000-803-H00 and Main Fuel/Oil Heat Exchanger Installation, TASK 79-21-01-400-801-H01.

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G. Put the Airplane Back to Its Usual Condition

SUBTASK 73-00-00-410-001-H01



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Do these tasks in sequence to safely close the left and right thrust reversers on the applicable engine:
 - (a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-410-816-H00.
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine
 - (b) Do this task: Close the Fan Cowl Panel (Selection), TASK 71-11-04-410-814-H00.
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine
 - (c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-805-H00.
 - (d) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

————— **END OF TASK** —————

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FUEL - DDG MAINTENANCE PROCEDURES

1. General

- A. This procedure has the maintenance tasks for the Master Minimum Equipment List (MMEL) maintenance requirements as shown in the Dispatch Deviations Guide (DDG). These tasks prepare the airplane for flight with certain systems/components inoperative.
- B. This procedure also has the tasks that put the airplane back to its usual condition.
- C. These are the tasks for the components in the engine fuel and control system:
 - (1) MMEL 73-21-6 (DDG) Preparation - Engine Fuel Shutoff Valve Indication Systems Inoperative.
 - (2) MMEL 73-21-6 (DDG) Restoration - Engine Fuel Shutoff Valve Indication Systems Inoperative.
 - (3) MMEL 73-21-08 (DDG) Preparation - Hydro-Mechanical Unit Airframe Shutoff Valve Start/Run Coil Inoperative.
 - (4) MMEL 73-21-08 (DDG) Restoration - Hydro-Mechanical Unit Airframe Shutoff Valve Start/Run Coil Inoperative.
 - (5) MMEL 73-34-1 (DDG) Preparation - Engine Fuel Filter Warning Indications Inoperative.
 - (6) MMEL 73-34-1 (DDG) Restoration - Engine Fuel Filter Warning Indications Inoperative.

TASK 73-00-00-040-804-H01**2. MMEL 73-21-6 (DDG) Preparation - Engine Fuel Shutoff Valve Indication Systems Inoperative****A. General**

- (1) This task gives the maintenance steps which prepare the airplane for flight with one Engine Fuel Shutoff Valve Indication System Inoperative.
- (2) EICAS Status Messages:
 - (a) ENG FUEL VALVE L
 - (b) ENG FUEL VALVE R
 - (c) FUEL SPAR VALVE L
 - (d) FUEL SPAR VALVE R.

B. References

Reference	Title
31-61-00-800-802	Erasing a EICAS Status Message Latched by AIMS (P/B 201)
71-00-00-800-835-H00	Engine Start (Selection) (P/B 201)
71-00-00-800-836-H00	Dry Motor (P/B 201)

C. Procedure**SUBTASK 73-00-00-860-007-H01**

- (1) Start the applicable engine and allow the engine to stabilize at ground idle.
 - (a) Do this task: Engine Start (Selection), TASK 71-00-00-800-835-H00.

SUBTASK 73-00-00-040-001-H01

- (2) For the applicable engine, open these circuit breakers and install safety tags:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
A	5	C28001	L ENGINE FUEL SPAR VALVE
A	19	C28002	R ENGINE FUEL SPAR VALVE

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SUBTASK 73-00-00-860-008-H01

- (3) After a minimum time that you operate the engine, position the associated FUEL CONTROL switch to the CUTOFF and confirm the engine shutdown.

- (a) If the engine does not shutdown, do this step:

NOTE: If the engine does not shutdown, the engine fuel shutoff valve is not operating correctly. The engine can continue to operate for up to one minute if the engine fuel valve is failed and the engine is shut down by the fuel spar valve closure only.

- 1) Monitor the EGT and be prepared to motor the engine (TASK 71-00-00-800-836-H00).
- 2) For the applicable engine, remove the safety tags and close these circuit breakers:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C28001	L ENGINE FUEL SPAR VALVE
A	19	C28002	R ENGINE FUEL SPAR VALVE

- 3) Wait one minute for the engine shutdown.

SUBTASK 73-00-00-860-010-H00

- (4) Select the Status Page on the MAT and verify the applicable FUEL SPAR VALVE L or R status message is displayed.

SUBTASK 73-00-00-860-011-H00

- (5) Erase the FUEL SPAR VALVE L or R message from the EICAS status display (TASK 31-61-00-800-802).

SUBTASK 73-00-00-860-012-H00

- (6) Make sure the engine has stopped rotating.

SUBTASK 73-00-00-860-013-H00

- (7) For the applicable engine, remove the safety tags and close these circuit breakers:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C28001	L ENGINE FUEL SPAR VALVE
A	19	C28002	R ENGINE FUEL SPAR VALVE

————— **END OF TASK** —————

TASK 73-00-00-440-802-H01**3. MMEL 73-21-6 (DDG) Restoration - Engine Fuel Shutoff Valve Indication Systems Inoperative****A. General**

- (1) This task gives instructions to put the airplane back to its usual condition after the operation the airplane for flight with one Engine Fuel Shutoff Valve Indication System Inoperative.

B. References

<u>Reference</u>	<u>Title</u>
31-61-00-800-802	Erasing a EICAS Status Message Latched by AIMS (P/B 201)
71-00-00-800-837-H00	Usual Engine Stop (P/B 201)

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C. Procedure

SUBTASK 73-00-00-970-001-H01

- (1) Select the Status Page on the MAT and verify the applicable FUEL SPAR VALVE L or R status message is displayed.

SUBTASK 73-00-00-210-001-H01

- (2) Do this task: Usual Engine Stop, TASK 71-00-00-800-837-H00.

SUBTASK 73-00-00-840-001-H01

- (3) Erase the FUEL SPAR VALVE L or R message from the EICAS status display.
- (a) Do this task: Erasing a EICAS Status Message Latched by AIMS, TASK 31-61-00-800-802.

————— **END OF TASK** —————

TASK 73-00-00-040-806-H00

4. MMEL 73-21-08 (DDG) Preparation - Hydro-Mechanical Unit Airframe Shutoff Valve Start/Run Coil Inoperative

(Figure 901, Figure 902)

A. General

- (1) This task gives the maintenance steps which prepare the airplane for flight with one Hydro-Mechanical Unit (HMU) Airframe Shutoff Valve Start/Run coil inoperative.
- (a) This procedure can be done on only one (1) engine.
- (b) The engine shutdown can be delayed by a maximum of 20 seconds when the FUEL CONTROL switch is moved to the CUTOFF position.
- (c) The Engine Indication and Crew Alerting System (EICAS) messages that follow are generated for the applicable engine:
- 1) ENG FUEL VALVE L - advisory level
 - 2) ENG FUEL VALVE L - status level
 - 3) ENG FUEL VALVE R - advisory level
 - 4) ENG FUEL VALVE R - status level
- (d) The Maintenance Messages that follow are generated for the applicable engine:
- 1) 73-13331, 73-23331: Hydro-Mechanical Unit (L Eng ch A/B) High-Pressure Shutoff Valve (HPSOV) is not in the commanded position.
 - 2) 73-13332, 73-23332: Hydro-Mechanical Unit (R Eng ch A/B) High-Pressure Shutoff Valve (HPSOV) is not in the commanded position.
- (e) The validation of correct HMU operation is necessary before each flight.

B. References

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
27-81-00-860-805	Retract the Leading Edge Slats (P/B 201)
28-22-02 P/B 401	ENGINE FUEL SPAR VALVE ACTUATOR - REMOVAL/INSTALLATION
70-00-01-400-807-H01	Electrical Connector - Disconnect and Connect (P/B 201)
71-00-00-800-835-H00	Engine Start (Selection) (P/B 201)

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Reference	Title
71-11-04-010-814-H00	Open the Fan Cowl Panel (Selection) (P/B 201)
71-11-04-410-814-H00	Close the Fan Cowl Panel (Selection) (P/B 201)
78-31-00-010-816-H00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-806-H00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)
78-31-00-410-816-H00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-805-H00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

D. Access Panels

Number	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

E. Procedure

SUBTASK 73-00-00-800-001-H00

(1) Prepare the Alternative Start Cable:

- (a) Locally manufacture an alternative start cable approximately 8 in. (203 mm) in length as shown in the Figure 901.

SUBTASK 73-00-00-010-003-H00



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(2) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:

- (a) Retract the Leading Edge Slats, TASK 27-81-00-860-805.
 (b) Leading Edge Slat - Deactivation, TASK 27-81-00-040-801.
 (c) Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-806-H00.
 (d) For the left and right fan cowl panels, do this task: Open the Fan Cowl Panel (Selection), TASK 71-11-04-010-814-H00.

Open these access panels:

Number	Name/Location
413AL	Left Fan Cowl Panel, Left Engine

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<u>Number</u>	<u>Name/Location</u>
414AR	Right Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine

- (e) For the left and right thrust reversers, do this task: Open the Thrust Reverser (Selection), TASK 78-31-00-010-816-H00.

Open these access panels:

<u>Number</u>	<u>Name/Location</u>
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

SUBTASK 73-00-00-040-003-H00

- (3) For the applicable engine, open these circuit breakers and install safety tags:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C76601	L ENG FUEL VALVE
B	19	C76600	R ENG FUEL VALVE

SUBTASK 73-00-00-840-002-H00

- (4) For the applicable engine, use the alternative start cable to put an inoperative HMU Airframe Shutoff Valve Start/Run coil to the Start/Run position.
- Disconnect the airplane connector (P/N BACC63CM1407SNA) from the HMU connector (P/N 1635-356) (Electrical Connector - Disconnect and Connect, TASK 70-00-01-400-807-H01).
 - Connect the red socket of the start cable to pin 5 on the HMU connector and the red pin of the start cable to the socket 6 on the airplane connector (Figure 902).
 - Connect the black socket of the start cable to pin 6 on the HMU connector and the black pin of the start cable to socket 5 on the airplane connector (Figure 902).

SUBTASK 73-00-00-440-001-H00

- (5) For the applicable engine, remove the safety tags and close these circuit breakers:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C76601	L ENG FUEL VALVE
B	19	C76600	R ENG FUEL VALVE

SUBTASK 73-00-00-860-014-H00

- (6) Wait for 30 seconds.

SUBTASK 73-00-00-040-002-H00

- (7) For the applicable engine, open these circuit breakers and install safety tags:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C76601	L ENG FUEL VALVE
B	19	C76600	R ENG FUEL VALVE

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NOTE: The circuit breakers will stay open for the flight. If these circuit breakers are closed, do the alternative start procedure again.

SUBTASK 73-00-00-020-001-H00

- (8) Remove the alternative start cable.

SUBTASK 73-00-00-420-001-H00

- (9) Connect the airplane connector (BACC63CM1407SNA) to the HMU connector (1635-356) (Electrical Connector - Disconnect and Connect, TASK 70-00-01-400-807-H01).

F. Prepare the Airplane for HMU Validation

SUBTASK 73-00-00-410-005-H00



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Do these tasks in sequence to safely close the left and right thrust reversers on the applicable engine:

- (a) Close the Thrust Reverser (Selection), TASK 78-31-00-410-816-H00.

Close these access panels:

<u>Number</u>	<u>Name/Location</u>
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

- (b) Close the Fan Cowl Panel (Selection), TASK 71-11-04-410-814-H00.

Close these access panels:

<u>Number</u>	<u>Name/Location</u>
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine

- (c) Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-805-H00.
(d) Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

G. Make sure that there is correct operation of the HMU before each flight

SUBTASK 73-00-00-860-015-H00

- (1) Do the fuel spar valve inspection as follows:

- (a) Make sure that the two engine control switches are in the CUTOFF position.

NOTE: It is not necessary to cycle the FUEL CONTROL switch to do this inspection.

- (b) Do an inspection of the applicable fuel spar valve actuator located in the rear spar.
1) Make sure that the manual override handle on the left engine fuel spar valve actuator is in the CLOSED position.

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- 2) Repair or replace the fuel spar valve actuator that is not in the CLOSED position (Refer to PAGEBLOCK 28-22-02/401 for the removal/installation procedure).

NOTE: There can be up to a 20 second delay when the engine is shutdown.

NOTE: Possible EICAS messages - ENG EEC C1, ENG EEC C2, ENG CONTROL, ENG FUEL VALVE, ENG TCMA.

NOTE: Possible Maintenance Messages - 73-13331, 73-23331: Hydro-Mechanical Unit (L Eng ch A/B) High-Pressure Shutoff Valve (HPSOV) is not in the commanded position.

NOTE: Possible Maintenance Messages - 73-13332, 73-23332: Hydro-Mechanical Unit (R Eng ch A/B) High-Pressure Shutoff Valve (HPSOV) is not in the commanded position.

SUBTASK 73-00-00-860-016-H00

- (2) Start the applicable engine and let the engine stabilize at ground idle.
(a) Do this task: Engine Start (Selection), TASK 71-00-00-800-835-H00.

SUBTASK 73-00-00-040-004-H00

- (3) For the applicable engine, open these circuit breakers and install safety tags:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C28001	L ENGINE FUEL SPAR VALVE
A	19	C28002	R ENGINE FUEL SPAR VALVE

SUBTASK 73-00-00-860-017-H00

- (4) After a minimum time that you operate the engine, put the associated FUEL CONTROL switch to the CUTOFF position.
(a) Make sure that the engine shutdown occurs in or less than 20 seconds after you move the FUEL CONTROL switch to the CUTOFF position.
(b) If the engine does not shutdown, do this step:

NOTE: If the engine does not shutdown, there is incorrect operation of the Fuel Metering Valve (FMV). The engine will continue to operate if the FMV failed.

- 1) For the applicable engine, remove the safety tags and close these circuit breakers:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C28001	L ENGINE FUEL SPAR VALVE
A	19	C28002	R ENGINE FUEL SPAR VALVE

NOTE: The engine can continue to operate for up to 1 minute. The engine will shutdown once the fuel in the manifold between the spar valve and the engine is used up.

- 2) Wait for 1 minute for the engine shutdown.

SUBTASK 73-00-00-860-019-H00

- (5) Make a selection of the Status Page on the Maintenance Access Terminal (MAT) and make sure that the applicable FUEL SPAR VALVE L or R status message is displayed.

SUBTASK 73-00-00-860-020-H00

- (6) Erase the FUEL SPAR VALVE L or R message from the EICAS status display.

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SUBTASK 73-00-00-860-021-H00

- (7) Make sure that the engine does not operate.

SUBTASK 73-00-00-440-002-H00

- (8) For the applicable engine, make sure these circuit breakers are open:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C28001	L ENGINE FUEL SPAR VALVE
A	19	C28002	R ENGINE FUEL SPAR VALVE

NOTE: Do not close the applicable L ENG FUEL VALVE or R ENG FUEL VALVE. These circuit breakers will stay open for the flight. If these circuit breakers are closed, do the alternative start procedure again.

————— **END OF TASK** —————

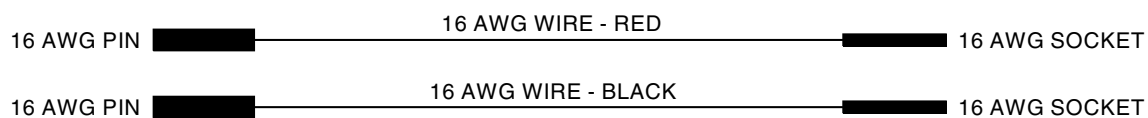
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ALTERNATIVE START CABLE

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2819742 S0000651012_V1

**Alternative Start Cable
Figure 901/73-00-00-990-803-H00**

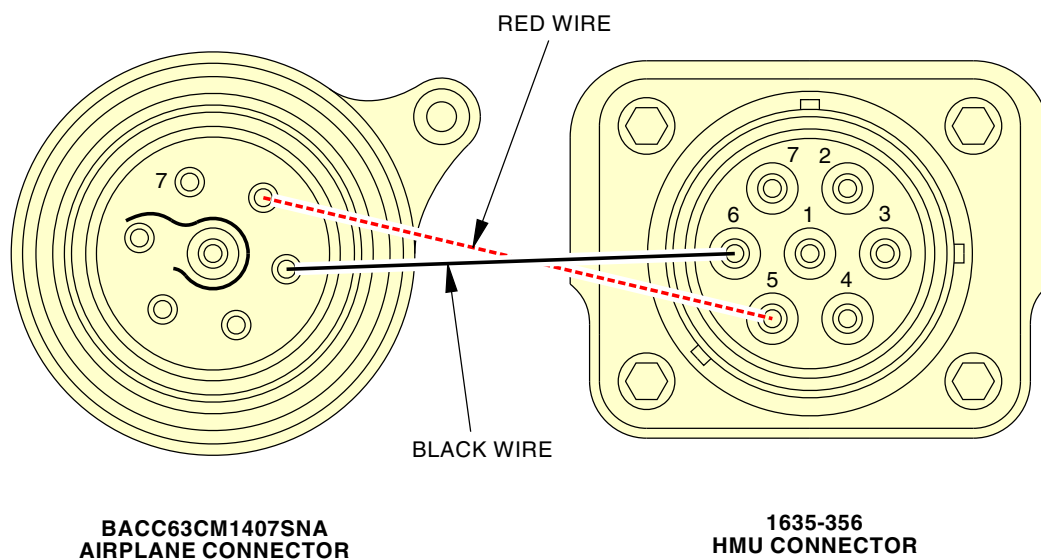
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Aircraft Connector Socket and HMU Connector Pin Identification
Figure 902/73-00-00-990-804-H00

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TASK 73-00-00-440-804-H00**5. MMEL 73-21-08 (DDG) Restoration - Hydro-Mechanical Unit Airframe Shutoff Valve Start/Run Coil Inoperative**

(Figure 901, Figure 902)

A. General

- (1) This task puts the airplane back to its usual condition after the operation of the airplane with one Hydro-Mechanical Unit (HMU) Airframe Shutoff Valve Start/Run coil inoperative.

B. References

Reference	Title
73-21-14 P/B 401	HYDROMECHANICAL UNIT - REMOVAL/INSTALLATION

C. Procedure

SUBTASK 73-00-00-960-002-H00

- (1) Replace the HMU (HYDROMECHANICAL UNIT - REMOVAL/INSTALLATION, PAGEBLOCK 73-21-14/401).

D. Put the Airplane Back to Its Usual Condition

SUBTASK 73-00-00-440-003-H00

- (1) For the applicable engine, remove the safety tags and close these circuit breakers:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
B	4	C76601	L ENG FUEL VALVE
B	19	C76600	R ENG FUEL VALVE

— END OF TASK —

TASK 73-00-00-040-803-H01**6. MMEL 73-34-1 (DDG) Preparation - Engine Fuel Filter Warning Indications Inoperative****A. General**

- (1) This task gives the maintenance steps which prepare the airplane for flight with the Engine Fuel Filter Warning Indications Inoperative.
- (2) EICAS Status Messages
- (a) ENG FUEL FILT SNSR L
 - (b) ENG FUEL FILT SNSR R

B. References

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
27-81-00-860-805	Retract the Leading Edge Slats (P/B 201)
71-00-00-700-802-H01	Test No. 2 - Dry Motor leak Check (P/B 501)
71-00-00-700-804-H01	Test No. 5 - Idle Leak Check (P/B 501)
71-11-04-010-814-H00	Open the Fan Cowl Panel (Selection) (P/B 201)
71-11-04-410-814-H00	Close the Fan Cowl Panel (Selection) (P/B 201)
78-31-00-010-816-H00	Open the Thrust Reverser (Selection) (P/B 201)

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Reference	Title
78-31-00-040-806-H00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)
78-31-00-410-816-H00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-805-H00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-201	Container - Fuel Resistant, 5 U.S.-Gal (19 l)

D. Consumable Materials

Reference	Description	Specification
D00552 [C02-019]	Oil - Engine Lubricating	GE Spec. D50TF1
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A

E. Access Panels

Number	Name/Location
414AR	Right Fan Cowl Panel, Left Engine
416AR	Right Thrust Reverser, Left Engine
424AR	Right Fan Cowl Panel, Right Engine
426AR	Right Thrust Reverser, Right Engine

F. Procedure

SUBTASK 73-00-00-010-002-H01



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO OPEN THE THRUST REVERSER(S). IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR

(1) Do these tasks in sequence to safely open the right thrust reverser on the applicable engine:

- (a) Do this task: Retract the Leading Edge Slats, TASK 27-81-00-860-805.
- (b) Do this task: Leading Edge Slat - Deactivation, TASK 27-81-00-040-801.
- (c) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-806-H00.

(d) For the right fan cowl panel, do this task:

Open the Fan Cowl Panel (Selection), TASK 71-11-04-010-814-H00

Number	Name/Location
414AR	Right Fan Cowl Panel, Left Engine
424AR	Right Fan Cowl Panel, Right Engine

(e) For the right thrust reverser, do this task:

Open the Thrust Reverser (Selection), TASK 78-31-00-010-816-H00

Number	Name/Location
416AR	Right Thrust Reverser, Left Engine
426AR	Right Thrust Reverser, Right Engine

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SUBTASK 73-00-00-860-005-H01

- (2) Do these steps to make sure the fuel control valve and the spar valve stay in the closed position:
- (a) Make sure that the FUEL CONTROL switch is in the CUTOFF position.
 - 1) Install a DO-NOT-OPERATE tag on the FUEL CONTROL switch.
 - (b) Push the STAT switch on the display select panel of the glareshield (P55).
 - 1) Make sure you do not see the applicable ENG FUEL VALVE L(R) or FUEL SPAR VALVE L(R) status messages.
 - (c) For the applicable engines, open these circuit breakers and install safety tags:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C28001	L ENGINE FUEL SPAR VALVE
A	19	C28002	R ENGINE FUEL SPAR VALVE
B	4	C76601	L ENG FUEL VALVE
B	19	C76600	R ENG FUEL VALVE

SUBTASK 73-00-00-680-001-H01



DO NOT GET FUEL IN YOUR MOUTH, OR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. KEEP THE FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE, WHICH CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (3) Drain the fuel from the fuel filter plug and do a check for contamination before each departure:
- (a) Put the 5 U.S.-gal (19 l) fuel resistant container, STD-201 below the fuel filter bowl.
 - (b) Remove the bleeder (drain) plug from the fuel filter plug and permit the fuel to drain a small amount of fuel into the 5 U.S.-gal (19 l) fuel resistant container, STD-201.
 - (c) Examine the fuel for contaminants (visible particles of solid material).
NOTE: Water is not a contaminant that can cause a fuel filter bypass.
 - (d) Remove the preformed packing from the bleeder (drain) plug and discard.
 - (e) Use a cotton wiper, G00034 to clean the bleeder (drain) plug.
 - (f) Put clean oil, D00552 [C02-019] on a new preformed packing.
 - 1) Make sure that you put the correct preformed packing on the bleeder (drain) plug.
NOTE: Do not twist the preformed packing, fuel leakage can occur.
 - (g) Put a short piece of string through the new preformed packing.



MAKE SURE THAT THE BLEEDER DRAIN PLUG THREADS DO NOT TOUCH THE PERFORMED PACKINGS. IF IT TOUCHES, IT CAN CAUSE DAMAGE TO THE PERFORMED PACKINGS AND CAN CAUSE FUEL LEAKAGE.

- (h) Put the preformed packing on the bleeder (drain) plug.
- (i) Use the string to pull the new preformed packing away from the threads of the bleeder drain plug.
 - 1) Pull the string around the new preformed packing twice to remove any twisting of the preformed packing.

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- (j) Install the bleeder drain plug in the fuel filter bowl.
 - 1) Make sure that you feel the plug makes a click sound during the installation.
 NOTE: If you do not feel the plug makes a click sound, the bleeder drain plug can be damaged.
- (k) Use the torque wrench when you install the bleeder (drain) plug.
 - 1) Tighten the bleeder (drain) plug to 105-120 pound-inches (11.9-13.6 Newton-meters).

SUBTASK 73-00-00-410-003-H00



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (4) Do these tasks in sequence to safely close the right thrust reverser on the applicable engine:
 - (a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-410-816-H00.
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
416AR	Right Thrust Reverser, Left Engine
426AR	Right Thrust Reverser, Right Engine
 - (b) Do this task: Close the Fan Cowl Panel (Selection), TASK 71-11-04-410-814-H00.
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
414AR	Right Fan Cowl Panel, Left Engine
424AR	Right Fan Cowl Panel, Right Engine
 - (c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-805-H00.
 - (d) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

SUBTASK 73-00-00-790-004-H01

- (5) Do these tasks: Test No. 2 - Dry Motor leak Check, TASK 71-00-00-700-802-H01 and Test No. 5 - Idle Leak Check, TASK 71-00-00-700-804-H01.

————— **END OF TASK** —————

TASK 73-00-00-440-801-H01**7. MMEL 73-34-1 (DDG) Restoration - Engine Fuel Filter Warning Indications Inoperative****A. General**

- (1) This task puts the airplane back to its usual condition after operation with the Engine Fuel Filter Warning Indications Inoperative.

B. Location Zones

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

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SUBTASK 73-00-00-740-001-H01

- (1) Go to the MAT and find the EICAS status message, ENG FUEL FILT SNSR L or R (FIM EICAS MESSAGE LIST).
- (a) Find the fault code and the correlated maintenance message numbers on the MAT.

SUBTASK 73-00-00-810-001-H01

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

SUBTASK 73-00-00-810-002-H01

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

————— **END OF TASK** —————

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FUEL DISTRIBUTION SYSTEM - INSPECTION/CHECK

1. General

- A. This procedure contains scheduled maintenance task data.
- B. This procedure has two tasks:
 - (1) An examination of the fuel distribution system
 - (2) A fuel filter contamination inspection.

TASK 73-11-00-210-801-H01

2. Fuel Distribution System Inspection

A. General

- (1) This task provides the instructions on how to examine the fuel distribution system.

B. References

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
27-81-00-860-805	Retract the Leading Edge Slats (P/B 201)
71-11-04-010-814-H00	Open the Fan Cowl Panel (Selection) (P/B 201)
71-11-04-410-814-H00	Close the Fan Cowl Panel (Selection) (P/B 201)
73-11-01-000-801-H01	Main Fuel Pump Removal (P/B 401)
73-11-01-400-801-H01	Main Fuel Pump Installation (P/B 401)
73-11-05-000-801-H01	Fuel Nozzle Removal (P/B 401)
73-11-05-400-801-H01	Fuel Nozzle Installation (P/B 401)
73-21-55-400-801-H01	Fuel Filter Differential Pressure Sensor Installation (P/B 401)
78-31-00-010-816-H00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-806-H00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)
78-31-00-410-816-H00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-805-H00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

D. Access Panels

Number	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

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E. Prepare for the Inspection

SUBTASK 73-11-00-010-002-H01

**WARNING**

DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO OPEN THE THRUST REVERSER(S). IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR

- (1) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:

- (a) Do this task: Retract the Leading Edge Slats, TASK 27-81-00-860-805.
- (b) Do this task: Leading Edge Slat - Deactivation, TASK 27-81-00-040-801.
- (c) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-806-H00.
- (d) For the left and right fan cowl panels, do this task:
Open the Fan Cowl Panel (Selection), TASK 71-11-04-010-814-H00

<u>Number</u>	<u>Name/Location</u>
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine

- (e) For the left and right thrust reversers, do this task:
Open the Thrust Reverser (Selection), TASK 78-31-00-010-816-H00

<u>Number</u>	<u>Name/Location</u>
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

F. Fuel Distribution System Inspection

SUBTASK 73-11-00-210-001-H01

- (1) Examine the main fuel pump:

- (a) Look for signs of fuel leaks.

NOTE: The stains that you see in the AGB and TGB areas do not mean that there is leakage. The stain is a discoloration caused by baking of oil or grease residue during engine operation. Stains in the AGB and TGB areas are acceptable.

- 1) If you see fuel leaks, replace the seals (TASK 73-11-01-000-801-H01).
- (b) Make sure that the main fuel pump is not loose.
 - 1) If the main fuel pump is loose, tighten the nuts (TASK 73-11-01-000-801-H01).
- (c) Look for nicks, dents, or scratches on the main fuel pump.
 - 1) Nicks, dents, or scratches are permitted if they are less than 0.030 inch (0.76 mm) in depth after you remove the high metal.
- (d) Look for cracks in the main fuel pump.
 - 1) If you see cracks, replace the main fuel pump. These are the tasks: Main Fuel Pump Removal, TASK 73-11-01-000-801-H01 and Main Fuel Pump Installation, TASK 73-11-01-400-801-H01.

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- (e) Make sure that the main fuel supply tube-hose is not loose.
 - 1) If the main fuel supply tube-hose is loose, tighten the bolts (TASK 73-11-01-400-801-H01).
- (f) Make sure that the fuel filter differential pressure sensor is not loose.
 - 1) If the sensor is loose, tighten the bolts (TASK 73-21-55-400-801-H01).
- (g) Make sure that the electrical connectors are not loose.

SUBTASK 73-11-00-210-002-H01**(2) Examine the fuel nozzles:**

- (a) Look for signs of fuel leaks from the fuel nozzle.

NOTE: The stains that you see in the AGB and TGB areas do not mean that there is leakage. The stain is a discoloration caused by baking of oil or grease residue during engine operation. Stains in the AGB and TGB areas are acceptable.

 - 1) If you see fuel leaks, replace the fuel nozzle. These are the tasks: Fuel Nozzle Removal, TASK 73-11-05-000-801-H01 and Fuel Nozzle Installation, TASK 73-11-05-400-801-H01.
- (b) Look for cracks in the mounting flange of the fuel nozzle.
 - 1) If you see cracks, replace the fuel nozzle. These are the tasks: Fuel Nozzle Removal, TASK 73-11-05-000-801-H01 and Fuel Nozzle Installation, TASK 73-11-05-400-801-H01.
- (c) Look for signs of air leaks from the mounting flange.
 - 1) If you see signs of air leaks, replace the fuel nozzle seal ring. These are the tasks: Fuel Nozzle Removal, TASK 73-11-05-000-801-H01 and Fuel Nozzle Installation, TASK 73-11-05-400-801-H01.
- (d) Look for nicks, dents, or scratches.
 - 1) Nicks, dents, or scratches are permitted if they are less than 0.03 inch (0.76 mm) in depth after removal of high metal.
- (e) Make sure the fuel nozzles are not loose.
 - 1) If you find a loose fuel nozzle, tighten the bolts (TASK 73-11-05-400-801-H01).

SUBTASK 73-11-00-210-003-H01**(3) Examine the fuel tubes:**

- (a) Look for splits, cracks, or kinks in the fuel tubes.
 - 1) If you see splits, cracks, or kinks, replace the fuel tube.
- (b) Look for dents in the fuel tubes.
 - 1) Replace the fuel tube if the fuel tube has an external diameter of less than 80 percent of the initial external diameter.
- (c) Look for nicks or marks in the straight sections of the fuel tubes.
 - 1) If you see nicks or marks in a straight section of a fuel tube and if the maximum depth is more than 0.005 inch (0.130 mm), replace the fuel tube.
- (d) Look for nicks or marks in the bend section of the fuel tubes
 - 1) If you see nicks or marks in the bend section of the fuel tubes, replace the fuel tube.

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- (e) Look for signs of fuel leaks from the fuel tubes.

NOTE: The stains that you see in the AGB and TGB areas do not mean that there is leakage. The stain is a discoloration caused by baking of oil or grease residue during engine operation. Stains in the AGB and TGB areas are acceptable.

- 1) If you see a fuel leaks, replace the applicable fuel tube.
- (f) Make sure that the fuel manifolds are not loose.
- 1) If you find a loose fuel manifold, tighten the applicable hardware.
- (g) Look for cracks in a weld joint.
- 1) If you see cracks in a weld joint, replace the fuel tube.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 73-11-00-410-002-H01



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Do these tasks in sequence to safely close the left and right thrust reversers on the applicable engine:
- (a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-410-816-H00.
- 1) Close these access panels:
- | <u>Number</u> | <u>Name/Location</u> |
|---------------|-------------------------------------|
| 415AL | Left Thrust Reverser, Left Engine |
| 416AR | Right Thrust Reverser, Left Engine |
| 425AL | Left Thrust Reverser, Right Engine |
| 426AR | Right Thrust Reverser, Right Engine |
- (b) Do this task: Close the Fan Cowl Panel (Selection), TASK 71-11-04-410-814-H00.
- 1) Close these access panels:
- | <u>Number</u> | <u>Name/Location</u> |
|---------------|------------------------------------|
| 413AL | Left Fan Cowl Panel, Left Engine |
| 414AR | Right Fan Cowl Panel, Left Engine |
| 423AL | Left Fan Cowl Panel, Right Engine |
| 424AR | Right Fan Cowl Panel, Right Engine |
- (c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-805-H00.
- (d) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

————— **END OF TASK** —————

TASK 73-11-00-700-801-H01

3. Fuel Filter Contamination (Scheduled Maintenance Requirement) Inspection

NOTE: This procedure is a scheduled maintenance task.

A. General

- (1) There are four procedures to do a check for fuel filter contamination.
- (a) One procedure uses the MAT (preferred) to look for fuel filter fault messages.

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- (b) One procedure (alternate) uses the CMC present leg fault report.
 - (c) One procedure (alternate) uses fuel filter delta pressure trend data collected by the ACMF.
 - (d) The other procedure (alternate) is for use when the MAT/CMC/ACMF functions are not available.
- (2) For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

B. References

Reference	Title
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
73-11-02-000-801-H01	Fuel Filter Element Removal (P/B 401)
73-11-02-400-801-H01	Fuel Filter Element Installation (P/B 401)

C. Location Zones

Zone	Area
212	Flight Compartment, Right

D. Fuel Filter Contamination Inspection (Preferred)

SUBTASK 73-11-00-860-001-H01

- (1) Set the EEC MAINT L or R ENG POWER switch on the aft overhead maintenance panel, P61, to the TEST position.
- (a) Wait 30 seconds before you start the test.

SUBTASK 73-11-00-740-001-H01

- (2) Use a maintenance access terminal (MAT) to find the fuel filter fault messages.
- (a) Make these selections on the MAT:
- 1) ONBOARD MAINTENANCE
 - 2) EXTENDED MAINTENANCE
 - 3) FAULT HISTORY
 - 4) 71-80 Left or Right Engine
- (b) Look for one or more of these faults in the last 3 flight legs (leg 0, leg -1, or leg -2).

Table 601/73-11-00-993-801-H01 Maintenance Message - Fuel Filter

Maintenance Messages	
73-33441	Fuel Filter (L Eng) maintenance is required.
73-33442	Fuel Filter (R Eng) maintenance is required.

- 1) If one or more of the above fault messages is present, do the corrective action in the FIM.

- (c) Select EXIT MAINTENANCE from the extended maintenance menu.

SUBTASK 73-11-00-860-002-H01

- (3) Set the EEC MAINT L or R ENG POWER switch on the aft overhead maintenance panel, P61, to the NORM position.

E. Fuel Filter Contamination Inspection (Alternate Procedure)

SUBTASK 73-11-00-210-005-H00

- (1) If you use the procedure (alternate) that uses the CMC present leg fault report, do these steps:

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- (a) Examine the present leg fault reports transmitted by the airplane.
- (b) Look for one or more of these maintenance messages in the last three flight legs. If one or more of these messages is present, do the corrective action in the FIM.
 - 1) 73-33441 Fuel Filter (L Eng) maintenance is required.
 - 2) 73-33442 Fuel Filter (R Eng) maintenance is required.

SUBTASK 73-11-00-210-004-H00

- (2) If you use the procedure (alternate) that uses the fuel filter delta pressure trend data collected by the ACMF, do these steps:
 - (a) Examine the ACMF trend data for fuel delta pressure.
 - (b) If there is a fuel filter delta pressure value greater than or equal to 18 PSID in the last three flight legs. If the fuel delta pressure is greater than or equal to 18 PSID in the last three flight legs, do the corrective action specified in the FIM for these maintenance message:
 - 1) 73-33441 Fuel Filter (L Eng) maintenance is required.
 - 2) 73-33442 Fuel Filter (R Eng) maintenance is required.

SUBTASK 73-11-00-900-001-H01

- (3) If the MAT/CMC/ACMF functions are not available, replace the Fuel Filter Element. These are the tasks: Fuel Filter Element Removal, TASK 73-11-02-000-801-H01 and Fuel Filter Element Installation, TASK 73-11-02-400-801-H01.

———— **END OF TASK** ————

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MAIN FUEL PUMP - REMOVAL/INSTALLATION

1. General

- A. This procedure contains two tasks:
- (1) A removal of the main fuel pump (referred to as the MFP)
 - (2) An installation of the MFP.
- B. You will use these tasks if you will replace the MFP with a new MFP, or if you will replace the preformed packing for the MFP mounting flange, the MFP drive shaft, the MFP face seals, and the MFP drive AGB.
- C. During the removal task, after you drain all the fuel from the fuel system, you must remove the three MFP mounted sensors and the main fuel filter assembly from the MFP. You must install these sensors and the fuel filter assembly to the new MFP. It is recommended that you remove the sensors and the fuel filter assembly while the MFP is still installed to the AGB.
- D. If you will replace the MFP with a new MFP, it is not necessary to replace the preformed packing on the bleeder (drain) plug or the locking drain plug after you drain the fuel system. A new preformed packing will be installed during the installation procedure.

TASK 73-11-01-000-801-H01**2. Main Fuel Pump Removal**

(Figure 401, Figure 402, and Figure 403)

A. General

- (1) This task is the removal procedure for the main fuel pump (referred to as the MFP).
- (2) The MFP is on the aft face of the accessory gearbox at approximately the 4:00 o'clock position.
- (3) You must open the right thrust reverser to get access to the MFP.

B. References

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
27-81-00-860-805	Retract the Leading Edge Slats (P/B 201)
71-11-04-010-814-H00	Open the Fan Cowl Panel (Selection) (P/B 201)
73-11-03-000-801-H01	Fuel Filter Bowl Assembly Removal (P/B 401)
73-21-55-000-801-H01	Fuel Filter Differential Pressure Sensor Removal (P/B 401)
78-31-00-010-816-H00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-806-H00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

C. Tools/Equipment

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

Reference	Description
SPL-331	Fixture - Installation/Removal, Line Replaceable Units Part #: 9C1132G06 Supplier: 06083 Opt Part #: 9C1132G03 Supplier: 06083 Opt Part #: 9C1132G04 Supplier: 06083 Opt Part #: 9C1132G05 Supplier: 06083
STD-201	Container - Fuel Resistant, 5 U.S.-Gal (19 l)

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D. Consumable Materials

Reference	Description	Specification
D00552 [C02-019]	Oil - Engine Lubricating	GE Spec. D50TF1
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Main fuel pump	73-11-01-03-090	ARO ALL
3	Preformed packing	73-11-01-03-095	ARO ALL
5	Preformed packing	73-11-01-03-065	ARO ALL

F. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

G. Access Panels

Number	Name/Location
414AR	Right Fan Cowl Panel, Left Engine
416AR	Right Thrust Reverser, Left Engine
424AR	Right Fan Cowl Panel, Right Engine
426AR	Right Thrust Reverser, Right Engine

H. Prepare for the Main Fuel Pump Removal

SUBTASK 73-11-01-010-001-H02



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO OPEN THE THRUST REVERSER(S). IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR

(1) Do these tasks in sequence to safely open the right thrust reverser on the applicable engine:

- (a) Do this task: Retract the Leading Edge Slats, TASK 27-81-00-860-805.
- (b) Do this task: Leading Edge Slat - Deactivation, TASK 27-81-00-040-801.
- (c) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-806-H00.

(d) For the right fan cowl panel, do this task:

Open the Fan Cowl Panel (Selection), TASK 71-11-04-010-814-H00

<u>Number</u>	<u>Name/Location</u>
414AR	Right Fan Cowl Panel, Left Engine
424AR	Right Fan Cowl Panel, Right Engine

(e) For the right thrust reverser, do this task:

Open the Thrust Reverser (Selection), TASK 78-31-00-010-816-H00

<u>Number</u>	<u>Name/Location</u>
416AR	Right Thrust Reverser, Left Engine
426AR	Right Thrust Reverser, Right Engine

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SUBTASK 73-11-01-860-003-H01

- (2) Do these steps to make sure the fuel control valve and the spar valve stay in the closed position:
- (a) Make sure that the FUEL CONTROL switch is in the CUTOFF position.
 - 1) Install a DO-NOT-OPERATE tag on the FUEL CONTROL switch.
 - (b) Push the STAT switch on the display select panel of the glareshield (P55).
 - 1) Make sure you do not see the applicable ENG FUEL VALVE L(R) or FUEL SPAR VALVE L(R) status messages.
 - (c) For the applicable engines, open these circuit breakers and install safety tags:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C28001	L ENGINE FUEL SPAR VALVE
A	19	C28002	R ENGINE FUEL SPAR VALVE
B	4	C76601	L ENG FUEL VALVE
B	19	C76600	R ENG FUEL VALVE

I. Main Fuel Pump Removal

SUBTASK 73-11-01-680-001-H01



DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. KEEP THE FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE, WHICH CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.



A LARGE VOLUME OF FUEL WILL DRAIN FROM THE FUEL SUPPLY SYSTEM. TO PREVENT A FUEL SPILL, YOU MUST USE A MINIMUM OF TWO CONTAINERS TO DRAIN THE FUEL SYSTEM.



IF YOU WILL NOT INSTALL A NEW MFP, INSTALL A NEW PREFORMED PACKING ON THE DRAIN PLUG. THE FAILURE OF THE PREFORMED PACKING CAN CAUSE DAMAGE TO EQUIPMENT.

- (1) Drain the fuel filter (Figure 401):
- (a) Put the 5 U.S.-gal (19 l) fuel resistant container, STD-201 below the fuel filter bowl.
 - (b) Remove the bleeder drain plug [4] from the fuel filter bowl and permit the fuel to drain into the container.
 - (c) Remove and discard the preformed packing [5] from the bleeder drain plug [4].
 - (d) If you will install a new main fuel pump [1], reinstall the bleeder drain plug [4] loosely.
NOTE: You will install a new packing and the plug correctly during the installation procedure for a new MFP.
 - (e) If you will reinstall the same main fuel pump [1] that you remove, do these steps:
 - 1) Examine the shaft end bumper pad [24].
 - 2) If the shaft end bumper pad [24] is broken, do these steps:
 - a) Remove all the pieces of the broken shaft end bumper pad [24] by hand.

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- b) Install a new shaft end bumper pad [24] into position on the end of the drive shaft.
- 3) Apply clean oil, D00552 [C02-019] on a new preformed packing [5].
 - a) Make sure that you put the correct preformed packing [5] on the bleeder drain plug [4].

NOTE: Do not twist the preformed packing, fuel leakage can occur.

- 4) Put a short piece of string through the new preformed packing [5].



MAKE SURE THAT THE BLEEDER DRAIN PLUG THREADS DO NOT TOUCH THE PERFORMED PACKINGS. IF IT TOUCHES, IT CAN CAUSE DAMAGE TO THE PERFORMED PACKINGS AND CAN CAUSE FUEL LEAKAGE.

- 5) Put the new preformed packing [5] on the bleeder drain plug [4].
- 6) Use the string to pull the new preformed packing [5] away from the threads of the drain plug.
 - a) Pull the string around the new preformed packing [5] twice to remove any twisting of the preformed packing [5].
- 7) Install the bleeder drain plug [4] in the fuel filter bowl.
 - a) Make sure that you feel the plug makes a click sound during the installation.

NOTE: If you do not feel the plug makes a click sound, the bleeder drain plug can be damaged.
- 8) Use the torque wrench when you install the bleeder drain plug [4].
 - a) Tighten the bleeder drain plug [4] to 105-120 pound-inches (11.9-13.6 Newton-meters).

SUBTASK 73-11-01-680-002-H01



DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. KEEP THE FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE, WHICH CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.



A LARGE VOLUME OF FUEL WILL DRAIN FROM THE FUEL SUPPLY SYSTEM. TO PREVENT A FUEL SPILL, YOU MUST USE A MINIMUM OF TWO CONTAINERS TO DRAIN THE FUEL SYSTEM.



IF YOU WILL NOT INSTALL A NEW MFP, INSTALL A NEW PREFORMED PACKING ON THE DRAIN PLUG. THE FAILURE OF THE PREFORMED PACKING CAN CAUSE DAMAGE TO EQUIPMENT.

- (2) Drain the MFP fuel supply system (Figure 401):
 - (a) Put the 5 U.S.-gal (19 l) fuel resistant container, STD-201 below the strainer on the main fuel pump [1].
 - (b) Remove the locking drain plug [2] from the MFP inlet strainer and permit the fuel to drain into the 5 U.S.-gal (19 l) fuel resistant container, STD-201.
 - (c) Remove and discard the preformed packing [3] from the locking drain plug [2].

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- (d) Use a cotton wiper, G00034 to clean the locking drain plug [2].
- (e) If you will install a new main fuel pump [1], reinstall the locking drain plug [2] loosely.
NOTE: You will install a new packing and the plug correctly during the installation procedure for a new MFP.
- (f) If you will reinstall the same main fuel pump [1] that you remove, do these steps:
 - 1) Apply clean engine oil on a new preformed packing [3] for the locking drain plug [2].
 - 2) Put the preformed packing [3] on the locking drain plug [2].
 - 3) Install the locking drain plug [2] in the MFP inlet strainer.
 - 4) Tighten the locking drain plug [2] to 105-120 pound-inches (11.9-13.6 Newton-meters).

SUBTASK 73-11-01-020-001-H01

- (3) Remove the fuel filter differential pressure sensor from the main fuel pump [1] (TASK 73-21-55-000-801-H01).

SUBTASK 73-11-01-020-003-H01

- (4) Remove the four bolts [7] that attach the fuel hose shroud [11] and main fuel supply tube hose [8] to the main fuel pump [1].

SUBTASK 73-11-01-020-004-H01

DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. KEEP THE FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE, WHICH CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.



A LARGE VOLUME OF FUEL WILL DRAIN FROM THE FUEL SUPPLY SYSTEM. TO PREVENT A FUEL SPILL, YOU MUST USE A MINIMUM OF TWO CONTAINERS TO DRAIN THE FUEL SYSTEM.

- (5) Remove the fuel hose shroud [11] and disconnect the main fuel supply tube hose [8] and carefully move it away from the main fuel pump [1].

NOTE: Do not bend or twist the main fuel supply tube-hose when you move it. Do not move the tube-hose enough to exceed the minimum allowable bend radii of 12.0 inches (0.30 meter).

SUBTASK 73-11-01-020-005-H01

- (6) Remove and discard the gasket seal [6] from the inlet port of the main fuel pump [1].

SUBTASK 73-11-01-020-006-H01

- (7) Install a protective cover in the main fuel supply tube hose [8] and the inlet port of the main fuel pump [1].

SUBTASK 73-11-01-020-007-H01

- (8) If the MFP (that you will install) does not have a fuel filter assembly installed, do this task: (Fuel Filter Bowl Assembly Removal, TASK 73-11-03-000-801-H01).

SUBTASK 73-11-01-480-001-H01

- (9) Connect the line replaceable units fixture, SPL-331 to the mounting pad of the main fuel pump [1]:
 - (a) Hold the mounting adapter of the line replaceable units fixture, SPL-331 with your hand.

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- (b) Remove the adjustment knob that attaches the mounting adapter to the cradle.
- (c) Remove the mounting adapter from the cradle and attach it to the mounting pad on the main fuel pump [1] with the four captive bolts and the four washers.
- (d) Move the line replaceable units fixture, SPL-331 into its position below the main fuel pump [1], and align the cradle with the mounting adapter.
- (e) Apply pressure to the hydraulic pump foot pedal of the line replaceable units fixture, SPL-331 and lift the cradle to the mounting adapter.

NOTE: Do not fully engage the cradle and the mounting adapter at this time.

- (f) Adjust the line replaceable units fixture, SPL-331 to align the cradle with the mounting adapter.
- (g) Apply pressure to the hydraulic pump foot pedal until the adapter and cradle engage.
- (h) Install the adjustment knob in the cradle and the mounting adapter.

SUBTASK 73-11-01-020-008-H01

- (10) Remove the eight nuts [10] that attach the main fuel pump [1] to the fuel adapter.

SUBTASK 73-11-01-020-009-H01

MOVE THE MFP SLOWLY TO PREVENT DAMAGE TO THE SHAFT OF THE MFP AND THE GEARBOX. THE MFP WEIGHS 58 POUNDS (26 KG). INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (11) Carefully move the main fuel pump [1] aft and away from the fuel adapter with the line replaceable units fixture, SPL-331.

SUBTASK 73-11-01-020-010-H01

- (12) Push down on the hydraulic pressure release pedal to lower the line replaceable units fixture, SPL-331.

SUBTASK 73-11-01-080-001-H01

- (13) Move the line replaceable units fixture, SPL-331 and the main fuel pump [1] away from the engine.

SUBTASK 73-11-01-020-011-H01

- (14) Remove and discard the preformed packing [23] from the MFP mounting flange.

SUBTASK 73-11-01-020-012-H01

- (15) Remove and discard the preformed packing [20] from the drive shaft on the main fuel pump [1].

SUBTASK 73-11-01-020-013-H01

- (16) Remove and discard the seals [22] from the gear stage discharge, the bypass return, the filter inlet, and the filter discharge ports.

SUBTASK 73-11-01-020-014-H01

- (17) Remove and discard the seal [21] from the servo wash screen discharge port.

SUBTASK 73-11-01-020-015-H01

- (18) Install protective covers on the drive shaft and fuel ports of the main fuel pump [1].

SUBTASK 73-11-01-020-016-H01

- (19) Install protective covers in the fuel ports in the fuel adapter gearbox drive.

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SUBTASK 73-11-01-020-017-H01

**WARNING**

MOVE THE MFP SLOWLY TO PREVENT DAMAGE TO THE SHAFT OF THE MFP AND THE GEARBOX. THE MFP WEIGHS 58 POUNDS (26 KG). INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (20) Remove the main fuel pump [1] from the line replaceable units fixture, SPL-331.

————— **END OF TASK** —————

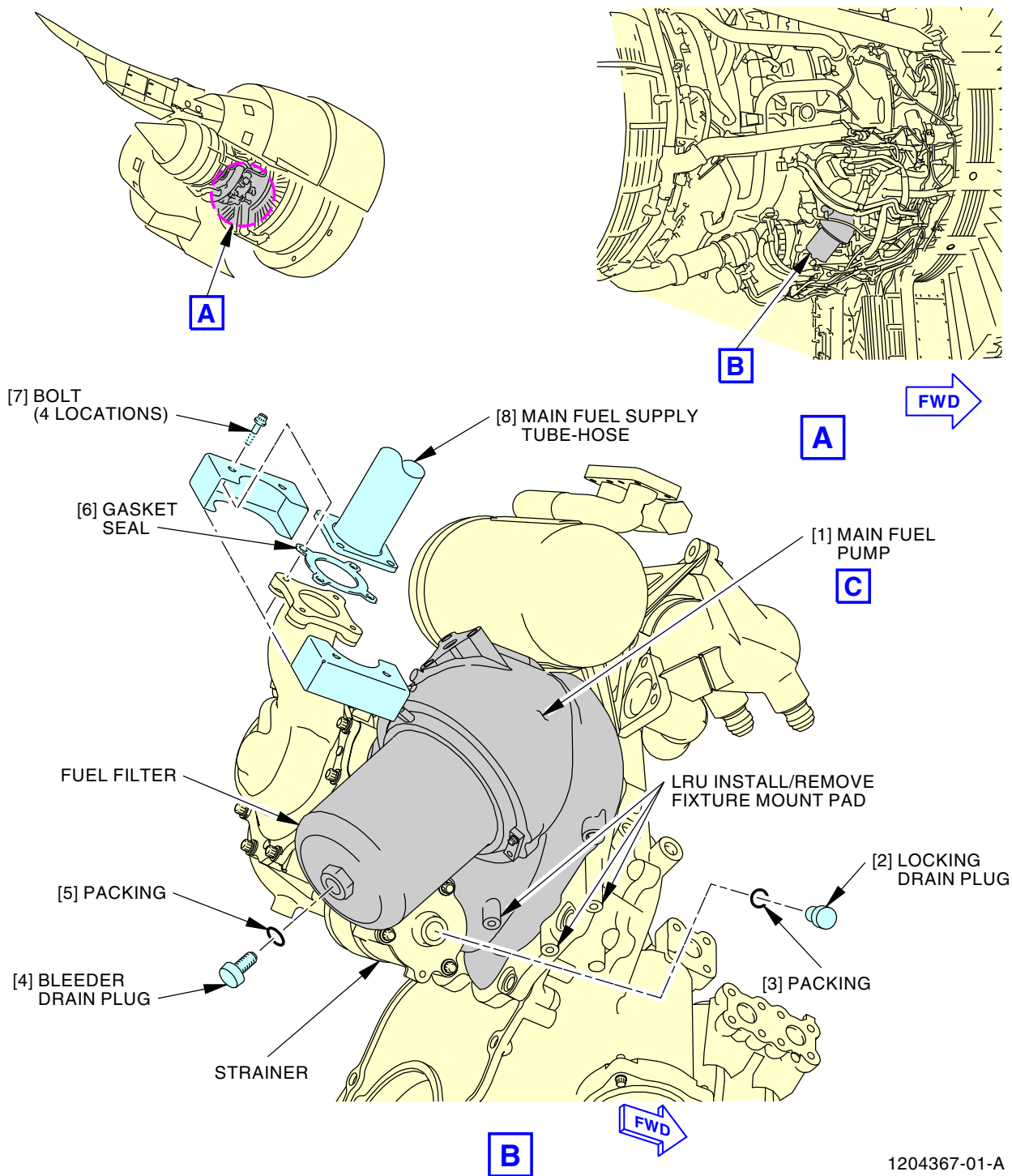
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Main Fuel Pump Installation
Figure 401/73-11-01-990-801-H01 (Sheet 1 of 3)

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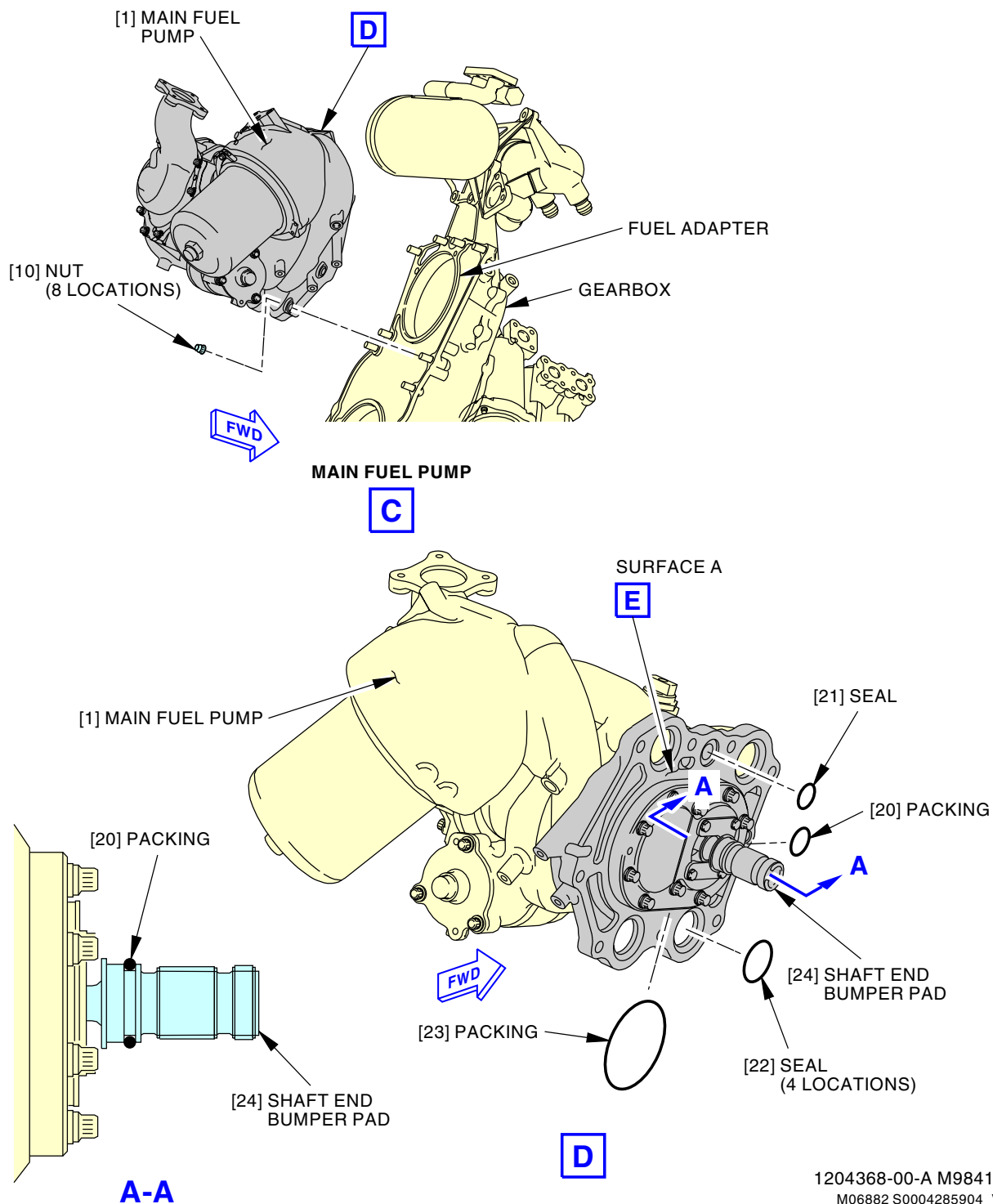
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Main Fuel Pump Installation
Figure 401/73-11-01-990-801-H01 (Sheet 2 of 3)

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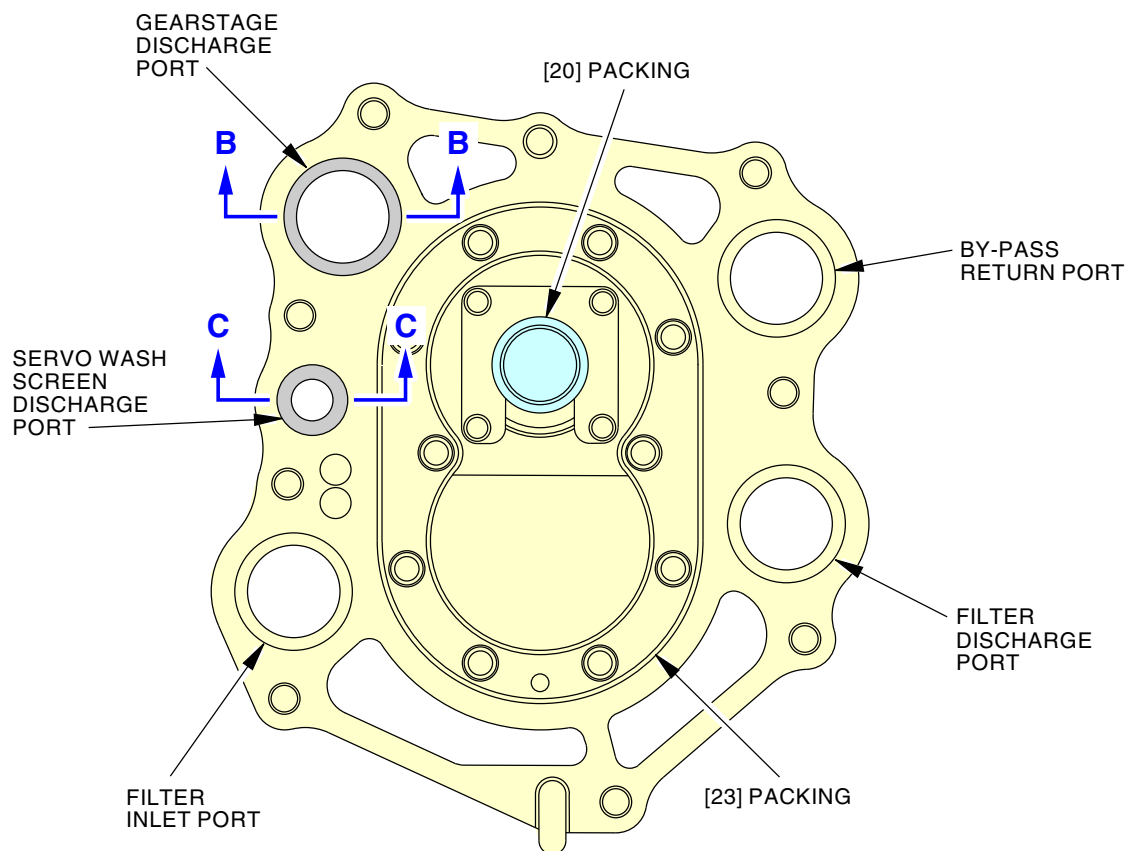
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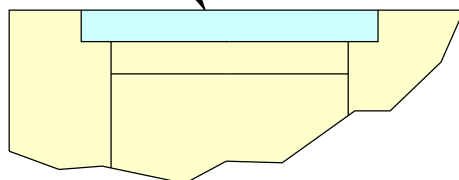
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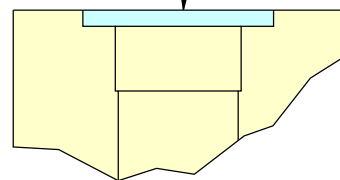
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SURFACE A

E[22] SEAL
(4 LOCATIONS)**B-B**

[21] SEAL

**C-C**

1204369-00-A M98419
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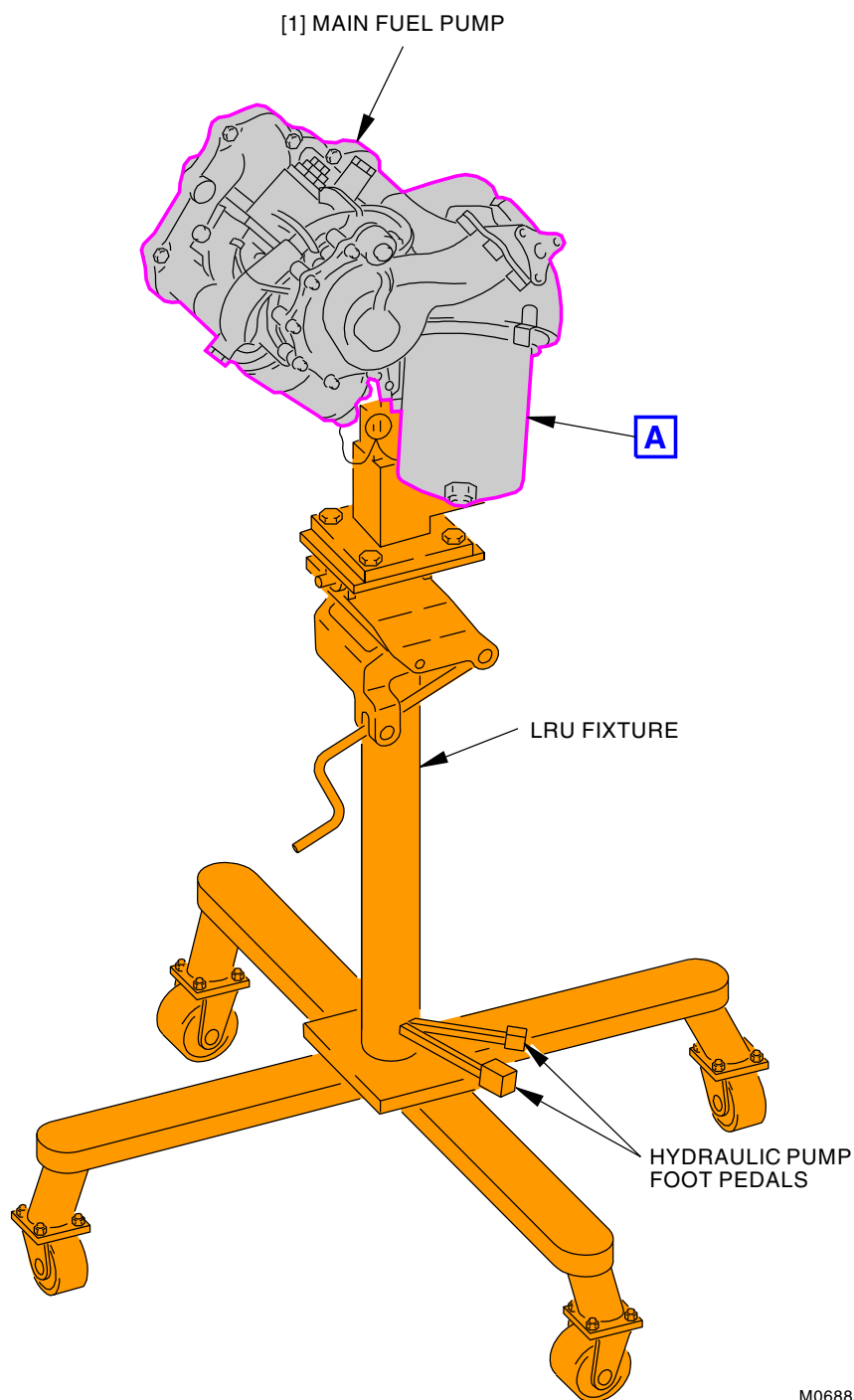
Main Fuel Pump Installation
Figure 401/73-11-01-990-801-H01 (Sheet 3 of 3)

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Main Fuel Pump LRU Fixture Installation
Figure 402/73-11-01-990-803-H01 (Sheet 1 of 2)

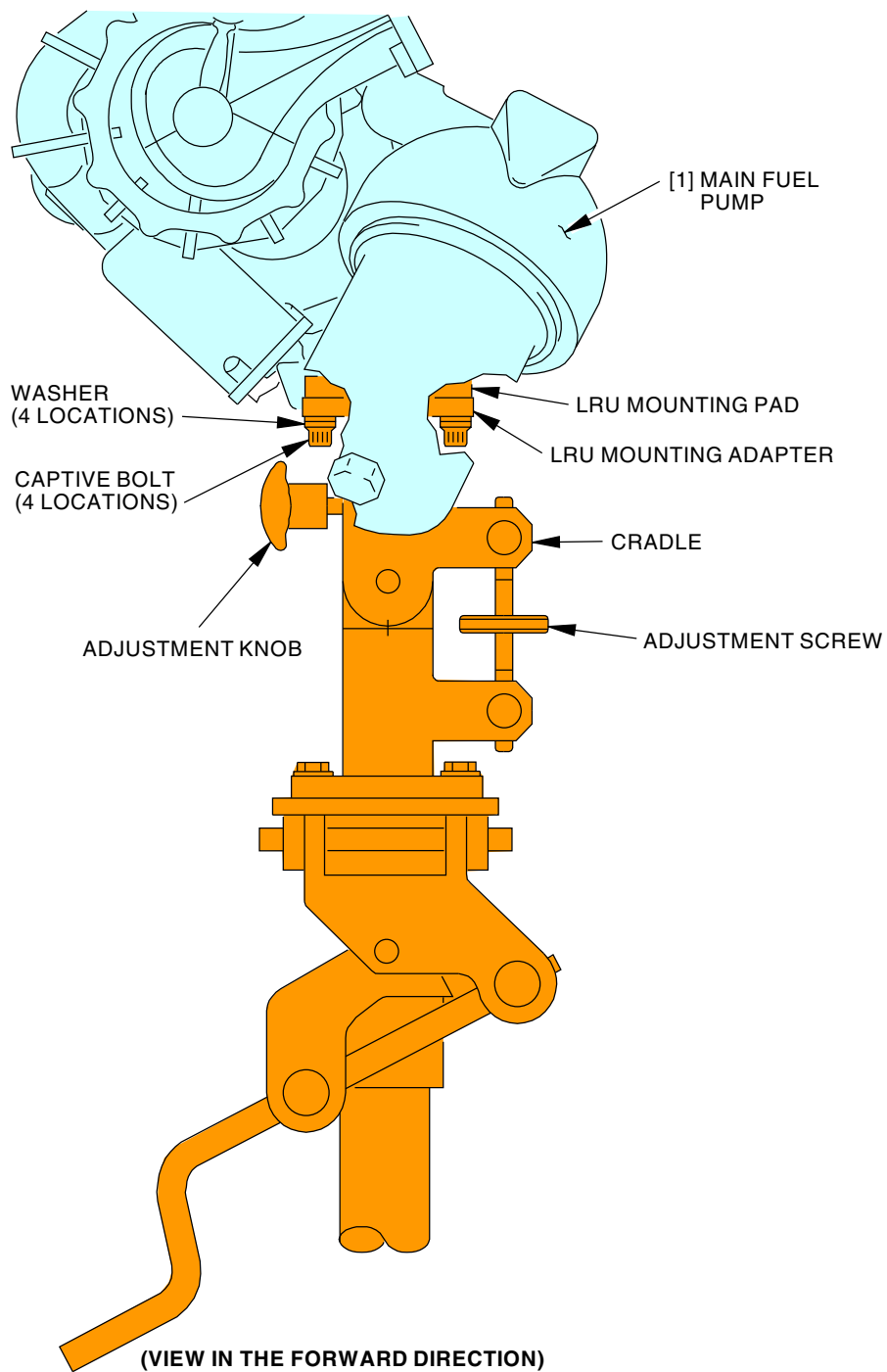
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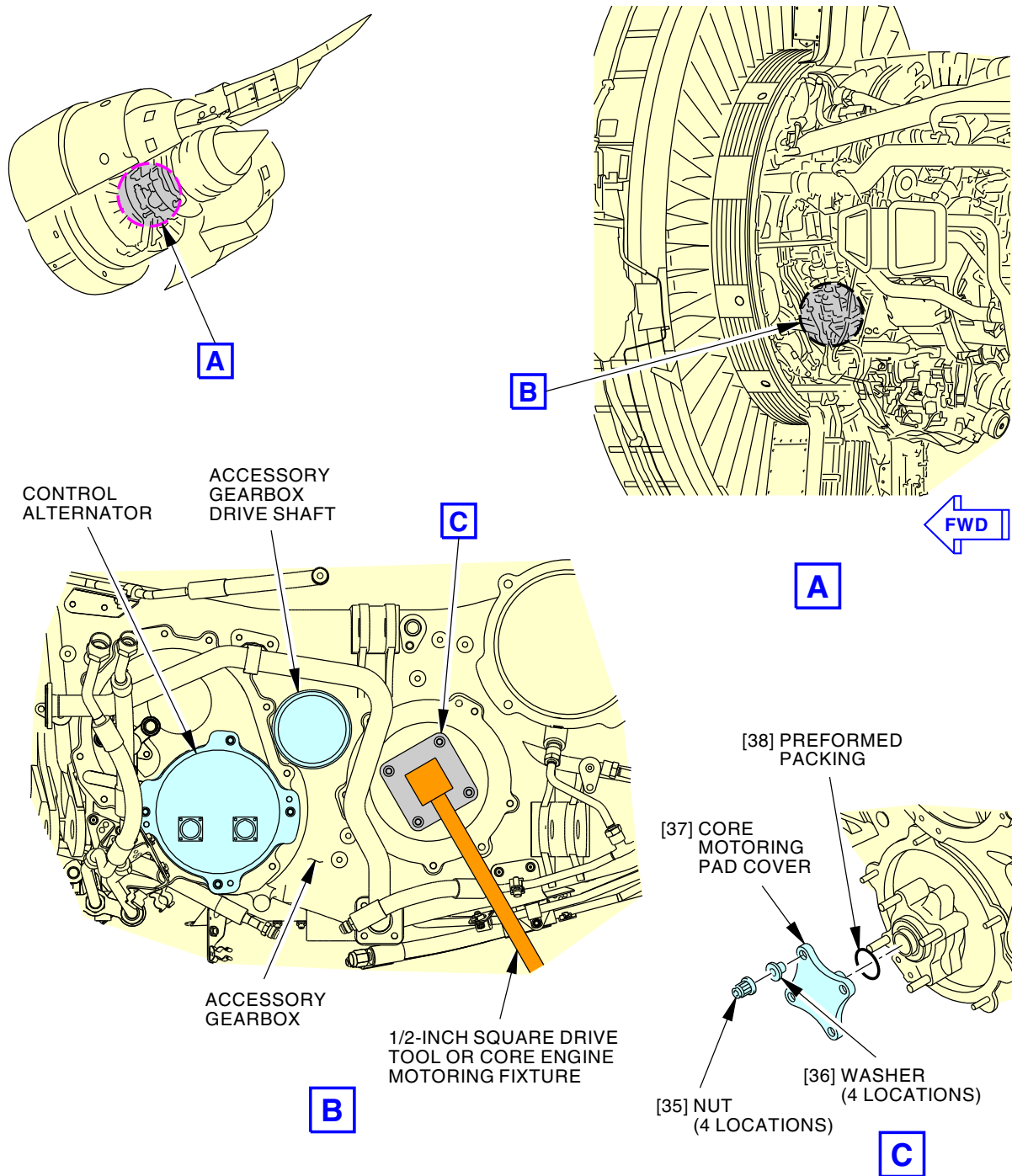
Main Fuel Pump LRU Fixture Installation
Figure 402/73-11-01-990-803-H01 (Sheet 2 of 2)

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1200647-00-A

M99500 S0000104355_V2

**Core Monitoring Pad Installation
Figure 403/73-11-01-990-804-H01**
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TASK 73-11-01-400-801-H01

3. Main Fuel Pump Installation

(Figure 401, Figure 402, and Figure 403)

A. General

- (1) This task is the installation procedure for the main fuel pump (referred to as the MFP).
- (2) You must do the tests that are listed in the Power Plant Test Reference Table after you install the MFP.

B. References

Reference	Title
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
71-00-00-800-833-H00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-814-H00	Close the Fan Cowl Panel (Selection) (P/B 201)
73-11-03-400-801-H01	Fuel Filter Bowl Assembly Installation (P/B 401)
73-21-55-400-801-H01	Fuel Filter Differential Pressure Sensor Installation (P/B 401)
78-31-00-410-816-H00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-805-H00	Thrust Reverser Activation After Ground Maintenance (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-7418	Kit - Electronic Turning Tool, GE90 and GE90-115B Part #: SWE18946DTT Supplier: 87641 Opt Part #: SWE18946ETT Supplier: 87641
SPL-331	Fixture - Installation/Removal, Line Replaceable Units Part #: 9C1132G06 Supplier: 06083 Opt Part #: 9C1132G03 Supplier: 06083 Opt Part #: 9C1132G04 Supplier: 06083 Opt Part #: 9C1132G05 Supplier: 06083

D. Consumable Materials

Reference	Description	Specification
D00552 [C02-019]	Oil - Engine Lubricating	GE Spec. D50TF1
D50043 [C02-058]	Compound - Antiseize, Acheson GP460 (For Threaded Fasteners 0.250 Inches Diameter Or Larger, C02-079 Is An Alternative)	GE A50TF201 Class A
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
6	Gasket seal	73-11-07-03B-030	ARO ALL
20	Preformed packing	73-11-01-03-030	ARO ALL
21	Seal	73-11-01-03-050	ARO ALL
22	Seal	73-11-01-03-045	ARO ALL
		73-11-01-03-050	ARO ALL

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(Continued)

AMM Item	Description	AIPC Reference	AIPC Effectivity
23	Preformed packing	73-11-01-03-035	ARO ALL
38	Preformed packing	72-64-01-02-045	ARO ALL

F. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

G. Access Panels

Number	Name/Location
414AR	Right Fan Cowl Panel, Left Engine
416AR	Right Thrust Reverser, Left Engine
424AR	Right Fan Cowl Panel, Right Engine
426AR	Right Thrust Reverser, Right Engine

H. Main Fuel Pump Installation

SUBTASK 73-11-01-480-002-H01

- (1) Connect the line replaceable units fixture, SPL-331 to the mounting pad on the main fuel pump [1] (Figure 402):

**WARNING**

MOVE THE MFP SLOWLY TO PREVENT DAMAGE TO THE SHAFT OF THE MFP AND THE GEARBOX. THE MFP WEIGHS 58 POUNDS (26 KG). INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (a) Put the main fuel pump [1] in its position on the line replaceable units fixture, SPL-331.
- (b) Attach the MFP mounting pad to the line replaceable units fixture, SPL-331 with the four captive bolts and the four washers.

SUBTASK 73-11-01-010-002-H01

- (2) Remove the protective covers from the MFP drive shaft, the fuel ports, the fuel adapter fuel ports, and the gearbox drive.

SUBTASK 73-11-01-160-001-H01

- (3) Wipe the MFP fuel port counterbores with a clean cotton wiper, G00034.
- (a) Make sure you clean the AGB or LRU counterbores.

NOTE: Contamination in the AGB or LRU counterbores can cause leakage.

SUBTASK 73-11-01-640-001-H01

- (4) Apply clean oil, D00552 [C02-019] on a new seal [21] and seals [22].

SUBTASK 73-11-01-420-001-H01

- (5) Install the four new seals [22] in the gear stage discharge, the by-pass return, the filter inlet, and the filter discharge port.

SUBTASK 73-11-01-420-002-H01

- (6) Install the new seal [21] in the servo wash discharge port.

SUBTASK 73-11-01-210-001-H01

- (7) Look at the ID of the seal [21] and seals [22] to make sure that the springs did not push out of the grooves when you installed them in the counterbores.
- (a) Replace the seal if the spring is pushed out of the groove.

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SUBTASK 73-11-01-420-003-H01

**CAUTION**

MAKE SURE THAT THE PREFORMED PACKINGS ARE INSTALLED ON THE DRIVE SHAFT AND MOUNTING FLANGE. A MISSING PACKING CAN CAUSE ENGINE OIL LEAKS.

- (8) Apply clean oil, D00552 [C02-019] on a new preformed packing [20] for the MFP drive shaft.

SUBTASK 73-11-01-420-004-H01

- (9) Put the preformed packing [20] on the MFP drive shaft.

SUBTASK 73-11-01-420-005-H01

- (10) Apply clean oil, D00552 [C02-019] on a new preformed packing [23] for the MFP mounting flange.

SUBTASK 73-11-01-420-006-H01

- (11) Put the preformed packing [23] on the MFP mounting flange.

SUBTASK 73-11-01-420-007-H01

- (12) Apply a light coat of Acheson GP460 compound, D50043 [C02-058] to the mount studs on the main fuel pump [1].

SUBTASK 73-11-01-420-008-H01

**CAUTION**

DO NOT CAUSE DAMAGE TO THE PACKING WHEN YOU INSTALL THE MFP. A DAMAGED PACKING CAN CAUSE ENGINE OIL LEAKS. OIL LEAKS CAN CAUSE AN IN-FLIGHT SHUTDOWN

- (13) Install the main fuel pump [1] to the gearbox as follows (Figure 401):
- (a) Move the main fuel pump [1] below the engine with the line replaceable units fixture, SPL-331.
 - (b) Apply pressure to the hydraulic pump foot pedal of the line replaceable units fixture, SPL-331 and put the main fuel pump [1] in its position aft of the mount pad on the fuel adapter.
 - (c) Move the main fuel pump [1] forward to the fuel adapter mount pad with the line replaceable units fixture, SPL-331.
 - (d) Adjust the line replaceable units fixture, SPL-331 to align the main fuel pump [1] drive shaft with the gearbox.

**CAUTION**

MAKE SURE THAT THE MAIN FUEL PUMP IS CORRECTLY ALIGNED WITH THE AGB AND HELD AT ALL TIMES. IF YOU DO NOT HOLD THE FUEL PUMP AND KEEP IT CORRECTLY ALIGNED DURING INSTALLATION, DAMAGE TO THE SPLINED DRIVE SHAFT CAN OCCUR.

**CAUTION**

DO NOT USE TOO MUCH FORCE WHEN YOU PUT THE MFP INTO THE GEARBOX DRIVE OR FUEL ADAPTER STUDS. TOO MUCH FORCE CAN CAUSE DAMAGE TO THE GEARBOX DRIVE AND FUEL ADAPTER STUDS.

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DO NOT CAUSE DAMAGE TO THE PACKING WHEN YOU INSTALL THE MFP. A DAMAGED PACKING CAN CAUSE ENGINE OIL LEAKS. OIL LEAKS CAN CAUSE AN IN-FLIGHT SHUTDOWN

- (e) Move the main fuel pump [1] into the fuel adapter with a positive forward motion until completely seated onto the gearbox dowel pins.
 - 1) Turn the main fuel pump [1] housing to the right and left with your hands to start the main fuel pump [1] drive shaft into the gearbox drive.

SUBTASK 73-11-01-980-001-H01

- (14) Do the alternate manual core engine motoring procedure to start the main fuel pump [1] drive shaft into the gearbox drive:
 - (a) Remove the nuts [35] and washers [36] which attach the core motoring pad cover [37] to the main gearbox.
 - (b) Remove the core motoring pad cover [37].
 - (c) Remove and discard the preformed packing [38] from the core motoring pad cover [37].



YOU MUST MAKE SURE THERE IS CLEARANCE BETWEEN THE MAIN GEARBOX MOTORING PAD STUDS AND THE TOOL HANDLE OR STUD DAMAGE IS POSSIBLE.

- (d) Insert a 1/2-inch square drive tool into the main gearbox core engine motoring drive.
- (e) Turn the core engine motoring drive to start the MFP drive shaft into the gearbox drive.
- (f) Remove the drive tool from the core engine motoring drive.
- (g) Apply clean oil, D00552 [C02-019] on a new preformed packing [38] for the core engine motoring pad.
- (h) Put the preformed packing [38] on the core motoring pad cover [37].
- (i) Put the core motoring pad cover [37] in its position on the motoring pad studs.
- (j) Attach the core motoring pad cover [37] to the main gearbox with washers [36] and nuts [35].
 - 1) Tighten the nuts [35] to 55-70 pound-inches (6.2-7.9 Newton-meters)

SUBTASK 73-11-01-980-002-H01

- (15) Do the alternate electrical core engine motoring procedure to start the MFP drive shaft into the gearbox drive:
 - (a) Remove the nuts [35] and washers [36] which attach the core motoring pad cover [37] to the main gearbox.
 - (b) Remove the core motoring pad cover [37].
 - (c) Remove and discard the preformed packing [38] from the core motoring pad cover [37].



YOU MUST INSTALL THE CORE ENGINE MOTORING FIXTURE CORRECTLY. INCORRECT INSTALLATION OF THE CORE ENGINE MOTORING FIXTURE COULD DAMAGE THE MAIN GEARBOX CORE MOTORING PAD STUDS.

- (d) Attach the core engine motoring adapter (part of the kit) to the gearbox core engine motoring drive.

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- (e) Tighten the core engine adapter nuts to 55-70 pound-inches (6.2-7.9 Newton-meters).
- (f) Use the electronic turning tool kit, COM-7418 to turn the core engine motoring drive to start the MFP drive shaft into the gearbox drive.
- (g) Remove the core motoring fixture from the main gearbox core engine motoring drive.
- (h) Apply clean oil, D00552 [C02-019] on a new preformed packing [38] for the core engine motoring pad.
- (i) Put the preformed packing [38] on the core engine motoring pad cover.
- (j) Put the core motoring pad cover [37] on the motoring pad studs.
- (k) Attach the core motoring pad cover [37] to the main gearbox with washers [36] and nuts [35].
- (l) Tighten the nuts [35] to 55-70 pound-inches (6.2-7.9 Newton-meters).

SUBTASK 73-11-01-420-009-H01

- (16) Install the nuts [10] that attach the main fuel pump [1] to the fuel adapter.
 - (a) Initially, tighten the nuts [10] to 50 pound-inches (5.6 Newton-meters) in a crisscross pattern, in the CW direction.

NOTE: Start with the nut position that is nearest to the engine assembled orientation.
 - (b) Tighten the nuts [10] again to 125 pound-inches (14.1 Newton-meters) in a crisscross pattern, in the CW direction.

NOTE: Start with the nut position that is nearest to the engine assembled orientation.
 - (c) Finally, tighten the nuts [10] again to 237–262 pound-inches (26.8–29.6 Newton-meters) in a crisscross pattern, in the CW direction.

NOTE: Start with the nut position that is nearest to the engine assembled orientation.

SUBTASK 73-11-01-080-002-H01

- (17) Disconnect the four captive bolts and washers that attach the mounting pad to the main fuel pump [1].

SUBTASK 73-11-01-080-003-H01

- (18) Lower the line replaceable units fixture, SPL-331 and move it away from the engine.

SUBTASK 73-11-01-640-002-H01

- (19) Put clean oil, D00552 [C02-019] on the new gasket seal [6].

SUBTASK 73-11-01-420-010-H01

- (20) Put the gasket seal [6] on the fuel inlet port.

SUBTASK 73-11-01-420-011-H01

- (21) Connect the main fuel supply tube hose [8]:
 - (a) Put the main fuel supply tube hose [8] and fuel hose shroud [11] in its position on the main fuel pump [1].
 - (b) Install the bolts [7] that attach the main fuel supply tube hose [8] and fuel hose shroud [11] to the main fuel pump [1]
 - (c) Tighten the bolts [7] to 180-220 pound-inches (20.3-24.9 Newton-meters).

SUBTASK 73-11-01-420-012-H01

- (22) Install the fuel filter differential pressure sensor into the main fuel pump [1] (TASK 73-21-55-400-801-H01).

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SUBTASK 73-11-01-020-018-H01

- (23) If the new MFP does not have a fuel filter assembly, install the fuel filter assembly (TASK 73-11-03-400-801-H01).

I. Put the Airplane Back to its Usual Condition

SUBTASK 73-11-01-410-002-H01

**WARNING**

DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Do these tasks in sequence to safely close the right thrust reverser on the applicable engine:
- (a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-410-816-H00.
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
416AR	Right Thrust Reverser, Left Engine
426AR	Right Thrust Reverser, Right Engine
 - (b) Do this task: Close the Fan Cowl Panel (Selection), TASK 71-11-04-410-814-H00.
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
414AR	Right Fan Cowl Panel, Left Engine
424AR	Right Fan Cowl Panel, Right Engine
 - (c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-805-H00.
 - (d) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

SUBTASK 73-11-01-860-004-H01

- (2) Do these steps to put the fuel control valve and the spar valve to the serviceable condition:
- (a) Make sure that the FUEL CONTROL switch is in the CUTOFF position.
 - (b) For the applicable engine, remove the safety tags and close these circuit breakers:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C28001	L ENGINE FUEL SPAR VALVE
A	19	C28002	R ENGINE FUEL SPAR VALVE
B	4	C76601	L ENG FUEL VALVE
B	19	C76600	R ENG FUEL VALVE

J. Main Fuel Pump Installation Test

SUBTASK 73-11-01-710-001-H01

- (1) Do the tests listed in the Power Plant Test Reference Table (TASK 71-00-00-800-833-H00).

————— **END OF TASK** —————

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FUEL FILTER ELEMENT - REMOVAL/INSTALLATION

1. General

- A. This procedure has two tasks:
- (1) Fuel filter element removal
 - (2) Fuel filter element installation.

TASK 73-11-02-000-801-H01

2. Fuel Filter Element Removal

(Figure 401)

A. General

- (1) This task provides the instructions on how to remove the fuel filter element.

B. References

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
27-81-00-860-805	Retract the Leading Edge Slats (P/B 201)
28-10-00-200-801	Detection Test for Microbial Growth (P/B 201)
70-43-42-300-801-H01	Blending Procedures (P/B 201)
71-11-04-010-814-H00	Open the Fan Cowl Panel (Selection) (P/B 201)
78-31-00-010-816-H00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-806-H00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-1054	Container - Fuel Resistant, 5-Gallon (19-Liter)

D. Consumable Materials

Reference	Description	Specification
D00552 [C02-019]	Oil - Engine Lubricating	GE Spec. D50TF1
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
4	Preformed packing	73-11-01-03-065	ARO ALL

F. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

G. Access Panels

Number	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine

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(Continued)

Number	Name/Location
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

H. Prepare for the Removal

SUBTASK 73-11-02-860-003-H01

- (1) Do these steps to make sure the fuel control valve and the spar valve stay in the closed position:
 - (a) Make sure that the FUEL CONTROL switch is in the CUTOFF position.
 - 1) Install a DO-NOT-OPERATE tag on the FUEL CONTROL switch.
 - (b) Push the STAT switch on the display select panel of the glareshield (P55).
 - 1) Make sure you do not see the applicable ENG FUEL VALVE L(R) or FUEL SPAR VALVE L(R) status messages.
 - (c) For the applicable engines, open these circuit breakers and install safety tags:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C28001	L ENGINE FUEL SPAR VALVE
A	19	C28002	R ENGINE FUEL SPAR VALVE
B	4	C76601	L ENG FUEL VALVE
B	19	C76600	R ENG FUEL VALVE

SUBTASK 73-11-02-010-001-H01



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO OPEN THE THRUST REVERSER(S). IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR

- (2) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:
 - (a) Do this task: Retract the Leading Edge Slats, TASK 27-81-00-860-805.
 - (b) Do this task: Leading Edge Slat - Deactivation, TASK 27-81-00-040-801.
 - (c) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-806-H00.
 - (d) For the left and right fan cowl panels, do this task:
Open the Fan Cowl Panel (Selection), TASK 71-11-04-010-814-H00

Number	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine
 - (e) For the left and right thrust reversers, do this task:
Open the Thrust Reverser (Selection), TASK 78-31-00-010-816-H00

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<u>Number</u>	<u>Name/Location</u>
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

I. Fuel Filter Element Removal

SUBTASK 73-11-02-680-001-H01



DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. KEEP THE FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE, WHICH CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Drain the fuel filter bowl [1]:
 - (a) Put the 5-gallon (19-liter) fuel resistant container, STD-1054 below the fuel filter bowl [1].
 - (b) Remove the bleeder drain plug [3] from the fuel filter bowl [1].
 - (c) Permit the fuel to drain into the 5-gallon (19-liter) fuel resistant container, STD-1054
 - (d) Remove the preformed packing [4] from the bleeder drain plug [3].
 - (e) Discard the preformed packing [4].
 - (f) Use a cotton wiper, G00034 to clean the bleeder drain plug [3].
 - (g) Put clean oil, D00552 [C02-019] on a new preformed packing [4].



THERE ARE SEVERAL SIMILAR PREFORMED PACKINGS IN THIS AREA OF THE ENGINE. USE THE CORRECT PREFORMED PACKING OR FUEL LEAKAGE CAN OCCUR.

- (h) Lubricate a new preformed packing [4] with oil, D00552 [C02-019].
- (i) Put a short piece of string through the new preformed packing [4].



TWISTING OF THE PREFORMED PACKING CAN CAUSE DAMAGE TO THE PREFORMED PACKING AND CAUSE FUEL LEAKAGE.

- (j) Put the preformed packing [4] on a sleeve.

NOTE: Use a locally manufactured sleeve that will fit over the bleeder drain plug. This will protect the preformed packing during installation.
- (k) Slide the sleeve with the preformed packing [4] over the bleeder drain plug [3].



MAKE SURE THAT THE BLEEDER DRAIN PLUG THREADS DO NOT TOUCH THE PERFORMED PACKINGS. IF IT TOUCHES, IT CAN CAUSE DAMAGE TO THE PERFORMED PACKINGS AND CAN CAUSE FUEL LEAKAGE.

- (l) Put the preformed packing [4] on the bleeder drain plug [3].
- (m) Remove the sleeve from the bleeder drain plug [3].

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- (n) Use the string to pull the new preformed packing [4] away from the threads of the drain plug.
 - 1) Pull the string around the new preformed packing [4] twice to remove all twisting of the preformed packing [4].
 - (o) Remove the string.
 - (p) Install the bleeder drain plug [3] in the fuel filter bowl [1].
- NOTE:** Make sure the plug clicks during installation. If the plug does not click, replace the bleeder drain plug and or the fuel filter bowl as necessary.

**CAUTION**

USE A TORQUE WRENCH WHEN INSTALLING THE BLEEDER DRAIN PLUG. THE ANTI-ROTATION FITTINGS CAN MAKE THE INSTALLATION TORQUE MORE DIFFICULT TO FEEL.

- (q) Tighten the bleeder drain plug [3] to 105-120 pound-inches (11.9-13.6 Newton-meters).

SUBTASK 73-11-02-020-001-H01

- (2) Remove the fuel filter element [6] as follows:
 - (a) Install a 1-1/4 inch box-end wrench or socket over the hex on the bottom of the fuel filter bowl [1].
 - (b) Push the ratchet lock tab [5] and hold it.

NOTE: The ratchet lock tab is attached to the fuel filter adapter on the main fuel pump. When you push on the lock tab, you will release the lock on the fuel filter bowl, and permit the bowl to turn.
 - (c) Turn the box-end wrench or socket on the fuel filter bowl [1] in a counterclockwise direction to disengage the filter bowl from the main fuel pump [2].
 - (d) Remove the box-end wrench or socket.
 - (e) Turn the fuel filter bowl [1] with your hands until you remove it from the main fuel pump [2].
 - (f) Remove the fuel filter element [6] from the fuel filter bowl [1].
 - (g) Remove the back-up rings [9] and the preformed packing [8] from the fuel filter bowl [1].
 - (h) Discard the preformed packing [8] and back-up rings [9].
 - (i) Do a visual check of the fuel filter bowl [1] and the adapter on the main fuel pump [2] for damage on the threads.
 - 1) Replace the fuel filter bowl [1] if you see damaged threads on the fuel filter bowl.
 - 2) Replace the main fuel pump [2] if you see damaged threads on the main fuel pump adapter.
 - (j) Do a visual check of the fuel filter bowl [1] and the adapter on the main fuel pump for debris or contamination.
 - 1) If you see debris or contamination, use a clean cotton wiper, G00034, to clean the fuel filter bowl [1] and the adapter on the main fuel pump.
 - 2) Keep all metal particles for analysis.
 - (k) Do an inspection of the fuel filter bowl [1] on the main fuel pump for wear as follows:
 - 1) Permitted up to 0.015 inch (0.381 mm) depth.
 - 2) Permitted up to 0.030 inch (0.762 mm) depth for a continue in service limit of 10 days.

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- 3) Hand blend the wear (TASK 70-43-42-300-801-H01).
- (l) Examine the fuel filter adapter [10] on the main fuel pump for wear as follows:
 - 1) Wear up to 0.040 inch (1.02 mm) is permitted.
- (m) Examine the for fuel filter element [6] signs of microbial contamination.

NOTE: Microbial contamination may show in the filter as a dark colored sludge or slime. However, the contamination does not always have these characteristics. Microbial contamination can cause a blocked fuel filter and result in a fuel filter bypass condition.

 - 1) If the fuel filter element [6] has trapped fine debris of unknown origin, it is recommended you do the inspection of the fuel tanks for microbial contamination (TASK 28-10-00-200-801).
- (n) Install a protective cover in the fuel filter adapter in the main fuel pump [2] and in the fuel filter bowl [1].

———— **END OF TASK** ————

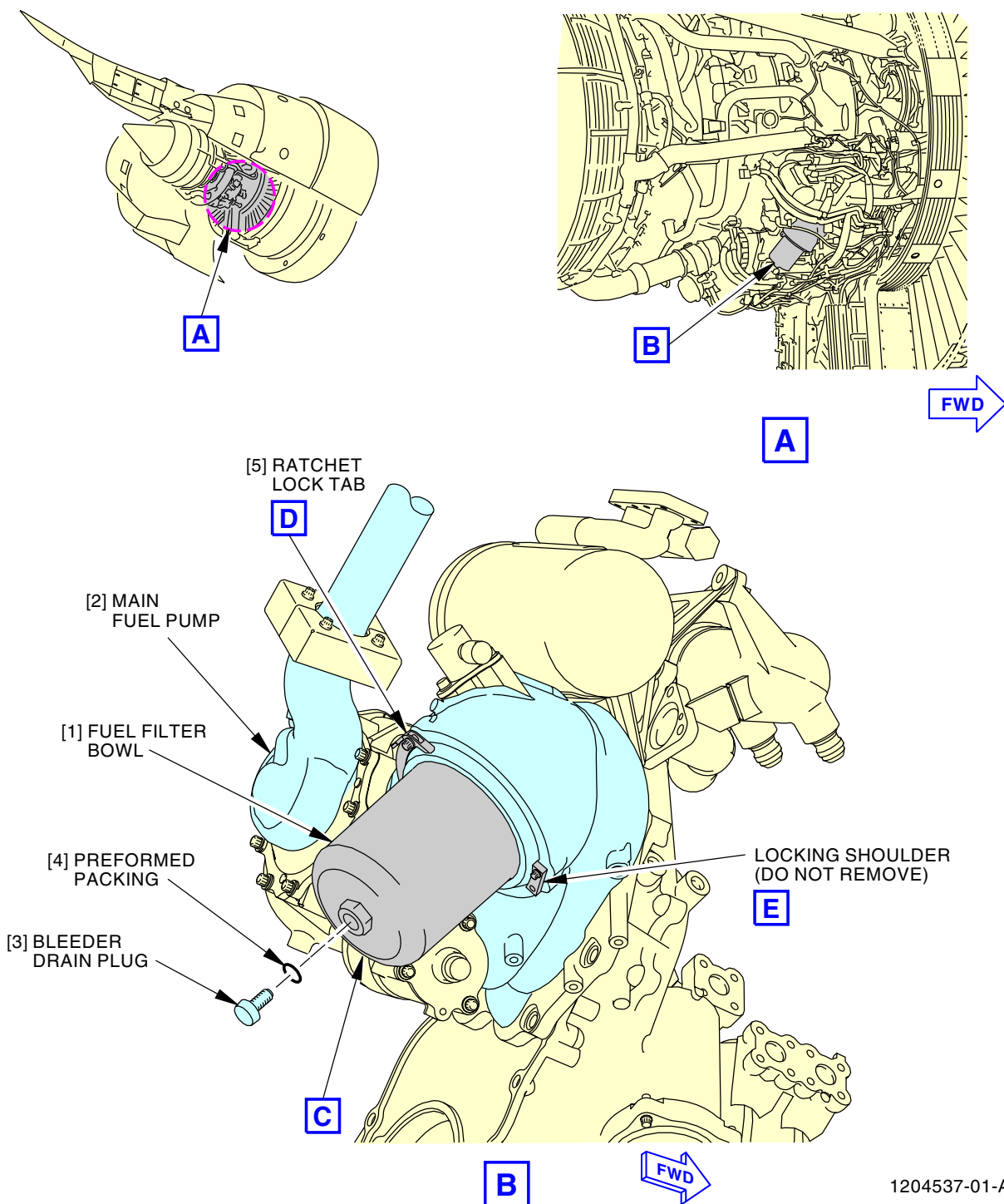
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1204537-01-A
M06889 S0004285908_V3

Engine Fuel Filter Installation
Figure 401/73-11-02-990-801-H01 (Sheet 1 of 2)

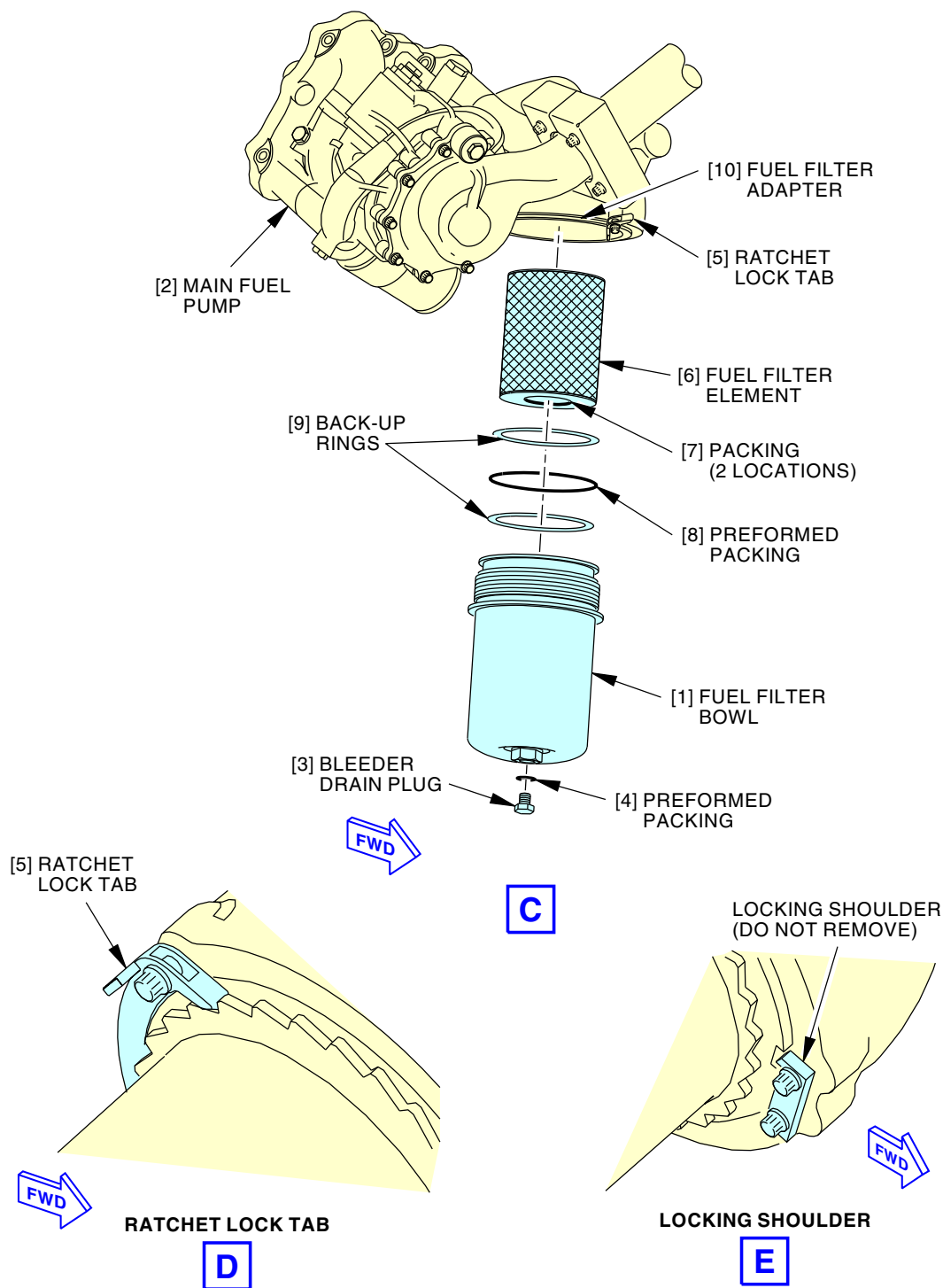
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1210885-00-A
M06890 S0004285909_V4

Engine Fuel Filter Installation
Figure 401/73-11-02-990-801-H01 (Sheet 2 of 2)

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TASK 73-11-02-400-801-H01

3. Fuel Filter Element Installation

(Figure 401)

A. General

(1) This task provides the instructions on how to install the fuel filter element.

B. References

Reference	Title
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
71-00-00-800-833-H00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-814-H00	Close the Fan Cowl Panel (Selection) (P/B 201)
78-31-00-410-816-H00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-805-H00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Consumable Materials

Reference	Description	Specification
D00552 [C02-019]	Oil - Engine Lubricating	GE Spec. D50TF1
D50043 [C02-058]	Compound - Antiseize, Acheson GP460 (For Threaded Fasteners 0.250 Inches Diameter Or Larger, C02-079 Is An Alternative)	GE A50TF201 Class A

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
6	Fuel filter element	73-11-01-03-080	ARO ALL
7	Preformed packing	73-11-01-03-085	ARO ALL
8	Preformed packing	73-11-01-03-075	ARO ALL
9	Back-up ring	73-11-01-03-070	ARO ALL

E. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

F. Access Panels

Number	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

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SUBTASK 73-11-02-420-001-H01



DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. KEEP THE FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE, WHICH CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Install the fuel filter element [6]:
- (a) Remove the protective covers from the fuel filter adapter on the main fuel pump [2] and the fuel filter bowl [1].
 - (b) Remove the new fuel filter element [6] from its protective cover.
- NOTE: The three (3) bands wrapped around the fuel filter element are part of the fuel filter element and should not be removed.



MAKE SURE THAT THERE IS A PREFORMED PACKING AT EACH END OF THE NEW FUEL FILTER ELEMENT. A MISSING PACKING CAN CAUSE FUEL FILTER LEAKS. DAMAGE TO EQUIPMENT CAN OCCUR.

- (c) Look to make sure that a new preformed packings [7] is installed in the inside diameter at each end of the new fuel filter element [6].
- (d) Lubricate the two preformed packings [7] with oil, D00552 [C02-019].
- (e) Install the new fuel filter element [6] into the fuel filter bowl [1].
- (f) Lubricate the preformed packing [8] with oil, D00552 [C02-019].



INSTALL THE BACK-UP RINGS, AND THE PREFORMED PACKINGS ON THE FUEL FILTER ASSEMBLY IN THE CORRECT SEQUENCE. AN INCORRECT ASSEMBLY SEQUENCE CAN CAUSE FUEL LEAKAGE.

- (g) Install two new back-up rings [9] and a new preformed packing [8] on the fuel filter bowl [1] as follows:
 - 1) Install the first back-up ring [9]
 - 2) Install the preformed packing [8]
 - 3) Install the second back-up ring [9].
 - (h) Apply a thin coat of the Acheson GP460 compound, D50043 [C02-058] on the threads of the fuel filter bowl [1].
 - (i) Insert the fuel filter bowl [1] into the fuel filter adapter in the main fuel pump [2].
 - (j) Align the fuel filter bowl [1] and the fuel filter element [6] with the fuel filter adapter in the main fuel pump [2].
- NOTE: You can feel it when the fuel filter adapter, fuel filter element, and fuel filter bowl are aligned.
- (k) Carefully turn the fuel filter bowl [1] in a clockwise direction with your hands.
 - (l) Continue to turn the fuel filter bowl [1] with your hands until it is tight.
- NOTE: The torque that is necessary to turn the fuel filter bowl will increase when the packing engages with the fuel filter adapter on the MFP.

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- (m) Install a 1-1/4 inch box-end wrench or socket over the hex on the bottom of the fuel filter bowl [1].
- (n) Turn the box-end wrench or socket in a clockwise direction until you have these conditions:

NOTE: You will still see a small gap when the fuel filter bowl is fully seated in the fuel filter adapter in the MFP.

- 1) The fuel filter bowl [1] is fully seated in the fuel filter adapter on the main fuel pump [2]
- 2) The ratchet lock tab [5] is fully engaged with the lock ring on the fuel filter bowl [1].

H. Put the Airplane Back to its Usual Condition

SUBTASK 73-11-02-410-001-H01



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Do these tasks in sequence to safely close the left and right thrust reversers on the applicable engine:
 - (a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-410-816-H00.
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine
 - (b) Do this task: Close the Fan Cowl Panel (Selection), TASK 71-11-04-410-814-H00.
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine
 - (c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-805-H00.
 - (d) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

SUBTASK 73-11-02-860-004-H01

- (2) Do these steps to put the fuel control valve and the spar valve to the serviceable condition:
 - (a) Make sure that the FUEL CONTROL switch is in the CUTOFF position.
 - (b) For the applicable engine, remove the safety tags and close these circuit breakers:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C28001	L ENGINE FUEL SPAR VALVE
A	19	C28002	R ENGINE FUEL SPAR VALVE
B	4	C76601	L ENG FUEL VALVE

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(Continued)

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C76600	R ENG FUEL VALVE

I. Fuel Filter Element Installation Test

SUBTASK 73-11-02-710-001-H01

(1) Do the tests listed in the Power Plant Test Reference Table (TASK 71-00-00-800-833-H00).

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FUEL FILTER BOWL ASSEMBLY - REMOVAL/INSTALLATION

1. General

- A. This procedure contains two tasks:
- (1) A removal of the fuel filter bowl assembly
 - (2) An installation of the fuel filter bowl assembly.

TASK 73-11-03-000-801-H01

2. Fuel Filter Bowl Assembly Removal

(Figure 401)

A. **General**

- (1) This task is the removal procedure for the fuel filter bowl assembly.
- (2) The fuel filter bowl assembly is threaded into the main fuel pump.
- (3) You must open the right thrust reverser to get access to the fuel filter bowl assembly.

B. **References**

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
27-81-00-860-805	Retract the Leading Edge Slats (P/B 201)
71-11-04-010-814-H00	Open the Fan Cowl Panel (Selection) (P/B 201)
78-31-00-010-816-H00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-806-H00	Thrust Reverser Deactivation For Ground Maintenance (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-2589	Tool - Removal, Fuel Filter Assembly Part #: ABB999-30SE1 Supplier: 18350
STD-1054	Container - Fuel Resistant, 5-Gallon (19-Liter)

D. **Consumable Materials**

Reference	Description	Specification
D00552 [C02-019]	Oil - Engine Lubricating	GE Spec. D50TF1
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A

E. **Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
4	Preformed packing	73-11-01-03-065	ARO ALL

F. **Location Zones**

Zone	Area
411	Engine, Left
421	Engine, Right

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G. Access Panels

Number	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

H. Prepare for the Fuel Filter Element Removal

SUBTASK 73-11-03-010-002-H01



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO OPEN THE THRUST REVERSER(S). IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR

- (1) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:

- (a) Do this task: Retract the Leading Edge Slats, TASK 27-81-00-860-805.
- (b) Do this task: Leading Edge Slat - Deactivation, TASK 27-81-00-040-801.
- (c) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-806-H00.
- (d) For the left and right fan cowl panels, do this task:

Open the Fan Cowl Panel (Selection), TASK 71-11-04-010-814-H00

<u>Number</u>	<u>Name/Location</u>
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine

- (e) For the left and right thrust reversers, do this task:

Open the Thrust Reverser (Selection), TASK 78-31-00-010-816-H00

<u>Number</u>	<u>Name/Location</u>
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

SUBTASK 73-11-03-869-001-H01

- (2) Do these steps to make sure the fuel control valve and the spar valve stay in the closed position:

- (a) Make sure that the FUEL CONTROL switch is in the CUTOFF position.
 - 1) Install a DO-NOT-OPERATE tag on the FUEL CONTROL switch.
- (b) Push the STAT switch on the display select panel of the glareshield (P55).

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- 1) Make sure you do not see the applicable ENG FUEL VALVE L(R) or FUEL SPAR VALVE L(R) status messages.
- (c) For the applicable engines, open these circuit breakers and install safety tags:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
A	5	C28001	L ENGINE FUEL SPAR VALVE
A	19	C28002	R ENGINE FUEL SPAR VALVE
B	4	C76601	L ENG FUEL VALVE
B	19	C76600	R ENG FUEL VALVE

I. Procedure

SUBTASK 73-11-03-020-001-H01

- (1) Remove the fuel filter assembly [1].



DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. KEEP THE FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE, WHICH CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Drain the fuel from the fuel filter assembly [1]
 - 1) Put the 5-gallon (19-liter) fuel resistant container, STD-1054 below the fuel filter bowl [10].
 - 2) Remove the bleeder drain plug [3] and permit the fuel to drain into the 5-gallon (19-liter) fuel resistant container, STD-1054.
 - 3) Remove the preformed packing [4] from the bleeder drain plug [3] and discard.
 - 4) Use a cotton wiper, G00034 to clean the bleeder drain plug [3].
- (b) Loosen the captive bolt that attaches the ratchet assembly [7] to the main fuel pump [2] and remove the ratchet assembly from the main fuel pump [2].
- (c) Remove the bolts [6] that attach the locking shoulder [5] to the main fuel pump [2] and remove the locking shoulder from the main fuel pump [2].
- (d) Connect the fuel filter removal tool, COM-2589 to the fuel filter assembly [1]:
 - 1) Put the fuel filter removal tool, COM-2589 in its position over the fuel filter bowl [10].
 - 2) Insert the teeth of the fuel filter removal tool, COM-2589 into the slots in the fuel filter assembly [1] head.
 - 3) Thread the captive retention bolt [9] into the drain plug hole in the fuel filter bowl.
NOTE: The retention bolt will help hold the installation tool securely in its position.
- (e) Remove the fuel filter assembly [1]:
 - 1) Install a 2-inch box-end wrench or socket on the hex on the bottom of the fuel filter removal tool, COM-2589.
 - 2) Turn the fuel filter removal tool, COM-2589 in a counterclockwise direction to disengage the fuel filter assembly [1] from the main fuel pump [2].
NOTE: It will become easier to turn the fuel filter assembly as the preformed packings disengage from the MFP.
 - 3) Use a cotton wiper, G00034 to clean the fuel filter bowl [10].
- (f) Remove the fuel filter removal tool, COM-2589 from the fuel filter assembly [1].

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- (g) Turn the fuel filter assembly [1] with your hands until it is removed from the main fuel pump [2].
 - (h) Remove the preformed packing [12], preformed packing [13], preformed packing [8] and back-up ring [11] from the fuel filter assembly [1] head and discard.
 - (i) Install protective covers on the fuel filter assembly [1] and in the MFP filter port.
 - (j) Put clean oil, D00552 [C02-019] on a new preformed packing [4].
 - 1) Make sure that you put the correct preformed packing [4] on the bleeder drain plug [3].
- NOTE:** Do not twist the preformed packing, fuel leakage can occur.
- (k) Put a short piece of string through the new preformed packing [4].

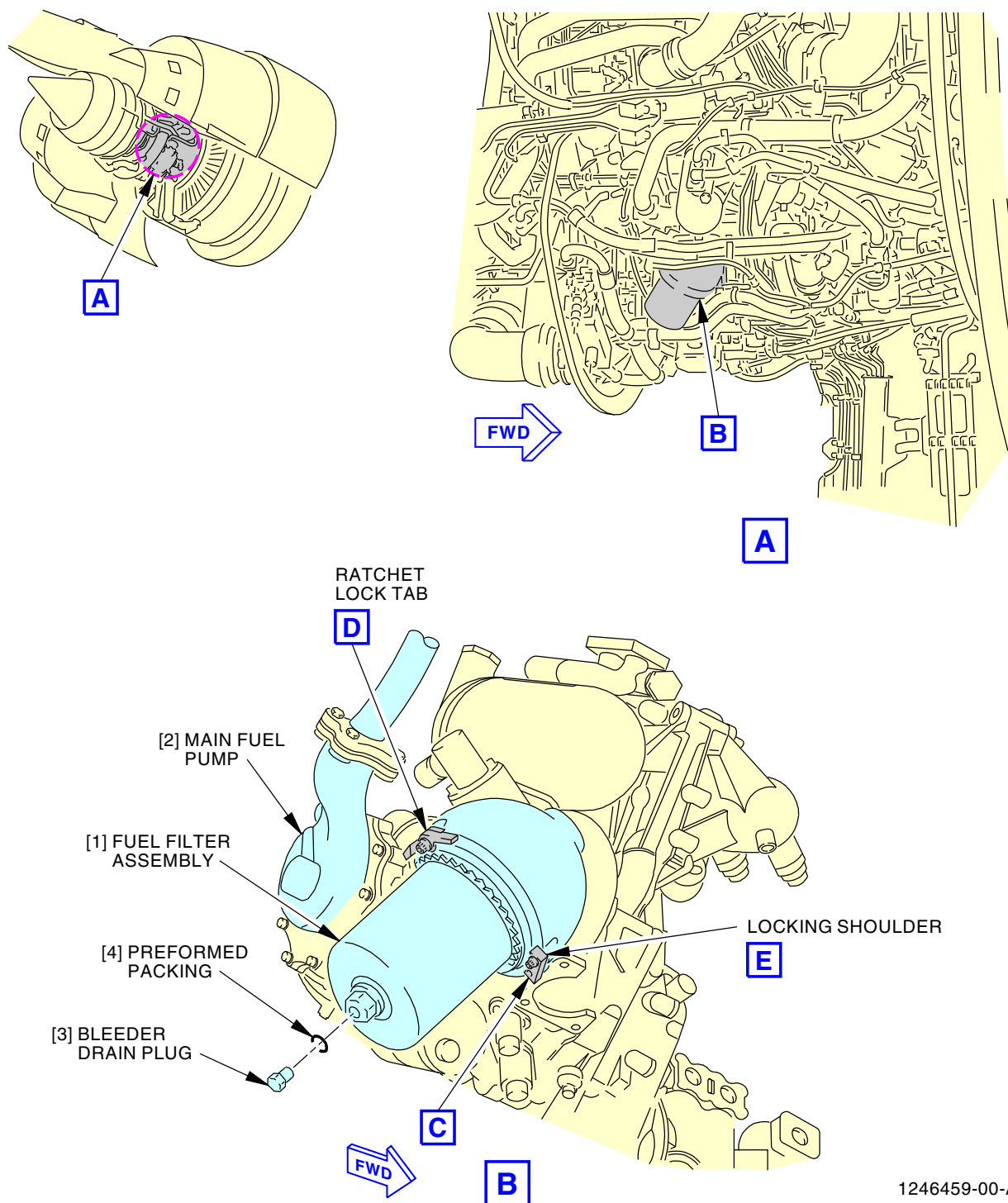
**CAUTION**

MAKE SURE THAT THE BLEEDER DRAIN PLUG THREADS DO NOT TOUCH THE PERFORMED PACKINGS. IF IT TOUCHES, IT CAN CAUSE DAMAGE TO THE PERFORMED PACKINGS AND CAN CAUSE FUEL LEAKAGE.

- (l) Put the new preformed packing [4] on the bleeder drain plug [3].
 - (m) Use the string to pull the new preformed packing [4] away from the threads of the drain plug.
 - 1) Pull the string around the new preformed packing [4] twice to remove any twisting of the preformed packing [4].
 - (n) Install the bleeder drain plug [3] in the fuel filter bowl [10].
 - 1) Make sure that you feel the plug makes a click sound during the installation.
- NOTE:** If you do not feel the plug makes a click sound, the bleeder drain plug can be damaged.
- (o) Use the torque wrench when you install the bleeder drain plug [3].
 - 1) Tighten the bleeder drain plug [3] to 105-120 pound-inches (11.9-13.6 Newton-meters).

———— **END OF TASK** ————

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Fuel Filter Bowl Assembly Installation
Figure 401/73-11-03-990-802-H00 (Sheet 1 of 3)

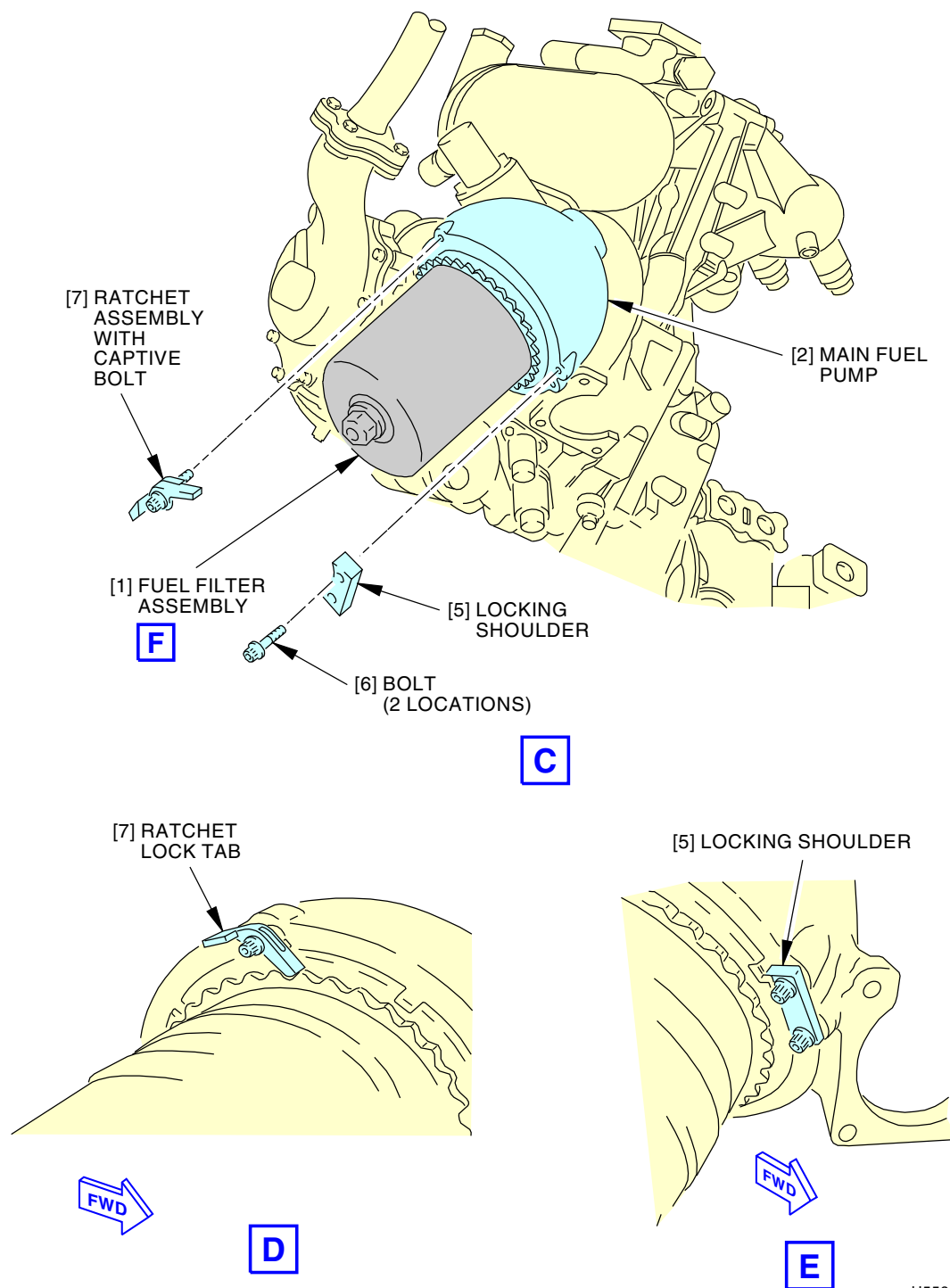
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Fuel Filter Bowl Assembly Installation
Figure 401/73-11-03-990-802-H00 (Sheet 2 of 3)

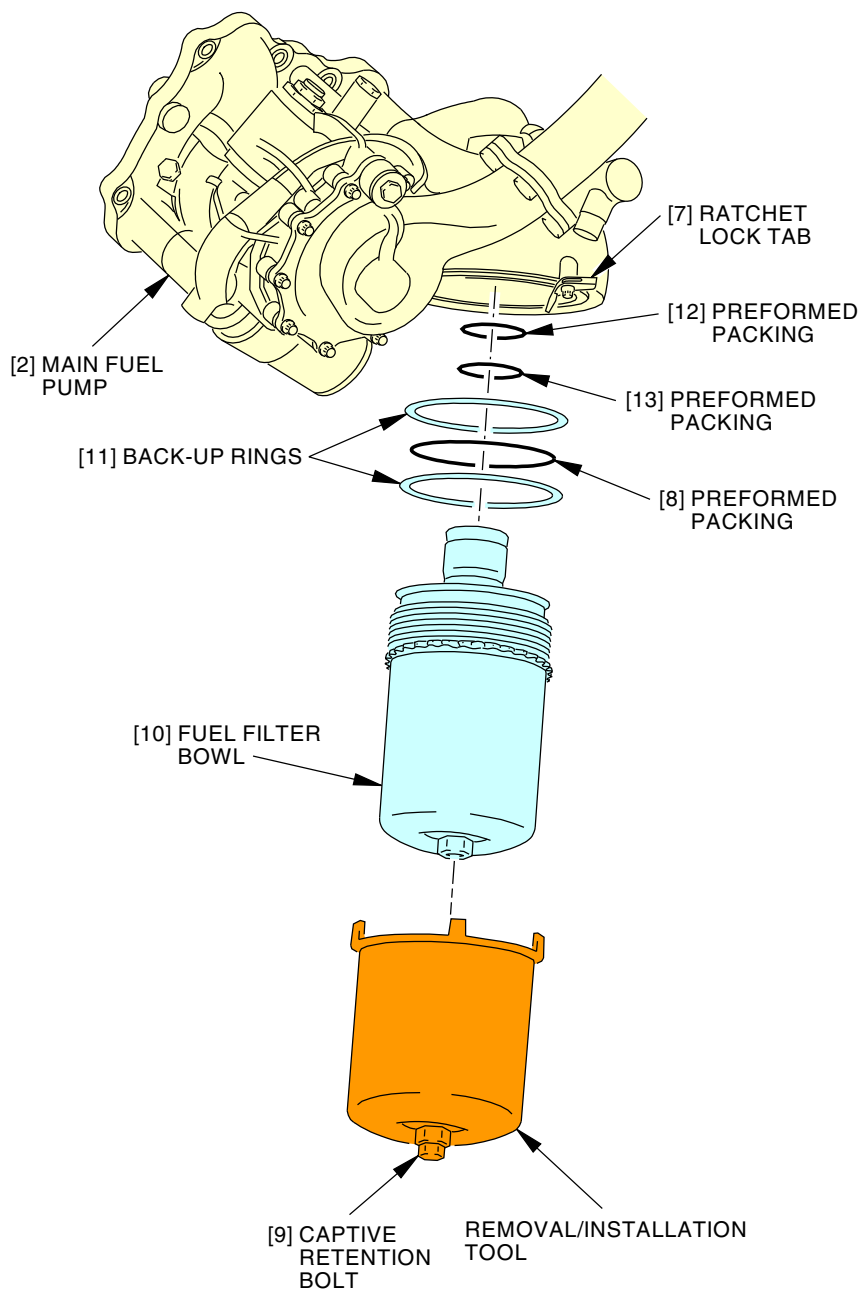
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Fuel Filter Bowl Assembly Installation
Figure 401/73-11-03-990-802-H00 (Sheet 3 of 3)

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TASK 73-11-03-400-801-H01

3. Fuel Filter Bowl Assembly Installation

(Figure 401)

A. General

- (1) This task is the installation procedure for the fuel filter bowl assembly.
- (2) You must do the tests that are listed in the power plant test reference table after you install the fuel filter bowl assembly.

B. References

Reference	Title
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
71-00-00-800-833-H00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-814-H00	Close the Fan Cowl Panel (Selection) (P/B 201)
78-31-00-410-816-H00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-805-H00	Thrust Reverser Activation After Ground Maintenance (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-2589	Tool - Removal, Fuel Filter Assembly Part #: ABB999-30SE1 Supplier: 18350

D. Consumable Materials

Reference	Description	Specification
D00552 [C02-019]	Oil - Engine Lubricating	GE Spec. D50TF1
D50043 [C02-058]	Compound - Antiseize, Acheson GP460 (For Threaded Fasteners 0.250 Inches Diameter Or Larger, C02-079 Is An Alternative)	GE A50TF201 Class A

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Fuel filter assembly	73-11-01-03-055	ARO ALL
8	Preformed packing	73-11-01-03-025	ARO ALL
11	Back-up ring	73-11-01-03-040	ARO ALL
12	Preformed packing	73-11-01-03-015	ARO ALL
13	Preformed packing	73-11-01-03-020	ARO ALL

F. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

G. Access Panels

Number	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
415AL	Left Thrust Reverser, Left Engine

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(Continued)

Number	Name/Location
416AR	Right Thrust Reverser, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

H. Fuel Filter Bowl Assembly Installation

SUBTASK 73-11-03-420-001-H01

(1) Install the fuel filter assembly [1].

(a) Prepare the fuel filter assembly [1] for installation:

- 1) Remove the protective covers from the fuel filter assembly [1] and the port in the main fuel pump [2].



INSTALL THE BACK-UP RINGS, AND THE PREFORMED PACKINGS ON THE FUEL FILTER ASSEMBLY IN THE CORRECT SEQUENCE. AN INCORRECT ASSEMBLY SEQUENCE CAN CAUSE FUEL LEAKAGE.

- 2) Install two new back-up rings [11] and a new preformed packing [8] on the fuel filter assembly [1] in this sequence:
 - a) Install a back-up ring [11].
 - b) Apply clean oil, D00552 [C02-019] on the preformed packing [8].
 - c) Install the preformed packing [8].
 - d) Install a back-up ring [11].
- 3) Apply clean oil, D00552 [C02-019] on the large diameter wash screen preformed packing [13].
- 4) Put the preformed packing [13] in the lower wash screen packing groove.
- 5) Apply clean oil, D00552 [C02-019] on the small diameter wash screen preformed packing [12].
- 6) Put the preformed packing [12] in the upper wash screen packing groove.
- 7) Put Acheson GP460 compound, D50043 [C02-058] on the threads of the fuel filter assembly.
- 8) Remove the bleeder drain plug [3] as follows:
 - a) Remove the preformed packing [4] from the bleeder drain plug [3].

<1> Discard the preformed packing [4].
 - b) Apply clean oil, D00552 [C02-019] on a new preformed packing [4].
 - c) Install the new preformed packing [4] on the bleeder drain plug [3].
- (b) Attach the fuel filter removal tool, COM-2589 to the fuel filter assembly [1]:
 - 1) Put fuel filter removal tool, COM-2589 in its position on the fuel filter bowl [10] of the fuel filter assembly [1].
- (c) Insert the teeth of the fuel filter removal tool, COM-2589 into the slots in the fuel filter assembly [1] head.
- (d) Thread the captive retention bolt [9] into the drain plug hole in the fuel filter bowl [10].

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- (e) Install the fuel filter assembly [1] in the main fuel pump [2]:
 - 1) Insert the fuel filter assembly [1] into the MFP port.
 - 2) Turn the fuel filter assembly [1] in a clockwise direction with your hands to engage the fuel filter assembly [1] with the threads in the port in the main fuel pump [2].
 - 3) Turn the fuel filter assembly [1] until it is not easy to turn with your hands.
NOTE: It will become harder to turn the fuel filter assembly as the preformed packings engage the MFP.
 - 4) Install a 2-inch box-end wrench or socket over the hex on the bottom of the installation tool.
 - 5) Turn the fuel filter removal tool, COM-2589 in a clockwise direction to fully install the fuel filter assembly [1] head into the main fuel pump [2].
 - a) Tighten the fuel filter assembly [1] to 1800-2100 pound-inches (150-175 pound-feet) (203.4-237.3 Newton-meters).
- (f) Remove the fuel filter removal tool, COM-2589 from the fuel filter assembly [1].
- (g) Install the locking shoulder [5]:
 - 1) Apply a thin coat of Acheson GP460 compound, D50043 [C02-058] on the threads of the bolts [6].
 - 2) Put the locking shoulder [5] in its position on the fuel filter assembly [1] and main fuel pump [2].
 - 3) Install the bolts [6] that attach the locking shoulder [5] to the main fuel pump [2].
 - 4) Go evenly from one bolt to the other until the locking shoulder [5] is engaged with the fuel filter assembly [1] head.
NOTE: The locking shoulder will cut its own safety groove.
 - 5) Tighten the bolts [6] to 110-120 pound-inches (12.4-13.6 Newton-meters).
- (h) Install the ratchet assembly with captive retention bolt [9]:
 - 1) Put the ratchet assembly with captive retention bolt [9] in its position on the main fuel pump [2], with the flat side next to the fuel filter bowl [10].
 - 2) Tighten the captive retention bolt [9] to 55-70 pound-inches (6.2-7.9 Newton-meters).
- (i) Install the bleeder drain plug [3] in the fuel filter assembly [1].
NOTE: Make sure that you feel the plug makes clicks sound during the installation. If you do not feel the plug make clicks sound, replace the bleeder drain plug and the fuel filter bowl as necessary.
 - 1) Tighten the bleeder drain plug [3] to 105.0-120.0 pound-inches (11.9-13.6 Newton meters).

I. Put the Airplane Back to its Usual Condition

SUBTASK 73-11-03-410-002-H01



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Do these tasks in sequence to safely close the left and right thrust reversers on the applicable engine:

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(a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-410-816-H00.

1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

(b) Do this task: Close the Fan Cowl Panel (Selection), TASK 71-11-04-410-814-H00.

1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine

(c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-805-H00.

(d) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

J. Fuel Filter Element Installation Test

SUBTASK 73-11-03-710-002-H01

(1) Do the tests listed in the Power Plant Test Reference Table (TASK 71-00-00-800-833-H00).

————— **END OF TASK** —————

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INTERSTAGE FUEL STRAINER ASSEMBLY – CLEANING/INSPECTION

1. General

A. This procedure has the following task:

- (1) Cleaning and inspection of the interstage fuel strainer assembly.

TASK 73-11-04-200-801-H00

2. Interstage Fuel Strainer Assembly - Cleaning/Inspection

(Figure 601)

NOTE: This procedure is a scheduled maintenance task.

A. **References**

Reference	Title
24-11-06-000-801	IDG Fuel/Oil Heat Exchanger Removal (P/B 401)
24-11-06-400-801	IDG Fuel/Oil Heat Exchanger Installation (P/B 401)
71-00-00-800-833-H00	Power Plant Test Reference Table (P/B 501)
73-11-01-000-801-H01	Main Fuel Pump Removal (P/B 401)
73-11-01-400-801-H01	Main Fuel Pump Installation (P/B 401)
73-11-02-000-801-H01	Fuel Filter Element Removal (P/B 401)
73-11-02-400-801-H01	Fuel Filter Element Installation (P/B 401)
73-11-04-000-801-H01	Interstage Fuel Strainer Assembly Removal (P/B 401)
73-11-04-400-801-H01	Interstage Fuel Strainer Assembly Installation (P/B 401)
73-21-14-000-801-H01	Hydromechanical Unit Removal (P/B 401)
73-21-14-400-801-H01	Hydromechanical Unit Installation (P/B 401)
79-21-01-000-803-H00	Main Fuel/Oil Heat Exchanger Removal (P/B 401)
79-21-01-400-801-H01	Main Fuel/Oil Heat Exchanger Installation (P/B 401)

B. **Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Packing	73-11-01-03-120	ARO ALL
6	Packing	73-11-01-03-095	ARO ALL
		73-11-01-03-122	ARO ALL
7	Interstage strainer assembly	73-11-01-03-110	ARO ALL

C. **Location Zones**

Zone	Area
411	Engine, Left
421	Engine, Right

D. **Interstage Strainer Assembly Cleaning/Inspection**

SUBTASK 73-11-04-020-001-H00

- (1) Remove the MFP interstage strainer assembly [7]. Refer to TASK 73-11-04-000-801-H01.

SUBTASK 73-11-04-200-001-H00

- (2) Do an inspection of the MFP interstage strainer assembly [7] for debris.
 - (a) Do an inspection of the MFP interstage strainer assembly [7] for metallic debris. If metallic debris more than an area of 0.137 in. (3.48 mm) x 0.196 in. (4.98 mm) is found in the strainer, do the following:

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- 1) Remove the metallic debris and keep the metallic debris for material analysis. Complete the material analysis within 500 engine flight hours or 100 engine cycles.
- 2) Report these materials to the GE Aviation Operations Center (AOC) or your local GE Field Service Engineer (FSE): 17-4 (AMS 5643), 17-7 (AMS 5678), 302 SS, 410 SS (AMS 5613) nitrided, or 440C (AMS 5630).
 - a) If metallic debris is identified to be 17-4 (AMS 5643), 17-7 (AMS 5678), 302 SS, 410 SS (AMS 5613) nitrided, or 440C (AMS 5630), do the following:
 - <1> Replace the hydromechanical unit with a new hydromechanical unit. Refer to Hydromechanical Unit Removal, TASK 73-21-14-000-801-H01 and Hydromechanical Unit Installation, TASK 73-21-14-400-801-H01.
 - <2> Continue on to SUBTASK H73-11-04-200-002-H00 and do an inspection of the MFP interstage strainer assembly [7] for holes.
 - b) If metallic debris is not identified to be 17-4 (AMS 5643), 17-7 (AMS 5678), 302 SS, 410 SS (AMS 5613) nitrided, or 440C (AMS 5630), do the following:
 - <1> Continue on to SUBTASK H73-11-04-200-002-H00 and do an inspection of the MFP interstage strainer assembly [7] for holes.
- (b) If you find non-metallic debris, or metallic debris less than an area of 0.137 in. (3.48 mm) x 0.196 in. (4.98 mm), do the following:
 - 1) Remove the debris.
 - 2) Continue on to SUBTASK H73-11-04-200-002-H00 and do an inspection of the MFP interstage strainer assembly [7] for holes.
- (c) If you do not find debris, continue on to SUBTASK H73-11-04-200-002-H00 and do an inspection of the MFP interstage strainer assembly [7] for holes.

SUBTASK 73-11-04-200-002-H00

- (3) Do an inspection of the MFP interstage strainer assembly [7] for holes.
 - (a) If you find one hole more than an area of 0.137 in. (3.48 mm) x 0.196 in. (4.98 mm), or two or more holes of any size, do the following:
 - 1) Replace the main fuel pump with a new main fuel pump [2]. Refer to Main Fuel Pump Removal, TASK 73-11-01-000-801-H01 and Main Fuel Pump Installation, TASK 73-11-01-400-801-H01.
 - 2) Install a new filter element assembly in the new main fuel pump [2]. Refer to Fuel Filter Element Removal, TASK 73-11-02-000-801-H01 and Fuel Filter Element Installation, TASK 73-11-02-400-801-H01.

NOTE: If the hydromechanical unit was replaced in paragraph 2. D. (2), (a), 2), a), <1>. Continue with step 4) below.
 - 3) Replace the hydromechanical unit with a new hydromechanical unit. Refer to Hydromechanical Unit Removal, TASK 73-21-14-000-801-H01 and Hydromechanical Unit Installation, TASK 73-21-14-400-801-H01.
 - 4) In or less than 50 flight cycles, remove and replace the lube/servo fuel/oil cooler. Refer to Main Fuel/Oil Heat Exchanger Removal, TASK 79-21-01-000-803-H00 and Main Fuel/Oil Heat Exchanger Installation, TASK 79-21-01-400-801-H01.
 - 5) In or less than 50 flight cycles, remove and replace the integrated drive generator (IDG) fuel/oil cooler. Refer to IDG Fuel/Oil Heat Exchanger Removal, TASK 24-11-06-000-801 and IDG Fuel/Oil Heat Exchanger Installation, TASK 24-11-06-400-801.

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- (b) If you find only one hole less than an area of 0.137 in. (3.48 mm) x 0.196 in. (4.98 mm), do the following:
- 1) Replace the MFP interstage strainer assembly [7]. Refer to Interstage Fuel Strainer Assembly Installation, TASK 73-11-04-400-801-H01.
 - 2) Continue on to SUBTASK H73-11-04-720-001-H00.

SUBTASK 73-11-04-210-003-H00

- (4) If you do not find holes, do the following:
- (a) Install the MFP interstage strainer assembly [7] again with the new preformed packing [1], packing [6] and packing [8]. Refer to Interstage Fuel Strainer Assembly Installation, TASK 73-11-04-400-801-H01.

SUBTASK 73-11-04-720-001-H00

- (5) Complete the tasks specified in the powerplant reference table. Refer to TASK 71-00-00-800-833-H00.

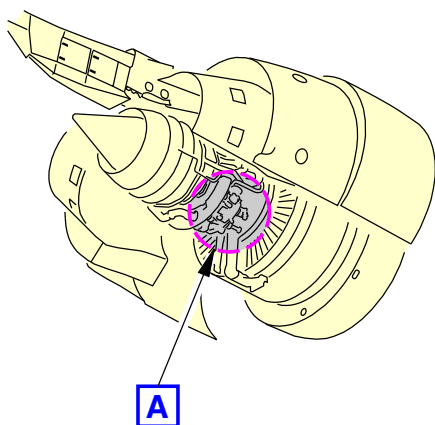
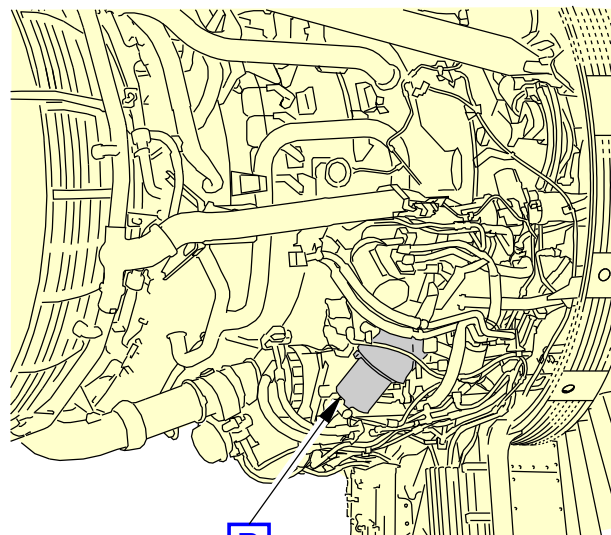
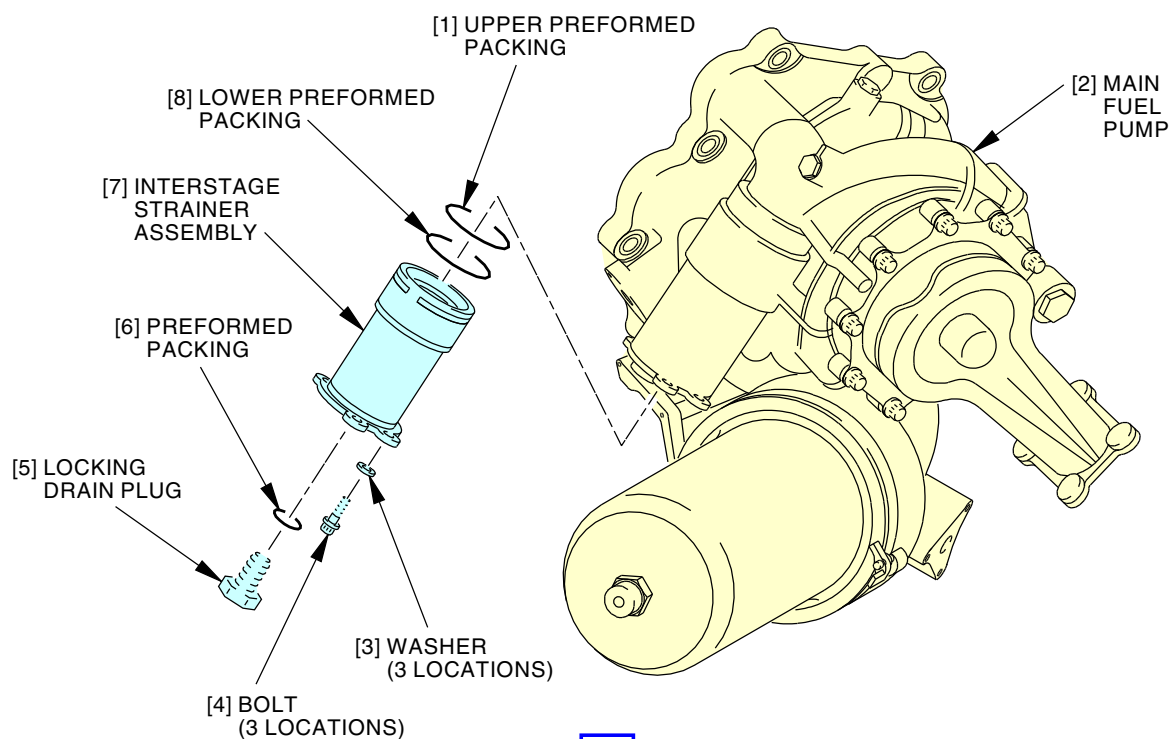
———— **END OF TASK** ————

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**Interstage Fuel Strainer Assembly
Figure 601/73-11-04-990-802-H00**

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INTERSTAGE FUEL STRAINER ASSEMBLY - REMOVAL/INSTALLATION

1. General

A. This procedure has two tasks:

- (1) A removal of the interstage fuel strainer assembly
- (2) An installation of the interstage fuel strainer assembly.

TASK 73-11-04-000-801-H01

2. Interstage Fuel Strainer Assembly Removal

NOTE: This procedure is a scheduled maintenance task.

A. General

- (1) This task is the removal procedure for the interstage fuel strainer assembly.

B. References

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
27-81-00-860-805	Retract the Leading Edge Slats (P/B 201)
71-11-04-010-814-H00	Open the Fan Cowl Panel (Selection) (P/B 201)
78-31-00-010-816-H00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-806-H00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-201	Container - Fuel Resistant, 5 U.S.-Gal (19 l)

D. Consumable Materials

Reference	Description	Specification
D00552 [C02-019]	Oil - Engine Lubricating	GE Spec. D50TF1

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
6	Preformed packing	73-11-01-03-095	ARO ALL

F. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

G. Access Panels

Number	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

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H. Procedure

SUBTASK 73-11-04-010-001-H01



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO OPEN THE THRUST REVERSER(S). IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR

- (1) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:

- (a) Do this task: Retract the Leading Edge Slats, TASK 27-81-00-860-805.
- (b) Do this task: Leading Edge Slat - Deactivation, TASK 27-81-00-040-801.
- (c) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-806-H00.
- (d) For the left and right fan cowl panels, do this task:
Open the Fan Cowl Panel (Selection), TASK 71-11-04-010-814-H00

<u>Number</u>	<u>Name/Location</u>
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine

- (e) For the left and right thrust reversers, do this task:
Open the Thrust Reverser (Selection), TASK 78-31-00-010-816-H00

<u>Number</u>	<u>Name/Location</u>
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

SUBTASK 73-11-04-860-001-H01

- (2) Do these steps to make sure the fuel control valve and the spar valve stay in the closed position:
- (a) Make sure that the FUEL CONTROL switch is in the CUTOFF position.
 - 1) Install a DO-NOT-OPERATE tag on the FUEL CONTROL switch.
 - (b) Push the STAT switch on the display select panel of the glareshield (P55).
 - 1) Make sure you do not see the applicable ENG FUEL VALVE L(R) or FUEL SPAR VALVE L(R) status messages.
 - (c) For the applicable engines, open these circuit breakers and install safety tags:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C28001	L ENGINE FUEL SPAR VALVE
A	19	C28002	R ENGINE FUEL SPAR VALVE
B	4	C76601	L ENG FUEL VALVE
B	19	C76600	R ENG FUEL VALVE

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SUBTASK 73-11-04-010-002-H01



DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. KEEP THE FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE, WHICH CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.



A LARGE VOLUME OF FUEL WILL DRAIN FROM THE FUEL SUPPLY SYSTEM. TO PREVENT A FUEL SPILL, USE A MINIMUM OF TWO CONTAINERS TO DRAIN THE FUEL SYSTEM.

- (3) Drain the fuel from the main fuel pump (MFP) supply system through the locking drain plug [5] of the interstage strainer assembly [7] (Figure 401):

NOTE: The locking drain plug for the strainer is identified as INLET DRAIN.

- (a) Put the 5 U.S.-gal (19 l) fuel resistant container, STD-201 below the interstage strainer assembly [7] on the MFP.
- (b) Remove the locking drain plug [5] from the cover of the interstage strainer assembly [7].
 - 1) Let the fuel drain in the 5 U.S.-gal (19 l) fuel resistant container, STD-201.



PUT A NEW PREFORMED PACKING ON THE DRAIN PLUG. USED PACKING WILL NOT SEAL CORRECTLY. IF THE PACKING DOES NOT SEAL, DAMAGE TO THE EQUIPMENT CAN OCCUR.

- 2) Remove and discard the preformed packing [6] from the locking drain plug [5].
- 3) Apply oil, D00552 [C02-019] to a new preformed packing [6].
- 4) Install the preformed packing [6] on the locking drain plug [5].
- 5) Install the locking drain plug [5] in the cover of the interstage strainer assembly [7].
- 6) Make sure that you feel a click-click-click when you install the locking drain plug [5].

NOTE: If you do not feel the click, replace the drain plug and the strainer.

- a) Tighten the locking drain plug [5] to 105-120 pound-inches (11.9-13.6 Newton-meters).

SUBTASK 73-11-04-010-003-H01

- (4) Remove the interstage strainer assembly [7]:
- (a) Remove the three bolts [4] and washers [3] that attach the interstage strainer assembly [7] to the main fuel pump [2].
 - (b) Install two of the three bolts [4] in the jackscrew holes of the strainer cover.



MAKE SURE THAT YOU TURN THE BOLTS EQUALLY. IF YOU DO NOT TURN THEM EQUALLY, THE STRAINER WILL NOT BE ALIGNED. DAMAGE TO THE STRAINER CAN OCCUR.

- 1) Turn the two bolts [4] equally, in the clockwise direction, to overcome the resistance of the upper preformed packing [1] and lower preformed packing [8].

NOTE: It will become easier to remove the strainer as the preformed packings disengage from the strainer housing on the MFP.

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DO NOT USE SHARP TOOLS TO REMOVE THE STRAINER, THE STRAINER COVER, OR THE STRAINER HOUSING. SHARP TOOLS CAN CAUSE DAMAGE TO THE STRAINER, THE STRAINER COVER, OR THE STRAINER HOUSING.

- 2) Remove the interstage strainer assembly [7] from the strainer housing with your hands.
- 3) Remove the two bolts [4] from the jackscrew holes of the strainer cover.
- (c) Remove and discard the upper preformed packing [1] and lower preformed packing [8] from the interstage strainer assembly [7].
- (d) Install a protective cover in the strainer port of the main fuel pump [2].
- (e) Put the interstage strainer assembly [7] in a protective cover.

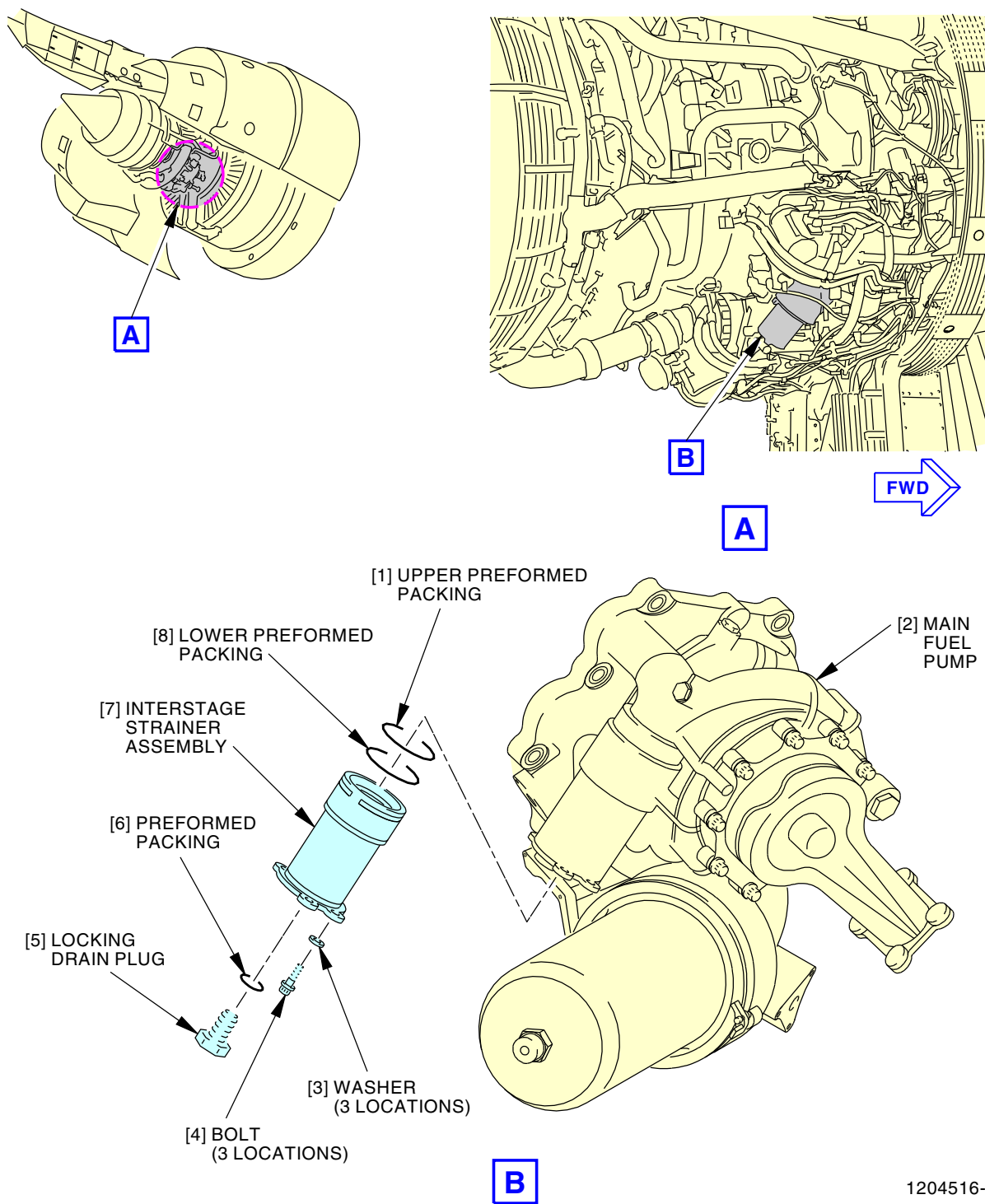
———— **END OF TASK** ————

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**Interstage Fuel Strainer Assembly
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TASK 73-11-04-400-801-H01

3. Interstage Fuel Strainer Assembly Installation

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This task is the installation procedure for the interstage fuel strainer assembly.

B. References

Reference	Title
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
71-00-00-800-833-H00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-814-H00	Close the Fan Cowl Panel (Selection) (P/B 201)
78-31-00-410-816-H00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-805-H00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Consumable Materials

Reference	Description	Specification
D00504	Grease - Petrolatum	VV-P-236
D50043 [C02-058]	Compound - Antiseize, Acheson GP460 (For Threaded Fasteners 0.250 Inches Diameter Or Larger, C02-079 Is An Alternative)	GE A50TF201 Class A

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Upper preformed packing	73-11-01-03-120	ARO ALL
8	Lower preformed packing	73-11-01-03-116	ARO ALL

E. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

F. Access Panels

Number	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

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SUBTASK 73-11-04-410-001-H01



INSTALL THE PREFORMED PACKINGS ON THE STRAINER IN THE CORRECT SEQUENCE. THE INCORRECT SEQUENCE CAN CAUSE FUEL LEAKS.

- (1) Install two new preformed packings; the upper preformed packing [1] and lower preformed packing [8] on the interstage strainer assembly [7] (Figure 401):
 - (a) Apply grease, D00504 to the lower preformed packing [8].
 - 1) Install the lower preformed packing [8] in the lower packing groove of the interstage strainer assembly [7].
 - (b) Apply grease, D00504 to the upper preformed packing [1].
 - 1) Install the upper preformed packing [1] in the upper packing groove of the interstage strainer assembly [7].

SUBTASK 73-11-04-420-001-H01



DO NOT USE TOO MUCH FORCE TO INSTALL THE STRAINER IN THE STRAINER HOUSING. TOO MUCH FORCE CAN CAUSE DAMAGE TO THE STRAINER, STRAINER COVER, OR STRAINER HOUSING.

- (2) Install the interstage strainer assembly [7] in the main fuel pump [2]:
 - (a) Put the washers [3] on each of the three bolts [4].
 - 1) Apply a light coat of Acheson GP460 compound, D50043 [C02-058] to the threads of the three bolts [4].
 - (b) Put the interstage strainer assembly [7] in the strainer housing of the main fuel pump [2].
 - (c) Align the bolt and jackscrew holes in the cover of the interstage strainer assembly [7] with the threaded holes in the strainer housing.
 - (d) Push the interstage strainer assembly [7] with your hands, until the upper and lower upper preformed packing [1] and lower preformed packing [8] start to go in the strainer housing.



DO NOT USE THE BOLTS TO PUSH THE STRAINER INTO THE STRAINER HOUSING. PUSH ONLY WITH YOUR HANDS. DAMAGE TO THE STRAINER, STRAINER COVER, OR STRAINER HOUSING CAN OCCUR.

- (e) Install the three bolts [4] and washers [3] in the cover of the interstage strainer assembly [7].
- (f) Do the steps that follow to complete the installation of the interstage strainer assembly [7] in the strainer housing:



MAKE SURE THAT YOU TURN THE BOLTS EQUALLY. IF YOU DO NOT TURN THEM EQUALLY, THE STRAINER WILL NOT BE ALIGNED. DAMAGE TO THE STRAINER CAN OCCUR.

- 1) Use a cross pattern when you turn the bolts [4].

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- 2) Turn the bolts [4] equally, in the clockwise direction, until the interstage strainer assembly [7] is fully seated in the strainer housing.

NOTE: It will become harder to install the strainer as the preformed packings go into the strainer housing.

- 3) Tighten the bolts [4] to 110-120 pound-inches (12.4-13.6 Newton-meters).

H. Put the Airplane Back to Its Usual Condition

SUBTASK 73-11-04-860-002-H01

- (1) Do these steps to put the fuel control valve and the spar valve to the serviceable condition:
 - (a) Make sure that the FUEL CONTROL switch is in the CUTOFF position.
 - (b) For the applicable engine, remove the safety tags and close these circuit breakers:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C28001	L ENGINE FUEL SPAR VALVE
A	19	C28002	R ENGINE FUEL SPAR VALVE
B	4	C76601	L ENG FUEL VALVE
B	19	C76600	R ENG FUEL VALVE

SUBTASK 73-11-04-410-002-H01



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (2) Do these tasks in sequence to safely close the left and right thrust reversers on the applicable engine:
 - (a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-410-816-H00.
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine
 - (b) Do this task: Close the Fan Cowl Panel (Selection), TASK 71-11-04-410-814-H00.
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine
 - (c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-805-H00.
 - (d) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

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I. Interstage Fuel Strainer Assembly Installation Test

SUBTASK 73-11-04-710-001-H01

- (1) Do the tests listed in the Power Plant Test Reference Table (TASK 71-00-00-800-833-H00).

————— **END OF TASK** —————

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FUEL NOZZLE - REMOVAL/INSTALLATION

1. General

A. This procedure contains two tasks:

- (1) The fuel nozzle removal
- (2) The fuel nozzle installation.

TASK 73-11-05-000-801-H01**2. Fuel Nozzle Removal****A. General**

- (1) This task contains the procedure for the removal of the fuel nozzle(s).
- (2) You must use this procedure for the removal and installation of one fuel nozzle, more than one fuel nozzle, or a complete set of fuel nozzles.
- (3) There are 30 fuel nozzles equally spaced around the circumference of the combustor diffuser case.

NOTE: The fuel nozzles are given position numbers in a clockwise (CW) sequence, when viewed from the rear of the engine to the forward. Fuel nozzle number 1 is at the 12:00 o'clock engine position. For fuel nozzle orientation, the lower igniter is next to fuel nozzle numbers 22, the upper igniter is next to fuel nozzle numbers 24, and the start transient bleed valve is forward of fuel nozzle number 24.

- (4) You must open the fan cowl panels and thrust reversers to get access to the fuel nozzles.

NOTE: It will be necessary to remove other components to get access to some fuel nozzles.

B. References

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
27-81-00-860-805	Retract the Leading Edge Slats (P/B 201)
71-11-04-010-814-H00	Open the Fan Cowl Panel (Selection) (P/B 201)
72-41-01-000-801-H01	Left Combustion Skirt Panel Removal (P/B 401)
72-41-01-000-802-H01	Center Combustion Skirt Panel Removal (P/B 401)
72-41-01-000-803-H01	Right Combustion Skirt Panel Removal (P/B 401)
73-21-14-000-801-H01	Hydromechanical Unit Removal (P/B 401)
73-21-14-400-801-H01	Hydromechanical Unit Installation (P/B 401)
78-31-00-010-816-H00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-806-H00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-200	Container - Fuel Resistant, 10 gallon (38 l)
STD-1154	Container - 5 Gallon (19 Liter)

D. Consumable Materials

Reference	Description	Specification
D00653 [C02-026]	Oil - Penetrating - L1 Liquid Wrench Indust. Grade	

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E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Fuel nozzle	73-11-05-04-030	ARO ALL
		73-11-05-04-035	ARO ALL

F. Access Panels

Number	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

G. Prepare for the Fuel Nozzle Removal

SUBTASK 73-11-05-010-001-H02



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO OPEN THE THRUST REVERSER(S). IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR

- (1) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:

- (a) Do this task: Retract the Leading Edge Slats, TASK 27-81-00-860-805.
- (b) Do this task: Leading Edge Slat - Deactivation, TASK 27-81-00-040-801.
- (c) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-806-H00.
- (d) For the left and right fan cowl panels, do this task:

Open the Fan Cowl Panel (Selection), TASK 71-11-04-010-814-H00

<u>Number</u>	<u>Name/Location</u>
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine

- (e) For the left and right thrust reversers, do this task:

Open the Thrust Reverser (Selection), TASK 78-31-00-010-816-H00

<u>Number</u>	<u>Name/Location</u>
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

SUBTASK 73-11-05-860-001-H01

- (2) Do these steps to make sure the fuel control valve and the spar valve stay in the closed position:

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- (a) Make sure that the FUEL CONTROL switch is in the CUTOFF position.
 - 1) Install a DO-NOT-OPERATE tag on the FUEL CONTROL switch.
- (b) Push the STAT switch on the display select panel of the glareshield (P55).
 - 1) Make sure you do not see the applicable ENG FUEL VALVE L(R) or FUEL SPAR VALVE L(R) status messages.
- (c) For the applicable engines, open these circuit breakers and install safety tags:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
A	5	C28001	L ENGINE FUEL SPAR VALVE
A	19	C28002	R ENGINE FUEL SPAR VALVE
B	4	C76601	L ENG FUEL VALVE
B	19	C76600	R ENG FUEL VALVE

SUBTASK 73-11-05-950-001-H01

- (3) Identify all the fuel nozzles to be removed and lubricate the related bolts [1] or bolts [6] with L1 Liquid Wrench Indust. Grade oil, D00653 [C02-026].

SUBTASK 73-11-05-020-001-H01



DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. KEEP THE FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE, WHICH CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (4) Do these steps to drain the fuel manifold [5]:

NOTE: To drain the fuel manifolds disconnect the fuel supply tubes to the manifolds at the HMU output locations.

NOTE: Drain the fuel manifolds before you remove a fuel nozzle.

NOTE: The fuel manifolds can have a small amount of pressure remaining.

NOTE: The fuel nozzles are given position numbers in a clockwise (CW) sequence, when viewed from the rear to the forward direction. Fuel nozzle number 1 is at the 12:00 o'clock engine position.

- (a) Drain the fuel manifold.
 - 1) Disconnect the fuel supply manifold No.1 and No.2 from the HMU and drain the fuel into a 5 gallon (19 liter) container, STD-1154(TASK 73-21-14-000-801-H01).
 - 2) Connect the fuel supply manifold No. 1 and No. 2 to the HMU (TASK 73-21-14-400-801-H01).
- (b) Identify the upper fuel nozzle [3] that is above the 3:00 and 9:00 o'clock positions that you will remove:

NOTE: This nozzle is referred to as the upper fuel nozzle.

 - 1) Put a 10 gallon (38 l) fuel resistant container, STD-200 below the upper fuel nozzle.
 - 2) Disconnect the B-nut [20] from the upper fuel nozzle

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- a) Let the fuel drain into the 10 gallon (38 l) fuel resistant container, STD-200.
- (c) Identify the lower fuel nozzle [3] that is below the 3:00 and 9:00 o'clock positions that you will removed.

NOTE: This nozzle is referred to as the lower fuel nozzle.

- 1) Put a 10 gallon (38 l) fuel resistant container, STD-200 below the lower fuel nozzle.
- (d) Disconnect the B-nut [20] from the lower fuel nozzle.
 - 1) Let the fuel drain into the 10 gallon (38 l) fuel resistant container, STD-200.
- (e) Re-connect the B-nut [20] to the upper and lower fuel nozzles [3] that you disconnected in the steps above.
 - 1) Tighten the B-nut [20].

NOTE: Refer to the end of the fuel nozzle installation task for the B-nut [20] tightening technique.

H. Fuel Nozzle Removal

SUBTASK 73-11-05-000-001-H01



DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (1) Remove the fuel nozzle in position number 1 (Figure 401 and Figure 404):
 - (a) Disconnect the B-nut [20] from the fuel nozzle [3].
 - (b) Remove one bolt [8] and loosen the other bolt [8] that connects clamps [9] to the damper bracket [7] and the fuel manifold [5].
 - (c) Remove the two bolts [6] that connect the damper bracket [7] to the aft face of the fuel nozzle [3].
 - (d) Remove the two bolts [46] that connects clamps [48] to the two fire loop tubes [45] to the support bracket [47].
 - (e) Remove the two bolts [6] that connect the support bracket [47] to the forward face of the fuel nozzle [3].
 - 1) Remove the support bracket [47].
 - (f) Move the damper bracket [7A] out of the way and support the fuel nozzle [3] with your hand and move the fuel nozzle [3] forward to disengage the tips of the fuel nozzle from the combustor swirl cups.
 - (g) Move the damper bracket [7A] out of the way and lift the fuel nozzle [3] and tilt the mounting flange forward and down.
 - 1) Remove the fuel nozzle [3] from the combustion case port
 - (h) Remove the seal assembly [4] from the fuel nozzle [3] or the combustion case.
 - (i) Install protective covers on the B-nut [20] and the fuel nozzle [3] fitting and tips.
 - (j) Install a protective cover in the combustion case port.

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SUBTASK 73-11-05-000-002-H01

**WARNING**

DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.

**CAUTION**

DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (2) Remove the fuel nozzle from the number 2 position (Figure 401 and Figure 402):
- Disconnect the B-nut [20] from the fuel nozzle [3].
 - Support the fuel nozzle [3] with your hand, and remove the four bolts [1].
 - Move the fuel nozzle [3] forward to disengage the fuel nozzle tips from the combustor swirl cups.
 - Lift the fuel nozzle [3], tilt the mounting flange forward and down.
 - Remove the fuel nozzle [3] from the combustion case port.
 - Remove the seal assembly [4] from the fuel nozzle [3] or combustion case.
 - Install protective covers on the B-nut [20] and the fuel nozzle tips and fitting.
 - Install a protective cover in the combustion case port.

SUBTASK 73-11-05-000-003-H01

**WARNING**

DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.

**CAUTION**

DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (3) Remove the fuel nozzle [3] from the number 3 position (Figure 401 and Figure 403):
- Disconnect the B-nut [20] from the fuel nozzle [3].
 - Remove one bolt [8] and loosen the other bolt [8] that connects clamps [9] to the damper bracket [7] and the fuel manifold [5].
 - Remove the two bolts [6] that connect the damper bracket [7] to the aft face of the fuel nozzle [3].
 - Support the fuel nozzle [3] with your hand, and remove the remaining two bolts [6].
 - Move the damper bracket [7] out of the way and move the fuel nozzle [3] forward to disengage the fuel nozzle tips from the combustor swirl cups.
 - Move the damper bracket [7] out of the way and lift the fuel nozzle [3] and tilt the mounting flange forward and down.
 - Remove the fuel nozzle [3] from the combustion case port.
 - Remove the seal assembly [4] from the fuel nozzle [3] or combustion case.
 - Install protective covers on the B-nut [20] and the fuel nozzle tips and fitting.

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- (i) Install a protective cover in the combustion case port.

SUBTASK 73-11-05-000-004-H01



DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (4) Remove the fuel nozzle [3] from the number 4 position (Figure 401 and Figure 405):
- Disconnect the B-nut [20] from the fuel nozzle [3].
 - Remove the bolt [22] that connects the clamp [21] to the PS3 bracket [10].
 - Remove the two bolts [6] that connect the PS3 bracket [10] to the aft face of the fuel nozzle [3].
 - Remove the PS3 bracket [10].
 - Support the fuel nozzle [3] with your hand, and remove the remaining two bolts [6].
 - Move the fuel nozzle [3] forward to disengage the fuel nozzle tips from the combustor swirl cups.
 - Lift the fuel nozzle [3] and tilt the mounting flange forward and down.
 - Remove the fuel nozzle [3] from the combustion case port.
 - Remove the seal assembly [4] from the fuel nozzle [3] or combustion case.
 - Install protective covers on the B-nut [20] and the fuel nozzle tips and fitting.
 - Install a protective cover in the combustion case port.

SUBTASK 73-11-05-000-005-H01



DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (5) Remove the fuel nozzle [3] from the number 5 position (Figure 401 and Figure 402):
- Disconnect the B-nut [20] from the fuel nozzle [3].
 - Support the fuel nozzle [3] with your hand, and remove the four bolts [1].
 - Move the fuel nozzle [3] forward to disengage the fuel nozzle tips from the combustor swirl cups.
 - Lift the fuel nozzle [3] and tilt the mounting flange forward and down.
 - Remove the fuel nozzle [3] from the combustion case port.
 - Remove the seal assembly [4] from the fuel nozzle [3] or combustion case.

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- (f) Install protective covers on the fuel manifold B-nut [20] and the fuel nozzle tips and fitting.
- (g) Install a protective cover in the combustion case port.

SUBTASK 73-11-05-000-006-H01



DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (6) Remove the fuel nozzle [3] from the number 6 position (Figure 401 and Figure 406):
 - (a) Disconnect the B-nut [20] from the fuel nozzle [3].
 - (b) Remove the one bolt [8] and loosen the other bolt [8] that connect the two clamps [9] to the damper bracket [7A] and the fuel manifold [5].
 - (c) Remove the two bolts [6] that connect the damper bracket [7A] to the aft face of the fuel nozzle [3].
 - (d) Remove the bolt [24] that connects the clamp [23] to the PS3 bracket [10]
 - (e) Support the fuel nozzle [3] with your hand, and remove the remaining two bolts [6] that connect the PS3 bracket [10] to the flange of the fuel nozzle [3].
 - 1) Remove the PS3 bracket [10].
 - (f) Move the damper bracket [7A] out of the way and move the fuel nozzle [3] forward to disengage the fuel nozzle tips from the combustor swirl cups.
 - (g) Move the damper bracket [7A] out of the way and lift the fuel nozzle [3] and tilt the mounting flange forward and down.
 - 1) Remove the fuel nozzle [3] from the combustion case port.
 - (h) Remove the seal assembly [4] from the fuel nozzle [3] or combustion case.
 - (i) Install protective covers on the B-nut [20] and the fuel nozzle tips and fitting.
 - (j) Install a protective cover in the combustion case port.

SUBTASK 73-11-05-000-007-H01



DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (7) Remove the fuel nozzle [3] from the number 7 position (Figure 401 and Figure 402):
 - (a) Disconnect the B-nut [20] from the fuel nozzle [3].
 - (b) Support the fuel nozzle [3] with your hand, and remove the four bolts [1].

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- (c) Move the fuel nozzle [3] forward to disengage the fuel nozzle tips from the combustor swirl cups.
- (d) Lift the fuel nozzle [3] and tilt the mounting flange forward and down.
 - 1) Remove the fuel nozzle [3] from the combustion case port.
- (e) Remove the seal assembly [4] from the fuel nozzle [3] or combustion case.
- (f) Install protective covers on the B-nut [20] and the fuel nozzle tips and fitting.
- (g) Install a protective cover in the combustion case port.

SUBTASK 73-11-05-000-008-H01



DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (8) Remove the fuel nozzle from the number 8 position (Figure 401 and Figure 402):
 - (a) Disconnect the B-nut [20] from the fuel nozzle [3].
 - (b) Support the fuel nozzle [3] with your hand, and remove the four bolts [1].
 - (c) Move the fuel nozzle [3] forward to disengage the fuel nozzle tips from the combustor swirl cups.
 - (d) Lift the fuel nozzle [3] and tilt the mounting flange forward and down.
 - 1) Remove the fuel nozzle [3] from the combustion case port.
 - (e) Remove the seal assembly [4] from the fuel nozzle [3] or combustion case.
 - (f) Install protective covers on the fuel manifold B-nut [20] and the fuel nozzle tips and fitting.
 - (g) Install a protective cover in the combustion case port.

SUBTASK 73-11-05-000-009-H01



DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (9) Remove the fuel nozzle [3] from the number 9 position (Figure 401 and Figure 407):
 - (a) Disconnect the B-nut [20] from the fuel nozzle [3].
 - (b) Remove one bolt [8] and loosen the other bolt [8] that connect the two clamps [9] to the damper bracket [7A] and the fuel manifold [5].
 - (c) Remove the two bolts [6] that connect the damper bracket [7A] to the aft face of the fuel nozzle [3].

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- (d) Remove the bolt [26] that connects the hose clamp [25] to the support bracket [12].
NOTE: The support bracket [12] is connected to two fuel nozzles located at position 9 and position 10.
- (e) Remove the bolt [6] that connects the support bracket [12] to the fuel nozzle [3] (position 10).
- (f) Support the fuel nozzle [3] with your hand and remove the remaining bolt [6] that attaches the support bracket [12] to the flange of the fuel nozzle [3] (position 9) and remove the support bracket [12].
- (g) Move the damper bracket [7A] out of the way and move the fuel nozzle [3] forward to disengage the tips of the fuel nozzle [3] from the combustor swirl cups.
- (h) Move the damper bracket [7A] out of the way and lift the fuel nozzle [3], tilt the mounting flange forward and down, and remove the fuel nozzle [3] from the combustion case port.
- (i) Remove the seal assembly [4] from the fuel nozzle [3] or combustion case.
- (j) Install protective covers on the fuel manifold B-nut [20] and the fuel nozzle [3] fitting and tips.
- (k) Put a protective cover in the port for the fuel nozzle [3] in the combustion case.

SUBTASK 73-11-05-000-010-H01



DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (10) Remove the fuel nozzle [3] from the number 10 position (Figure 401 and Figure 407):
 - (a) Remove the right combustion skirt panel (TASK 72-41-01-000-803-H01).
 - (b) Disconnect the fuel manifold B-nut [20] from the fuel nozzle [3] (if not already removed).
 - (c) Remove the bolts [26] that attach the hose clamp [25] to the support bracket [12].
NOTE: The support bracket [12] is connected to two fuel nozzles located at position 9 and position 10.
 - (d) Remove the bolt [6] that attaches the support bracket [12] to the fuel nozzle [3] (position 9) (if not already removed).
 - (e) Remove the bolt [6] that attaches the support bracket [12] to the fuel nozzle [3] (position 10) and remove the support bracket [12] (if not already removed).
 - (f) Support the fuel nozzle [3] with your hand and remove the remaining bolts [6] that attach the fuel nozzle [3] to the aft flange.
 - (g) Move the fuel nozzle [3] forward to disengage the tips of the fuel nozzle [3] from the combustor swirl cups.
 - (h) Lift the fuel nozzle [3], tilt the mounting flange forward and down, and remove the fuel nozzle [3] from the combustion case port.
 - (i) Remove the seal assembly [4] from the fuel nozzle [3] or combustion case.

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- (j) Install protective covers on the fuel manifold B-nut [20] and the fuel nozzle [3] fitting and tips.
- (k) Put a protective cover in the port for the fuel nozzle [3] in the combustion case.

SUBTASK 73-11-05-000-011-H01



DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (11) Remove the number 11 position fuel nozzle [3] (Figure 401 and Figure 408):
 - (a) Remove the right combustion skirt panel (TASK 72-41-01-000-803-H01).
 - (b) Disconnect the fuel manifold B-nut [20] from the fuel nozzle [3].
 - (c) Remove one bolt [8] and loosen the other bolt [8] that attach the two clamps [9] to the damper bracket [7] and the fuel manifold [5].
 - (d) Remove the bolt [49] that attaches the clamp [50] to the support bracket [51] and the tube [52].
 - (e) Remove the two bolts [6] that attach the support bracket [51] to the forward face of the fuel nozzle [3] and remove the support bracket [51].
 - (f) Support the fuel nozzle [3] with your hand.
 - (g) Remove the two bolts [6] that attach the damper bracket [7] to the aft face of the fuel nozzle [3].
 - (h) Move the damper bracket [7] out of the way and move the fuel nozzle [3] forward to disengage the tips of the fuel nozzle [3] from the combustor swirl cups.
 - (i) Move the damper bracket [7] out of the way and lift the fuel nozzle [3], tilt the mounting flange forward and down, and remove the fuel nozzle [3] from the combustion case port.
 - (j) Remove the seal assembly [4] from the fuel nozzle [3] or combustion case.
 - (k) Install protective covers on the fuel manifold B-nut [20] and the fuel nozzle [3] fitting and tips.
 - (l) Put a protective cover in the port for the fuel nozzle [3] in the combustion case.

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DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (12) Remove the number 12 position fuel nozzle [3] (Figure 401 and Figure 402):

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- (a) Remove the right combustion skirt panel (TASK 72-41-01-000-803-H01).
- (b) Disconnect the fuel manifold B-nut [20] from the fuel nozzle [3].
- (c) Support the fuel nozzle [3] with your hand, and remove the bolts [1].
- (d) Move the fuel nozzle [3] forward to disengage the tips of the fuel nozzle [3] from the combustor swirl cups.
- (e) Lift the fuel nozzle [3], tilt the mounting flange forward and down, and remove the fuel nozzle [3] from the combustion case port.
- (f) Remove the seal assembly [4] from the fuel nozzle [3] or combustion case.
- (g) Install protective covers on the fuel manifold B-nut [20] and the fuel nozzle [3] fitting and tips.
- (h) Put a protective cover in the port for the fuel nozzle [3] in the combustion case.

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DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (13) Remove the number 13 position fuel nozzle [3] (Figure 401 and Figure 409):
 - (a) Remove the right combustion skirt panel (TASK 72-41-01-000-803-H01).
 - (b) Disconnect the fuel manifold B-nut [20] from the fuel nozzle [3].
 - (c) Remove one bolt [8] and loosen the other bolt [8] that attaches the two clamps [9] to the damper bracket [7A] and the fuel manifold [5].
 - (d) Remove the two bolts [6] that attach the damper bracket [7A] to the aft face of the fuel nozzle [3].
 - (e) Remove the bolts [27] that attaches the clamps [28] to the fuel manifold bracket [13].
 - (f) Support the fuel nozzle [3] with your hand, and remove the remaining two bolts [6].
 - (g) Move the damper bracket [7A] out of the way and move the fuel nozzle [3] forward to disengage the tips of the fuel nozzle [3] from the combustor swirl cups.
 - (h) Move the damper bracket [7A] out of the way and lift the fuel nozzle [3], tilt the mounting flange forward and down, and remove the fuel nozzle [3] from the combustion case port.
 - (i) Remove the seal assembly [4] from the fuel nozzle [3] or combustion case.
 - (j) Install protective covers on the fuel manifold B-nut [20] and the fuel nozzle [3] fitting and tips.
 - (k) Put a protective cover in the port for the fuel nozzle [3] in the combustion case.

SUBTASK 73-11-05-000-014-H01



DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.

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DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (14) Remove the number 14 position fuel nozzle [3] (Figure 401 and Figure 403):
- (a) Remove the center combustion skirt panel (TASK 72-41-01-000-802-H01).
 - (b) Disconnect the fuel manifold B-nut [20] from the fuel nozzle [3].
 - (c) Remove one bolt [8] and loosen the other bolt [8] that attaches the two clamps [9] to the damper bracket [7] and the fuel manifold [5].
 - (d) Remove the two bolts [6] that attach the damper bracket [7] to the aft face of the fuel nozzle [3].
 - (e) Support the fuel nozzle [3] with your hand, and remove the remaining two bolts [6].
 - (f) Move the damper bracket [7] out of the way and move the fuel nozzle [3] forward to disengage the tips of the fuel nozzle [3] from the combustor swirl cups.
 - (g) Move the damper bracket [7] out of the way and lift the fuel nozzle [3], tilt the mounting flange forward and down, and remove the fuel nozzle [3] from the combustion case port.
 - (h) Remove the seal assembly [4] from the fuel nozzle [3] or combustion case.
 - (i) Install protective covers on the fuel manifold B-nut [20] and the fuel nozzle [3] fitting and tips.
 - (j) Put a protective cover in the port for the fuel nozzle [3] in the combustion case.

SUBTASK 73-11-05-000-015-H01



DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (15) Remove the number 15 position fuel nozzle [3] (Figure 401 and Figure 402):
- (a) Remove the center combustion skirt panel (TASK 72-41-01-000-802-H01).
 - (b) Disconnect the fuel manifold B-nut [20] from the fuel nozzle [3].
 - (c) Support the fuel nozzle [3] with your hand, and remove the bolts [1].
 - (d) Move the fuel nozzle [3] forward to disengage the tips of the fuel nozzle [3] from the combustor swirl cups.
 - (e) Lift the fuel nozzle [3], tilt the mounting flange forward and down, and remove the fuel nozzle [3] from the combustion case port.
 - (f) Remove the seal assembly [4] from the fuel nozzle [3] or combustion case.
 - (g) Install protective covers on the fuel manifold B-nut [20] and the fuel nozzle [3] fitting and tips.
 - (h) Put a protective cover in the port for the fuel nozzle [3] in the combustion case.

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SUBTASK 73-11-05-000-016-H01

**WARNING**

DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.

**CAUTION**

DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (16) Remove the number 16 position fuel nozzle [3] (Figure 401 and Figure 410):
- (a) Remove the center combustion skirt panel (TASK 72-41-01-000-802-H01).
 - (b) Disconnect the fuel manifold B-nut [20] from the fuel nozzle [3].
 - (c) Remove one bolt [8] and loosen the other bolt [8] that attach the two clamps [9] to the damper bracket [7A] and the fuel manifold [5].
 - (d) Remove the two bolts [6] that attach the damper bracket [7A] to the aft face of the fuel nozzle [3].
 - (e) Remove the bolts [30] that attaches the clamps [29] to the fuel manifold bracket [14].
 - (f) Support the fuel nozzle [3] with your hand and remove the remaining two bolts [6] that attach the fuel manifold bracket [14] to the flange of the fuel nozzle [3] and remove the fuel manifold bracket [14].
 - (g) Move the damper bracket [7A] out of the way and move the fuel nozzle [3] forward to disengage the tips of the fuel nozzle [3] from the combustor swirl cups.
 - (h) Move the damper bracket [7A] out of the way and lift the fuel nozzle [3], tilt the mounting flange forward and down, and remove the fuel nozzle [3] from the combustion case port.
 - (i) Remove the seal assembly [4] from the fuel nozzle [3] or combustion case.
 - (j) Install protective covers on the fuel manifold B-nut [20] and the fuel nozzle [3] fitting and tips.
 - (k) Put a protective cover in the port for the fuel nozzle [3] in the combustion case.

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**WARNING**

DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.

**CAUTION**

DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (17) Remove the number 17 position fuel nozzle [3] (Figure 401 and Figure 402):
- (a) Remove the center combustion skirt panel (TASK 72-41-01-000-802-H01).
 - (b) Disconnect the fuel manifold B-nut [20] from the fuel nozzle [3].
 - (c) Support the fuel nozzle [3] with your hand, and remove the bolts [1].

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- (d) Move the fuel nozzle [3] forward to disengage the tips of the fuel nozzle [3] from the combustor swirl cups.
- (e) Lift the fuel nozzle [3], tilt the mounting flange forward and down, and remove the fuel nozzle from the combustion case port.
- (f) Remove the seal assembly [4] from the fuel nozzle [3] or combustion case.
- (g) Install protective covers on the fuel manifold B-nut [20] and the fuel nozzle [3] fitting and tips.
- (h) Put a protective cover in the port for the fuel nozzle [3] in the combustion case.

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DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (18) Remove the number 18 position fuel nozzle [3] (Figure 401 and Figure 403):
 - (a) Remove the center combustion skirt panel (TASK 72-41-01-000-802-H01).
 - (b) Disconnect the fuel manifold B-nut [20] from the fuel nozzle [3].
 - (c) Remove one bolt [8] and loosen the other bolt [8] that attach the two clamps [9] to the damper bracket [7] and the fuel manifold [5].
 - (d) Remove the two bolts [6] that attach the damper bracket [7] to the aft face of the fuel nozzle [3].
 - (e) Support the fuel nozzle [3] with your hand, and remove the remaining two bolts [6].
 - (f) Move the damper bracket [7] out of the way and move the fuel nozzle [3] forward to disengage the tips of the fuel nozzle [3] from the combustor swirl cups.
 - (g) Move the damper bracket [7] out of the way and lift the fuel nozzle [3], tilt the mounting flange forward and down, and remove the fuel nozzle [3] from the combustion case port.
 - (h) Remove the seal assembly [4] from the fuel nozzle [3] or combustion case.
 - (i) Install protective covers on the fuel manifold B-nut [20] and the fuel nozzle [3] fitting and tips.
 - (j) Put a protective cover in the port for the fuel nozzle [3] in the combustion case.

SUBTASK 73-11-05-000-019-H01



DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.

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DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (19) Remove the number 19 position fuel nozzle [3] (Figure 401 and Figure 411):
- (a) Remove the left combustion skirt panel (TASK 72-41-01-000-801-H01).
 - (b) Disconnect the fuel manifold B-nut [20] from the fuel nozzle [3].
 - (c) Remove the bolt [31] that attaches the clamp [32] to the fuel manifold bracket [15].
 - (d) Remove the two bolts [6] that attach to the fuel manifold bracket [15] to the forward flange of the fuel nozzle [3] and remove the fuel manifold bracket [15].
 - (e) Support the fuel nozzle [3] with your hand, and remove the remaining two bolts [6].
 - (f) Move the fuel nozzle [3] forward to disengage the tips of the fuel nozzle [3] from the combustor swirl cups.
 - (g) Lift the fuel nozzle [3], tilt the mounting flange forward and down, and remove the fuel nozzle [3] from the combustion case port.
 - (h) Remove the seal assembly [4] from the fuel nozzle [3] or combustion case.
 - (i) Install protective covers on the fuel manifold B-nut [20] and the fuel nozzle [3] fitting and tips.
 - (j) Put a protective cover in the port for the fuel nozzle [3] in the combustion case.

SUBTASK 73-11-05-000-020-H01



DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (20) Remove the number 20 position fuel nozzle [3] (Figure 401 and Figure 412):
- (a) Remove the left combustion skirt panel (TASK 72-41-01-000-801-H01).
 - (b) Disconnect the fuel manifold B-nut [20] from the fuel nozzle [3].
 - (c) Remove one bolt [8] and loosen the other bolt [8] that attach the two clamps [9] to the damper bracket [7A] and the fuel manifold [5].
 - (d) Remove the two bolts [6] that attach the damper bracket [7A] to the aft face of the fuel nozzle [3].
 - (e) Remove the bolt [34] that attaches the clamp [33] to the fuel manifold bracket [16].
 - (f) Support the fuel nozzle [3] with your hand and remove the remaining two bolts [6] that attach the fuel manifold bracket [16] to the flange of the fuel nozzle [3] and remove the fuel manifold bracket [16].
 - (g) Move the damper bracket [7A] out of the way and move the fuel nozzle [3] forward to disengage the tips of the fuel nozzle [3] from the combustor swirl cups.

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- (h) Move the damper bracket [7A] out of the way and lift the fuel nozzle [3], tilt the mounting flange forward and down, and remove the fuel nozzle [3] from the combustion case port.
- (i) Remove the seal assembly [4] from the fuel nozzle [3] or combustion case.
- (j) Install protective covers on the fuel manifold B-nut [20] and the fuel nozzle [3] fitting and tips.
- (k) Put a protective cover in the port for the fuel nozzle [3] in the combustion case.

SUBTASK 73-11-05-000-021-H01



DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (21) Remove the number 21 position fuel nozzle [3] (Figure 401 and Figure 403):
 - (a) Remove the left combustion skirt panel (TASK 72-41-01-000-801-H01).
 - (b) Disconnect the fuel manifold B-nut [20] from the fuel nozzle [3].
 - (c) Remove one bolt [8] and loosen the other bolt [8] that attach the two clamps [9] to the damper bracket [7] and the fuel manifold [5].
 - (d) Remove the two bolts [6] that attach the damper bracket [7] to the aft face of the fuel nozzle [3].
 - (e) Support the fuel nozzle [3] with your hand, and remove the remaining two bolts [6].
 - (f) Move the damper bracket [7] out of the way and move the fuel nozzle [3] forward to disengage the tips of the fuel nozzle [3] from the combustor swirl cups.
 - (g) Move the damper bracket [7] out of the way and lift the fuel nozzle [3], tilt the mounting flange forward and down, and remove the fuel nozzle [3] from the combustion case port.
 - (h) Remove the seal assembly [4] from the fuel nozzle [3] or combustion case.
 - (i) Install protective covers on the fuel manifold B-nut [20] and the fuel nozzle [3] fitting and tips.
 - (j) Put a protective cover in the port for the fuel nozzle [3] in the combustion case.

SUBTASK 73-11-05-000-022-H01



DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (22) Remove the number 22 position fuel nozzle [3] (Figure 401 and Figure 402):
 - (a) Disconnect the fuel manifold B-nut [20] from the fuel nozzle [3].

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- (b) Support the fuel nozzle [3] with your hand, and remove the bolts [1].
- (c) Move the fuel nozzle [3] forward to disengage the tips of the fuel nozzle [3] from the combustor swirl cups.
- (d) Lift the fuel nozzle [3], tilt the mounting flange forward and down, and remove the fuel nozzle [3] from the combustion case port.
- (e) Remove the seal assembly [4] from the fuel nozzle [3] or combustion case.
- (f) Install protective covers on the fuel manifold B-nut [20] and the fuel nozzle [3] fitting and tips.
- (g) Put a protective cover in the port for the fuel nozzle [3] in the combustion case.

SUBTASK 73-11-05-000-023-H01



DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (23) Remove the number 23 position fuel nozzle [3] (Figure 401 and Figure 403):
- (a) Disconnect the fuel manifold B-nut [20] from the fuel nozzle [3].
 - (b) Remove one bolt [8] and loosen the other bolt [8] that attach the two clamps [9] to the damper bracket [7] and the fuel manifold [5]
 - (c) Remove the two bolts [6] that attach the damper bracket [7] to the aft face of the fuel nozzle [3] and remove the damper bracket [7].
 - (d) Support the fuel nozzle [3] with your hand, and remove the remaining two bolts [6].
 - (e) Move the damper bracket [7] out of the way and move the fuel nozzle [3] forward to disengage the tip of the fuel nozzle [3] from the combustor swirl cup.
 - (f) Move the damper bracket [7] out of the way and lift the fuel nozzle [3], tilt the mounting flange forward and down, and remove the fuel nozzle [3] from the combustion case port.
 - (g) Remove the seal assembly [4] from the fuel nozzle [3] or combustion case.
 - (h) Install protective covers on the fuel manifold B-nut [20] and the fuel nozzle [3] fitting and tips.
 - (i) Put a protective cover in the port for the fuel nozzle [3] in the combustion case.

SUBTASK 73-11-05-000-024-H01



DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.

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DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (24) Remove the number 24 position fuel nozzle [3] (Figure 401 and Figure 413):
- (a) Disconnect the fuel manifold B-nut [20] from the fuel nozzle [3].
 - (b) Remove the bolt [35] that attaches clamp [36] to the IDG oil tube [53] and the support bracket [17]
 - (c) Remove the two bolts [59] that attach the support bracket [17] to the STB outlet tube [54].
 - (d) Remove the bolts [6] that attaches the support bracket [17] to the fuel nozzle [3] and remove the support bracket [17]
 - (e) Support the fuel nozzle [3] with your hand, and remove the remaining two bolts [6] that attach to the flange of the fuel nozzle [3].
 - (f) Move the fuel nozzle [3] forward to disengage the tips of the fuel nozzle [3] from the combustor swirl cups.
 - (g) Lift the fuel nozzle [3], tilt the mounting flange forward and down, and remove the fuel nozzle [3] from the combustion case port.
 - (h) Remove the seal assembly [4] from the fuel nozzle [3] or combustion case.
 - (i) Install protective covers on the fuel manifold B-nut [20] and the fuel nozzle [3] fitting and tips.
 - (j) Put a protective cover in the port for the fuel nozzle [3] in the combustion case.

SUBTASK 73-11-05-000-025-H01

**WARNING**

DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.

**CAUTION**

DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (25) Remove the number 25 position fuel nozzle [3] (Figure 401 and Figure 414):
- (a) Disconnect the fuel manifold B-nut [20] from the fuel nozzle [3].
 - (b) Remove one bolt [8] and loosen the other bolt [8] that attach the two clamps [9] to the damper bracket [7] and the fuel manifold [5].
 - (c) Remove the two bolts [6] that attach the damper bracket [7] to the aft face of the fuel nozzle [3].
 - (d) Remove the bolts [37] that attach the hose clamp [38] to the support bracket [18] and remove the hose clamp [38].
 - (e) Remove the four bolts [55] that attach the HPT air duct support bracket [56] to the HPT manifold support bracket [18] and remove the support bracket [56].

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- (f) Remove the two bolts [57] that attach support bracket [18] to the forward bracket [58].
NOTE: The support bracket [18] is connected to two fuel nozzles located at position 25 and position 26.
- (g) Remove the bolts [6] that attaches the support bracket [18] to the fuel nozzle [3] (position 26).
- (h) Support the fuel nozzle [3] with your hand and remove the bolts [6] that attaches the support bracket [18] to the fuel nozzle [3] (position 25) and remove the support bracket [18].
- (i) Move the damper bracket [7] out of the way and move the fuel nozzle [3] forward to disengage the tips of the fuel nozzle [3] from the combustor swirl cups.
- (j) Move the damper bracket [7] out of the way and lift the fuel nozzle [3], tilt the mounting flange forward and down, and remove the fuel nozzle [3] from the combustion case port.
- (k) Remove the seal assembly [4] from the fuel nozzle [3] or combustion case.
- (l) Install protective covers on the fuel manifold B-nut [20] and the fuel nozzle [3] fitting and tips.
- (m) Put a protective cover in the port for the fuel nozzle [3] in the combustion case.

SUBTASK 73-11-05-000-026-H01



DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (26) Remove the number 26 position fuel nozzle [3] (Figure 401 and Figure 414):
 - (a) Disconnect the fuel manifold B-nut [20] from the fuel nozzle [3].
 - (b) Remove the bolts [37] that attach the hose clamp [38] to the support bracket [18] (if not already removed).
 - (c) Remove the four bolts [55] that attach the HPT air duct support bracket [56] to the HPT manifold support bracket [18] and remove the support bracket [56].
 - (d) Remove the two bolts [57] that attach support bracket [18] to the forward bracket [58].
NOTE: The support bracket [18] is connected to two fuel nozzles located at position 25 and position 26.
 - (e) Remove bolt [6] that attaches the support bracket [18] to the fuel nozzle [3] (position 25) (if not already removed).
 - (f) Remove the bolt [6] that attaches the support bracket [18] to the fuel nozzle [3] (position 26) and remove the support bracket [18].
 - (g) Support the fuel nozzle [3] with your hand, and remove the remaining bolts [6] in the fuel nozzle [3] flange.
 - (h) Move the fuel nozzle [3] forward to disengage the tips of the fuel nozzle [3] from the combustor swirl cups.
 - (i) Lift the fuel nozzle [3], tilt the mounting flange forward and down, and remove the fuel nozzle [3] from the combustion case port.

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- (j) Remove the seal assembly [4] from the fuel nozzle [3] or combustion case.
- (k) Install protective covers on the fuel manifold B-nut [20] and the fuel nozzle [3] fitting and tips.
- (l) Put a protective cover in the port for the fuel nozzle [3] in the combustion case.

SUBTASK 73-11-05-000-027-H01



DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (27) Remove the number 27 position fuel nozzle [3] (Figure 401 and Figure 415):
- (a) Disconnect the fuel manifold B-nut [20] from the fuel nozzle [3].
 - (b) Remove one bolt [8] and loosen the other bolt [8] that attach the two clamps [9] to the damper bracket [7] and the fuel manifold [5].
 - (c) Remove the bolts [6] that attach the damper bracket [7] to the aft face of the fuel nozzle [3].
 - (d) Remove the bolt [39] that attaches the clamp [40] to the support bracket [19].
 - (e) Remove the bolts [41] that attach the clamp [42] to the support bracket [19].
 - (f) Support the fuel nozzle [3] with your hand, and remove the remaining bolts [6] that attach the support bracket [19] to the flange of the fuel nozzle [3] and remove the support bracket [19].
 - (g) Move the damper bracket [7] out of the way and move the fuel nozzle [3] forward to disengage the tips of the fuel nozzle [3] from the combustor swirl cups.
 - (h) Move the damper bracket [7] out of the way and lift the fuel nozzle [3], tilt the mounting flange forward and down, and remove the fuel nozzle [3] from the combustion case port.
 - (i) Remove the seal assembly [4] from the fuel nozzle [3] or combustion case.
 - (j) Install protective covers on the fuel nozzle B-nut [20] and the fuel nozzle [3] fitting and tips.
 - (k) Put a protective cover in the port for the fuel nozzle [3] in the combustion case.

SUBTASK 73-11-05-000-028-H01



DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (28) Remove the number 28 position fuel nozzle [3] (Figure 401 and Figure 403):

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- (a) Disconnect the fuel manifold B-nut [20] from the fuel nozzle [3].
- (b) Remove one bolt [8] and loosen the other bolt [8] that attach the two clamps [9] to the damper bracket [7] and the fuel manifold [5].
- (c) Remove the bolts [6] that attach the damper bracket [7] to the aft face of the fuel nozzle [3].
- (d) Support the fuel nozzle [3] with your hand, and remove the remaining bolts [6].
- (e) Move the damper bracket [7] out of the way and move the fuel nozzle [3] forward to disengage the tips of the fuel nozzle [3] from the combustor swirl cups.
- (f) Move the damper bracket [7] out of the way and lift the fuel nozzle [3], tilt the mounting flange forward and down, and remove the fuel nozzle [3] from the combustion case port.
- (g) Remove the seal assembly [4] from the fuel nozzle [3] or the combustion case.
- (h) Install protective covers on the fuel manifold B-nut [20] and the fuel nozzle [3] fitting and tips.
- (i) Put a protective cover in the port for the fuel nozzle [3] in the combustion case.

SUBTASK 73-11-05-000-029-H01

**WARNING**

DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.

**CAUTION**

DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (29) Remove the number 29 position fuel nozzle [3] (Figure 401 and Figure 403):
- (a) Disconnect the fuel manifold B-nut [20] from the fuel nozzle [3].
 - (b) Remove one bolt [8] and loosen the other bolt [8] that attach the two clamps [9] to the damper bracket [7] and the fuel manifold [5].
 - (c) Remove the bolts [6] that attach the damper bracket [7] to the aft face of the fuel nozzle [3].
 - (d) Support the fuel nozzle [3] with your hand, and remove the remaining bolts [6].
 - (e) Move the damper bracket [7] out of the way and move the fuel nozzle [3] forward to disengage the tips of the fuel nozzle [3] from the combustor swirl cups.
 - (f) Move the damper bracket [7] out of the way and lift the fuel nozzle [3], tilt the mounting flange forward and down, and remove the fuel nozzle [3] from the combustion case port.
 - (g) Remove the seal assembly [4] from the fuel nozzle [3] or combustion case.
 - (h) Install protective covers on the fuel nozzle B-nut [20] and the fuel nozzle [3] fitting and tips.
 - (i) Put a protective cover in the port for the fuel nozzle [3] in the combustion case.

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**WARNING**

DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.

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DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (30) Remove the number 30 position fuel nozzle [3] (Figure 401 and Figure 402):
- (a) Disconnect the fuel manifold B-nut [20] from the fuel nozzle [3].
 - (b) Support the fuel nozzle [3] with your hand, and remove bolts [1].
 - (c) Move the fuel nozzle [3] forward to disengage the tips of the fuel nozzle [3] from the combustor swirl cups.
 - (d) Lift the fuel nozzle [3], tilt the mounting flange forward and down, and remove the fuel nozzle [3] from the combustion case port.
 - (e) Remove the seal assembly [4] from the fuel nozzle [3] or combustion case.
 - (f) Install protective covers on the fuel manifold B-nut [20] and the fuel nozzle [3] fitting and tips.
 - (g) Put a protective cover in the port for the fuel nozzle [3] in the combustion case.

———— **END OF TASK** ————

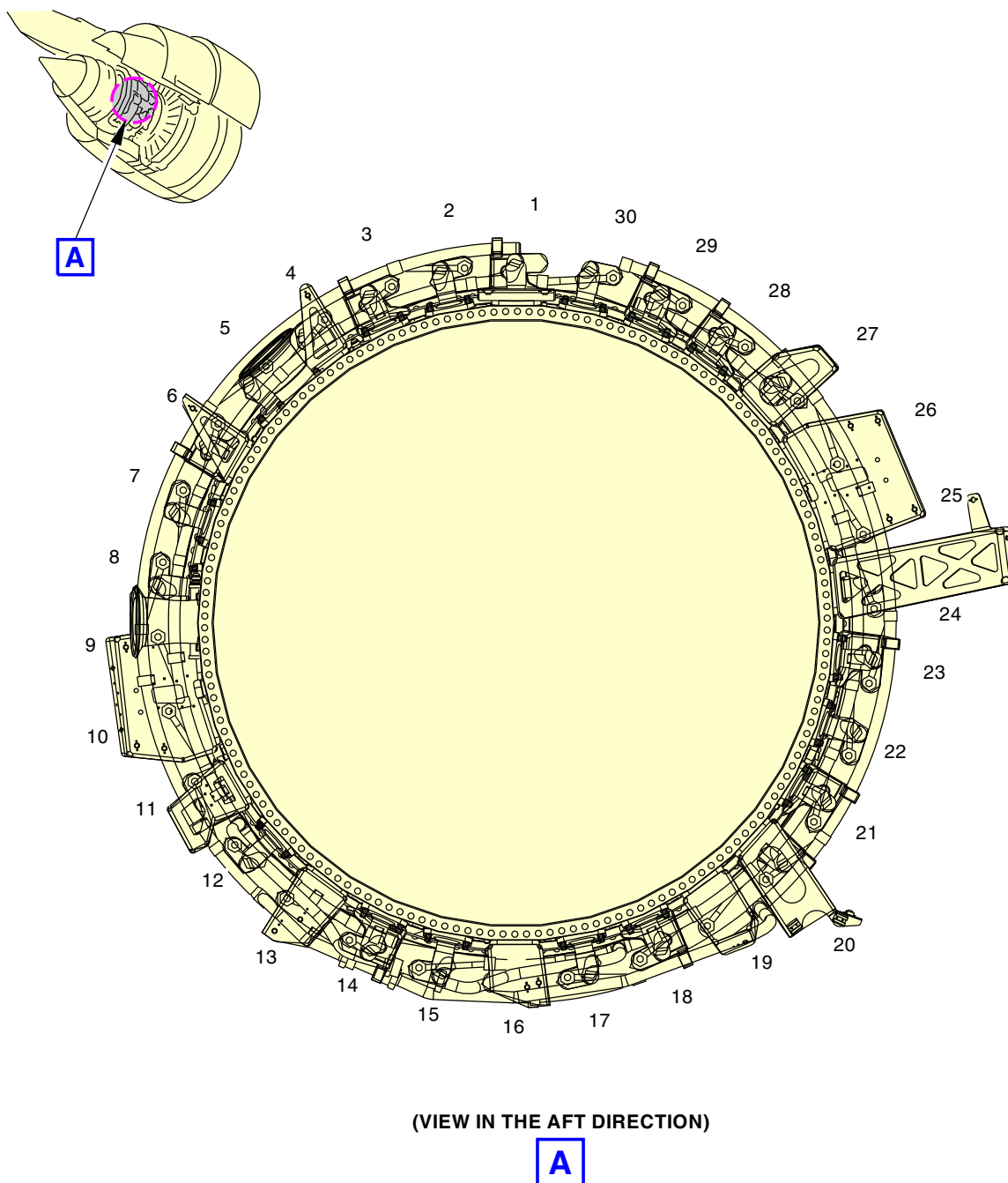
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**NOTE:**

THIS VIEW SHOWS THE FUEL NOZZLE TO FUEL MANIFOLD INTERFACE.

1204143-00-A
M06928 S0004285914_V2

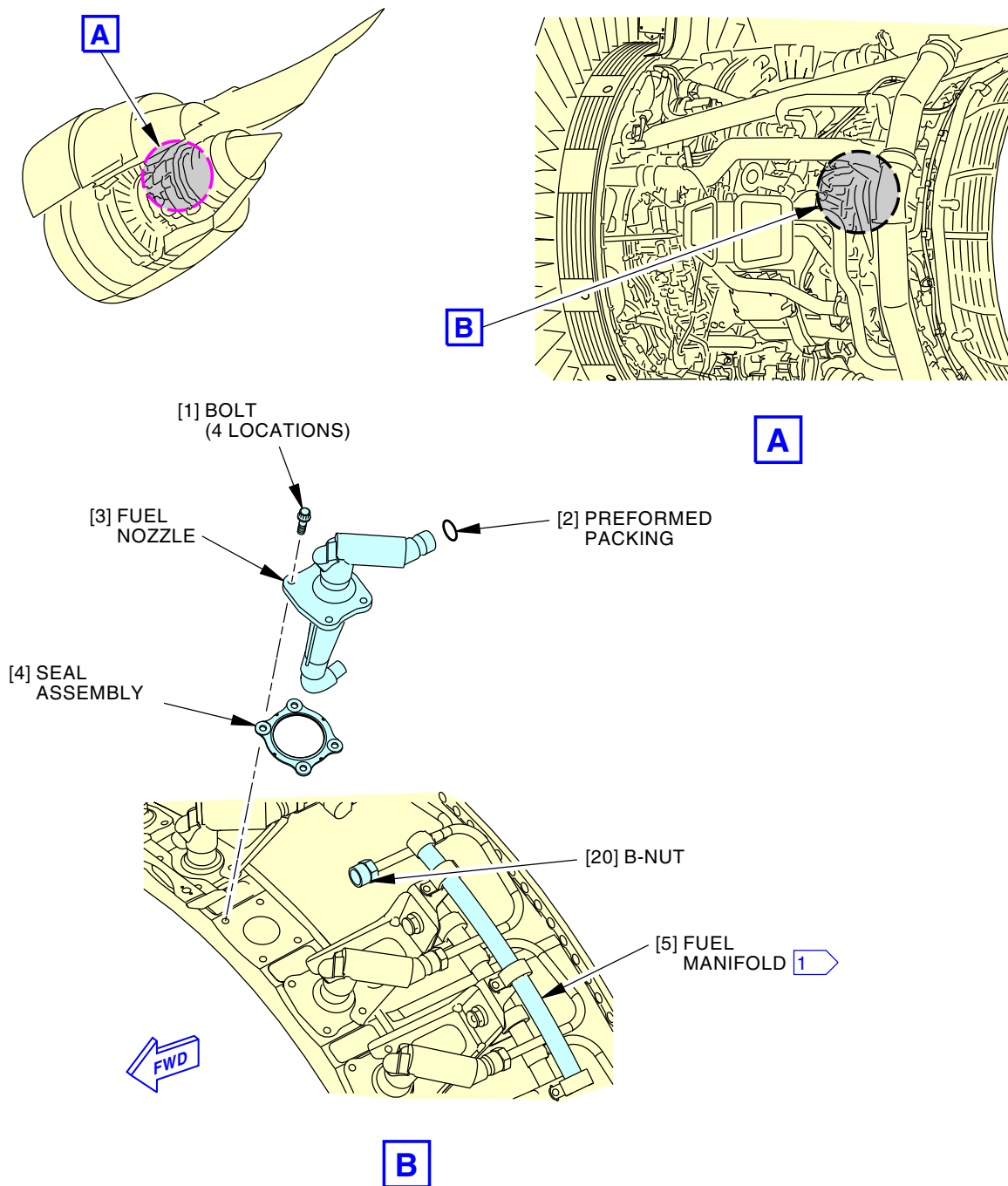
Fuel Nozzle Location and Orientation
Figure 401/73-11-05-990-801-H01

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1 LEFT AND RIGHT SIDE THE SAME TYPICAL FUEL NOZZLE INSTALLATION FOR FUEL NOZZLE POSITIONS 2, 5, 7, 8, 12, 15, 17, 22 AND 30

1204146-01-A
M06929 S0004285915_V3

Fuel Nozzle Installation (Positions 2, 5, 7, 8, 12, 15, 17, 22, and 30)
Figure 402/73-11-05-990-802-H02

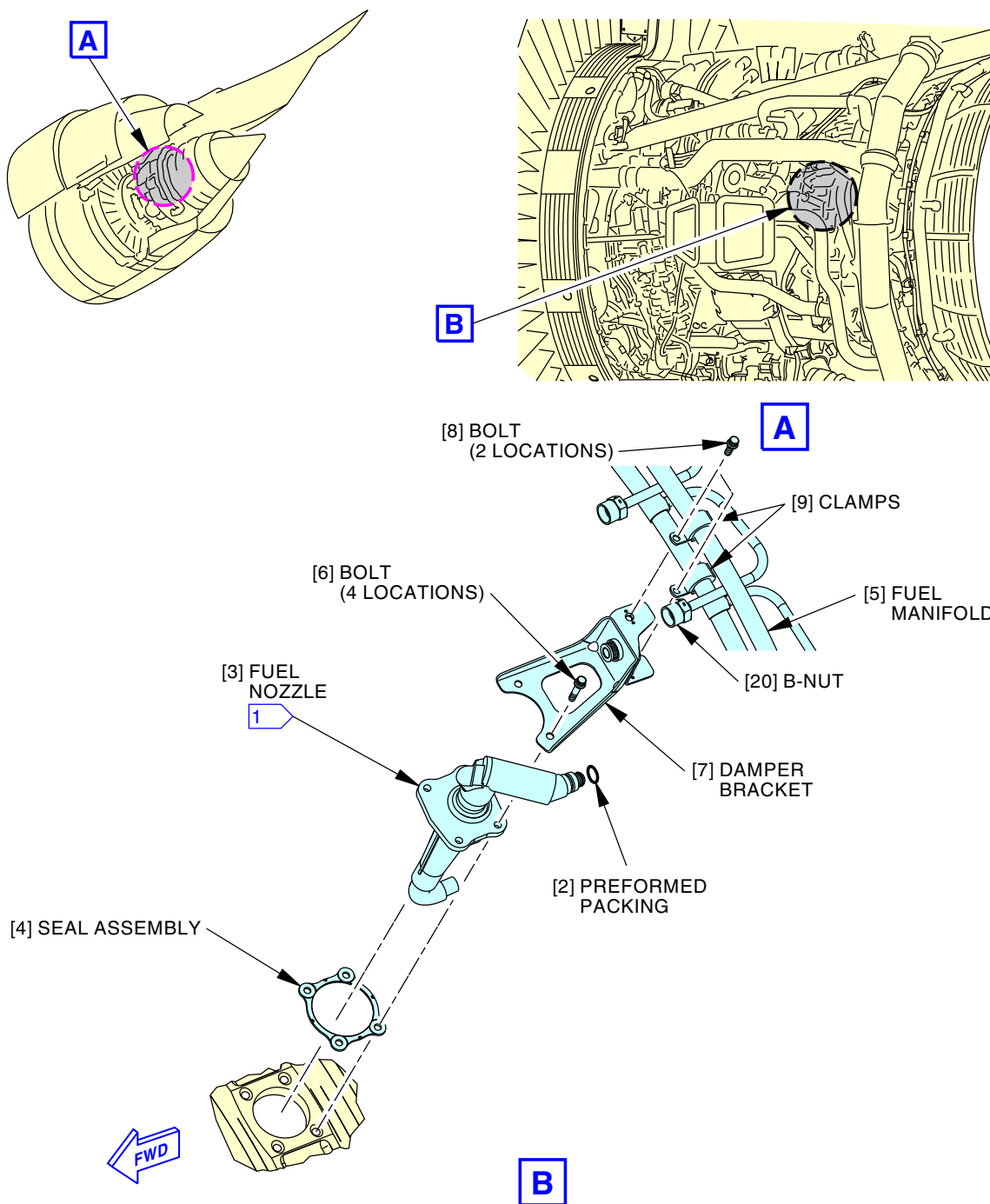
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1 TYPICAL FUEL NOZZLE INSTALLATION FOR FUEL NOZZLE POSITIONS 3, 14, 18, 21, 23, 28 AND 29.

1204148-01-A
M06930 S0004285916_V3

Fuel Nozzle Installation with Damper Bracket (Positions 3, 14, 18, 21, 23, 28, and 29)
Figure 403/73-11-05-990-803-H02

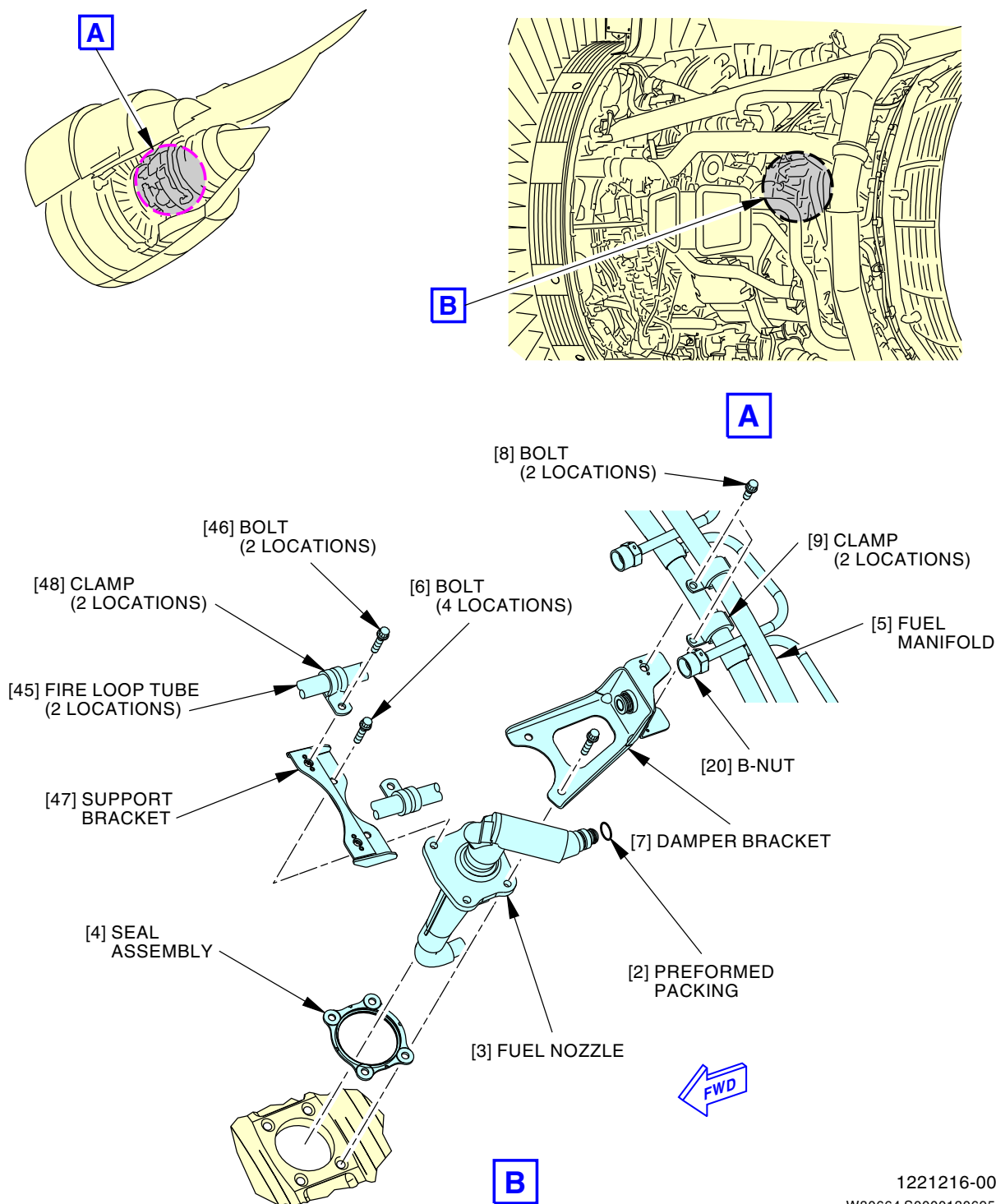
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Fuel Nozzle Installation with Damper/Support Bracket (Position 1)
Figure 404/73-11-05-990-822-H01

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W80664 S0000130695_V2

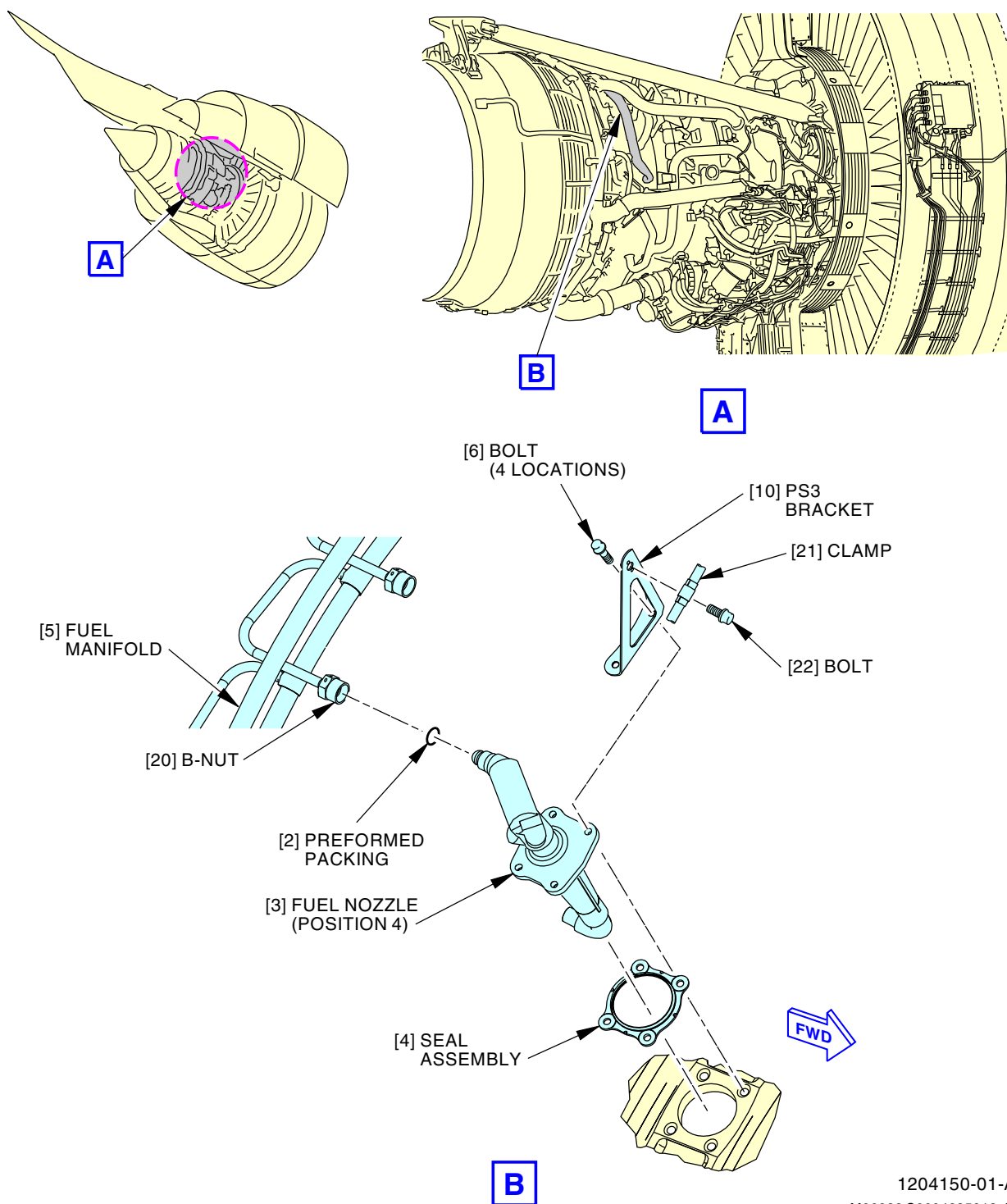
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M06932 S0004285918_V3

Fuel Nozzle Installation with PS3 Bracket (Position 4)
Figure 405/73-11-05-990-804-H02

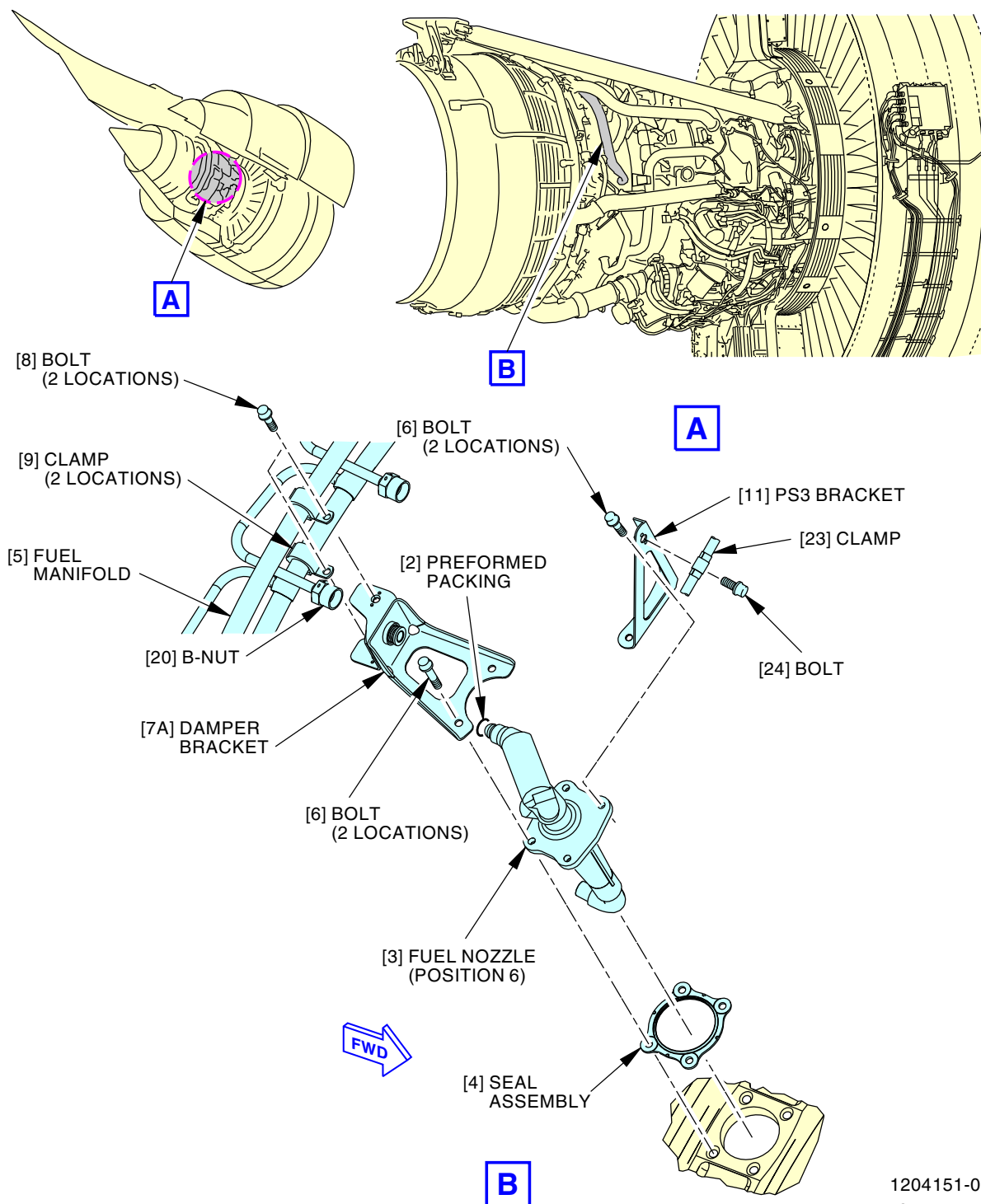
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1204151-01-A
M06933 S0004285919_V3

Fuel Nozzle Installation with PS3 Bracket (Position 6)
Figure 406/73-11-05-990-805-H02

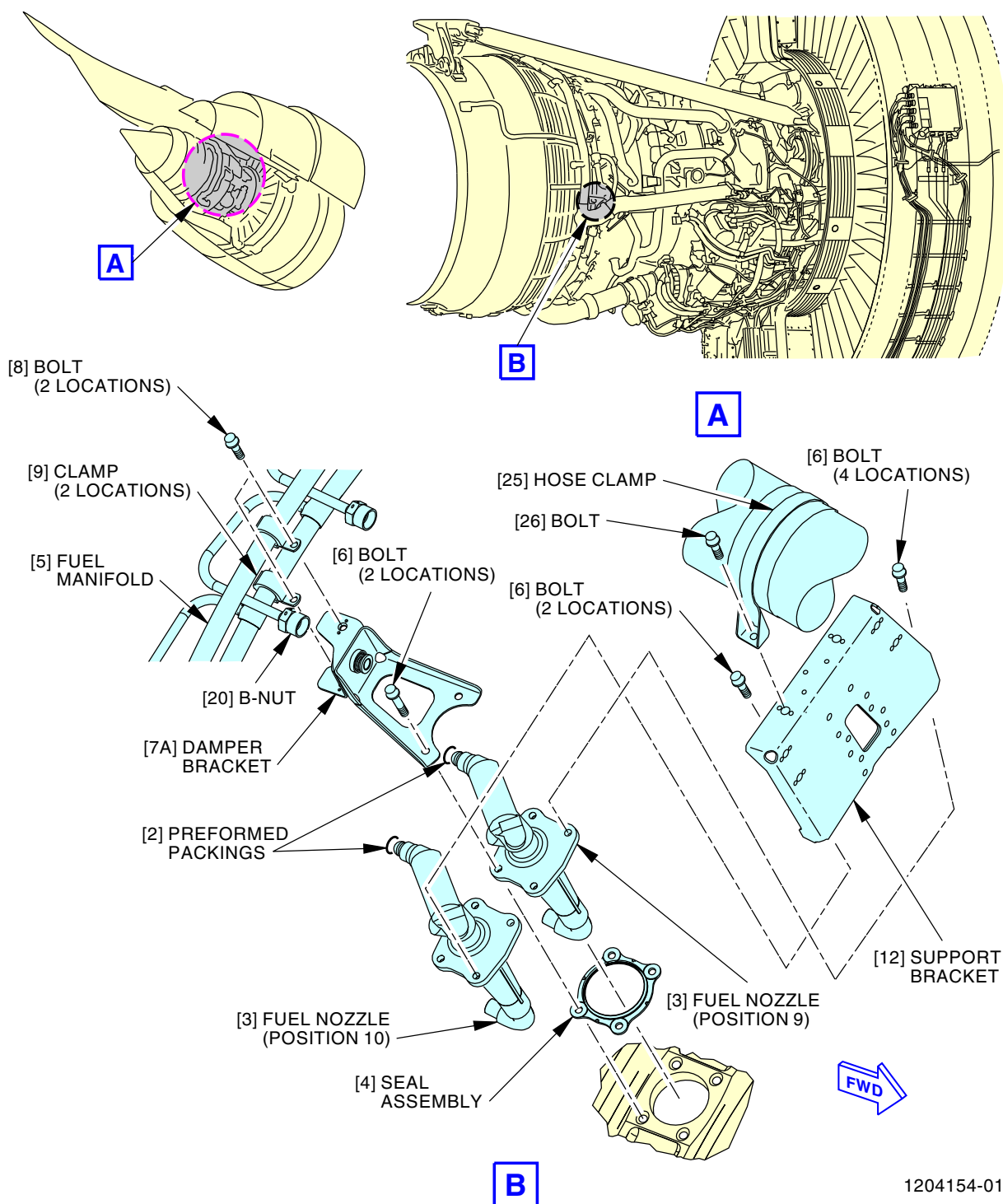
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1204154-01-A
M06934 S0004285920_V3

Fuel Nozzle Installation with Damper/Support Bracket (Positions 9, 10)
Figure 407/73-11-05-990-806-H02

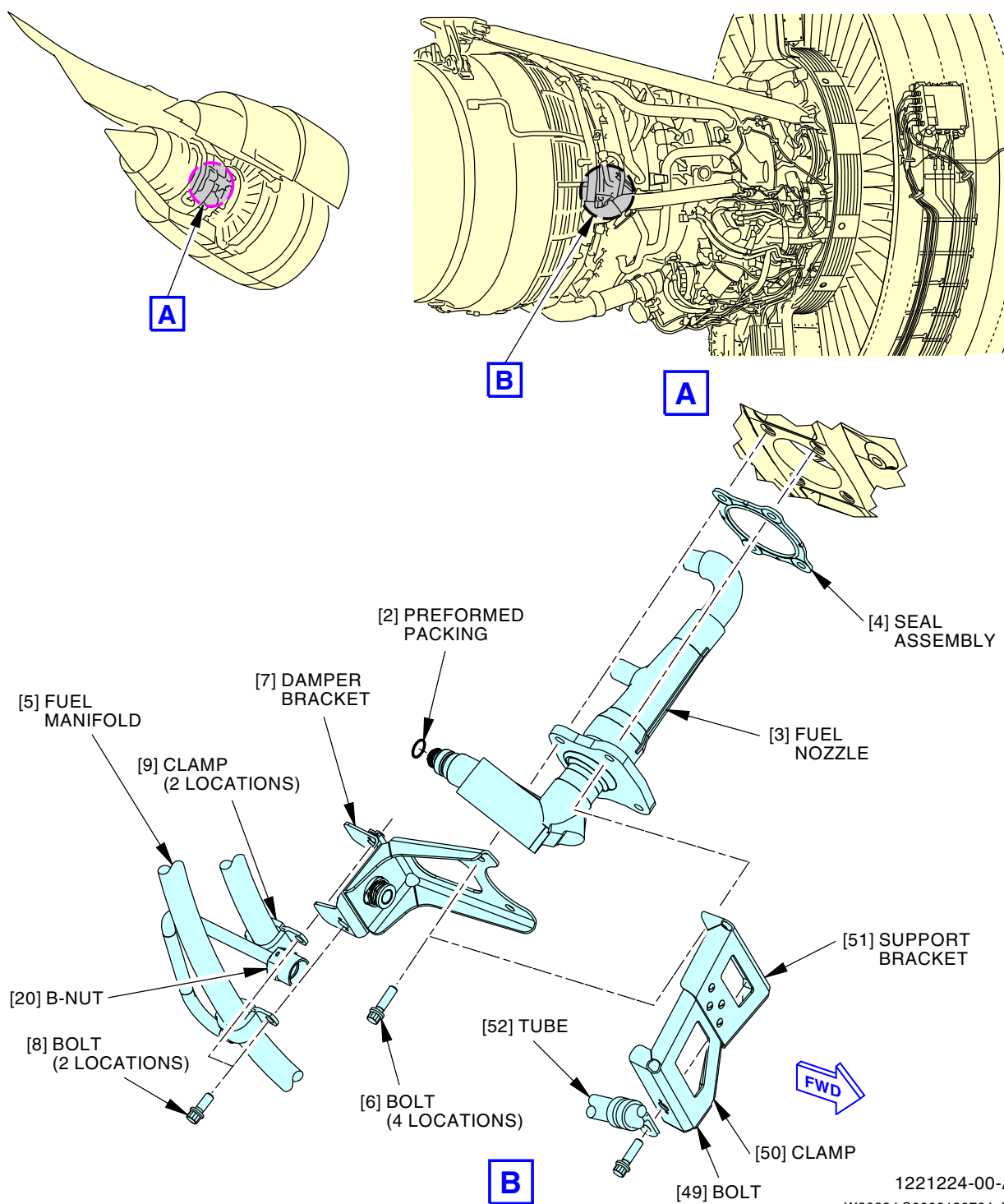
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Fuel Nozzle Installation with Damper/Support Bracket (Position 11)
Figure 408/73-11-05-990-821-H01

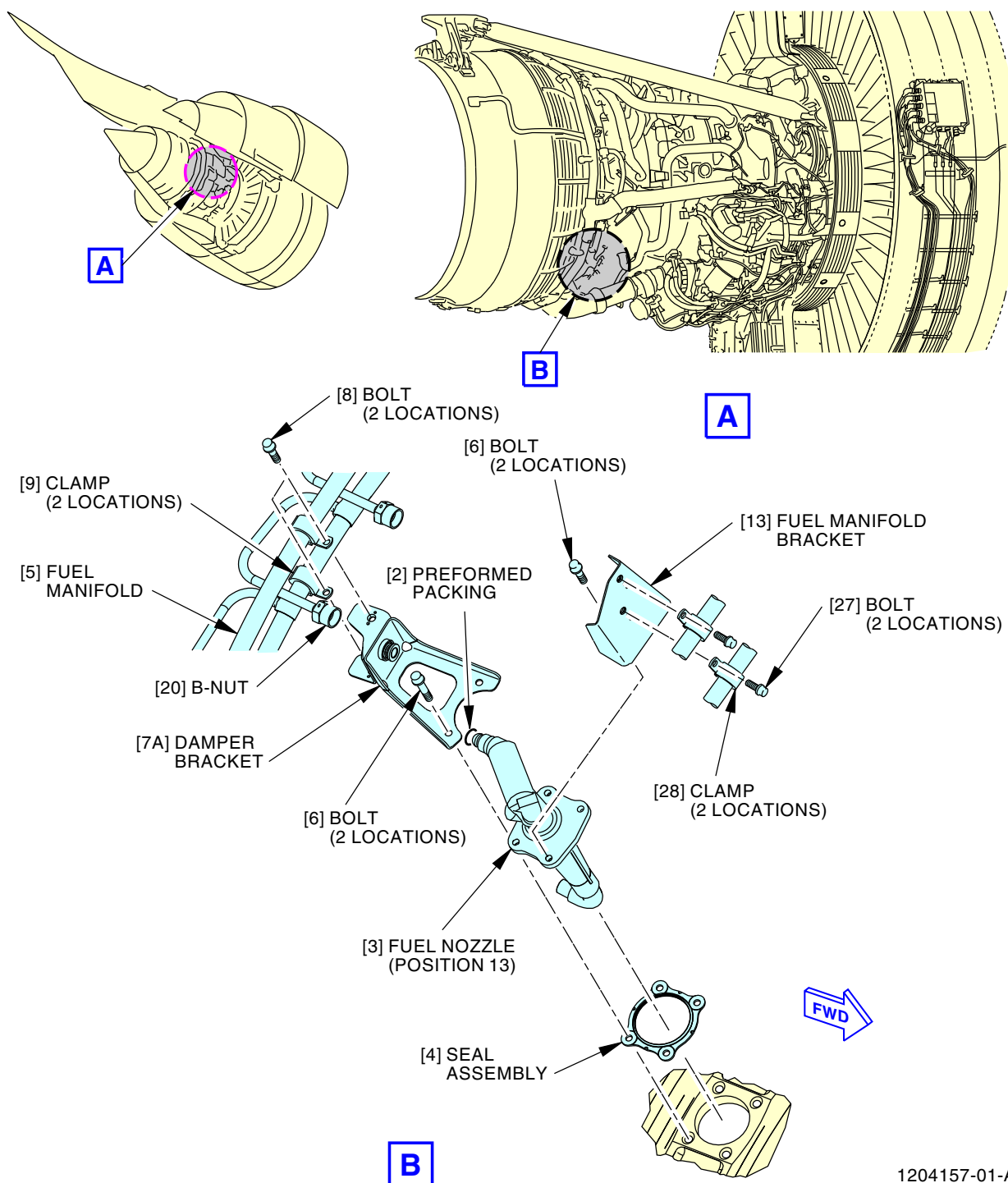
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1204157-01-A

M06936 S0004285921_V3

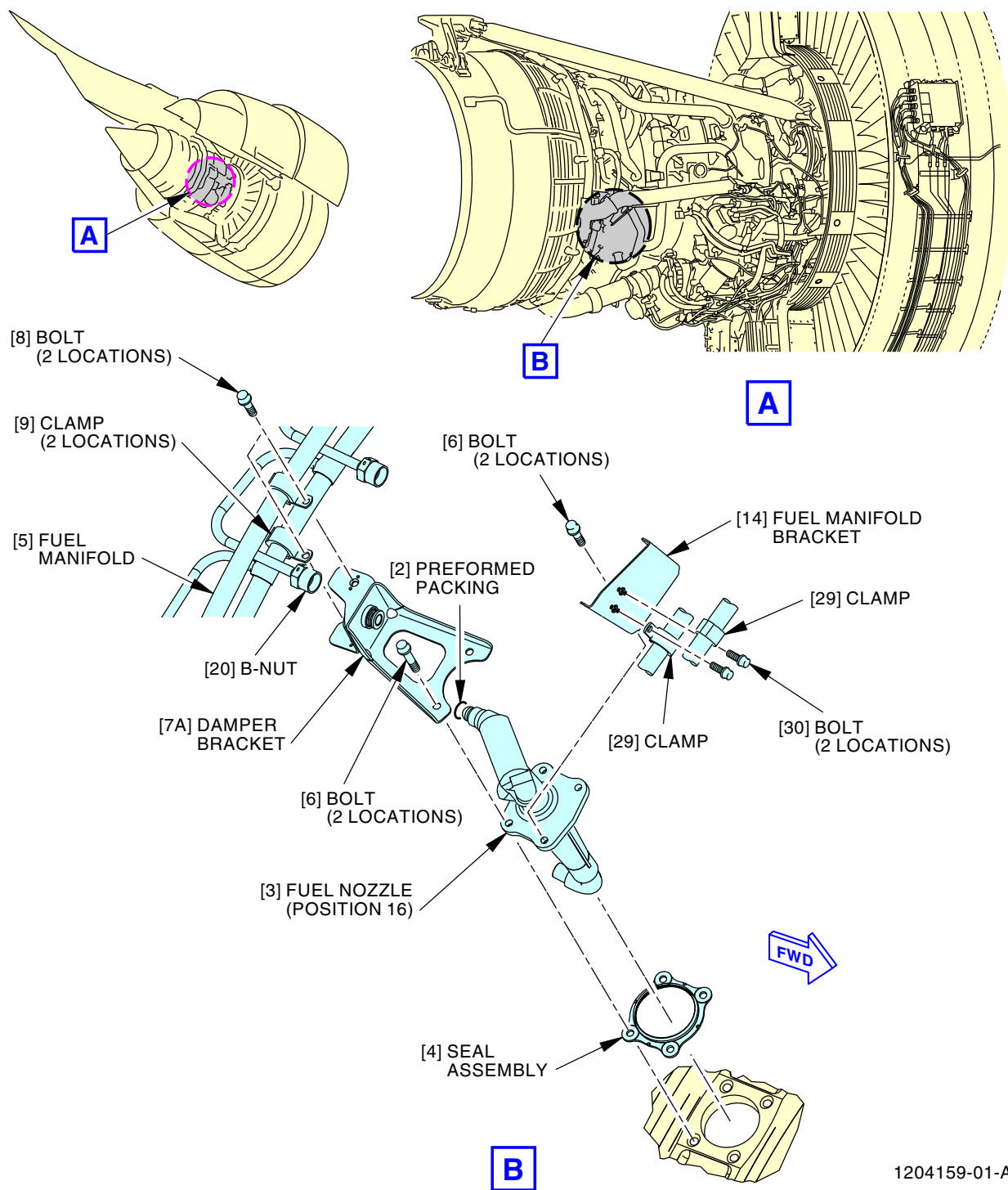
Fuel Nozzle Installation with Damper/Fuel Manifold Bracket (Position 13)
Figure 409/73-11-05-990-807-H02

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1204159-01-A
M06937 S0004285922_V3

Fuel Nozzle Installation with Damper/Fuel Manifold Bracket (Position 16)
Figure 410/73-11-05-990-808-H02

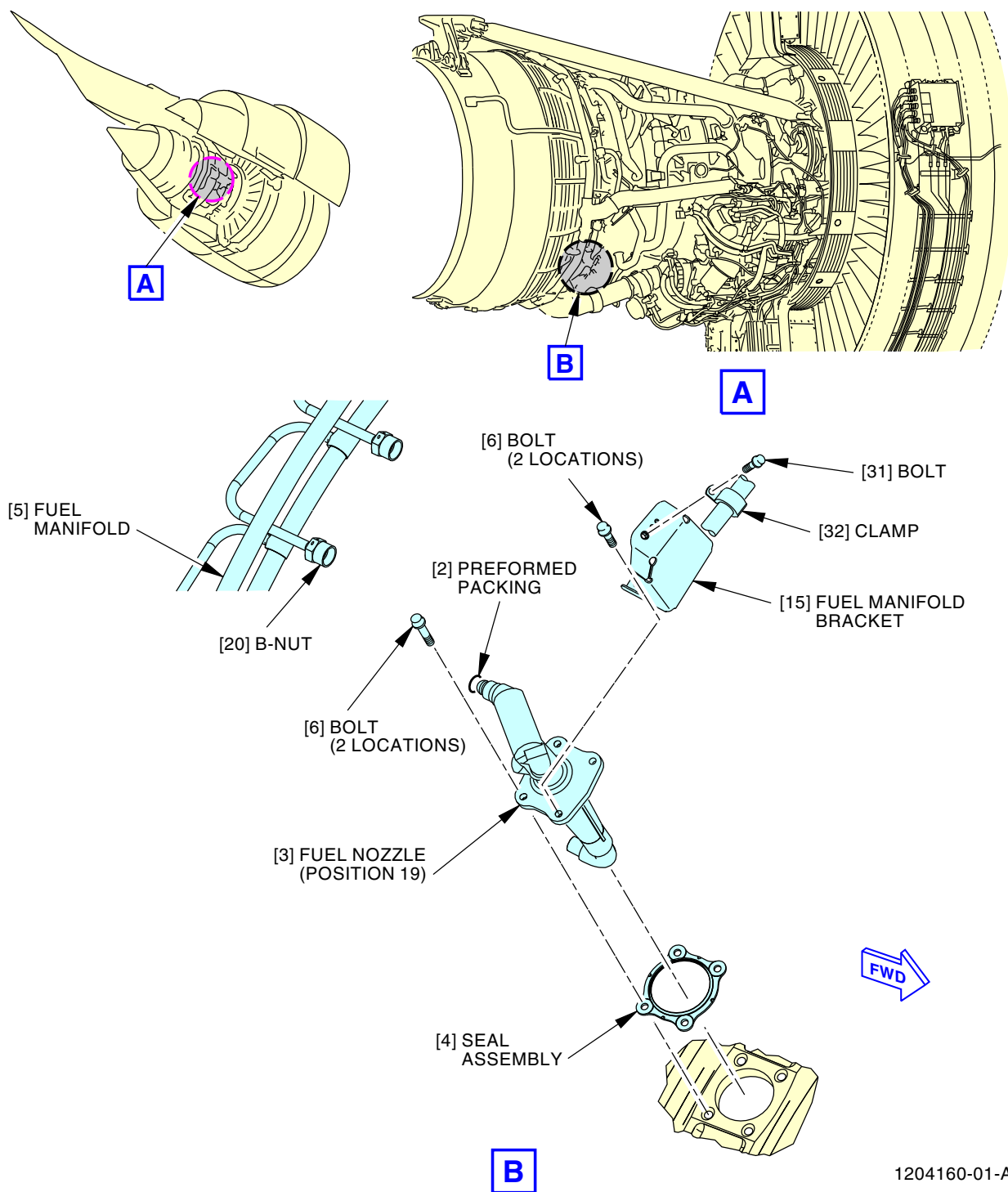
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1204160-01-A
M06938 S0004285923_V3

Fuel Nozzle Installation with Fuel Manifold Bracket (Position 19)
Figure 411/73-11-05-990-809-H02

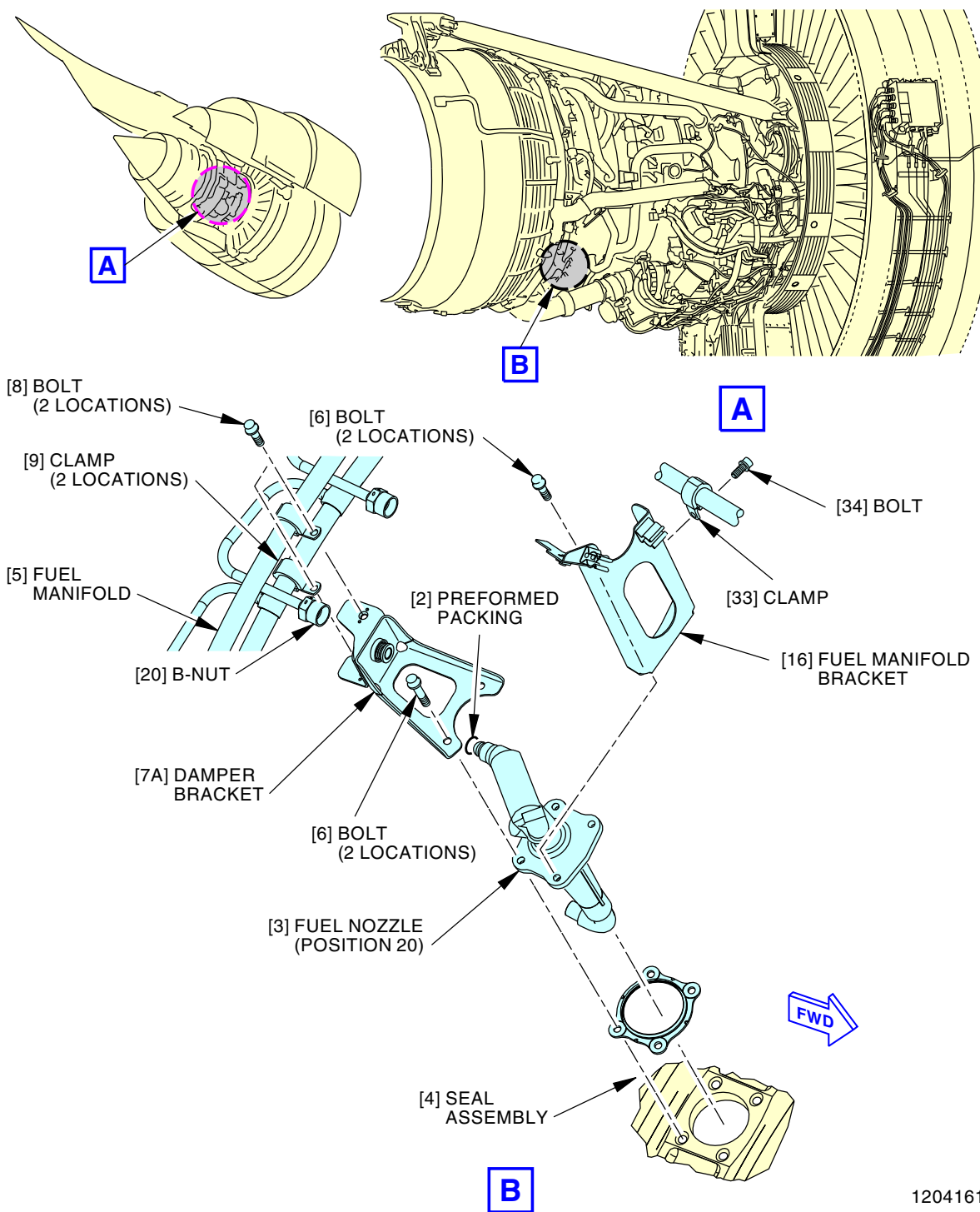
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1204161-01-A
M06940 S0004285925_V3

Fuel Nozzle Installation with Damper/Fuel Manifold Bracket (Position 20)
Figure 412/73-11-05-990-810-H02

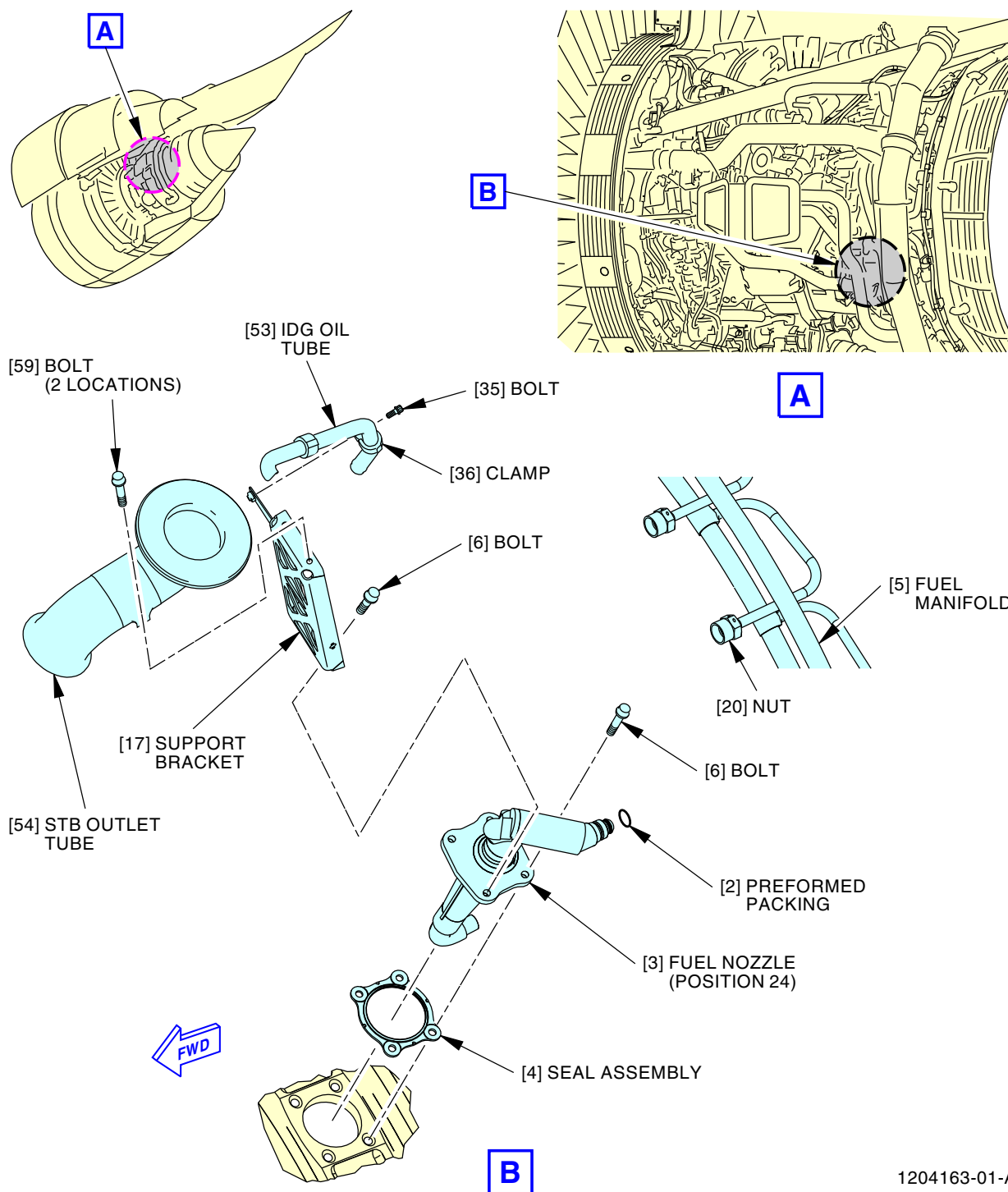
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Fuel Nozzle Installation with Support Bracket (Position 24)
Figure 413/73-11-05-990-811-H02

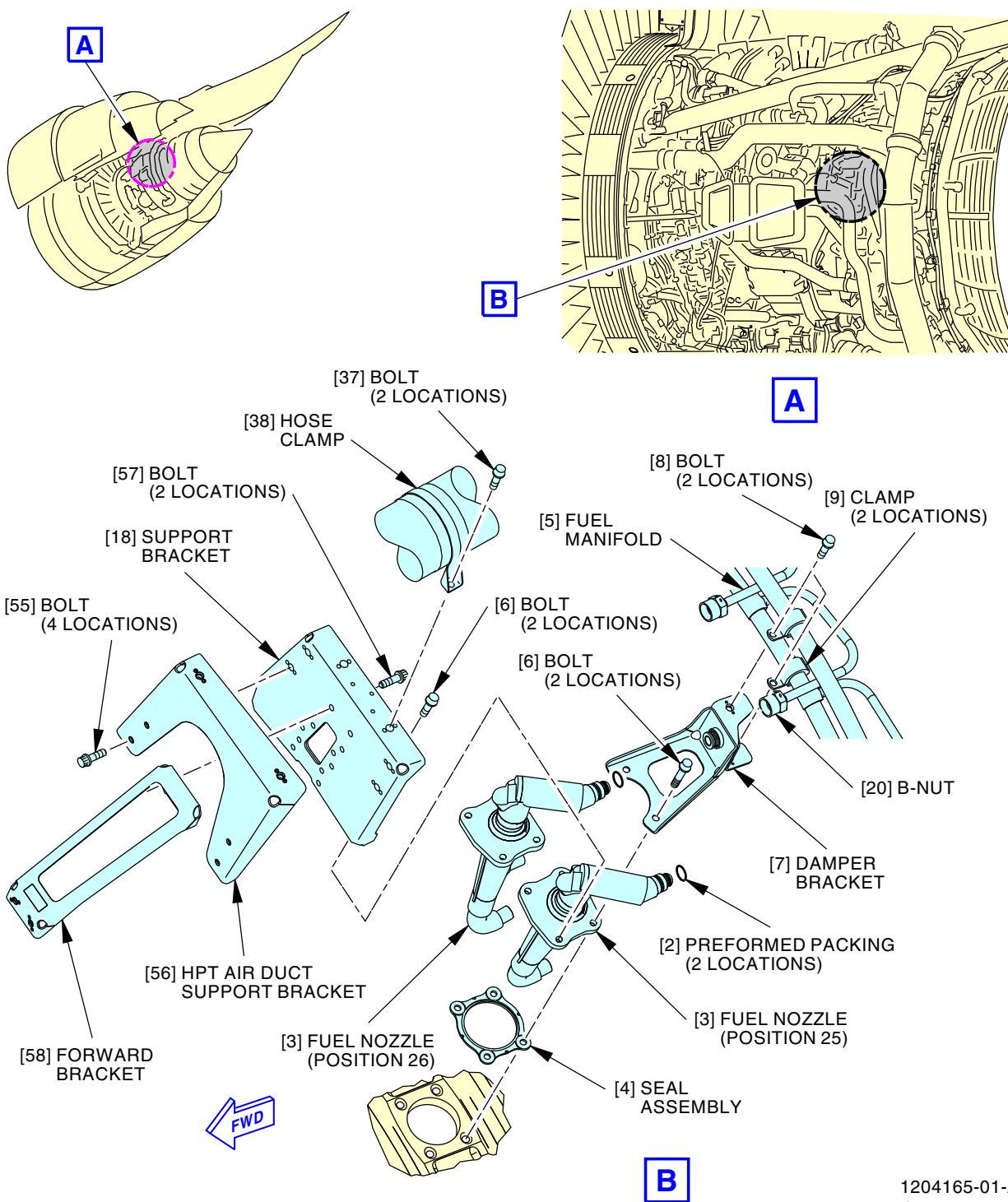
1204163-01-A
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1204165-01-A
M06943 S0004285928_V3

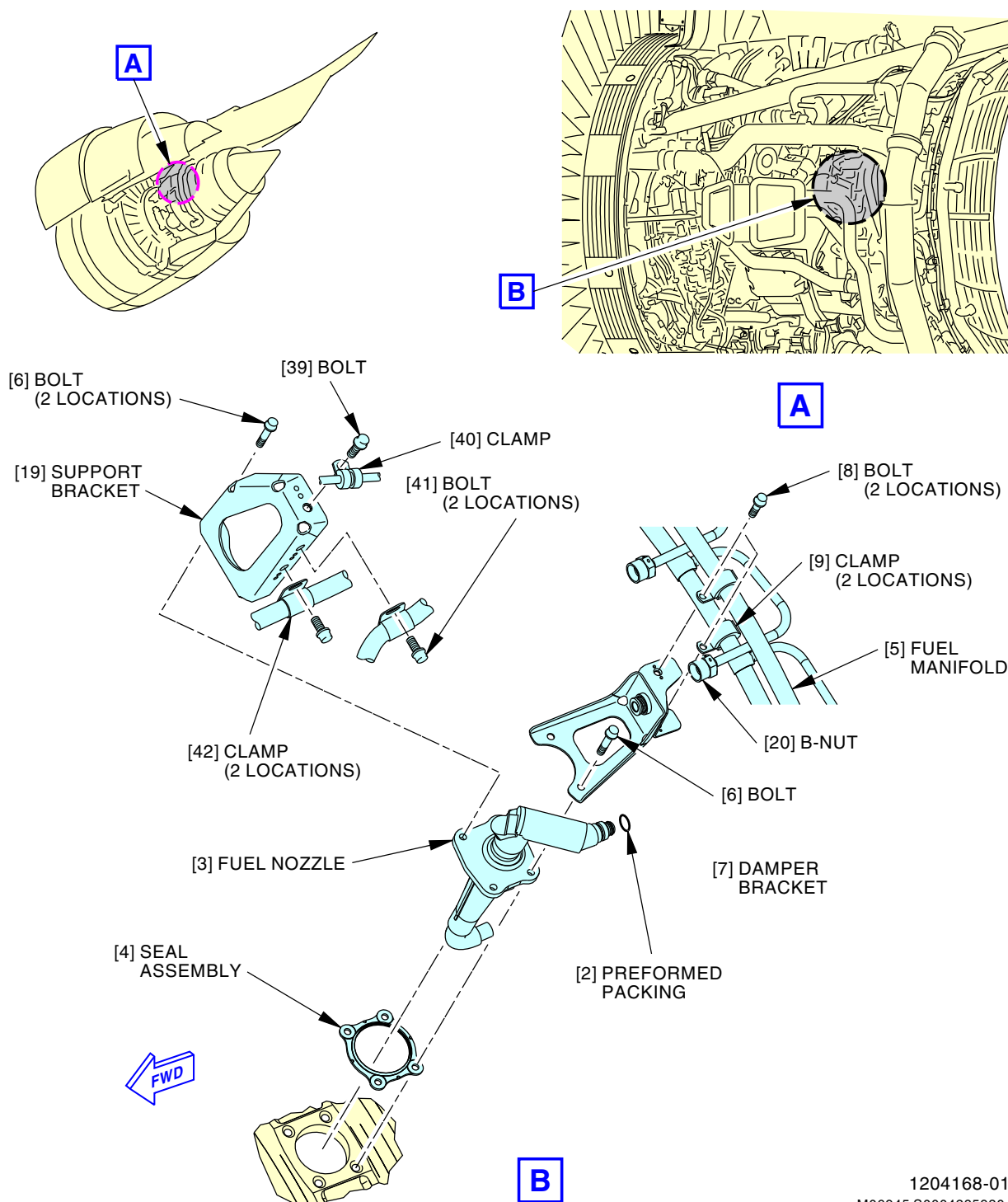
Fuel Nozzle Installation with Damper/Support Bracket (Positions 25, 26)
Figure 414/73-11-05-990-812-H02

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Fuel Nozzle Installation with Damper/Support Bracket (Position 27)
Figure 415/73-11-05-990-813-H02

1204168-01-A
M06945 S0004285930_V3

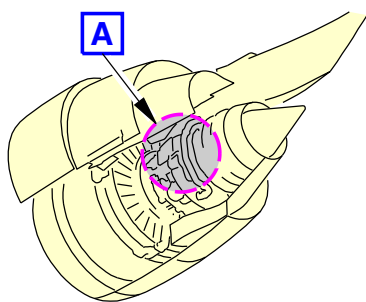
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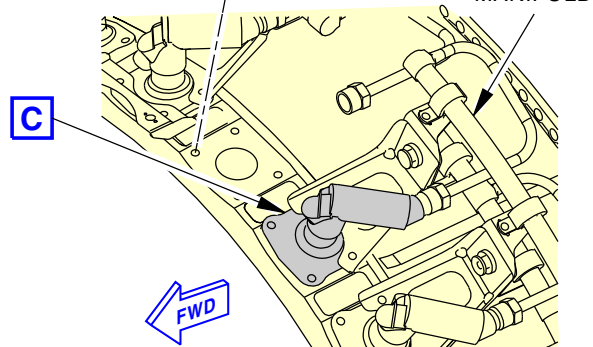
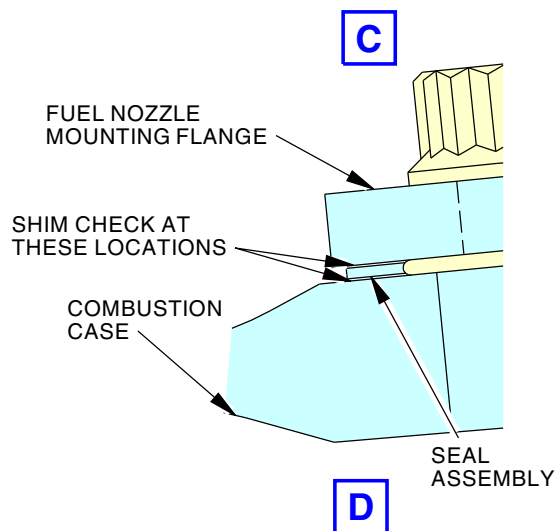
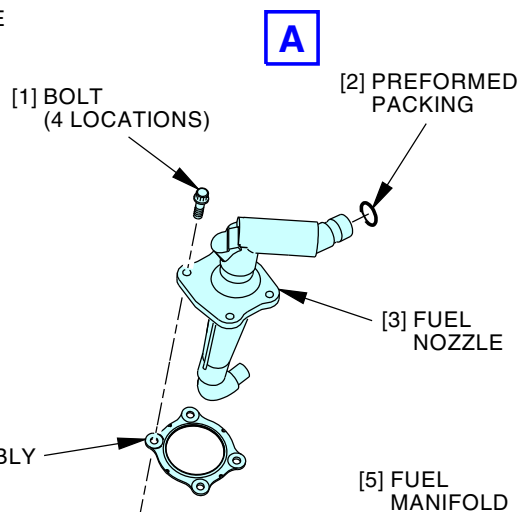
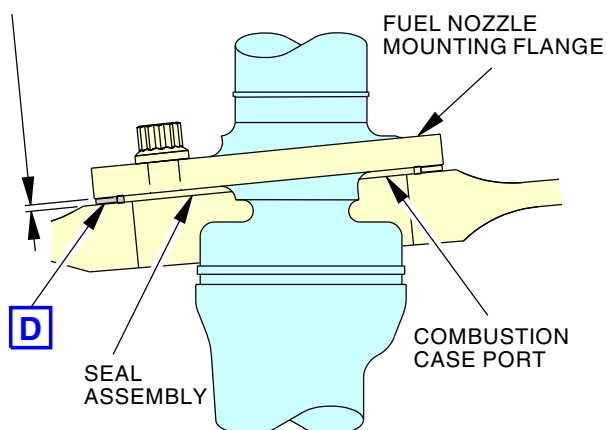
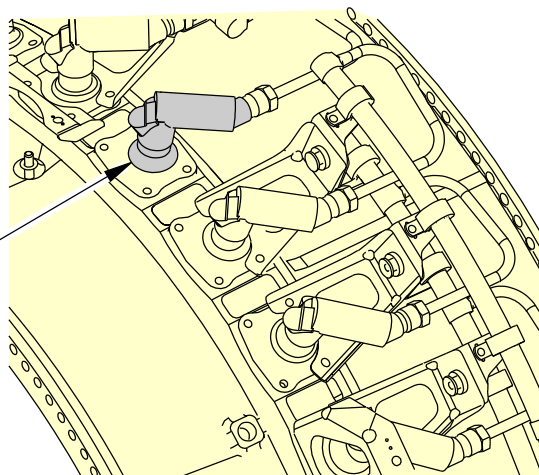
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SHIM CHECK BETWEEN FUEL NOZZLE MOUNTING FLANGE AND SEAL ASSEMBLY OR BETWEEN SEAL ASSEMBLY AND COMBUSTION CASE PORT.



1204169-01-A
M06947 S0004285932_V3

**Seal Assembly Shim Inspection
Figure 416/73-11-05-990-814-H02**

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TASK 73-11-05-400-801-H01

3. Fuel Nozzle Installation

A. General

- (1) This task contains the installation instructions of the fuel nozzle(s).
- (2) You must do the tests that are listed in the power plant test reference table after the replacement of a fuel nozzle.

B. References

Reference	Title
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
71-00-00-800-833-H00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-814-H00	Close the Fan Cowl Panel (Selection) (P/B 201)
72-41-01-400-801-H01	Left Combustion Skirt Panel Installation (P/B 401)
72-41-01-400-802-H01	Center Combustion Skirt Panel Installation (P/B 401)
72-41-01-400-803-H01	Right Combustion Skirt Panel Installation (P/B 401)
73-11-05-300-801-H01	Fuel Nozzle Repair (P/B 801)
78-31-00-410-816-H00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-805-H00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-371	Gauge - Feeler, 0.0 to 0.5 in (0.0 to 12.7 mm), Readable to 1/1000 in (.025 mm)

D. Consumable Materials

Reference	Description	Specification
D00504	Grease - Petrolatum	VV-P-236
D50043 [C02-058]	Compound - Antiseize, Acheson GP460 (For Threaded Fasteners 0.250 Inches Diameter Or Larger, C02-079 Is An Alternative)	GE A50TF201 Class A

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Preformed packing	73-11-05-04-025	ARO ALL
3	Fuel nozzle	73-11-05-04-030	ARO ALL
		73-11-05-04-035	ARO ALL
4	Seal assembly	73-11-05-04-010	ARO ALL

F. Access Panels

Number	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

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G. Fuel Nozzle Installation

SUBTASK 73-11-05-420-001-H01



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (1) Identify the fuel nozzle type and position.

NOTE: The fuel nozzles are given position numbers in a clockwise (CW) sequence, when viewed in the forward direction. Fuel nozzle number 1 is at the 12:00 o'clock engine position.

NOTE: For fuel nozzle orientation, the lower igniter is next to the fuel nozzle number 22, the upper igniter is next to fuel nozzle number 24, and the start transient bleed valve is forward of fuel nozzle 24.

SUBTASK 73-11-05-420-002-H01



DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (2) Install the number 1 position fuel nozzle [3] (Figure 401, Figure 404, and Figure 416):
- (a) Remove the protective cover from the port in the combustion case for the fuel nozzle [3].
 - (b) Examine the threaded inserts of the fuel nozzle pad in the combustion case for thread damage.
 - 1) Thread damage is not permitted, do this task: Fuel Nozzle Repair, TASK 73-11-05-300-801-H01.
 - (c) Remove the protective covers from the fuel nozzle [3] inlet fitting and tips, and the fuel manifold B-nut [20].
 - (d) Examine the preformed packing [2] that is installed on the fuel nozzle [3] inlet fitting for cuts or tears.

NOTE: Replacement fuel nozzle(s) are provided with a new preformed packing installed.

 - 1) If you do not see damage, do the step that follows:
 - a) Put grease, D00504 on the preformed packing [2], the fuel nozzle [3] inlet fitting, and the fuel manifold [5] mating fitting.
 - 2) If you see damage, replace the preformed packing [2] as follows:
 - a) Remove and discard the damaged preformed packing [2].
 - b) Put grease, D00504 on the new preformed packing [2].
 - c) Install the new preformed packing [2] on the OD of the fuel nozzle [3] inlet fitting.
 - d) Put grease, D00504 on the fuel nozzle [3] inlet fitting and the fuel manifold [5] mating fitting.

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TO PREVENT HIGH TEMPERATURES BELOW THE COWLING, YOU MUST INSTALL A NEW SEAL ASSEMBLY EACH TIME A FUEL NOZZLE IS REMOVED AND INSTALLED. IF YOU DO NOT, DAMAGE TO COMPONENTS CAN OCCUR.

- (e) Put the new seal assembly [4] on the combustion case port for the fuel nozzle [3].



DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

- (f) Put the fuel nozzle [3] in a position that is aligned radially with the port in the combustion case, and with the fuel fitting facing aft.
- (g) Move the damper bracket [7] out of the way and tilt the mounting flange forward and down and insert the fuel nozzle [3] into the combustion case port.
- (h) Move the fuel nozzle [3] aft until the tips of the fuel nozzle engage with the combustor swirl cups.



MAKE SURE THE SEAL ASSEMBLY, THE FUEL NOZZLE, AND THE BOLT HOLES IN THE COMBUSTION CASE PORT ARE ALIGNED CORRECTLY. IF THE SEAL ASSEMBLY IS NOT ALIGNED CORRECTLY, DAMAGE TO THE ENGINE CAN OCCUR DUE TO THE HIGH NACELLE TEMPERATURE LEAKAGE.

- (i) Make sure the seal assembly [4], the fuel nozzle [3], and the bolt holes in the combustion case port are aligned.
- (j) Put Acheson GP460 compound, D50043 [C02-058] on the threads of the bolts [6].
- (k) Put the damper bracket [7] on the aft face of the combustion case.
- (l) Install the bolts [6] hand tight that attach the damper bracket [7] and the fuel nozzle [3] to the combustion case aft bolt holes.
- (m) Put the fire loop tubes support bracket [47] on the forward face of the combustion case.
- (n) Install the bolts [6] hand tight that attach the support bracket [47] and the fuel nozzle [3] to the combustion case.



TIGHTEN THE BOLTS CORRECTLY. DAMAGE TO THE BOLTS AND THE COMBUSTION CASE CAN OCCUR.

- (o) Tighten the bolts [6] to 110-125 pound-inches (12.4-14.1 Newton-meters).
- (p) Install one bolt [8] to attach the clamp [9] to the damper bracket [7] and the fuel manifold [5].
- 1) Tighten the bolt [8] to 110-120 pound-inches (12.4-13.5.1 Newton-meters).
 - 2) Tighten the other bolt [8] (loosened in the removal task) to 110-120 pound-inches (12.4-13.5.1 Newton-meters).
- (q) Install the two bolts [46] that attach the fire loop tubes [45] to the support bracket [47].
- 1) Tighten the bolts [46] to 110-120 pound-inches (12.4-14.1 Newton-meters).
- (r) Do a seal assembly shim check as follows (Figure 416):

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- 1) Use a 0.0 to 0.5 in (0.0 to 12.7 mm) feeler gauge, STD-371 and set the gauge shim stock at 0.005 inch (0.13 mm).
- 2) Put the 0.005 inch (0.13 mm) gauge shim stock between the combustion case port and the seal assembly or between the fuel nozzle mounting flange and seal assembly at or near the four attachment bolts.

NOTE: If the 0.005 inch (0.13 mm) gauge shim stock can insert in one or two of these locations, that means the fuel nozzle is not correctly seated and must be removed and installed again.

- (s) Connect the fuel manifold B-nut [20] to the fuel nozzle [3] and tighten with your fingers.
- (t) If there is only one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-003-H01 and SUBTASK 73-11-05-860-006-H01.
- (u) If there is more than one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-004-H01 and SUBTASK 73-11-05-860-007-H01.

SUBTASK 73-11-05-420-003-H01



DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (3) Install the number 2 position fuel nozzle [3] (Figure 401, Figure 402, and Figure 416).
 - (a) Remove the protective cover from the port in the combustion case for the fuel nozzle [3]
 - (b) Examine the threaded inserts of the fuel nozzle pad in the combustion case for thread damage.
 - 1) Thread damage is not permitted, do this task: Fuel Nozzle Repair, TASK 73-11-05-300-801-H01.
 - (c) Remove the protective covers from the fuel nozzle [3] inlet fitting and tips, and the fuel manifold B-nut [20].
 - (d) Examine the preformed packing [2] that is installed on the fuel nozzle [3] inlet fitting for cuts or tears.

NOTE: Replacement fuel nozzle(s) are provided with a new preformed packing installed.

- 1) If you do not see damage, do the step that follows:
 - a) Put grease, D00504 on the preformed packing [2], the fuel nozzle [3] inlet fitting, and the fuel manifold [5] mating fitting.
- 2) If you see damage, replace the preformed packing [2] as follows:
 - a) Remove and discard the damaged preformed packing [2].
 - b) Put grease, D00504 on the new preformed packing [2].
 - c) Install the new preformed packing [2] on the OD of the fuel nozzle [3] inlet fitting.
 - d) Put grease, D00504 on the fuel nozzle [3] inlet fitting and the fuel manifold mating fitting.

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TO PREVENT HIGH TEMPERATURES BELOW THE COWLING, YOU MUST INSTALL A NEW SEAL ASSEMBLY EACH TIME A FUEL NOZZLE IS REMOVED AND INSTALLED. IF YOU DO NOT, DAMAGE TO COMPONENTS CAN OCCUR.

- (e) Put the new seal assembly [4] on the combustion case port for the fuel nozzle [3].



DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

- (f) Put the fuel nozzle [3] in a position that is aligned radially with the port in the combustion case, and with fuel fitting facing aft.
- (g) Tilt the mounting flange forward and down and insert the fuel nozzle [3] into the combustion case port.
- (h) Move the fuel nozzle [3] aft until the tips of the fuel nozzle [3] engage with the combustor swirl cups.



MAKE SURE THE SEAL ASSEMBLY, THE FUEL NOZZLE, AND THE BOLT HOLES IN THE COMBUSTION CASE PORT ARE ALIGNED CORRECTLY. IF THE SEAL ASSEMBLY IS NOT ALIGNED CORRECTLY, DAMAGE TO THE ENGINE CAN OCCUR DUE TO THE HIGH NACELLE TEMPERATURE LEAKAGE.

- (i) Make sure the seal assembly [4], the fuel nozzle [3], and the bolt holes in the combustion case port are aligned.
- (j) Put Acheson GP460 compound, D50043 [C02-058] on the threads of the bolts [1].
- (k) Install the four bolts [1] hand tight that attach the fuel nozzle [3] to the combustion case.



TIGHTEN THE BOLTS CORRECTLY. DAMAGE TO THE BOLTS AND THE COMBUSTION CASE CAN OCCUR.

- (l) Tighten the bolts [1] to 110-125 pound-inches (12.4-14.1 Newton-meters).
- (m) Do a seal assembly shim check as follows (Figure 416):
- 1) Use a 0.0 to 0.5 in (0.0 to 12.7 mm) feeler gauge, STD-371 and set the gauge shim stock at 0.005 inch (0.13 mm).
 - 2) Put the 0.005 inch (0.13 mm) gauge shim stock between the combustion case port and the seal assembly or between the fuel nozzle mounting flange and the seal assembly at or near the four attachment bolts.
- NOTE: If the 0.005 inch (0.13 mm) gauge shim stock can insert in one or two of these locations, that means the fuel nozzle is not correctly seated and must be removed and installed again.
- (n) Connect the fuel manifold B-nut [20] to the fuel nozzle [3] and tighten with your fingers.
- (o) If there is only one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-003-H01 and SUBTASK 73-11-05-860-006-H01.
- (p) If there is more than one fuel nozzle installations, do these subtasks: SUBTASK 73-11-05-210-004-H01 and SUBTASK 73-11-05-860-007-H01.

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SUBTASK 73-11-05-420-004-H01



DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (4) Install the number 3 position fuel nozzle [3] (Figure 401, Figure 403, and Figure 416):
- (a) Remove the protective cover from the port in the combustion case for the fuel nozzle [3].
 - (b) Examine the threaded inserts of the fuel nozzle pad in the combustion case for thread damage.
 - 1) Thread damage is not permitted, do this task: Fuel Nozzle Repair, TASK 73-11-05-300-801-H01.
 - (c) Remove the protective covers from the fuel nozzle [3] inlet fitting and tips, and the fuel manifold B-nut [20].
 - (d) Examine the preformed packing [2] that is installed on the fuel nozzle [3] inlet fitting for cuts or tears.

NOTE: Replacement fuel nozzle(s) are provided with a new preformed packing installed.

- 1) If you do not see damage, do the step that follows:
 - a) Put grease, D00504 on the preformed packing [2], the fuel nozzle [3] inlet fitting, and the fuel manifold [5] mating fitting.
- 2) If you see damage, replace the preformed packing [2] as follows:
 - a) Remove and discard the damaged preformed packing [2].
 - b) Put grease, D00504 on the new preformed packing [2].
 - c) Install the new preformed packing [2] on the OD of the fuel nozzle [3] inlet fitting.
 - d) Put grease, D00504 on the fuel nozzle [3] inlet fitting and the fuel manifold [5] mating fitting.



TO PREVENT HIGH TEMPERATURES BELOW THE COWLING, YOU MUST INSTALL A NEW SEAL ASSEMBLY EACH TIME A FUEL NOZZLE IS REMOVED AND INSTALLED. IF YOU DO NOT, DAMAGE TO COMPONENTS CAN OCCUR.

- (e) Put the new seal assembly [4] on the combustion case port for the fuel nozzle [3].



DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

- (f) Put the fuel nozzle [3] in a position that is aligned radially with the port in the combustion case, and with the fuel fitting facing aft.
- (g) Move the damper bracket [7] out of the way and tilt the mounting flange forward and down and insert the fuel nozzle [3] into the combustion case port.

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- (h) Move the fuel nozzle [3] aft until the tips of the fuel nozzle [3] engage in the combustor swirl cups.



MAKE SURE THE SEAL ASSEMBLY, THE FUEL NOZZLE, AND THE BOLT HOLES IN THE COMBUSTION CASE PORT ARE ALIGNED CORRECTLY. IF THE SEAL ASSEMBLY IS NOT ALIGNED CORRECTLY, DAMAGE TO THE ENGINE CAN OCCUR DUE TO THE HIGH NACELLE TEMPERATURE LEAKAGE.

- (i) Make sure the seal assembly [4], the fuel nozzle [3], and the bolt holes in the combustion case port are aligned.
- (j) Put Acheson GP460 compound, D50043 [C02-058] on the threads of the bolts [1] and the bolts [6].
- (k) Put the damper bracket [7] on the aft face of the fuel nozzle [3].
- (l) Install the bolts [6] hand tight that attach the damper bracket [7] and fuel nozzle [3] to the combustion case aft bolt holes.
- (m) Install the bolts [6] hand tight that attach the forward nozzle flange to the combustion case.



TIGHTEN THE BOLTS CORRECTLY. DAMAGE TO THE BOLTS AND THE COMBUSTION CASE CAN OCCUR.

- (n) Tighten the bolts [6] to 110-125 pound-inches (12.1-14.1 Newton-meters).
- (o) Install one bolt [8] that attaches the clamp [9] to the damper bracket [7] and the fuel manifold [5].
 - 1) Tighten the bolt [8] to 110-120 pound-inches (12.4-13.5 Newton-meters).
 - 2) Tighten the other bolt [8] (loosened in the removal task) to 110-120 pound-inches (12.4-13.5 Newton-meters)
- (p) Do a seal assembly shim check as follows (Figure 416):
 - 1) Use a 0.0 to 0.5 in (0.0 to 12.7 mm) feeler gauge, STD-371 and set the gauge shim stock at 0.005 inch (0.13 mm).
 - 2) Put the 0.005 inch (0.13 mm) gauge shim stock between the combustion case port and the seal assembly or between the fuel nozzle mounting flange and the seal assembly at or near the four attachment bolts.

NOTE: If the 0.005 inch (0.13 mm) gauge shim stock can insert in one or two of these locations, that means the fuel nozzle is not correctly seated and must be removed and installed again.
- (q) Connect the fuel manifold B-nut [20] to the fuel nozzle [3] and tighten with your fingers.
- (r) If there is only one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-003-H01 and SUBTASK 73-11-05-860-006-H01.
- (s) If there is more than one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-004-H01 and SUBTASK 73-11-05-860-007-H01.

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SUBTASK 73-11-05-420-005-H01



DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (5) Install the number 4 position fuel nozzle [3] (Figure 401, Figure 405, and Figure 416):
- (a) Remove the protective cover from the port in the combustion case for the fuel nozzle [3].
 - (b) Examine the threaded inserts of the fuel nozzle pad in the combustion case for thread damage.
 - 1) Thread damage is not permitted, do this task: Fuel Nozzle Repair, TASK 73-11-05-300-801-H01.
 - (c) Remove the protective covers from the fuel nozzle [3] inlet fitting and tips, and the fuel manifold B-nut [20].
 - (d) Examine the preformed packing [2] that is installed on the fuel nozzle [3] inlet fitting for cuts or tears.

NOTE: Replacement fuel nozzle(s) are provided with a new preformed packing installed.

- 1) If you do not see damage, do the step that follows:
 - a) Put grease, D00504 on the preformed packing [2], the fuel nozzle [3] inlet fitting, and the fuel manifold [5] mating fitting.
- 2) If you see damage, replace the preformed packing [2] as follows:
 - a) Remove and discard the damaged preformed packing [2].
 - b) Put grease, D00504 on the new preformed packing [2].
 - c) Install the new preformed packing [2] on the OD of the fuel nozzle [3] inlet fitting.
 - d) Put grease, D00504 on the fuel nozzle [3] inlet fitting and the fuel manifold [5] mating fitting.



TO PREVENT HIGH TEMPERATURES BELOW THE COWLING, YOU MUST INSTALL A NEW SEAL ASSEMBLY EACH TIME A FUEL NOZZLE IS REMOVED AND INSTALLED. IF YOU DO NOT, DAMAGE TO COMPONENTS CAN OCCUR.

- (e) Put the new seal assembly [4] on the combustion case port for the fuel nozzle [3].



DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

- (f) Put the fuel nozzle [3] in a position that is aligned radially with the port in the combustion case, and with the fuel fitting facing aft.

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- (g) Tilt the mounting flange forward and down and insert the fuel nozzle [3] into the combustion case port.
- (h) Move the fuel nozzle [3] aft until the tips of the fuel nozzle [3] engage with the combustor swirl cups.



MAKE SURE THE SEAL ASSEMBLY, THE FUEL NOZZLE, AND THE BOLT HOLES IN THE COMBUSTION CASE PORT ARE ALIGNED CORRECTLY. IF THE SEAL ASSEMBLY IS NOT ALIGNED CORRECTLY, DAMAGE TO THE ENGINE CAN OCCUR DUE TO THE HIGH NACELLE TEMPERATURE LEAKAGE.

- (i) Make sure the seal assembly [4], the fuel nozzle [3], and the bolt holes in the combustion case port are aligned.
- (j) Put Acheson GP460 compound, D50043 [C02-058] on the threads of the bolts [6] and the bolt [22].
- (k) Install the bolts [6] hand tight to attach the fuel nozzle [3] to the combustion case aft bolt holes.
- (l) Put the PS3 bracket [10] on the forward face of the fuel nozzle [3].
- (m) Install the bolts [6] hand tight to attach the PS3 bracket [10] and the fuel nozzle [3] to the combustion case forward bolt holes.



TIGHTEN THE BOLTS CORRECTLY. DAMAGE TO THE BOLTS AND THE COMBUSTION CASE CAN OCCUR.

- (n) Tighten the bolts [6] to 110-125 pound-inches (12.4-14.1 Newton-meters).
- (o) Install the clamp [21] that attaches the PS3 tube to the PS3 bracket [10] with the bolt [22].
 - 1) Tighten the bolt [22] to 110-120 pound-inches (12.4-13.5 Newton-meters).
- (p) Do a seal assembly shim check as follows (Figure 416):
 - 1) Use a 0.0 to 0.5 in (0.0 to 12.7 mm) feeler gauge, STD-371 and set the gauge shim stock at 0.005 inch (0.13 mm).
 - 2) Put the 0.005 inch (0.13 mm) gauge shim stock between the combustion case port and the seal assembly or between the fuel nozzle mounting flange and the seal assembly at or near the four attachment bolts.

NOTE: If the 0.005 inch (0.13 mm) gauge shim stock can insert in one or two of these locations, that means the fuel nozzle is not correctly seated and must be removed and installed again.
- (q) Connect the fuel manifold B-nut [20] to the fuel nozzle [3] and tighten with your fingers.
- (r) If there is only one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-003-H01 and SUBTASK 73-11-05-860-006-H01.
- (s) If there is more than one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-004-H01 and SUBTASK 73-11-05-860-007-H01.

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SUBTASK 73-11-05-420-006-H01



DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (6) Install the number 5 position fuel nozzle [3] (Figure 401, Figure 402, and Figure 416):
- (a) Remove the protective cover from the port in the combustion case for the fuel nozzle [3].
 - (b) Examine the threaded inserts of the fuel nozzle pad in the combustion case for thread damage.
 - 1) Thread damage is not permitted, do this task: Fuel Nozzle Repair, TASK 73-11-05-300-801-H01.
 - (c) Remove the protective covers from the fuel nozzle [3] inlet fitting and tips, and the fuel manifold B-nut [20].
 - (d) Examine the preformed packing [2] that is installed on the fuel nozzle [3] inlet fitting for cuts or tears.

NOTE: Replacement fuel nozzle(s) [3] are provided with a new preformed packing [2] installed.

 - 1) If you do not see damage, do the step that follows:
 - a) Put grease, D00504 on the preformed packing [2], the fuel nozzle [3] inlet fitting, and the fuel manifold [5] mating fitting.
 - 2) If you see damage, replace the preformed packing [2] as follows:
 - a) Remove and discard the damaged preformed packing [2].
 - b) Put grease, D00504 on the new preformed packing [2].
 - c) Install the new preformed packing [2] on the OD of the fuel nozzle [3] inlet fitting.
 - d) Put grease, D00504 on the fuel nozzle [3] inlet fitting and the fuel manifold [5] mating fitting.



TO PREVENT HIGH TEMPERATURES BELOW THE COWLING, YOU MUST INSTALL A NEW SEAL ASSEMBLY EACH TIME A FUEL NOZZLE IS REMOVED AND INSTALLED. IF YOU DO NOT, DAMAGE TO COMPONENTS CAN OCCUR.

- (e) Put the new seal assembly [4] on the combustion case port for the fuel nozzle [3].



DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

- (f) Put the fuel nozzle [3] in a position that is aligned radially with the port in the combustion case, and with the fuel fitting facing aft.

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- (g) Tilt the mounting flange forward and down and insert the fuel nozzle [3] into the combustion case port.
- (h) Move the fuel nozzle [3] aft until the tips of the fuel nozzle [3] engage with the combustor swirl cups.

**CAUTION**

MAKE SURE THE SEAL ASSEMBLY, THE FUEL NOZZLE, AND THE BOLT HOLES IN THE COMBUSTION CASE PORT ARE ALIGNED CORRECTLY. IF THE SEAL ASSEMBLY IS NOT ALIGNED CORRECTLY, DAMAGE TO THE ENGINE CAN OCCUR DUE TO THE HIGH NACELLE TEMPERATURE LEAKAGE.

- (i) Make sure the seal assembly [4], the fuel nozzle [3], and the bolt holes in the combustion case port are aligned.
- (j) Put Acheson GP460 compound, D50043 [C02-058] on the threads of the bolts [1].
- (k) Install the bolts [1] hand tight that attach the fuel nozzle [3] to the combustion case.

**CAUTION**

TIGHTEN THE BOLTS CORRECTLY. DAMAGE TO THE BOLTS AND THE COMBUSTION CASE CAN OCCUR.

- (l) Tighten the bolts [1] to 110-125 pound-inches (12.4-14.1 Newton-meters).
 - (m) Do a seal assembly shim check as follows (Figure 416):
 - 1) Use a 0.0 to 0.5 in (0.0 to 12.7 mm) feeler gauge, STD-371 and set the gauge shim stock at 0.005 inch (0.13 mm).
 - 2) Put the 0.005 inch (0.13 mm) gauge shim stock between the combustion case port and the seal assembly or between the fuel nozzle mounting flange and the seal assembly at or near the four attachment bolts.
- NOTE:** If the 0.005 inch (0.13 mm) gauge shim stock can insert in one or two of these locations, that means the fuel nozzle is not correctly seated and must be removed and installed again.
- (n) Connect the fuel manifold B-nut [20] to the fuel nozzle [3] and tighten with your fingers.
 - (o) If there is only one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-003-H01 and SUBTASK 73-11-05-860-006-H01.
 - (p) If there is more than one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-004-H01 and SUBTASK 73-11-05-860-007-H01.

SUBTASK 73-11-05-420-007-H01

**WARNING**

DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.

**CAUTION**

DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (7) Install the number 6 position fuel nozzle [3] (Figure 401, Figure 406, and Figure 416):
 - (a) Remove the protective cover from the port in the combustion case for the fuel nozzle [3].

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- (b) Examine the threaded inserts of the fuel nozzle pad in the combustion case for thread damage.
 - 1) Thread damage is not permitted, do this task: Fuel Nozzle Repair, TASK 73-11-05-300-801-H01.
- (c) Remove the protective covers from the fuel nozzle [3] inlet fitting and tips, and the fuel manifold B-nut [20].
- (d) Examine the preformed packing [2] that is installed on the fuel nozzle [3] inlet fitting for cuts or tears.

NOTE: Replacement fuel nozzle(s) are provided with a new preformed packing installed.

- 1) If you do not see damage, do the step that follows:
 - a) Put grease, D00504 on the preformed packing [2], the fuel nozzle [3] inlet fitting, and the fuel manifold B-nut [20].
- 2) If you see damage, replace the preformed packing [2] as follows:
 - a) Remove and discard the damaged preformed packing [2].
 - b) Put grease, D00504 on new preformed packing [2].
 - c) Install the new preformed packing [2] on the OD of the fuel nozzle [3] inlet fitting.
 - d) Put grease, D00504 on the fuel nozzle [3] inlet fitting and the fuel manifold [5] mating fitting.

**CAUTION**

TO PREVENT HIGH TEMPERATURES BELOW THE COWLING, YOU MUST INSTALL A NEW SEAL ASSEMBLY EACH TIME A FUEL NOZZLE IS REMOVED AND INSTALLED. IF YOU DO NOT, DAMAGE TO COMPONENTS CAN OCCUR.

- (e) Put the new seal assembly [4] on the combustion case port for the fuel nozzle [3].

**CAUTION**

DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

- (f) Put the fuel nozzle [3] in a position that is aligned radially with the port in the combustion case, and with the fuel fitting facing aft.
- (g) Move the damper bracket [7A] out of the way and tilt the mounting flange forward and down and insert the fuel nozzle [3] into the combustion case port.
- (h) Move the fuel nozzle [3] aft until the tips of the fuel nozzle [3] engage with the combustor swirl cups.

**CAUTION**

MAKE SURE THE SEAL ASSEMBLY, THE FUEL NOZZLE, AND THE BOLT HOLES IN THE COMBUSTION CASE PORT ARE ALIGNED CORRECTLY. IF THE SEAL ASSEMBLY IS NOT ALIGNED CORRECTLY, DAMAGE TO THE ENGINE CAN OCCUR DUE TO THE HIGH NACELLE TEMPERATURE LEAKAGE.

- (i) Make sure the seal assembly [4], the fuel nozzle [3], and the bolt holes in the combustion case port are aligned.
- (j) Put Acheson GP460 compound, D50043 [C02-058] on the threads of the bolts [6].
- (k) Put the damper bracket [7A] on the aft face of the fuel nozzle [3].

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- (l) Install the bolts [6] hand tight to attach the damper bracket [7A] and the fuel nozzle [3] to the combustion case aft bolt holes.
- (m) Put the PS3 bracket [10] on the forward face of the fuel nozzle [3].
- (n) Install the bolts [6] hand tight to attach the PS3 bracket [10] and the fuel nozzle [3] to the combustion case forward bolt holes.

**CAUTION**

TIGHTEN THE BOLTS CORRECTLY. DAMAGE TO THE BOLTS AND THE COMBUSTION CASE CAN OCCUR.

- (o) Tighten the bolts [6] to 110-125 pound-inches (12.4-14.1 Newton-meters).
- (p) Install one bolt [8] to attach clamp [9] to the damper bracket [7A] and the fuel manifold [5].
 - 1) Tighten the bolt [8] to 110-120 pound-inches (12.4-13.5 Newton-meters).
 - 2) Tighten the other bolt [8] (loosened in the removal task) to 110-120 pound-inches (12.4-13.5 Newton-meters).
- (q) Install the bolt [24] to attach the clamp [23] to the PS3 bracket [10].
 - 1) Tighten the bolt [24] to 110-120 pound-inches (12.4-13.5 Newton-meters).
- (r) Do a seal assembly shim check as follows (Figure 416):
 - 1) Use a 0.0 to 0.5 in (0.0 to 12.7 mm) feeler gauge, STD-371 and set the gauge shim stock at 0.005 inch (0.13 mm).
 - 2) Put the 0.005 inch (0.13 mm) gauge shim stock between the combustion case port and the seal assembly or between the fuel nozzle mounting flange and the seal assembly at or near the four attachment bolts.

NOTE: If the 0.005 inch (0.13 mm) gauge shim stock can insert in one or two of these locations, that means the fuel nozzle is not correctly seated and must be removed and installed again.
- (s) Connect the fuel manifold B-nut [20] to the fuel nozzle [3] and tighten with your fingers.
- (t) If there is only one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-003-H01 and SUBTASK 73-11-05-860-006-H01.
- (u) If there is more than one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-004-H01 and SUBTASK 73-11-05-860-007-H01.

SUBTASK 73-11-05-420-008-H01

**WARNING**

DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.

**CAUTION**

DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (8) Install the number 7 position fuel nozzle [3] (Figure 401, Figure 402, and Figure 416):
 - (a) Remove the protective cover from the port in the combustion case for the fuel nozzle [3].
 - (b) Examine the threaded inserts of the fuel nozzle pad in the combustion case for thread damage.

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- 1) Thread damage is not permitted, do this task: Fuel Nozzle Repair, TASK 73-11-05-300-801-H01.
- (c) Remove the protective covers from the fuel nozzle [3] inlet fitting and tips, and the fuel manifold B-nut [20].
- (d) Examine the preformed packing [2] that is installed on the fuel nozzle [3] inlet fitting for cuts or tears.

NOTE: Replacement fuel nozzle(s) are provided with a new preformed packing installed.

- 1) If you do not see damage, do the step that follows:
 - a) Put grease, D00504 on the preformed packing [2], the fuel nozzle [3] inlet fitting, and the fuel manifold [5] mating fitting.
- 2) If you see damage, replace the preformed packing [2] as follows:
 - a) Remove and discard the damaged preformed packing [2].
 - b) Put grease, D00504 on the new preformed packing [2].
 - c) Install the new preformed packing [2] on the OD of the fuel nozzle [3] inlet fitting.
 - d) Put grease, D00504 on the fuel nozzle [3] inlet fitting and the fuel manifold [5] mating fitting.



TO PREVENT HIGH TEMPERATURES BELOW THE COWLING, YOU MUST INSTALL A NEW SEAL ASSEMBLY EACH TIME A FUEL NOZZLE IS REMOVED AND INSTALLED. IF YOU DO NOT, DAMAGE TO COMPONENTS CAN OCCUR.

- (e) Put the new seal assembly [4] on the combustion case port for the fuel nozzle [3].



DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

- (f) Put the fuel nozzle [3] in a position that is aligned radially with the port in the combustion case, and with the fuel fitting facing aft.
- (g) Tilt the mounting flange forward and down and insert the fuel nozzle [3] into the combustion case port.
- (h) Move the fuel nozzle [3] aft until the tips of the fuel nozzle [3] engage with the combustor swirl cups.



MAKE SURE THE SEAL ASSEMBLY, THE FUEL NOZZLE, AND THE BOLT HOLES IN THE COMBUSTION CASE PORT ARE ALIGNED CORRECTLY. IF THE SEAL ASSEMBLY IS NOT ALIGNED CORRECTLY, DAMAGE TO THE ENGINE CAN OCCUR DUE TO THE HIGH NACELLE TEMPERATURE LEAKAGE.

- (i) Make sure the seal assembly [4], the fuel nozzle [3], and the bolt holes in the combustion case port are aligned.
- (j) Put Acheson GP460 compound, D50043 [C02-058] on the threads of the bolts [1].
- (k) Install the bolts [1] hand tight that attach the fuel nozzle [3] to the combustion case.

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**CAUTION**

TIGHTEN THE BOLTS CORRECTLY. DAMAGE TO THE BOLTS AND THE COMBUSTION CASE CAN OCCUR.

- (l) Tighten the bolts [1] to 110-125 pound-inches (12.4-14.1 Newton-meters).
- (m) Do a seal assembly shim check as follows (Figure 416):
 - 1) Use a 0.0 to 0.5 in (0.0 to 12.7 mm) feeler gauge, STD-371 and set the gauge shim stock at 0.005 inch (0.13 mm).
 - 2) Put the 0.005 inch (0.13 mm) gauge shim stock between the combustion case port and the seal assembly or between the fuel nozzle mounting flange and the seal assembly at or near the four attachment bolts.

NOTE: If the 0.005 inch (0.13 mm) gauge shim stock can insert in one or two of these locations, that means the fuel nozzle is not correctly seated and must be removed and installed again.
- (n) Connect the fuel manifold B-nut [20] to the fuel nozzle [3] and tighten with your fingers.
- (o) If there is only one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-003-H01 and SUBTASK 73-11-05-860-006-H01.
- (p) If there is more than one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-004-H01 and SUBTASK 73-11-05-860-007-H01.

SUBTASK 73-11-05-420-009-H01

**WARNING**

DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.

**CAUTION**

DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (9) Install the number 8 position fuel nozzle [3] (Figure 401, Figure 402, and Figure 416):
 - (a) Remove the protective cover from the port in the combustion case for the fuel nozzle [3].
 - (b) Examine the threaded inserts of the fuel nozzle pad in the combustion case for thread damage.
 - 1) Thread damage is not permitted, do this task: Fuel Nozzle Repair, TASK 73-11-05-300-801-H01.
 - (c) Remove the protective covers from the fuel nozzle [3] inlet fitting and tips, and the fuel manifold B-nut [20].
 - (d) Examine the preformed packing [2] that is installed on the fuel nozzle [3] inlet fitting for cuts or tears.

NOTE: Replacement fuel nozzle(s) are provided with a new preformed packing installed.

 - 1) If you do not see damage, do the step that follows:
 - a) Put grease, D00504 on the preformed packing [2], the fuel nozzle [3] inlet fitting, and the fuel manifold [5] mating fitting.
 - 2) If you see damage, replace the preformed packing [2] as follows:

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- a) Remove and discard the damaged preformed packing [2].
- b) Put grease, D00504 on the new preformed packing [2].
- c) Install the new preformed packing [2] on the OD of the fuel nozzle [3] inlet fitting.
- d) Put grease, D00504 on the fuel nozzle [3] inlet fitting and the fuel manifold [5] mating fitting.

**CAUTION**

TO PREVENT HIGH TEMPERATURES BELOW THE COWLING, YOU MUST INSTALL A NEW SEAL ASSEMBLY EACH TIME A FUEL NOZZLE IS REMOVED AND INSTALLED. IF YOU DO NOT, DAMAGE TO COMPONENTS CAN OCCUR.

- (e) Put the new seal assembly [4] on the combustion case port for the fuel nozzle [3].

**CAUTION**

DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

- (f) Put the fuel nozzle [3] in a position that is aligned radially with the port in the combustion case, and with the fuel fitting facing aft.
- (g) Tilt the mounting flange forward and down and insert the fuel nozzle [3] into the combustion case port.
- (h) Move the fuel nozzle [3] aft until the tips of the fuel nozzle [3] engage with the combustor swirl cups.

**CAUTION**

MAKE SURE THE SEAL ASSEMBLY, THE FUEL NOZZLE, AND THE BOLT HOLES IN THE COMBUSTION CASE PORT ARE ALIGNED CORRECTLY. IF THE SEAL ASSEMBLY IS NOT ALIGNED CORRECTLY, DAMAGE TO THE ENGINE CAN OCCUR DUE TO THE HIGH NACELLE TEMPERATURE LEAKAGE.

- (i) Make sure the seal assembly [4], the fuel nozzle [3], and the bolt holes in the combustion case port are aligned.
- (j) Put Acheson GP460 compound, D50043 [C02-058] on the threads of the bolts [1].
- (k) Install the bolts [1] hand tight that attach the fuel nozzle [3] to the combustion case.

**CAUTION**

TIGHTEN THE BOLTS CORRECTLY. DAMAGE TO THE BOLTS AND THE COMBUSTION CASE CAN OCCUR.

- (l) Tighten the bolts [1] to 110-125 pound-inches (12.4-14.1 Newton-meters).
- (m) Do a seal assembly shim check as follows (Figure 416):
 - 1) Use a 0.0 to 0.5 in (0.0 to 12.7 mm) feeler gauge, STD-371 and set the gauge shim stock at 0.005 inch (0.13 mm).

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- 2) Put the 0.005 inch (0.13 mm) gauge shim stock between the combustion case port and the seal assembly or between the fuel nozzle mounting flange and the seal assembly at or near the four attachment bolts.

NOTE: If the 0.005 inch (0.13 mm) gauge shim stock can insert in one or two of these locations, that means the fuel nozzle is not correctly seated and must be removed and installed again.

- (n) Connect the fuel manifold B-nut [20] to the fuel nozzle [3] and tighten with your fingers.
- (o) If there is only one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-003-H01 and SUBTASK 73-11-05-860-006-H01.
- (p) If there is more than one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-004-H01 and SUBTASK 73-11-05-860-007-H01.

SUBTASK 73-11-05-420-010-H01



DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (10) Install the number 9 position fuel nozzle [3] (Figure 401, Figure 407, and Figure 416):
- (a) Remove the protective cover from the port in the combustion case for the fuel nozzle [3].
- (b) Examine the threaded inserts of the fuel nozzle pad in the combustion case for thread damage.
- 1) Thread damage is not permitted, do this task: Fuel Nozzle Repair, TASK 73-11-05-300-801-H01.
- (c) Remove the protective covers from the fuel nozzle [3] inlet fitting and tips, and the fuel manifold B-nut [20].
- (d) Examine the preformed packing [2] that is installed on the fuel nozzle [3] inlet fitting for cuts or tears.

NOTE: Replacement fuel nozzle(s) are provided with a new preformed packing installed.

- 1) If you do not see damage, do the step that follows:
- a) Put grease, D00504 on the preformed packing [2], the fuel nozzle [3] inlet fitting, and the fuel manifold [5] mating fitting.
- 2) If you see damage, replace the preformed packing [2] as follows:
- a) Remove and discard the damaged preformed packing [2].
- b) Put grease, D00504 on the new preformed packing [2].
- c) Install the new preformed packing [2] on the OD of the fuel nozzle [3] inlet fitting.
- d) Put grease, D00504 on the fuel nozzle [3] inlet fitting and the fuel manifold [5] mating fitting.

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TO PREVENT HIGH TEMPERATURES BELOW THE COWLING, YOU MUST INSTALL A NEW SEAL ASSEMBLY EACH TIME A FUEL NOZZLE IS REMOVED AND INSTALLED. IF YOU DO NOT, DAMAGE TO COMPONENTS CAN OCCUR.

- (e) Put the new seal assembly [4] on the combustion case port for the fuel nozzle [3].



DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

- (f) Put the fuel nozzle [3] in a position that is aligned radially with the port in the combustion case, and with the fuel fittings facing aft.
- (g) Move the damper bracket [7A] out of the way and tilt the mounting flange forward and down and insert the fuel nozzle [3] into the combustion case port.
- (h) Move the fuel nozzle [3] aft until the tips of the fuel nozzle [3] engage with the combustor swirl cups.



MAKE SURE THE SEAL ASSEMBLY, THE FUEL NOZZLE, AND THE BOLT HOLES IN THE COMBUSTION CASE PORT ARE ALIGNED CORRECTLY. IF THE SEAL ASSEMBLY IS NOT ALIGNED CORRECTLY, DAMAGE TO THE ENGINE CAN OCCUR DUE TO THE HIGH NACELLE TEMPERATURE LEAKAGE.

- (i) Make sure the seal assembly [4], the fuel nozzle [3], and the bolt holes in the combustion case port are aligned.
- (j) Put Acheson GP460 compound, D50043 [C02-058] on the threads of the bolts [6].
- (k) Put the damper bracket [7A] on the combustion case aft bolt holes.
- (l) Install the bolts [6] hand tight that attach the damper bracket [7A] and fuel nozzle [3] to the combustion case aft bolt holes.
- (m) Put the support bracket [12] on the forward face of both position 9 and position 10 fuel nozzles [3] and install bolts [6] hand tight to the combustion case forward bolt holes for both fuel nozzles.



TIGHTEN THE BOLTS CORRECTLY. DAMAGE TO THE BOLTS AND THE COMBUSTION CASE CAN OCCUR.

- (n) Tighten the bolts [6] to 110-125 pound-inches (12.4-14.1 Newton-meters).
- (o) Install the bolt [8] to the clamp [9] to attach the damper bracket [7A] and the fuel manifold [5].
- 1) Tighten the bolt [8] to 110-120 pound-inches (12.4-13.5 Newton-meters).
 - 2) Tighten the other bolt [8] (loosened in the removal task) to 110-120 pound-inches (12.4-13.5 Newton-meters).
- (p) Install the bolts [26] to attach the hose clamp [25] to the support bracket [12].
- 1) Tighten the bolts [26] to 110-120 pound-inches (12.4-13.5 Newton-meters).
- (q) Do a seal assembly shim check as follows (Figure 416):

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- 1) Use a 0.0 to 0.5 in (0.0 to 12.7 mm) feeler gauge, STD-371 and set the gauge shim stock at 0.005 inch (0.13 mm).
- 2) Put the 0.005 inch (0.13 mm) gauge shim stock between the combustion case port and the seal assembly or between the fuel nozzle mounting flange and the seal assembly at or near the four attachment bolts.

NOTE: If the 0.005 inch (0.13 mm) gauge shim stock can insert in one or two of these locations, that means the fuel nozzle is not correctly seated and must be removed and installed again.

- (r) Connect the fuel manifold B-nut [20] to the fuel nozzle [3] and tighten with your fingers.
- (s) If there is only one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-003-H01 and SUBTASK 73-11-05-860-006-H01.
- (t) If there is more than one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-004-H01 and SUBTASK 73-11-05-860-007-H01.

SUBTASK 73-11-05-420-011-H01



DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (11) Install the number 10 position fuel nozzle [3] (Figure 401, Figure 407, and Figure 416):
 - (a) Remove the protective cover from the port in the combustion case for the fuel nozzle [3].
 - (b) Examine the threaded inserts of the fuel nozzle pad in the combustion case for thread damage.
 - 1) Thread damage is not permitted, do this task: Fuel Nozzle Repair, TASK 73-11-05-300-801-H01.
 - (c) Remove the protective covers from the fuel nozzle [3] inlet fitting and tips, and the fuel manifold B-nut [20].
 - (d) Examine the preformed packing [2] that is installed on the fuel nozzle [3] inlet fitting for cuts or tears.

NOTE: Replacement fuel nozzle(s) are provided with a new preformed packing installed.

- 1) If you do not see damage, do the step that follows:
 - a) Put grease, D00504 on the preformed packing [2], the fuel nozzle [3] inlet fitting, and the fuel manifold [5] mating fitting.
- 2) If you see damage, replace the preformed packing [2] as follows:
 - a) Remove and discard the damaged preformed packing [2].
 - b) Put grease, D00504 on the new preformed packing [2].
 - c) Install the new preformed packing [2] on the OD of the fuel nozzle [3] inlet fitting.
 - d) Put grease, D00504 on the fuel nozzle [3] inlet fitting and the fuel manifold [5] mating fitting.

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TO PREVENT HIGH TEMPERATURES BELOW THE COWLING, YOU MUST INSTALL A NEW SEAL ASSEMBLY EACH TIME A FUEL NOZZLE IS REMOVED AND INSTALLED. IF YOU DO NOT, DAMAGE TO COMPONENTS CAN OCCUR.

- (e) Put the new seal assembly [4] on the combustion case port for the fuel nozzle [3].



DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

- (f) Put the fuel nozzle [3] in a position that is aligned radially with the port in the combustion case, and with the fuel fittings facing aft.
- (g) Tilt the mounting flange forward and down and insert the fuel nozzle [3] into the combustion case port.
- (h) Move the fuel nozzle [3] aft until the tips of the fuel nozzle [3] engage with the combustor swirl cups.



MAKE SURE THE SEAL ASSEMBLY, THE FUEL NOZZLE, AND THE BOLT HOLES IN THE COMBUSTION CASE PORT ARE ALIGNED CORRECTLY. IF THE SEAL ASSEMBLY IS NOT ALIGNED CORRECTLY, DAMAGE TO THE ENGINE CAN OCCUR DUE TO THE HIGH NACELLE TEMPERATURE LEAKAGE.

- (i) Make sure the seal assembly [4], the fuel nozzle [3], and the bolt holes in the combustion case port are aligned.
- (j) Put Acheson GP460 compound, D50043 [C02-058] on the threads of the bolts [6].
- (k) Install the bolts [6] hand tight that attach the fuel nozzle [3] to the combustion case aft bolt holes.
- (l) Put the support bracket [12] on the forward face of both position 9 and position 10 fuel nozzles [3] and install the bolts [6] hand tight to the combustion case forward bolt holes.



TIGHTEN THE BOLTS CORRECTLY. DAMAGE TO THE BOLTS AND THE COMBUSTION CASE CAN OCCUR.

- (m) Tighten the bolts [6] to 110-125 pound-inches (12.4-14.1 Newton-meters).
- (n) Install the bolts [26] to attach the hose clamp [25] to the support bracket [12].
- 1) Tighten the bolts [26] to 110-120 pound-inches (12.4-13.5 Newton-meters).
- (o) Do a seal assembly shim check as follows (Figure 416):
- 1) Use a 0.0 to 0.5 in (0.0 to 12.7 mm) feeler gauge, STD-371 and set the gauge shim stock at 0.005 inch (0.13 mm).
 - 2) Put the 0.005 inch (0.13 mm) gauge shim stock between the combustion case port and the seal assembly or between the fuel nozzle mounting flange and the seal assembly at or near the four attachment bolts.

NOTE: If the 0.005 inch (0.13 mm) gauge shim stock can insert in one or two of these locations, that means the fuel nozzle is not correctly seated and must be removed and installed again.

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- (p) Connect the fuel manifold B-nut [20] to the fuel nozzle [3] and tighten with your fingers.
- (q) If there is only one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-003-H01 and SUBTASK 73-11-05-860-006-H01.
- (r) If there is more than one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-004-H01 and SUBTASK 73-11-05-860-007-H01.
- (s) Install the right combustion skirt panel (TASK 72-41-01-400-803-H01).

SUBTASK 73-11-05-420-012-H01



DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (12) Install the number 11 position fuel nozzle [3] (Figure 401, and Figure 416):
 - (a) Remove the protective cover from the port in the combustion case for the fuel nozzle [3].
 - (b) Examine the threaded inserts of the fuel nozzle pad in the combustion case for thread damage.
 - 1) Thread damage is not permitted, do this task: Fuel Nozzle Repair, TASK 73-11-05-300-801-H01.
 - (c) Remove the protective covers from the fuel nozzle [3] inlet fitting and tips, and the fuel manifold B-nut [20].
 - (d) Examine the preformed packing [2] that is installed on the fuel nozzle [3] inlet fitting for cuts or tears.

NOTE: Replacement fuel nozzle(s) are provided with a new preformed packing installed.

- 1) If you do not see damage, do the step that follows:
 - a) Put grease, D00504 on the preformed packing [2], the fuel nozzle [3] inlet fitting, and the fuel manifold [5] mating fitting.
- 2) If you see damage, replace the preformed packing [2] as follows:
 - a) Remove and discard the damaged preformed packing [2].
 - b) Put grease, D00504 on new preformed packing [2].
 - c) Install the new preformed packing [2] on the OD of the fuel nozzle [3] inlet fitting.
 - d) Put grease, D00504 on the fuel nozzle [3] inlet fitting and the fuel manifold [5] mating fitting.



TO PREVENT HIGH TEMPERATURES BELOW THE COWLING, YOU MUST INSTALL A NEW SEAL ASSEMBLY EACH TIME A FUEL NOZZLE IS REMOVED AND INSTALLED. IF YOU DO NOT, DAMAGE TO COMPONENTS CAN OCCUR.

- (e) Put the new seal assembly [4] on the combustion case port for the fuel nozzle [3].

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DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

- (f) Put the fuel nozzle [3] in a position that is aligned radially with the port in the combustion case, and with the fuel fitting facing aft.
- (g) Move the damper bracket [7] out of the way and tilt the mounting flange forward and down and insert the fuel nozzle [3] into the combustion case port.
- (h) Move the fuel nozzle [3] aft until the tips of the fuel nozzle [3] engage with the combustor swirl cups.



MAKE SURE THE SEAL ASSEMBLY, THE FUEL NOZZLE, AND THE BOLT HOLES IN THE COMBUSTION CASE PORT ARE ALIGNED CORRECTLY. IF THE SEAL ASSEMBLY IS NOT ALIGNED CORRECTLY, DAMAGE TO THE ENGINE CAN OCCUR DUE TO THE HIGH NACELLE TEMPERATURE LEAKAGE.

- (i) Make sure the seal assembly [4] and the bolt holes in the combustion case port are aligned.
- (j) Put Acheson GP460 compound, D50043 [C02-058] on the threads of the bolts [6].
- (k) Put the damper bracket [7] on the aft face of the fuel nozzle [3].
- (l) Install the bolts [6] hand tight that attach the damper bracket [7] and the fuel nozzle [3] to the combustion case aft bolt holes.
- (m) Put support bracket [51] on the forward face of the fuel nozzle [3].
- (n) Install the bolts [6] hand tight that attach the support bracket [51] and the fuel nozzle [3] to the combustion case forward bolt holes.



TIGHTEN THE BOLTS CORRECTLY. DAMAGE TO THE BOLTS AND THE COMBUSTION CASE CAN OCCUR.

- (o) Tighten the bolts [6] to 110-125 pound-inches (12.4-14.1 Newton-meters).
- (p) Install the one bolt [8] to the clamp [9] to attach the damper bracket [7] and the fuel manifold [5].
 - 1) Tighten the bolt [8] to 110-120 pound-inches (12.4-13.5 Newton-meters).
 - 2) Tighten the other bolt [8] (loosened in the removal task) to 110-120 pound-inches (12.4-13.5 Newton-meters).
- (q) Install the clamp [50] with the bolt [49] that attaches the tube [52] to the support bracket [51].
 - 1) Tighten the bolt [49] to 110-120 pound-inches (12.4-13.5 Newton-meters).
- (r) Do a seal assembly shim check as follows (Figure 416):
 - 1) Use a 0.0 to 0.5 in (0.0 to 12.7 mm) feeler gauge, STD-371 and set the gauge shim stock at 0.005 inch (0.13 mm).

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- 2) Put the 0.005 inch (0.13 mm) gauge shim stock between the combustion case port and the seal assembly or between the fuel nozzle mounting flange and the seal assembly at or near the four attachment bolts.

NOTE: If the 0.005 inch (0.13 mm) gauge shim stock can insert in one or two of these locations, that means the fuel nozzle is not correctly seated and must be removed and installed again.

- (s) Connect the fuel manifold B-nut [20] to the fuel nozzle [3] and tighten with your fingers.
- (t) If there is only one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-003-H01 and SUBTASK 73-11-05-860-006-H01.
- (u) If there is more than one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-004-H01 and SUBTASK 73-11-05-860-007-H01.
- (v) Install the right combustion skirt panel (TASK 72-41-01-400-803-H01).

SUBTASK 73-11-05-420-013-H01



DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (13) Install the number 12 position fuel nozzle [3] (Figure 401, Figure 402, and Figure 416)
 - (a) Remove the protective cover from the port in the combustion case for the fuel nozzle [3].
 - (b) Examine the threaded inserts of the fuel nozzle pad in the combustion case for thread damage.
 - 1) Thread damage is not permitted, do this task: Fuel Nozzle Repair, TASK 73-11-05-300-801-H01.
 - (c) Remove the protective covers from the fuel nozzle [3] inlet fitting and tips, and the fuel manifold B-nut [20].
 - (d) Examine the preformed packing [2] that is installed on the fuel nozzle [3] inlet fitting for cuts or tears.

NOTE: Replacement fuel nozzle(s) are provided with a new preformed packing installed.

 - 1) If you do not see damage, do the step that follows:
 - a) Put grease, D00504 on the preformed packing [2], the fuel nozzle [3] inlet fitting, and the fuel manifold [5] mating fitting.
 - 2) If you see damage, replace the preformed packing [2] as follows:
 - a) Remove and discard the damaged preformed packing [2].
 - b) Put grease, D00504 on new preformed packing [2].
 - c) Install the new preformed packing [2] on the OD of the fuel nozzle [3] inlet fitting.
 - d) Put grease, D00504 on the fuel nozzle [3] inlet fitting and the fuel manifold [5] mating fitting.

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**CAUTION**

TO PREVENT HIGH TEMPERATURES BELOW THE COWLING, YOU MUST INSTALL A NEW SEAL ASSEMBLY EACH TIME A FUEL NOZZLE IS REMOVED AND INSTALLED. IF YOU DO NOT, DAMAGE TO COMPONENTS CAN OCCUR.

- (e) Put the new seal assembly [4] on the combustion case port for the fuel nozzle [3].

**CAUTION**

DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

- (f) Put the fuel nozzle [3] in a position that is aligned radially with the port in the combustion case, and with the fuel fitting facing aft.
- (g) Tilt the mounting flange forward and down and insert the fuel nozzle [3] into the combustion case port.
- (h) Move the fuel nozzle [3] aft until the tips of the fuel nozzle [3] engage with the combustor swirl cups.

**CAUTION**

MAKE SURE THE SEAL ASSEMBLY, THE FUEL NOZZLE, AND THE BOLT HOLES IN THE COMBUSTION CASE PORT ARE ALIGNED CORRECTLY. IF THE SEAL ASSEMBLY IS NOT ALIGNED CORRECTLY, DAMAGE TO THE ENGINE CAN OCCUR DUE TO THE HIGH NACELLE TEMPERATURE LEAKAGE.

- (i) Make sure the seal assembly [4], the fuel nozzle [3], and the bolt holes in the combustion case port are aligned.
- (j) Put Acheson GP460 compound, D50043 [C02-058] on the threads of the bolts [1].
- (k) Install the bolts [1] hand tight to attach the fuel nozzle [3] to the combustion case.

**CAUTION**

TIGHTEN THE BOLTS CORRECTLY. DAMAGE TO THE BOLTS AND THE COMBUSTION CASE CAN OCCUR.

- (l) Tighten the bolts [1] to 110-125 pound-inches (12.4-14.1 Newton-meters).
- (m) Do a seal assembly shim check as follows (Figure 416):
- 1) Use a 0.0 to 0.5 in (0.0 to 12.7 mm) feeler gauge, STD-371 and set the gauge shim stock at 0.005 inch (0.13 mm).
 - 2) Put the 0.005 inch (0.13 mm) gauge shim stock between the combustion case port and the seal assembly or between the fuel nozzle mounting flange and the seal assembly at or near the four attachment bolts.
- NOTE: If the 0.005 inch (0.13 mm) gauge shim stock can insert in one or two of these locations, that means the fuel nozzle is not correctly seated and must be removed and installed again.
- (n) Connect the fuel manifold B-nut [20] to the fuel nozzle [3] and tighten with your fingers.
- (o) If there is only one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-003-H01 and SUBTASK 73-11-05-860-006-H01.
- (p) If there is more than one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-004-H01 and SUBTASK 73-11-05-860-007-H01.

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- (q) Install the right combustion skirt panel (TASK 72-41-01-400-803-H01).

SUBTASK 73-11-05-420-014-H01



DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (14) Install the number 13 position fuel nozzle [3] (Figure 401, Figure 409, and Figure 416):
- (a) Remove the protective cover from the port in the combustion case for the fuel nozzle [3].
 - (b) Examine the threaded inserts of the fuel nozzle pad in the combustion case for thread damage.
 - 1) Thread damage is not permitted, do this task: Fuel Nozzle Repair, TASK 73-11-05-300-801-H01.
 - (c) Remove the protective covers from the fuel nozzle [3] inlet fitting and tips, and the fuel manifold B-nut [20].
 - (d) Examine the preformed packing [2] that is installed on the fuel nozzle [3] inlet fitting for cuts or tears.

NOTE: Replacement fuel nozzle(s) are provided with a new preformed packing installed.

- 1) If you do not see damage, do the step that follows:
 - a) Put grease, D00504 on the preformed packing [2], the fuel nozzle [3] inlet fitting, and the fuel manifold [5] mating fitting.
- 2) If you see damage, replace the preformed packing [2] as follows:
 - a) Remove and discard the damaged preformed packing [2].
 - b) Put grease, D00504 on the new preformed packing [2].
 - c) Install the new preformed packing [2] on the OD of the fuel nozzle [3] inlet fitting.
 - d) Put grease, D00504 on the fuel nozzle [3] inlet fitting and the fuel manifold [5] mating fitting.



TO PREVENT HIGH TEMPERATURES BELOW THE COWLING, YOU MUST INSTALL A NEW SEAL ASSEMBLY EACH TIME A FUEL NOZZLE IS REMOVED AND INSTALLED. IF YOU DO NOT, DAMAGE TO COMPONENTS CAN OCCUR.

- (e) Put the new seal assembly [4] on the combustion case port for the fuel nozzle [3].



DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

- (f) Put the fuel nozzle [3] in a position that is aligned radially with the port in the combustion case, and with the fuel fitting facing aft.

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- (g) Move the damper bracket [7A] out of the way and tilt the mounting flange forward and down and insert the fuel nozzle [3] into the combustion case port.
- (h) Move the fuel nozzle [3] aft until the tips of the fuel nozzle [3] engage with the combustor swirl cups.

**CAUTION**

MAKE SURE THE SEAL ASSEMBLY, THE FUEL NOZZLE, AND THE BOLT HOLES IN THE COMBUSTION CASE PORT ARE ALIGNED CORRECTLY. IF THE SEAL ASSEMBLY IS NOT ALIGNED CORRECTLY, DAMAGE TO THE ENGINE CAN OCCUR DUE TO THE HIGH NACELLE TEMPERATURE LEAKAGE.

- (i) Make sure the seal assembly [4], the fuel nozzle [3], and the bolt holes in the combustion case port are aligned.
- (j) Put Acheson GP460 compound, D50043 [C02-058] on the threads of the bolts [6].
- (k) Put the damper bracket [7A] on the aft face of the fuel nozzle [3].
- (l) Install the bolts [6] hand tight to attach the damper bracket [7A] and fuel nozzle [3] to the combustion case aft bolt holes.
- (m) Put the fuel manifold bracket [13] on the forward face of the fuel nozzle [3].
- (n) Install the bolts [6] hand tight to attach the fuel manifold bracket [13] and the fuel nozzle [3] to the combustion case forward bolt holes.

**CAUTION**

TIGHTEN THE BOLTS CORRECTLY. DAMAGE TO THE BOLTS AND THE COMBUSTION CASE CAN OCCUR.

- (o) Tighten the bolts [6] to 110-125 pound-inches (12.4-14.1 Newton-meters).
- (p) Install one bolt [8] to the clamp [9] to attach the damper bracket [7A] and the fuel manifold [5].
 - 1) Tighten the bolt [8] to 110-120 pound-inches (12.4-13.5 Newton-meters).
 - 2) Tighten the other bolt [8] (loosened in the removal task) to 110-120 pound-inches (12.4-13.5 Newton-meters).
- (q) Install the bolts [27] to attach the clamps [28] to the fuel manifold bracket [13].
 - 1) Tighten the bolts [27] to 110-120 pound-inches (12.4-13.5 Newton-meters).
- (r) Do a seal assembly shim check as follows (Figure 416):
 - 1) Use a 0.0 to 0.5 in (0.0 to 12.7 mm) feeler gauge, STD-371 and set the gauge shim stock at 0.005 inch (0.13 mm).
 - 2) Put the 0.005 inch (0.13 mm) gauge shim stock between the combustion case port and the seal assembly or between the fuel nozzle mounting flange and the seal assembly at or near the four attachment bolts.

NOTE: If the 0.005 inch (0.13 mm) gauge shim stock can insert in one or two of these locations, that means the fuel nozzle is not correctly seated and must be removed and installed again.
- (s) Connect the fuel manifold B-nut [20] to the fuel nozzle [3] and tighten with your fingers.
- (t) If there is only one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-003-H01 and SUBTASK 73-11-05-860-006-H01.

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- (u) If there is more than one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-004-H01 and SUBTASK 73-11-05-860-007-H01.
- (v) Install the right combustion skirt panel (TASK 72-41-01-400-803-H01).

SUBTASK 73-11-05-420-015-H01



DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (15) Install the number 14 position fuel nozzle [3] (Figure 401, Figure 403, and Figure 416):
 - (a) Remove the protective cover from the port in the combustion case for the fuel nozzle [3].
 - (b) Examine the threaded inserts of the fuel nozzle pad in the combustion case for thread damage.
 - 1) Thread damage is not permitted, do this task: Fuel Nozzle Repair, TASK 73-11-05-300-801-H01.
 - (c) Remove the protective covers from the fuel nozzle [3] inlet fitting and tips, and the fuel manifold B-nut [20].
 - (d) Examine the preformed packing [2] that is installed on the fuel nozzle [3] inlet fitting for cuts or tears.

NOTE: Replacement fuel nozzle(s) are provided with a new preformed packing installed.

 - 1) If you do not see damage, do the step that follows:
 - a) Put grease, D00504 on the preformed packing [2], the fuel nozzle [3] inlet fitting, and the fuel manifold [5] mating fitting.
 - 2) If you see damage, replace the preformed packing [2] as follows:
 - a) Remove and discard the damaged preformed packing [2].
 - b) Put grease, D00504 on the new preformed packing [2].
 - c) Install the new preformed packing [2] on the OD of the fuel nozzle inlet fitting.
 - d) Put grease, D00504 on the fuel nozzle [3] inlet fitting and the fuel manifold [5] mating fitting.



TO PREVENT HIGH TEMPERATURES BELOW THE COWLING, YOU MUST INSTALL A NEW SEAL ASSEMBLY EACH TIME A FUEL NOZZLE IS REMOVED AND INSTALLED. IF YOU DO NOT, DAMAGE TO COMPONENTS CAN OCCUR.

- (e) Put the new seal assembly [4] on the combustion case port for the fuel nozzle [3].

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DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

- (f) Put the fuel nozzle [3] in a position that is aligned radially with the port in the combustion case, and with the fuel fitting facing aft.
- (g) Move the damper bracket [7] out of the way and tilt the mounting flange forward and down and insert the fuel nozzle [3] into the combustion case port.
- (h) Move the fuel nozzle [3] aft until the tips of the fuel nozzle [3] engage with the combustor swirl cups.



MAKE SURE THE SEAL ASSEMBLY, THE FUEL NOZZLE, AND THE BOLT HOLES IN THE COMBUSTION CASE PORT ARE ALIGNED CORRECTLY. IF THE SEAL ASSEMBLY IS NOT ALIGNED CORRECTLY, DAMAGE TO THE ENGINE CAN OCCUR DUE TO THE HIGH NACELLE TEMPERATURE LEAKAGE.

- (i) Make sure the seal assembly [4], the fuel nozzle [3], and the bolt holes in the combustion case port are aligned.
- (j) Put Acheson GP460 compound, D50043 [C02-058] on the threads of the bolts [6].
- (k) Put the damper bracket [7] on the aft face of the fuel nozzle [3].
- (l) Install the bolts [6] hand tight to attach the damper bracket [7] and the fuel nozzle [3] to the combustion case aft bolt holes.
- (m) Install the bolts [6] hand tight to attach the fuel nozzle [3] to the combustion case forward bolt holes.



TIGHTEN THE BOLTS CORRECTLY. DAMAGE TO THE BOLTS AND THE COMBUSTION CASE CAN OCCUR.

- (n) Tighten the bolts [6] to 110-125 pound-inches (12.4-14.1 Newton-meters).
- (o) Install the one bolt [8] to the clamp [9] to attach the damper bracket [7] and the fuel manifold [5].
 - 1) Tighten the bolt [8] to 110-120 pound-inches (12.4-13.5 Newton meters).
 - 2) Tighten the other bolt [8] (loosened in the removal task) to 110-120 pound-inches (12.4-13.5 Newton-meters).
- (p) Do a seal assembly shim check as follows (Figure 416):
 - 1) Use a 0.0 to 0.5 in (0.0 to 12.7 mm) feeler gauge, STD-371 and set the gauge shim stock at 0.005 inch (0.13 mm).
 - 2) Put the 0.005 inch (0.13 mm) gauge shim stock between the combustion case port and the seal assembly or between the fuel nozzle mounting flange and the seal assembly at or near the four attachment bolts.

NOTE: If the 0.005 inch (0.13 mm) gauge shim stock can insert in one or two of these locations, that means the fuel nozzle is not correctly seated and must be removed and installed again.
- (q) Connect the fuel manifold B-nut [20] to the fuel nozzle [3] and tighten with your fingers.

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- (r) If there is only one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-003-H01 and SUBTASK 73-11-05-860-006-H01.
- (s) If there is more than one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-004-H01 and SUBTASK 73-11-05-860-007-H01.
- (t) Install the center combustion skirt panel (TASK 72-41-01-400-802-H01).

SUBTASK 73-11-05-420-016-H01

**WARNING**

DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.

**CAUTION**

DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (16) Install the number 15 position fuel nozzle [3] (Figure 401, Figure 402, and Figure 416):
- (a) Remove the protective cover from the port in the combustion case for the fuel nozzle [3].
 - (b) Examine the threaded inserts of the fuel nozzle pad in the combustion case for thread damage.
 - 1) Thread damage is not permitted, do this task: Fuel Nozzle Repair, TASK 73-11-05-300-801-H01.
 - (c) Remove the protective covers from the fuel nozzle [3] inlet fitting and tips, and the fuel manifold B-nut [20].
 - (d) Examine the preformed packing [2] that is installed on the fuel nozzle [3] inlet fitting for cuts or tears.
- NOTE:** Replacement fuel nozzle(s) are provided with new a preformed packing installed.
- 1) If you do not see damage, do the step that follows:
 - a) Put grease, D00504 on the preformed packing [2], the fuel nozzle inlet fitting, and the fuel manifold [5] mating fitting.
 - 2) If you see damage, replace the preformed packing [2] as follows:
 - a) Remove and discard the damaged preformed packing [2].
 - b) Put grease, D00504 on new preformed packing [2].
 - c) Install the new preformed packing [2] on the OD of the fuel nozzle inlet fitting.
 - d) Put grease, D00504 on the fuel nozzle [3] inlet fitting and the fuel manifold [5] mating fitting.

**CAUTION**

TO PREVENT HIGH TEMPERATURES BELOW THE COWLING, YOU MUST INSTALL A NEW SEAL ASSEMBLY EACH TIME A FUEL NOZZLE IS REMOVED AND INSTALLED. IF YOU DO NOT, DAMAGE TO COMPONENTS CAN OCCUR.

- (e) Put the new seal assembly [4] on the combustion case port for the fuel nozzle [3].

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DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

- (f) Put the fuel nozzle [3] in a position that is aligned radially with the port in the combustion case, and with the fuel fitting facing aft.
- (g) Tilt the mounting flange forward and down and insert the fuel nozzle [3] into the combustion case port.
- (h) Move the fuel nozzle [3] aft until the tips of the fuel nozzle [3] engage with the combustor swirl cups.



MAKE SURE THE SEAL ASSEMBLY, THE FUEL NOZZLE, AND THE BOLT HOLES IN THE COMBUSTION CASE PORT ARE ALIGNED CORRECTLY. IF THE SEAL ASSEMBLY IS NOT ALIGNED CORRECTLY, DAMAGE TO THE ENGINE CAN OCCUR DUE TO THE HIGH NACELLE TEMPERATURE LEAKAGE.

- (i) Make sure the seal assembly [4], the fuel nozzle [3], and the bolt holes in the combustion case port are aligned.
- (j) Put Acheson GP460 compound, D50043 [C02-058] on the threads of the bolts [1].
- (k) Install the bolts [1] hand tight to attach the fuel nozzle [3] to the combustion case.



TIGHTEN THE BOLTS CORRECTLY. DAMAGE TO THE BOLTS AND THE COMBUSTION CASE CAN OCCUR.

- (l) Tighten the bolts [1] to 110-125 pound-inches (12.4-14.1 Newton-meters).
- (m) Do a seal assembly shim check as follows (Figure 416):
 - 1) Use a 0.0 to 0.5 in (0.0 to 12.7 mm) feeler gauge, STD-371 and set the gauge shim stock at 0.005 inch (0.13 mm).
 - 2) Put the 0.005 inch (0.13 mm) gauge shim stock between the combustion case port and the seal assembly or between the fuel nozzle mounting flange and the seal assembly at or near the four attachment bolts.

NOTE: If the 0.005 inch (0.13 mm) gauge shim stock can insert in one or two of these locations, that means the fuel nozzle is not correctly seated and must be removed and installed again.
- (n) Connect the fuel manifold B-nut [20] to the fuel nozzle [3] and tighten with your fingers.
- (o) If there is only one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-003-H01 and SUBTASK 73-11-05-860-006-H01.
- (p) If there is more than one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-004-H01 and SUBTASK 73-11-05-860-007-H01.
- (q) Install the center combustion skirt panel (TASK 72-41-01-400-802-H01).

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SUBTASK 73-11-05-420-017-H01

**WARNING**

DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.

**CAUTION**

DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (17) Install the number 16 position fuel nozzle [3] (Figure 401, Figure 410, and Figure 416):
- (a) Remove the protective cover from the port in the combustion case for the fuel nozzle [3].
 - (b) Examine the threaded inserts of the fuel nozzle pad in the combustion case for thread damage.
 - 1) Thread damage is not permitted, do this task: Fuel Nozzle Repair, TASK 73-11-05-300-801-H01.
 - (c) Remove the protective covers from the fuel nozzle [3] inlet fitting and tips, and the fuel manifold B-nut [20].
 - (d) Examine the preformed packing [2] that is installed on the fuel nozzle [3] inlet fitting for cuts or tears.
- NOTE:** Replacement fuel nozzle(s) are provided with a new preformed packing installed.
- 1) If you do not see damage, do the step that follows:
 - a) Put grease, D00504 on the preformed packing [2], the fuel nozzle [3] inlet fitting, and the fuel manifold [5] mating fitting.
 - 2) If you see damage, replace the preformed packing [2] as follows:
 - a) Remove and discard the damaged preformed packing [2].
 - b) Put grease, D00504 on the new preformed packing [2].
 - c) Install the new preformed packing [2] on the OD of the fuel nozzle [3] inlet fitting.
 - d) Put grease, D00504 on the fuel nozzle [3] inlet fitting and the fuel manifold [5] mating fitting.

**CAUTION**

TO PREVENT HIGH TEMPERATURES BELOW THE COWLING, YOU MUST INSTALL A NEW SEAL ASSEMBLY EACH TIME A FUEL NOZZLE IS REMOVED AND INSTALLED. IF YOU DO NOT, DAMAGE TO COMPONENTS CAN OCCUR.

- (e) Put the new seal assembly [4] on the combustion case port for the fuel nozzle [3].

**CAUTION**

DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

- (f) Put the fuel nozzle [3] in a position that is aligned radially with the port in the combustion case, and with the fuel fitting facing aft.
- (g) Move the damper bracket [7A] out of the way and tilt the mounting flange forward and down and insert the fuel nozzle [3] into the combustion case port.

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- (h) Move the fuel nozzle [3] aft until the tips of the fuel nozzle [3] engage with the combustor swirl cups.



MAKE SURE THE SEAL ASSEMBLY, THE FUEL NOZZLE, AND THE BOLT HOLES IN THE COMBUSTION CASE PORT ARE ALIGNED CORRECTLY. IF THE SEAL ASSEMBLY IS NOT ALIGNED CORRECTLY, DAMAGE TO THE ENGINE CAN OCCUR DUE TO THE HIGH NACELLE TEMPERATURE LEAKAGE.

- (i) Make sure the seal assembly [4] and the fuel nozzle [3], and the bolt holes in the combustion case port are aligned.
- (j) Put Acheson GP460 compound, D50043 [C02-058] on the threads of the bolts [6].
- (k) Put the damper bracket [7A] on the aft face of the fuel nozzle [3].
- (l) Install the bolts [6] hand tight to attach the damper bracket [7A] and the fuel nozzle [3] to the combustion case aft bolt holes.
- (m) Put the fuel manifold bracket [14] on the forward face of the fuel nozzle [3]
- (n) Install the bolts [6] hand tight to attach the fuel manifold bracket [14] and the fuel nozzle [3] to the combustion case.
- (o) Tighten the bolts [6] with your hand to correctly install the fuel nozzle [3] in the combustion case.



TIGHTEN THE BOLTS CORRECTLY. DAMAGE TO THE BOLTS AND THE COMBUSTION CASE CAN OCCUR.

- (p) Tighten the bolts [6] to 110-125 pounds-inches (12.4-14.1 Newton-meters).
- (q) Install the one bolt [8] to the clamp [9] to attach the damper bracket [7A] and the fuel manifold [5].
 - 1) Tighten the bolt [8] to 110-120 pound-inches (12.4-13.5 newton-meters).
 - 2) Tighten the other bolt [8] (loosened in the removal task) to 110-120 pound-inches (12.4-13.5 Newton-meters).
- (r) Install the bolts [30] to attach clamps [29] to the fuel manifold bracket [14]
 - 1) Tighten the bolts [30] to 110-120 pound-inches (12.4-13.5 Newton-meters).
- (s) Do a seal assembly shim check as follows (Figure 416):
 - 1) Use a 0.0 to 0.5 in (0.0 to 12.7 mm) feeler gauge, STD-371 and set the gauge shim stock at 0.005 inch (0.13 mm).
 - 2) Put the 0.005 inch (0.13 mm) gauge shim stock between the combustion case port and the seal assembly or between the fuel nozzle mounting flange and the seal assembly at or near the four attachment bolts.

NOTE: If the 0.005 inch (0.13 mm) gauge shim stock can insert in one or two of these locations, that means the fuel nozzle is not correctly seated and must be removed and installed again.
- (t) Connect the fuel manifold B-nut [20] to the fuel nozzle [3] and tighten with your fingers.
- (u) If there is only one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-003-H01 and SUBTASK 73-11-05-860-006-H01.

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- (v) If there is more than one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-004-H01 and SUBTASK 73-11-05-860-007-H01.
- (w) Install the center combustion skirt panel (TASK 72-41-01-400-802-H01).

SUBTASK 73-11-05-420-018-H01



DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (18) Install the number 17 position fuel nozzle [3] (Figure 401, Figure 402, and Figure 416):
- (a) Remove the protective cover from the port in the combustion case for the fuel nozzle [3].
 - (b) Examine the threaded inserts of the fuel nozzle pad in the combustion case for thread damage.
 - 1) Thread damage is not permitted, do this task: Fuel Nozzle Repair, TASK 73-11-05-300-801-H01.
 - (c) Remove the protective covers from the fuel nozzle [3] inlet fitting and tips, and the fuel manifold B-nut [20].
 - (d) Examine the preformed packing [2] that is installed on the fuel nozzle [3] inlet fitting for cuts or tears.
- NOTE:** Replacement fuel nozzle(s) are provided with a new preformed packing installed.
- 1) If you do not see damage, do the step that follows:
 - a) Put grease, D00504 on the preformed packing [2], the fuel nozzle [3] inlet fitting, and the fuel manifold [5] mating fitting.
 - 2) If you see damage, replace the preformed packing [2] as follows:
 - a) Remove and discard the damaged preformed packing [2].
 - b) Put grease, D00504 on new preformed packing [2].
 - c) Install the new preformed packing [2] on the OD of the fuel nozzle [3] inlet fitting.
 - d) Put grease, D00504 on the fuel nozzle [3] inlet fitting and the fuel manifold [5] mating fitting.



TO PREVENT HIGH TEMPERATURES BELOW THE COWLING, YOU MUST INSTALL A NEW SEAL ASSEMBLY EACH TIME A FUEL NOZZLE IS REMOVED AND INSTALLED. IF YOU DO NOT, DAMAGE TO COMPONENTS CAN OCCUR.

- (e) Put the new seal assembly [4] on the combustion case port for the fuel nozzle [3].

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DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

- (f) Put the fuel nozzle [3] in a position that is aligned radially with the port in the combustion case, and with the fuel fitting facing aft.
- (g) Tilt the mounting flange forward and down and insert the fuel nozzle [3] into the combustion case port.
- (h) Move the fuel nozzle [3] aft until the tips of the fuel nozzle [3] engage with the combustor swirl cups.



MAKE SURE THE SEAL ASSEMBLY, THE FUEL NOZZLE, AND THE BOLT HOLES IN THE COMBUSTION CASE PORT ARE ALIGNED CORRECTLY. IF THE SEAL ASSEMBLY IS NOT ALIGNED CORRECTLY, DAMAGE TO THE ENGINE CAN OCCUR DUE TO THE HIGH NACELLE TEMPERATURE LEAKAGE.

- (i) Make sure the seal assembly [4], the fuel nozzle [3], and the bolt holes in the combustion case port are aligned.
- (j) Put Acheson GP460 compound, D50043 [C02-058] on the threads of the bolts [1].
- (k) Install the bolts [1] hand tight to attach the fuel nozzle [3] to the combustion case.



TIGHTEN THE BOLTS CORRECTLY. DAMAGE TO THE BOLTS AND THE COMBUSTION CASE CAN OCCUR.

- (l) Tighten the bolts [1] to 110-125 pound-inches (12.4-14.1 Newton-meters).
- (m) Do a seal assembly shim check as follows (Figure 416):
 - 1) Use a 0.0 to 0.5 in (0.0 to 12.7 mm) feeler gauge, STD-371 and set the gauge shim stock at 0.005 inch (0.13 mm).
 - 2) Put the 0.005 inch (0.13 mm) gauge shim stock between the combustion case port and the seal assembly or between the fuel nozzle mounting flange and the seal assembly at or near the four attachment bolts.

NOTE: If the 0.005 inch (0.13 mm) gauge shim stock can insert in one or two of these locations, that means the fuel nozzle is not correctly seated and must be removed and installed again.
- (n) Connect the fuel manifold B-nut [20] to the fuel nozzle [3] and tighten with your fingers.
- (o) If there is only one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-003-H01 and SUBTASK 73-11-05-860-006-H01.
- (p) If there is more than one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-004-H01 and SUBTASK 73-11-05-860-007-H01.
- (q) Install the center combustion skirt panel (TASK 72-41-01-400-802-H01).

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SUBTASK 73-11-05-420-019-H01



DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (19) Install the number 18 position fuel nozzle [3] (Figure 401, Figure 403, and Figure 416):
- Remove the protective cover from the port in the combustion case for the fuel nozzle [3].
 - Examine the threaded inserts of the fuel nozzle pad in the combustion case for thread damage.
 - Thread damage is not permitted, do this task: Fuel Nozzle Repair, TASK 73-11-05-300-801-H01.
 - Remove the protective covers from the fuel nozzle [3] inlet fitting and tips, and the B-nut [20].
 - Examine the preformed packing [2] that is installed on the fuel nozzle [3] inlet fitting for cuts or tears.

NOTE: Replacement fuel nozzle(s) are provided with a new preformed packing installed.

- If you do not see damage, do the step that follows:
 - Put grease, D00504 on the preformed packing [2], the fuel nozzle [3] inlet fitting, and the fuel manifold [5] mating fitting.
- If you see damage, replace the preformed packing [2] as follows:
 - Remove and discard the damaged preformed packing [2].
 - Put grease, D00504 on new preformed packing [2].
 - Install the new preformed packing [2] on the OD of the fuel nozzle [3] inlet fitting.
 - Put grease, D00504 on the fuel nozzle [3] inlet fitting and the fuel manifold [5] mating fitting.



TO PREVENT HIGH TEMPERATURES BELOW THE COWLING, YOU MUST INSTALL A NEW SEAL ASSEMBLY EACH TIME A FUEL NOZZLE IS REMOVED AND INSTALLED. IF YOU DO NOT, DAMAGE TO COMPONENTS CAN OCCUR.

- (e) Put the new seal assembly [4] on the combustion case port for the fuel nozzle [3].



DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

- Put the fuel nozzle [3] in a position that is aligned radially with the port in the combustion case, and with the fuel fitting facing aft.
- Move the damper bracket [7] out of the way and tilt the mounting flange forward and down and insert the fuel nozzle [3] into the combustion case port.

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- (h) Move the fuel nozzle [3] aft until the tips of the fuel nozzle [3] engage with the combustor swirl cups.



MAKE SURE THE SEAL ASSEMBLY, THE FUEL NOZZLE, AND THE BOLT HOLES IN THE COMBUSTION CASE PORT ARE ALIGNED CORRECTLY. IF THE SEAL ASSEMBLY IS NOT ALIGNED CORRECTLY, DAMAGE TO THE ENGINE CAN OCCUR DUE TO THE HIGH NACELLE TEMPERATURE LEAKAGE.

- (i) Make sure the seal assembly [4], the fuel nozzle [3], and the bolt holes in the combustion case port are aligned.
- (j) Put Acheson GP460 compound, D50043 [C02-058] on the threads of the bolts [6].
- (k) Put the damper bracket [7] on the aft face of the fuel nozzle [3].
- (l) Install the bolts [6] hand tight to attach the damper bracket [7] and the fuel nozzle [3] to the combustion case aft bolt holes.
- (m) Install the bolts [6] hand tight that attach the fuel nozzle [3] to the combustion case forward bolt holes.



TIGHTEN THE BOLTS CORRECTLY. DAMAGE TO THE BOLTS AND THE COMBUSTION CASE CAN OCCUR.

- (n) Tighten the bolts [6] to 110-125 pound-inches (12.4-14.1 Newton-meters).
- (o) Install the bolt [8] to the clamp [9] to attach the damper bracket [7] and the fuel manifold [5].
- 1) Tighten the bolt [8] to 110-120 pound-inches (12.4-13.5 Newton-meters).
 - 2) Tighten the other bolt [8] (loosened in the removal task) to 110-120 pound-inches (12.4-13.5 Newton-meters).
- (p) Do a seal assembly shim check as follows (Figure 416):
- 1) Use a 0.0 to 0.5 in (0.0 to 12.7 mm) feeler gauge, STD-371 and set the gauge shim stock at 0.005 inch (0.13 mm).
 - 2) Put the 0.005 inch (0.13 mm) gauge shim stock between the combustion case port and the seal assembly or between the fuel nozzle mounting flange and the seal assembly at or near the four attachment bolts.
- NOTE:** If the 0.005 inch (0.13 mm) gauge shim stock can insert in one or two of these locations, that means the fuel nozzle is not correctly seated and must be removed and installed again.
- (q) Connect the fuel manifold B-nut [20] to the fuel nozzle [3] and tighten with your fingers.
- (r) If there is only one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-003-H01 and SUBTASK 73-11-05-860-006-H01.
- (s) If there is more than one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-004-H01 and SUBTASK 73-11-05-860-007-H01.
- (t) Install the center combustion skirt panel (TASK 72-41-01-400-802-H01).

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SUBTASK 73-11-05-420-020-H01



DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (20) Install the number 19 position fuel nozzle [3] (Figure 401, Figure 411, and Figure 416):
- (a) Remove the protective cover from the port in the combustion case for the fuel nozzle [3].
 - (b) Examine the threaded inserts of the fuel nozzle pad in the combustion case for thread damage.
 - 1) Thread damage is not permitted, do this task: Fuel Nozzle Repair, TASK 73-11-05-300-801-H01.
 - (c) Remove the protective covers from the fuel nozzle [3] inlet fitting and tips, and the fuel manifold B-nut [20].
 - (d) Examine the preformed packing [2] that is installed on the fuel nozzle [3] inlet fitting for cuts or tears.
- NOTE:** Replacement fuel nozzle(s) are provided with a new preformed packing installed.
- 1) If you do not see damage, do the step that follows:
 - a) Put grease, D00504 on the preformed packing [2], the fuel nozzle [3] inlet fitting, and the fuel manifold [5] mating fitting.
 - 2) If you see damage, replace the preformed packing [2] as follows:
 - a) Remove and discard the damaged preformed packing [2].
 - b) Put grease, D00504 on preformed packing [2].
 - c) Install the new preformed packing [2] on the OD of the fuel nozzle [3] inlet fitting.
 - d) Put grease, D00504 on the fuel nozzle [3] inlet fitting and the fuel manifold [5] mating fitting.



TO PREVENT HIGH TEMPERATURES BELOW THE COWLING, YOU MUST INSTALL A NEW SEAL ASSEMBLY EACH TIME A FUEL NOZZLE IS REMOVED AND INSTALLED. IF YOU DO NOT, DAMAGE TO COMPONENTS CAN OCCUR.

- (e) Put the new seal assembly [4] on the combustion case port for the fuel nozzle [3].



DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

- (f) Put the fuel nozzle [3] in a position that is aligned radially with the port in the combustion case, and with the fuel fitting facing aft.
- (g) Tilt the mounting flange forward and down and insert the fuel nozzle [3] into the combustion case port.

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- (h) Move the fuel nozzle [3] aft until the tips of the fuel nozzle [3] engage with the combustor swirl cups.



MAKE SURE THE SEAL ASSEMBLY, THE FUEL NOZZLE, AND THE BOLT HOLES IN THE COMBUSTION CASE PORT ARE ALIGNED CORRECTLY. IF THE SEAL ASSEMBLY IS NOT ALIGNED CORRECTLY, DAMAGE TO THE ENGINE CAN OCCUR DUE TO THE HIGH NACELLE TEMPERATURE LEAKAGE.

- (i) Make sure the seal assembly [4], the fuel nozzle [3], and the bolt holes in the combustion case port are aligned.
- (j) Put Acheson GP460 compound, D50043 [C02-058] on the threads of the bolts [6].
- (k) Install the bolts [6] hand tight to attach the fuel nozzle [3] to the combustion case aft bolt holes.
- (l) Put the fuel manifold bracket [15] on the forward face of the fuel nozzle [3].
- (m) Install the bolts [6] hand tight to attach the fuel manifold bracket [15] and the fuel nozzle [3] to the combustion case forward bolt holes.



TIGHTEN THE BOLTS CORRECTLY. DAMAGE TO THE BOLTS AND THE COMBUSTION CASE CAN OCCUR.

- (n) Tighten the bolts [6] to 110-125 pound-inches (12.4-14.1 Newton-meters).
- (o) Install the bolt [31] to attach the clamp [32] to the fuel manifold bracket [15]
- 1) Tighten the bolt [31] to 110-120 pound-inches (12.4-13.5 Newton-meters).
- (p) Do a seal assembly shim check as follows (Figure 416):
- 1) Use a 0.0 to 0.5 in (0.0 to 12.7 mm) feeler gauge, STD-371 and set the gauge shim stock at 0.005 inch (0.13 mm).
- 2) Put the 0.005 inch (0.13 mm) gauge shim stock between the combustion case port and the seal assembly or between the fuel nozzle mounting flange and the seal assembly at or near the four attachment bolts.
- NOTE: If the 0.005 inch (0.13 mm) gauge shim stock can insert in one or two of these locations, that means the fuel nozzle is not correctly seated and must be removed and installed again.
- (q) Connect the fuel manifold B-nut [20] to the fuel nozzle [3] and tighten with your fingers.
- (r) If there is only one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-003-H01 and SUBTASK 73-11-05-860-006-H01.
- (s) If there is more than one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-004-H01 and SUBTASK 73-11-05-860-007-H01.
- (t) Install the left combustion skirt panel (TASK 72-41-01-400-801-H01).

SUBTASK 73-11-05-420-021-H01



DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.

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(WARNING PRECEDES)



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (21) Install the number 20 position fuel nozzle [3] (Figure 401, Figure 412, and Figure 416):
- (a) Remove the protective cover from the port in the combustion case for the fuel nozzle [3].
 - (b) Examine the threaded inserts of the fuel nozzle pad in the combustion case for thread damage.
 - 1) Thread damage is not permitted, do this task: Fuel Nozzle Repair, TASK 73-11-05-300-801-H01.
 - (c) Remove the protective covers from the fuel nozzle [3] inlet fitting and tips, and the fuel manifold B-nut [20].
 - (d) Examine the preformed packing [2] that is installed on the fuel nozzle [3] inlet fitting for cuts or tears.

NOTE: Replacement fuel nozzle(s) are provided with a new preformed packing installed.

- 1) If you do not see damage, do the step that follows:
 - a) Put grease, D00504 on the preformed packing [2], the fuel nozzle [3] inlet fitting, and the fuel manifold [5] mating fitting.
- 2) If you see damage, replace the preformed packing [2] as follows:
 - a) Remove and discard the damaged preformed packing [2].
 - b) Put grease, D00504 on new preformed packing [2].
 - c) Install the new preformed packing [2] on the OD of the fuel nozzle [3] inlet fitting.
 - d) Put grease, D00504 on the fuel nozzle [3] inlet fitting and the fuel manifold [5] mating fitting.



TO PREVENT HIGH TEMPERATURES BELOW THE COWLING, YOU MUST INSTALL A NEW SEAL ASSEMBLY EACH TIME A FUEL NOZZLE IS REMOVED AND INSTALLED. IF YOU DO NOT, DAMAGE TO COMPONENTS CAN OCCUR.

- (e) Put the new seal assembly [4] on the combustion case port for the fuel nozzle [3].



DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

- (f) Put the fuel nozzle [3] in a position that is aligned radially with the port in the combustion case, and with the fuel fitting facing aft.
- (g) Move the damper bracket [7A] out of the way and tilt the mounting flange forward and down and insert the fuel nozzle [3] into the combustion case port.
- (h) Move the fuel nozzle [3] aft until the tips of the fuel nozzle [3] engage with the combustor swirl cups.

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MAKE SURE THE SEAL ASSEMBLY, THE FUEL NOZZLE, AND THE BOLT HOLES IN THE COMBUSTION CASE PORT ARE ALIGNED CORRECTLY. IF THE SEAL ASSEMBLY IS NOT ALIGNED CORRECTLY, DAMAGE TO THE ENGINE CAN OCCUR DUE TO THE HIGH NACELLE TEMPERATURE LEAKAGE.

- (i) Make sure the seal assembly [4], the fuel nozzle [3], and the bolt holes in the combustion case port are aligned.
- (j) Put Acheson GP460 compound, D50043 [C02-058] on the threads of the bolts [6].
- (k) Put the damper bracket [7A] on the aft face of the fuel nozzle [3].
- (l) Install the bolts [6] hand tight to attach the damper bracket [7A] and the fuel nozzle [3] to the combustion case aft bolt holes.
- (m) Put the fuel manifold bracket [16] on the forward face of the fuel nozzle [3]
- (n) Install the bolts [6] hand tight to attach the fuel manifold bracket [16] and the fuel nozzle [3] to the combustion case forward bolt holes.



TIGHTEN THE BOLTS CORRECTLY. DAMAGE TO THE BOLTS AND THE COMBUSTION CASE CAN OCCUR.

- (o) Tighten the bolts [6] to 110-125 pound-inches (12.4-14.1 Newton-meters).
- (p) Install the bolt [8] to the clamp [9] to attach the damper bracket [7A] to the fuel manifold [5].
 - 1) Tighten the bolt [8] to 110-120 pound-inches (12.4-13.5 Newton-meters).
 - 2) Tighten the other bolt [8] (loosened in the removal task) to 110-120 pound-inches (12.4-13.5 Newton-meters).
- (q) Install the bolt [34] to attach the clamp [33] to the fuel manifold bracket [16].
 - 1) Tighten the bolt [34] to 110-120 pound-inches (12.4-13.5 Newton-meters).
- (r) Do a seal assembly shim check as follows (Figure 416):
 - 1) Use a 0.0 to 0.5 in (0.0 to 12.7 mm) feeler gauge, STD-371 and set the gauge shim stock at 0.005 inch (0.13 mm).
 - 2) Put the 0.005 inch (0.13 mm) gauge shim stock between the combustion case port and the seal assembly or between the fuel nozzle mounting flange and the seal assembly at or near the four attachment bolts.

NOTE: If the 0.005 inch (0.13 mm) gauge shim stock can insert in one or two of these locations, that means the fuel nozzle is not correctly seated and must be removed and installed again.
- (s) Connect the fuel manifold B-nut [20] to the fuel nozzle [3] and tighten with your fingers.
- (t) If there is only one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-003-H01 and SUBTASK 73-11-05-860-006-H01.
- (u) If there is more than one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-004-H01 and SUBTASK 73-11-05-860-007-H01.
- (v) Install the left combustion skirt panel (TASK 72-41-01-400-801-H01).

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SUBTASK 73-11-05-420-022-H01

**WARNING**

DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.

**CAUTION**

DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (22) Install the number 21 position fuel nozzle [3] (Figure 401, Figure 403, and Figure 416):
- Remove the protective cover from the port in the combustion case for the fuel nozzle [3].
 - Examine the threaded inserts of the fuel nozzle pad in the combustion case for thread damage.
 - Thread damage is not permitted, do this task: Fuel Nozzle Repair, TASK 73-11-05-300-801-H01.
 - Remove the protective covers from the fuel nozzle [3] inlet fitting and tips, and the fuel manifold B-nut [20].
 - Examine the preformed packing [2] that is installed on the fuel nozzle [3] inlet fitting for cuts or tears.
- NOTE:** Replacement fuel nozzle(s) are provided with a new preformed packing installed.
- If you do not see damage, do the step that follows:
 - Put grease, D00504 on the preformed packing [2], the fuel nozzle [3] inlet fitting, and the fuel manifold [5] mating fitting.
 - If you see damage, replace the preformed packing [2] as follows:
 - Remove and discard the damaged preformed packing [2].
 - Put grease, D00504 on the new preformed packing [2].
 - Install the new preformed packing [2] on the OD of the fuel nozzle [3] inlet fitting.
 - Put grease, D00504 on the fuel nozzle [3] inlet fitting and the fuel manifold [5] mating fitting.

**CAUTION**

TO PREVENT HIGH TEMPERATURES BELOW THE COWLING, YOU MUST INSTALL A NEW SEAL ASSEMBLY EACH TIME A FUEL NOZZLE IS REMOVED AND INSTALLED. IF YOU DO NOT, DAMAGE TO COMPONENTS CAN OCCUR.

- (e) Put the new seal assembly [4] on the combustion case port for the fuel nozzle [3].

**CAUTION**

DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

- Put the fuel nozzle [3] in a position that is aligned radially with the port in the combustion case, and with the fuel fitting facing aft.
- Move the damper bracket [7] out of the way and tilt the mounting flange forward and down and insert the fuel nozzle [3] into the combustion case port.

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- (h) Move the fuel nozzle [3] aft until the tips of the fuel nozzle [3] engage with the combustor swirl cups.



MAKE SURE THE SEAL ASSEMBLY, THE FUEL NOZZLE, AND THE BOLT HOLES IN THE COMBUSTION CASE PORT ARE ALIGNED CORRECTLY. IF THE SEAL ASSEMBLY IS NOT ALIGNED CORRECTLY, DAMAGE TO THE ENGINE CAN OCCUR DUE TO THE HIGH NACELLE TEMPERATURE LEAKAGE.

- (i) Make sure that the seal assembly [4], the fuel nozzle [3], and the bolt holes in the combustion case port are aligned.
- (j) Put Acheson GP460 compound, D50043 [C02-058] on the threads of the bolts [6].
- (k) Put the damper bracket [7] on the aft face of the fuel nozzle [3].
- (l) Install the bolts [6] hand tight to attach the damper bracket [7] and the fuel nozzle [3] to the combustion case aft bolt holes.
- (m) Install the bolts [6] hand tight to attach the fuel nozzle [3] to the combustion case forward bolt holes.



TIGHTEN THE BOLTS CORRECTLY. DAMAGE TO THE BOLTS AND THE COMBUSTION CASE CAN OCCUR.

- (n) Tighten the bolts [6] to 110-125 pound-inches (12.4-14.1 Newton-meters).
- (o) Install the one bolt [8] to the clamp [9] to attach the damper bracket [7] and the fuel manifold [5].
 - 1) Tighten the bolt [8] to 110-120 pound-inches (12.4-13.5 Newton-meters).
 - 2) Tighten the other bolt [8] (loosened in the removal task) to 110-120 pound-inches (12.4-13.5 Newton-meters).
- (p) Do a seal assembly shim check as follows (Figure 416):
 - 1) Use a 0.0 to 0.5 in (0.0 to 12.7 mm) feeler gauge, STD-371 and set the gauge shim stock at 0.005 inch (0.13 mm).
 - 2) Put the 0.005 inch (0.13 mm) gauge shim stock between the combustion case port and the seal assembly or between the fuel nozzle mounting flange and the seal assembly at or near the four attachment bolts.

NOTE: If the 0.005 inch (0.13 mm) gauge shim stock can insert in one or two of these locations, that means the fuel nozzle is not correctly seated and must be removed and installed again.
- (q) Connect the fuel manifold B-nut [20] to the fuel nozzle [3] and tighten with your fingers.
- (r) If there is only one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-003-H01 and SUBTASK 73-11-05-860-006-H01.
- (s) If there is more than one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-004-H01 and SUBTASK 73-11-05-860-007-H01.
- (t) Install the left combustion skirt panel (TASK 72-41-01-400-801-H01).

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SUBTASK 73-11-05-420-023-H01

**WARNING**

DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.

**CAUTION**

DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (23) Install the number 22 position fuel nozzle [3] (Figure 401, Figure 402, and Figure 416):
- (a) Remove the protective cover from the port in the combustion case for the fuel nozzle [3].
 - (b) Examine the threaded inserts of the fuel nozzle pad in the combustion case for thread damage.
 - 1) Thread damage is not permitted, do this task: Fuel Nozzle Repair, TASK 73-11-05-300-801-H01.
 - (c) Remove the protective covers from the fuel nozzle [3] inlet fitting and tips, and the fuel manifold B-nut [20].
 - (d) Examine the preformed packing [2] that is installed on the fuel nozzle [3] inlet fitting for cuts or tears.
- NOTE:** Replacement fuel nozzle(s) are provided with a new preformed packing installed.
- 1) If you do not see damage, do the step that follows:
 - a) Put grease, D00504 on the preformed packing [2], the fuel nozzle [3] inlet fitting, and the fuel manifold [5] mating fitting.
 - 2) If you see damage, replace the preformed packing [2] as follows:
 - a) Remove and discard the damaged preformed packing [2].
 - b) Put grease, D00504 on the new preformed packing [2].
 - c) Install the new preformed packing [2] on the OD of the fuel nozzle [3] inlet fitting.
 - d) Put grease, D00504 on the fuel nozzle [3] inlet fitting and the fuel manifold [5] mating fitting.

**CAUTION**

TO PREVENT HIGH TEMPERATURES BELOW THE COWLING, YOU MUST INSTALL A NEW SEAL ASSEMBLY EACH TIME A FUEL NOZZLE IS REMOVED AND INSTALLED. IF YOU DO NOT, DAMAGE TO COMPONENTS CAN OCCUR.

- (e) Put the new seal assembly [4] on the combustion case port for the fuel nozzle [3].

**CAUTION**

DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

- (f) Put the fuel nozzle [3] in a position that is aligned radially with the port in the combustion case, and with the fuel fitting facing aft.
- (g) Tilt the mounting flange forward and down and insert the fuel nozzle [3] into the combustion case port.

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- (h) Move the fuel nozzle [3] aft until the tips of the fuel nozzle [3] engage with the combustor swirl cups.



MAKE SURE THE SEAL ASSEMBLY, THE FUEL NOZZLE, AND THE BOLT HOLES IN THE COMBUSTION CASE PORT ARE ALIGNED CORRECTLY. IF THE SEAL ASSEMBLY IS NOT ALIGNED CORRECTLY, DAMAGE TO THE ENGINE CAN OCCUR DUE TO THE HIGH NACELLE TEMPERATURE LEAKAGE.

- (i) Make sure the seal assembly [4], the fuel nozzle [3], and the bolt holes in the combustion case port are aligned.
- (j) Put Acheson GP460 compound, D50043 [C02-058] on the threads of the bolts [1].
- (k) Install the bolts [1] hand tight to attach the fuel nozzle [3] to the combustion case.



TIGHTEN THE BOLTS CORRECTLY. DAMAGE TO THE BOLTS AND THE COMBUSTION CASE CAN OCCUR.

- (l) Tighten the bolts [1] to 110-125 pound-inches (12.4-14.1 Newton-meters).
- (m) Do a seal assembly shim check as follows (Figure 416):
- 1) Use a 0.0 to 0.5 in (0.0 to 12.7 mm) feeler gauge, STD-371 and set the gauge shim stock at 0.005 inch (0.13 mm).
 - 2) Put the 0.005 inch (0.13 mm) gauge shim stock between the combustion case port and the seal assembly or between the fuel nozzle mounting flange and the seal assembly at or near the four attachment bolts.
- NOTE:** If the 0.005 inch (0.13 mm) gauge shim stock can insert in one or two of these locations, that means the fuel nozzle is not correctly seated and must be removed and installed again.
- (n) Connect the fuel manifold B-nut [20] to the fuel nozzle [3] and tighten with your fingers.
- (o) If there is only one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-003-H01 and SUBTASK 73-11-05-860-006-H01.
- (p) If there is more than one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-004-H01 and SUBTASK 73-11-05-860-007-H01.

SUBTASK 73-11-05-420-024-H01



DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (24) Install the number 23 position fuel nozzle [3] (Figure 401, Figure 403, and Figure 416):
- (a) Remove the protective cover from the port in the combustion case for the fuel nozzle [3].
 - (b) Examine the threaded inserts of the fuel nozzle pad in the combustion case for thread damage.

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- 1) Thread damage is not permitted, do this task: Fuel Nozzle Repair, TASK 73-11-05-300-801-H01.
- (c) Remove the protective covers from the fuel nozzle [3] inlet fitting and tips, and the fuel manifold B-nut [20].
- (d) Examine the preformed packing [2] that is installed on the fuel nozzle [3] inlet fitting for cuts or tears.

NOTE: Replacement fuel nozzle(s) are provided with a new preformed packing installed.

- 1) If you do not see damage, do the step that follows:
 - a) Put grease, D00504 on the preformed packing [2], the fuel nozzle [3] inlet fitting, and the fuel manifold [5] mating fitting.
- 2) If you see damage, replace the preformed packing [2] as follows:
 - a) Remove and discard the damaged preformed packing [2].
 - b) Put grease, D00504 on the new preformed packing [2].
 - c) Install the new preformed packing [2] on the OD of the fuel nozzle [3] inlet fitting.
 - d) Put grease, D00504 on the fuel nozzle [3] inlet fitting and the fuel manifold [5] mating fitting.



TO PREVENT HIGH TEMPERATURES BELOW THE COWLING, YOU MUST INSTALL A NEW SEAL ASSEMBLY EACH TIME A FUEL NOZZLE IS REMOVED AND INSTALLED. IF YOU DO NOT, DAMAGE TO COMPONENTS CAN OCCUR.

- (e) Put the new seal assembly [4] on the combustion case port for the fuel nozzle [3].



DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

- (f) Put the fuel nozzle [3] in a position that is aligned radially with the port in the combustion case, and with the fuel fitting facing aft.
- (g) Move the damper bracket [7] out of the way and tilt the mounting flange forward and down and insert the fuel nozzle [3] into the combustion case port.
- (h) Move the fuel nozzle [3] aft until the tips of the fuel nozzle [3] engage with the combustor swirl cups.



MAKE SURE THE SEAL ASSEMBLY, THE FUEL NOZZLE, AND THE BOLT HOLES IN THE COMBUSTION CASE PORT ARE ALIGNED CORRECTLY. IF THE SEAL ASSEMBLY IS NOT ALIGNED CORRECTLY, DAMAGE TO THE ENGINE CAN OCCUR DUE TO THE HIGH NACELLE TEMPERATURE LEAKAGE.

- (i) Make sure seal assembly [4], the fuel nozzle [3], and the bolt holes in the combustion case port are aligned.
- (j) Put Acheson GP460 compound, D50043 [C02-058] on the threads of the bolts [6].
- (k) Put the damper bracket [7] on the aft face of the fuel nozzle [3].
- (l) Install the bolts [6] hand tight to attach the damper bracket [7] and the fuel nozzle [3] to the combustion case aft bolt holes.

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- (m) Install the bolts [6] hand tight to attach the fuel nozzle [3] to the combustion case forward holes.



TIGHTEN THE BOLTS CORRECTLY. DAMAGE TO THE BOLTS AND THE COMBUSTION CASE CAN OCCUR.

- (n) Tighten the bolts [6] to 110-125 pound-inches (12.4-14.1 Newton-meters).
- (o) Install the one bolt [8] to the clamp [9] to attach the damper bracket [7] and the fuel manifold [5].
- 1) Tighten the bolt [8] to 110-120 pound-inches (12.4-13.5 Newton-meters).
 - 2) Tighten the other bolt [8] (loosened in the removal task) to 110-120 pound-inches (12.4-13.5 Newton-meters).
- (p) Do a seal assembly shim check as follows (Figure 416):
- 1) Use a 0.0 to 0.5 in (0.0 to 12.7 mm) feeler gauge, STD-371 and set the gauge shim stock at 0.005 inch (0.13 mm).
 - 2) Put the 0.005 inch (0.13 mm) gauge shim stock between the combustion case port and the seal assembly or between the fuel nozzle mounting flange and the seal assembly at or near the four attachment bolts.
- NOTE:** If the 0.005 inch (0.13 mm) gauge shim stock can insert in one or two of these locations, that means the fuel nozzle is not correctly seated and must be removed and installed again.
- (q) Connect the fuel manifold B-nut [20] to the fuel nozzle [3] and tighten with your fingers.
- (r) If there is only one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-003-H01 and SUBTASK 73-11-05-860-006-H01.
- (s) If there is more than one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-004-H01 and SUBTASK 73-11-05-860-007-H01.

SUBTASK 73-11-05-420-025-H01



DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (25) Install the number 24 position fuel nozzle [3] (Figure 401, Figure 413, and Figure 416):
- (a) Remove the protective cover from the port in the combustion case for the fuel nozzle [3].
 - (b) Examine the threaded inserts of the fuel nozzle pad in the combustion case for thread damage.
 - 1) Thread damage is not permitted, do this task: Fuel Nozzle Repair, TASK 73-11-05-300-801-H01.
 - (c) Remove the protective covers from the fuel nozzle [3] inlet fitting and tips, and the fuel manifold B-nut [20].

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- (d) Examine the preformed packing [2] that is installed on the fuel nozzle [3] inlet fitting for cuts or tears.

NOTE: Replacement fuel nozzle(s) are provided with a new preformed packing installed.

- 1) If you do not see damage, do the step that follows:
 - a) Put grease, D00504 on the preformed packing [2], the fuel nozzle [3] inlet fitting, and the fuel manifold [5] mating fitting.
- 2) If you see damage, replace the preformed packing [2] as follows:
 - a) Remove and discard the damaged preformed packing [2].
 - b) Put grease, D00504 on the new preformed packing [2].
 - c) Install the new preformed packing [2] on the OD of the fuel nozzle [3] inlet fitting.
 - d) Put grease, D00504 on the fuel nozzle [3] inlet fitting and the fuel manifold [5] mating fitting.



TO PREVENT HIGH TEMPERATURES BELOW THE COWLING, YOU MUST INSTALL A NEW SEAL ASSEMBLY EACH TIME A FUEL NOZZLE IS REMOVED AND INSTALLED. IF YOU DO NOT, DAMAGE TO COMPONENTS CAN OCCUR.

- (e) Put the new seal assembly [4] on the combustion case port for the fuel nozzle [3].



DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

- (f) Put the fuel nozzle [3] in a position that is aligned radially with the port in the combustion case, and with the fuel fitting facing aft.
- (g) Tilt the mounting flange forward and down and insert the fuel nozzle [3] into the combustion case port.
- (h) Move the fuel nozzle [3] aft until the tips of the fuel nozzle [3] engage with the combustor swirl cups.



MAKE SURE THE SEAL ASSEMBLY, THE FUEL NOZZLE, AND THE BOLT HOLES IN THE COMBUSTION CASE PORT ARE ALIGNED CORRECTLY. IF THE SEAL ASSEMBLY IS NOT ALIGNED CORRECTLY, DAMAGE TO THE ENGINE CAN OCCUR DUE TO THE HIGH NACELLE TEMPERATURE LEAKAGE.

- (i) Make sure the seal assembly [4], the fuel nozzle [3], and the bolt holes in the combustion case port are aligned.
- (j) Put Acheson GP460 compound, D50043 [C02-058] on the threads of the bolts [6].
- (k) Install the bolts [6] hand tight to attach the fuel nozzle [3] to the combustion case aft bolt holes.
- (l) Put the support bracket [17] on the forward face of the fuel nozzle [3].
- (m) Install the bolts [6] hand tight to attach the support bracket [17] and the fuel nozzle [3] to the combustion case forward bolt holes.

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TIGHTEN THE BOLTS CORRECTLY. DAMAGE TO THE BOLTS AND THE COMBUSTION CASE CAN OCCUR.

- CAUTION**
- (n) Tighten the bolts [6] to 110-125 pound-inches (12.4-14.1 Newton-meters).
 - (o) Install the bolts [59] that attach the STB outlet tube [54] to the support bracket [17].
 - 1) Tighten bolts [59] to 110-120 pound-inches (12.4-13.5 Newton-meters).
 - (p) Install the bolt [35] to attach the clamp [36] to the support bracket [17].
 - 1) Tighten bolt [35] to 110-120 pound-inches (12.4-13.5 Newton-meters).
 - (q) Do a seal assembly shim check as follows (Figure 416):
 - 1) Use a 0.0 to 0.5 in (0.0 to 12.7 mm) feeler gauge, STD-371 and set the gauge shim stock at 0.005 inch (0.13 mm).
 - 2) Put the 0.005 inch (0.13 mm) gauge shim stock between the combustion case port and the seal assembly or between the fuel nozzle mounting flange and the seal assembly at or near the four attachment bolts.

NOTE: If the 0.005 inch (0.13 mm) gauge shim stock can insert in one or two of these locations, that means the fuel nozzle is not correctly seated and must be removed and installed again.
 - (r) Connect the fuel manifold B-nut [20] to the fuel nozzle [3] and tighten with your fingers.
 - (s) If there is only one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-003-H01 and SUBTASK 73-11-05-860-006-H01.
 - (t) If there is more than one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-004-H01 and SUBTASK 73-11-05-860-007-H01.

SUBTASK 73-11-05-420-026-H01



DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (26) Install the number 25 position fuel nozzle [3] (Figure 401, Figure 414, and Figure 416):
 - (a) Remove the protective cover from the port in the combustion case for the fuel nozzle [3].
 - (b) Examine the threaded inserts of the fuel nozzle pad in the combustion case for thread damage.
 - 1) Thread damage is not permitted, do this task: Fuel Nozzle Repair, TASK 73-11-05-300-801-H01.
 - (c) Remove the protective covers from the fuel nozzle [3] inlet fitting and tips, and the fuel manifold B-nut [20].
 - (d) Examine the preformed packing [2] that is installed on the fuel nozzle inlet fitting for cuts or tears.

NOTE: Replacement fuel nozzle(s) are provided with a new preformed packing installed.

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- 1) If you do not see damage, do the step that follows:
 - a) Put grease, D00504 on the preformed packing [2], the fuel nozzle [3] inlet fitting, and the fuel manifold [5] mating fitting.
- 2) If you see damage, replace the preformed packing [2] as follows:
 - a) Remove and discard the damaged preformed packing [2].
 - b) Put grease, D00504 on the new preformed packing [2].
 - c) Install the new preformed packing [2] on the OD of the fuel nozzle [3] inlet fitting.
 - d) Put grease, D00504 on the fuel nozzle [3] inlet fitting and the fuel manifold [5] mating fitting.

**CAUTION**

TO PREVENT HIGH TEMPERATURES BELOW THE COWLING, YOU MUST INSTALL A NEW SEAL ASSEMBLY EACH TIME A FUEL NOZZLE IS REMOVED AND INSTALLED. IF YOU DO NOT, DAMAGE TO COMPONENTS CAN OCCUR.

- (e) Put the new seal assembly [4] on the combustion case port for the fuel nozzle [3].

**CAUTION**

DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

- (f) Put the fuel nozzle [3] in a position that is aligned radially with the port in the combustion case, and with the fuel fitting facing aft.
- (g) Move the damper bracket [7] out of the way and tilt the mounting flange forward and down and insert the fuel nozzle [3] into the combustion case port.
- (h) Move the fuel nozzle [3] aft until the tips of the fuel nozzle [3] engage with the combustor swirl cups.

**CAUTION**

MAKE SURE THE SEAL ASSEMBLY, THE FUEL NOZZLE, AND THE BOLT HOLES IN THE COMBUSTION CASE PORT ARE ALIGNED CORRECTLY. IF THE SEAL ASSEMBLY IS NOT ALIGNED CORRECTLY, DAMAGE TO THE ENGINE CAN OCCUR DUE TO THE HIGH NACELLE TEMPERATURE LEAKAGE.

- (i) Make sure the seal assembly [4], the fuel nozzle [3], and the bolt holes in the combustion case port are aligned.
- (j) Put Acheson GP460 compound, D50043 [C02-058] on the threads of the bolts [6].
- (k) Install the bolts [6] hand tight to attach the damper bracket [7] and the fuel nozzle [3] to the combustion case aft bolt holes.
- (l) Put the support bracket [18] on the forward face of both position 25 and 26 fuel nozzles [3] and install the bolts [6] hand tight to the combustion case forward bolt holes.

**CAUTION**

TIGHTEN THE BOLTS CORRECTLY. DAMAGE TO THE BOLTS AND THE COMBUSTION CASE CAN OCCUR.

- (m) Tighten the bolts [6] to 110-125 pound-inches (12.4-14.1 Newton-meters).

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- (n) Install the one bolt [8] to the clamp [9] to attach the damper bracket [7] and the fuel manifold [5].
 - 1) Tighten the bolt [8] to 110-120 pound-inches (12.4-13.5 Newton-meters).
 - 2) Tighten the other bolt [8] (loosened in the removal task) to 110-120 pound-inches (12.4-13.5 Newton-meters).
- (o) Install the two bolts [57] that attach support bracket [18] to the forward bracket [58].
 - 1) Tighten the bolts [57] to 110-120 pound-inches (12.4-13.5 Newton-meters).
- (p) Install the four bolts [55] that attach the HPT air duct support bracket [56] to the high pressure turbine manifold support bracket [18].
 - 1) Tighten the bolts [55] to 110-120 pound-inches (12.4-13.5 Newton-meters).
- (q) Install the bolts [37] to attach the hose clamp [38] to the support bracket [18].
 - 1) Tighten the bolts [37] to 110-120 pound-inches (12.4-13.5 Newton-meters).
- (r) Do a seal assembly shim check as follows (Figure 416):
 - 1) Use a 0.0 to 0.5 in (0.0 to 12.7 mm) feeler gauge, STD-371 and set the gauge shim stock at 0.005 inch (0.13 mm).
 - 2) Put the 0.005 inch (0.13 mm) gauge shim stock between the combustion case port and the seal assembly or between the fuel nozzle mounting flange and the seal assembly at or near the four attachment bolts.

NOTE: If the 0.005 inch (0.13 mm) gauge shim stock can insert in one or two of these locations, that means the fuel nozzle is not correctly seated and must be removed and installed again.
- (s) Connect the fuel manifold B-nut [20] to the fuel nozzle [3] and tighten with your fingers.
- (t) If there is only one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-003-H01 and SUBTASK 73-11-05-860-006-H01.
- (u) If there is more than one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-004-H01 and SUBTASK 73-11-05-860-007-H01.

SUBTASK 73-11-05-420-027-H01



DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (27) Install the number 26 position fuel nozzle [3] (Figure 401, Figure 414, and Figure 416):
 - (a) Remove the protective cover from the port in the combustion case for the fuel nozzle [3].
 - (b) Examine the threaded inserts of the fuel nozzle pad in the combustion case for thread damage.
 - 1) Thread damage is not permitted, do this task: Fuel Nozzle Repair, TASK 73-11-05-300-801-H01.
 - (c) Remove the protective covers from the fuel nozzle [3] inlet fitting and tips, and the fuel manifold B-nut [20].

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- (d) Examine the preformed packing [2] that is installed on the fuel nozzle [3] inlet fitting for cuts or tears.

NOTE: Replacement fuel nozzle(s) are provided with a new preformed packing installed.

- 1) If you do not see damage, do the step that follows:
 - a) Put grease, D00504 on the preformed packing [2], the fuel nozzle [3] inlet fitting, and the fuel manifold [5] mating fitting.
- 2) If you see damage, replace the preformed packing [2] as follows:
 - a) Remove and discard the damaged preformed packing [2].
 - b) Put grease, D00504 on the new preformed packing [2].
 - c) Install the new preformed packing [2] on the OD of the fuel nozzle [3] inlet fitting.
 - d) Put grease, D00504 on the fuel nozzle [3] inlet fitting and the fuel manifold [5] mating fitting.

**CAUTION**

TO PREVENT HIGH TEMPERATURES BELOW THE COWLING, YOU MUST INSTALL A NEW SEAL ASSEMBLY EACH TIME A FUEL NOZZLE IS REMOVED AND INSTALLED. IF YOU DO NOT, DAMAGE TO COMPONENTS CAN OCCUR.

- (e) Put the new seal assembly [4] on the combustion case port for the fuel nozzle [3].

**CAUTION**

DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

- (f) Put the fuel nozzle [3] in a position that is aligned radially with the port in the combustion case, and with the fuel fitting facing aft.
- (g) Tilt the mounting flange forward and down and insert the fuel nozzle [3] into the combustion case port.
- (h) Move the fuel nozzle [3] aft until the tips of the fuel nozzle [3] engage with the combustor swirl cups.

**CAUTION**

MAKE SURE THE SEAL ASSEMBLY, THE FUEL NOZZLE, AND THE BOLT HOLES IN THE COMBUSTION CASE PORT ARE ALIGNED CORRECTLY. IF THE SEAL ASSEMBLY IS NOT ALIGNED CORRECTLY, DAMAGE TO THE ENGINE CAN OCCUR DUE TO THE HIGH NACELLE TEMPERATURE LEAKAGE.

- (i) Make sure the seal assembly [4], the fuel nozzle [3], and the bolt holes in the combustion case port are aligned.
- (j) Put Acheson GP460 compound, D50043 [C02-058] on the threads of the bolts [6].
- (k) Install the bolts [6] hand tight to attach the fuel nozzle [3] to the combustion case aft bolt holes.
- (l) Put the support bracket [18] on the forward face of both position 25 and position 26 fuel nozzles [3] and install the bolts [6] hand tight to the combustion case forward bolt holes.

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TIGHTEN THE BOLTS CORRECTLY. DAMAGE TO THE BOLTS AND THE COMBUSTION CASE CAN OCCUR.

- (m) Tighten the bolts [6] to 110-125 pound-inches (12.4-14.1 Newton-meters).
- (n) Install the two bolts [57] that attach the support bracket [18] to the forward bracket [58].
 - 1) Tighten the bolts [57] to 110-120 pound-inches (12.4-13.5 Newton-meters).
- (o) Install the four bolts [55] that attach the HPT air duct support bracket [56] to the HPT manifold support bracket [18].
 - 1) Tighten the bolts [55] to 110-120 pound-inches (12.4-13.5 Newton-meters).
- (p) Install the bolts [37] to attach the hose clamp [38] to the support bracket [18].
 - 1) Tighten the bolts [37] to 110-120 pound-inches (12.4-13.5 Newton-meters).
- (q) Do a seal assembly shim check as follows (Figure 416):
 - 1) Use a 0.0 to 0.5 in (0.0 to 12.7 mm) feeler gauge, STD-371 and set the gauge shim stock at 0.005 inch (0.13 mm).
 - 2) Put the 0.005 inch (0.13 mm) gauge shim stock between the combustion case port and the seal assembly or between the fuel nozzle mounting flange and the seal assembly at or near the four attachment bolts.

NOTE: If the 0.005 inch (0.13 mm) gauge shim stock can insert in one or two of these locations, that means the fuel nozzle is not correctly seated and must be removed and installed again.
- (r) Connect the fuel manifold B-nut [20] to the fuel nozzle [3].
- (s) If there is only one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-003-H01 and SUBTASK 73-11-05-860-006-H01.
- (t) If there is more than one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-004-H01 and SUBTASK 73-11-05-860-007-H01.

SUBTASK 73-11-05-420-028-H01



DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (28) Install the number 27 position fuel nozzle [3] (Figure 401, Figure 415, and Figure 416):
 - (a) Remove the protective cover from the port in the combustion case for the fuel nozzle [3].
 - (b) Examine the threaded inserts of the fuel nozzle pad in the combustion case for thread damage.
 - 1) Thread damage is not permitted, do this task: Fuel Nozzle Repair, TASK 73-11-05-300-801-H01.
 - (c) Remove the protective covers from the fuel nozzle [3] inlet fitting and tips, and the fuel manifold B-nut [20].

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- (d) Examine the preformed packing [2] that is installed on the fuel nozzle [3] inlet fitting for cuts or tears.

NOTE: Replacement fuel nozzle(s) are provided with a new preformed packing installed.

- 1) If you do not see damage, do the step that follows:
 - a) Put grease, D00504 on the preformed packing [2], the fuel nozzle [3] inlet fitting, and the fuel manifold [5] mating fitting.
- 2) If you see damage, replace the preformed packing [2] as follows:
 - a) Remove and discard the damaged preformed packing [2].
 - b) Put grease, D00504 on the new preformed packing [2].
 - c) Install the new preformed packing [2] on the OD of the fuel nozzle [3] inlet fitting.
 - d) Put grease, D00504 on the fuel nozzle [3] inlet fitting and the fuel manifold [5] mating fitting.



TO PREVENT HIGH TEMPERATURES BELOW THE COWLING, YOU MUST INSTALL A NEW SEAL ASSEMBLY EACH TIME A FUEL NOZZLE IS REMOVED AND INSTALLED. IF YOU DO NOT, DAMAGE TO COMPONENTS CAN OCCUR.

- (e) Put the new seal assembly [4] on the combustion case port for the fuel nozzle [3].



DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

- (f) Put the fuel nozzle [3] in a position that is aligned radially with the port in the combustion case, and with the fuel fitting facing aft.
- (g) Move the damper bracket [7] out of the way and tilt the mounting flange forward and down and insert the fuel nozzle [3] into the combustion case port.
- (h) Move the fuel nozzle [3] aft until the tips of the fuel nozzle [3] engage with the combustor swirl cups.



MAKE SURE THE SEAL ASSEMBLY, THE FUEL NOZZLE, AND THE BOLT HOLES IN THE COMBUSTION CASE PORT ARE ALIGNED CORRECTLY. IF THE SEAL ASSEMBLY IS NOT ALIGNED CORRECTLY, DAMAGE TO THE ENGINE CAN OCCUR DUE TO THE HIGH NACELLE TEMPERATURE LEAKAGE.

- (i) Make sure that the seal assembly [4], the fuel nozzle [3], and the bolt holes in the combustion case port are aligned.
- (j) Put Acheson GP460 compound, D50043 [C02-058] on the threads of the bolts [1].
- (k) Put the damper bracket [7] on the aft face of the fuel nozzle [3].
- (l) Install the bolts [6] hand tight to attach the damper bracket [7] and the fuel nozzle [3] to the combustion case aft bolt holes.
- (m) Put the support bracket [19] on the forward face of the fuel nozzle [3].
- (n) Install the bolts [6] hand tight to attach the support bracket [19] and the fuel nozzle [3] to the forward bolt holes.

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**CAUTION**

TIGHTEN THE BOLTS CORRECTLY. DAMAGE TO THE BOLTS AND THE COMBUSTION CASE CAN OCCUR.

- (o) Tighten the bolts [6] to 110-125 pound-inches (12.4-14.1 Newton-meters).
- (p) Install the one bolt [8] to the clamp [9] to attach the damper bracket [7] and the fuel manifold [5].
 - 1) Tighten the bolt [8] to 110-120 pound-inches (12.4-13.5 Newton-meters).
 - 2) Tighten the other bolt [8] (loosened in the removal task) to 110-120 pound-inches (12.4-13.5 Newton-meters).
- (q) Install the bolt [39] to attach clamp [40] to the support bracket [19].
 - 1) Tighten the bolt [39] to 110-120 pound-inches (12.4-13.5 Newton-meters).
- (r) Install the bolts [41] to attach the clamps [42] to the support bracket [19].
 - 1) Tighten the bolts [41] to 110-120 pound-inches (12.4-13.5 Newton-meters).
- (s) Do a seal assembly shim check as follows (Figure 416):
 - 1) Use a 0.0 to 0.5 in (0.0 to 12.7 mm) feeler gauge, STD-371 and set the gauge shim stock at 0.005 inch (0.13 mm).
 - 2) Put the 0.005 inch (0.13 mm) gauge shim stock between the combustion case port and the seal assembly or between the fuel nozzle mounting flange and the seal assembly at or near the four attachment bolts.

NOTE: If the 0.005 inch (0.13 mm) gauge shim stock can insert in one or two of these locations, that means the fuel nozzle is not correctly seated and must be removed and installed again.
- (t) Connect the fuel manifold B-nut [20] to the fuel nozzle [3] and tighten with your fingers.
- (u) If there is only one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-003-H01 and SUBTASK 73-11-05-860-006-H01.
- (v) If there is more than one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-004-H01 and SUBTASK 73-11-05-860-007-H01.

SUBTASK 73-11-05-420-029-H01

**WARNING**

DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.

**CAUTION**

DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (29) Install the number 28 position fuel nozzle [3] (Figure 401, Figure 403, and Figure 416):
 - (a) Remove the protective cover from the port in the combustion case for the fuel nozzle [3].
 - (b) Examine the threaded inserts of the fuel nozzle pad in the combustion case for thread damage.
 - 1) Thread damage is not permitted, do this task: Fuel Nozzle Repair, TASK 73-11-05-300-801-H01.

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- (c) Remove the protective covers from the fuel nozzle [3] inlet fitting and tips, and the fuel manifold B-nut [20].
- (d) Examine the preformed packing [2] that is installed on the fuel nozzle [3] inlet fitting for cuts or tears.
NOTE: Replacement fuel nozzle(s) are provided with a new preformed packing installed.
 - 1) If you do not see damage, do the step that follows:
 - a) Put grease, D00504 on the preformed packing [2], the fuel nozzle [3] inlet fitting, and the fuel manifold [5] mating fitting.
 - 2) If you see damage, replace the preformed packing [2] as follows:
 - a) Remove and discard the damaged preformed packing [2].
 - b) Put grease, D00504 on the new preformed packing [2].
 - c) Install the new preformed packing [2] on the OD of the fuel nozzle [3] inlet fitting.
 - d) Put grease, D00504 on the fuel nozzle [3] inlet fitting and the fuel manifold [5] mating fitting.

**CAUTION**

TO PREVENT HIGH TEMPERATURES BELOW THE COWLING, YOU MUST INSTALL A NEW SEAL ASSEMBLY EACH TIME A FUEL NOZZLE IS REMOVED AND INSTALLED. IF YOU DO NOT, DAMAGE TO COMPONENTS CAN OCCUR.

- (e) Put the new seal assembly [4] on the combustion case port for the fuel nozzle [3].

**CAUTION**

DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

- (f) Put the fuel nozzle [3] in a position that is aligned radially with the port in the combustion case, and with the fuel fitting facing aft.
- (g) Move the damper bracket [7] out of the way and tilt the mounting flange forward and down and insert the fuel nozzle [3] into the combustion case port.
- (h) Move the fuel nozzle [3] aft until the tips of the fuel nozzle [3] engage with the combustor swirl cups.

**CAUTION**

MAKE SURE THE SEAL ASSEMBLY, THE FUEL NOZZLE, AND THE BOLT HOLES IN THE COMBUSTION CASE PORT ARE ALIGNED CORRECTLY. IF THE SEAL ASSEMBLY IS NOT ALIGNED CORRECTLY, DAMAGE TO THE ENGINE CAN OCCUR DUE TO THE HIGH NACELLE TEMPERATURE LEAKAGE.

- (i) Make sure the seal assembly [4], the fuel nozzle [3], and the bolt holes in the combustion case port are aligned.
- (j) Put Acheson GP460 compound, D50043 [C02-058] on the threads of the bolts [6].
- (k) Put the damper bracket [7] on the aft face of the fuel nozzle [3].
- (l) Install the bolts [6] hand tight to attach the damper bracket [7] and the fuel nozzle [3] to the combustion case aft bolt holes.
- (m) Install the bolts [6] hand tight to attach the fuel nozzle [3] to the combustion case forward bolt holes.

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TIGHTEN THE BOLTS CORRECTLY. DAMAGE TO THE BOLTS AND THE COMBUSTION CASE CAN OCCUR.

- (n) Tighten the bolts [6] to 110-125 pound-inches (12.4-14.1 Newton-meters).
- (o) Install the one bolt [8] to the clamp [9] to attach the damper bracket [7] and the fuel manifold [5].
 - 1) Tighten the bolt [8] to 110-120 pound-inches (12.4-13.5 Newton-meters).
 - 2) Tighten the other bolt [8] (loosened in the removal task) to 110-120- pound-inches (12.4-13.5 Newton-meters).
- (p) Do a seal assembly shim check as follows (Figure 416):
 - 1) Use a 0.0 to 0.5 in (0.0 to 12.7 mm) feeler gauge, STD-371 and set the gauge shim stock at 0.005 inch (0.13 mm).
 - 2) Put the 0.005 inch (0.13 mm) gauge shim stock between the combustion case port and the seal assembly or between the fuel nozzle mounting flange and the seal assembly at or near the four attachment bolts.

NOTE: If the 0.005 inch (0.13 mm) gauge shim stock can insert in one or two of these locations, that means the fuel nozzle is not correctly seated and must be removed and installed again.
- (q) Connect the fuel manifold B-nut [20] to the fuel nozzle [3] and tighten with your fingers.
- (r) If there is only one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-003-H01 and SUBTASK 73-11-05-860-006-H01.
- (s) If there is more than one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-004-H01 and SUBTASK 73-11-05-860-007-H01.

SUBTASK 73-11-05-420-030-H01



DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (30) Install the number 29 position fuel nozzle [3] (Figure 401, Figure 403, and Figure 416):
 - (a) Remove the protective cover from the port in the combustion case for the fuel nozzle [3].
 - (b) Examine the threaded inserts of the fuel nozzle pad in the combustion case for thread damage.
 - 1) Thread damage is not permitted, do this task: Fuel Nozzle Repair, TASK 73-11-05-300-801-H01.
 - (c) Remove the protective covers from the fuel nozzle [3] inlet fitting and tips, and the fuel manifold B-nut [20].
 - (d) Examine the preformed packing [2] that is installed on the fuel nozzle inlet fitting for cuts or tears.

NOTE: Replacement fuel nozzle(s) are provided with a new preformed packing installed.

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- 1) If you do not see damage, do the step that follows:
 - a) Put grease, D00504 on the preformed packing [2], the fuel nozzle [3] inlet fitting, and the fuel manifold [5] mating fitting.
- 2) If you see damage, replace the preformed packing [2] as follows:
 - a) Remove and discard the damaged preformed packing [2].
 - b) Put grease, D00504 on the new preformed packing [2].
 - c) Install the new preformed packing [2] on the OD of the fuel nozzle [3] inlet fitting.
 - d) Put grease, D00504 on the fuel nozzle [3] inlet fitting and the fuel manifold [5] mating fitting.

**CAUTION**

TO PREVENT HIGH TEMPERATURES BELOW THE COWLING, YOU MUST INSTALL A NEW SEAL ASSEMBLY EACH TIME A FUEL NOZZLE IS REMOVED AND INSTALLED. IF YOU DO NOT, DAMAGE TO COMPONENTS CAN OCCUR.

- (e) Put the new seal assembly [4] on the combustion case port for the fuel nozzle [3].

**CAUTION**

DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

- (f) Put the fuel nozzle [3] in a position that is aligned radially with the port in the combustion case, and with the fuel fitting facing aft.
- (g) Move the damper bracket [7] out of the way and tilt the mounting flange forward and down and insert the fuel nozzle [3] into the combustion case port.
- (h) Move the fuel nozzle [3] aft until the tips of the fuel nozzle [3] engage with the combustor swirl cups.

**CAUTION**

MAKE SURE THE SEAL ASSEMBLY, THE FUEL NOZZLE, AND THE BOLT HOLES IN THE COMBUSTION CASE PORT ARE ALIGNED CORRECTLY. IF THE SEAL ASSEMBLY IS NOT ALIGNED CORRECTLY, DAMAGE TO THE ENGINE CAN OCCUR DUE TO THE HIGH NACELLE TEMPERATURE LEAKAGE.

- (i) Make sure the seal assembly [4], the fuel nozzle [3], and the bolt holes in the combustion case port are aligned.
- (j) Put Acheson GP460 compound, D50043 [C02-058] on the threads of the bolts [6].
- (k) Put the damper bracket [7] on the aft face of the fuel nozzle [3].
- (l) Install the bolts [6] hand tight to attach the damper bracket [7] and the fuel nozzle [3] to the combustion case aft bolt holes.
- (m) Install the bolts [6] hand tight to attach the fuel nozzle [3] to the combustion case forward bolt holes.

**CAUTION**

TIGHTEN THE BOLTS CORRECTLY. DAMAGE TO THE BOLTS AND THE COMBUSTION CASE CAN OCCUR.

- (n) Tighten the bolts [6] to 110-125 pound-inches (12.4-14.1 Newton-meters).

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- (o) Install the bolt [8] to the clamp [9] to attach the damper bracket [7] and the fuel manifold [5].
 - 1) Tighten the bolt [8] to 110-120 pound-inches (12.4-13.5 Newton-meters).
 - 2) Tighten the other bolt [8] (loosened in the removal task) to 110-120 pound-inches (12.4-13.5 Newton-meters).
- (p) Do a seal assembly shim check as follows (Figure 416):
 - 1) Use a 0.0 to 0.5 in (0.0 to 12.7 mm) feeler gauge, STD-371 and set the gauge shim stock at 0.005 inch (0.13 mm).
 - 2) Put the 0.005 inch (0.13 mm) gauge shim stock between the combustion case port and the seal assembly or between the fuel nozzle mounting flange and the seal assembly at or near the four attachment bolts.

NOTE: If the 0.005 inch (0.13 mm) gauge shim stock can insert in one or two of these locations, that means the fuel nozzle is not correctly seated and must be removed and installed again.
- (q) Connect the fuel manifold B-nut [20] to the fuel nozzle [3] and tighten with your fingers.
- (r) If there is only one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-003-H01 and SUBTASK 73-11-05-860-006-H01.
- (s) If there is more than one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-004-H01 and SUBTASK 73-11-05-860-007-H01.

SUBTASK 73-11-05-420-031-H01



DO NOT LET THE FUEL GET ON YOUR SKIN OR CLOTHES. REMOVE CLOTHES THAT HAVE FUEL ON THEM. FUEL CAN BURN YOUR SKIN. FULLY REMOVE FUEL FROM YOUR SKIN WITH WATER.



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (31) Install the number 30 position fuel nozzle [3] (Figure 401, Figure 402, and Figure 416):
 - (a) Remove the protective cover from the port in the combustion case for the fuel nozzle [3].
 - (b) Examine the threaded inserts of the fuel nozzle pad in the combustion case for thread damage.
 - 1) Thread damage is not permitted, do this task: Fuel Nozzle Repair, TASK 73-11-05-300-801-H01.
 - (c) Remove the protective covers from the fuel nozzle [3] inlet fitting and tips, and the fuel manifold B-nut [20].
 - (d) Examine the preformed packing [2] that is installed on the fuel nozzle [3] inlet fitting for cuts or tears.

NOTE: Replacement fuel nozzle(s) are provided with a new preformed packing installed.

 - 1) If you do not see damage, do the step that follows:
 - a) Put grease, D00504 on the preformed packing [2], the fuel nozzle [3] inlet fitting, and the fuel manifold [5] mating fitting.
 - 2) If you see damage, replace the preformed packing [2] as follows:

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- a) Remove and discard the damaged preformed packing [2].
- b) Put grease, D00504 on the new preformed packing [2].
- c) Install the new preformed packing [2] on the OD of the fuel nozzle [3] inlet fitting.
- d) Put grease, D00504 on the fuel nozzle [3] inlet fitting and the fuel manifold [5] mating fitting.

**CAUTION**

TO PREVENT HIGH TEMPERATURES BELOW THE COWLING, YOU MUST INSTALL A NEW SEAL ASSEMBLY EACH TIME A FUEL NOZZLE IS REMOVED AND INSTALLED. IF YOU DO NOT, DAMAGE TO COMPONENTS CAN OCCUR.

- (e) Put the new seal assembly [4] on the combustion case port for the fuel nozzle [3].

**CAUTION**

DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

- (f) Put the fuel nozzle [3] in a position that is aligned radially with the port in the combustion case, and with the fuel fitting facing aft.
- (g) Tilt the mounting flange forward and down and insert the fuel nozzle [3] into the combustion case port.
- (h) Move the fuel nozzle [3] aft until the tips of the fuel nozzle [3] engage with the combustor swirl cups.

**CAUTION**

MAKE SURE THE SEAL ASSEMBLY, THE FUEL NOZZLE, AND THE BOLT HOLES IN THE COMBUSTION CASE PORT ARE ALIGNED CORRECTLY. IF THE SEAL ASSEMBLY IS NOT ALIGNED CORRECTLY, DAMAGE TO THE ENGINE CAN OCCUR DUE TO THE HIGH NACELLE TEMPERATURE LEAKAGE.

- (i) Make sure the seal assembly [4], the fuel nozzle [3], and the bolt holes in the combustion case port are aligned.
- (j) Put Acheson GP460 compound, D50043 [C02-058] on the threads of the bolts [1].
- (k) Install the bolts [1] hand tight to attach the fuel nozzle [3] to the combustion case.

**CAUTION**

TIGHTEN THE BOLTS CORRECTLY. DAMAGE TO THE BOLTS AND THE COMBUSTION CASE CAN OCCUR.

- (l) Tighten the bolts [1] to 110-125 pound-inches (12.4-14.1 Newton-meters).
- (m) Do a seal assembly shim check as follows (Figure 416):
 - 1) Use a 0.0 to 0.5 in (0.0 to 12.7 mm) feeler gauge, STD-371 and set the gauge shim stock at 0.005 inch (0.13 mm).

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- 2) Put the 0.005 inch (0.13 mm) gauge shim stock between the combustion case port and the seal assembly or between the fuel nozzle mounting flange and the seal assembly at or near the four attachment bolts.

NOTE: If the 0.005 inch (0.13 mm) gauge shim stock can insert in one or two of these locations, that means the fuel nozzle is not correctly seated and must be removed and installed again.

- (n) Connect the fuel manifold B-nut [20] to the fuel nozzle [3] and tighten with your fingers.
- (o) If there is only one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-003-H01 and SUBTASK 73-11-05-860-006-H01.
- (p) If there is more than one fuel nozzle installation, do these subtasks: SUBTASK 73-11-05-210-004-H01 and SUBTASK 73-11-05-860-007-H01.

H. Single Fuel Nozzle Installation Tightening Procedure

SUBTASK 73-11-05-210-003-H01

- (1) Torque the bolts [1] or bolts [6] again and do a visual inspection for the correct position of the fuel nozzle seal assembly:
 - (a) Make sure the applicable fuel nozzle bolts [1] or bolts [6] go through each seal assembly [4] bolt hole.



MAKE SURE THE SEAL ASSEMBLY, THE FUEL NOZZLE, AND THE BOLT HOLES IN THE COMBUSTION CASE PORT ARE ALIGNED CORRECTLY. IF THE SEAL ASSEMBLY IS NOT ALIGNED CORRECTLY, DAMAGE TO THE ENGINE CAN OCCUR DUE TO THE HIGH NACELLE TEMPERATURE LEAKAGE.

- (b) If the seal assembly [4] is not in the correct position, loosen the fuel nozzle mounting bolts [1] or bolts [6]. Align and install the seal assembly [4] again.
- (c) Tighten each of the fuel nozzle bolts [1] or bolts [6], to 110-125 pound-inches (12.4-14.1 Newton-meters).

SUBTASK 73-11-05-860-006-H01



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (2) Tighten the fuel manifold B-nut [20] to the fuel nozzle inlet fitting as follows:

NOTE: Do not loosen the fuel manifold B-nut during this procedure.

 - (a) Tighten the fuel manifold B-nut [20] to 450-550 pound-inches (50.9-62.1 Newton-meters).
 - (b) Wait for a minimum of 5 minutes before you tighten the B-nut [20] again in the step the follows.
 - (c) Tighten the fuel manifold B-nut [20] a second time to 450-550 pound-inches (50.9-62.1 Newton-meters).
 - (d) Wait for a minimum of 5 minutes before you tighten the B-nut [20] again in the step the follows.
 - (e) Tighten the fuel manifold B-nut [20] a third and final time to 450-550 pound-inches (50.9-62.1 Newton-meters).
 - (f) Make sure the fuel manifold B-nut [20] is fully seated.

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- (g) If the fuel manifold B-nut [20] is not fully seated, do the steps that follows:
 - 1) Loosen the fuel manifold B-nut [20].
 - 2) Do the steps above again to tighten the fuel manifold B-nut [20].
- (h) Safety the fuel manifold B-nut [20] to the fuel nozzle [3]

I. More than One Fuel Nozzle Installation Tightening Procedures

SUBTASK 73-11-05-210-004-H01

- (1) Torque the bolts [1] or bolts [6] again and do a visual inspection for the correct position of each fuel nozzle seal assembly:
 - (a) Start with the fuel nozzle position 1 and end at fuel nozzle position 30. Make sure the fuel nozzle bolts [1] or bolts [6] go through each seal assembly [4] bolt hole.



MAKE SURE THE SEAL ASSEMBLY, THE FUEL NOZZLE, AND THE BOLT HOLES IN THE COMBUSTION CASE PORT ARE ALIGNED CORRECTLY. IF THE SEAL ASSEMBLY IS NOT ALIGNED CORRECTLY, DAMAGE TO THE ENGINE CAN OCCUR DUE TO THE HIGH NACELLE TEMPERATURE LEAKAGE.

- (b) If the seal assembly [4] is not in the correct position, loosen the fuel nozzle mounting bolts [1] or bolts [6]. Align and install the seal assembly [4] again. Use the procedure for the applicable fuel nozzle position.
- (c) Start with fuel nozzle 1 and end at fuel nozzle position 30. Tighten each of the fuel nozzle bolts [1] or bolts [6], (four for each fuel nozzle) to 110-125 pound-inches (12.4-14.1 Newton-meters).

SUBTASK 73-11-05-860-007-H01



DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE B-NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

- (2) Tighten the fuel manifold B-nuts [20] to the fuel nozzle inlet fittings as follows:

NOTE: Do not loosen the fuel manifold B-nuts [20] during this procedure.

 - (a) Start with the lowest numbered fuel nozzle first and tighten the fuel manifold B-nuts [20] to 450-550 pound-inches (50.9-62.1 Newton-meters).
 - (b) Go to the next fuel nozzle and tighten the fuel manifold B-nuts [20] to 450-550 pound-inches (50.9-62.1 Newton-meters).
 - (c) Continue this procedure in sequence to the highest numbered fuel nozzle that you replaced. When the highest number is reached, wait 5 minutes before you do the tightening that follows:
 - 1) Start with the highest numbered fuel nozzle that you replaced and tighten the fuel manifold B-nut [20] to 450-550 pound-inches (50.9-62.1 Newton-meters).
 - 2) Go to the next fuel nozzle and tighten the fuel manifold B-nut [20] to 450-550 pound-inches (50.9-62.1 Newton-meters).
 - 3) Continue this procedure in sequence to the lowest numbered fuel nozzle that you replaced. When the lowest number is reached, wait 5 minutes before you do the steps below.
 - 4) Start with the lowest numbered fuel nozzle that you replaced and tighten the fuel manifold B-nut [20] to 450-550 pound-inches (50.9-62.1 Newton-meters).

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- 5) Go to the next fuel nozzle and tighten the fuel manifold B-nut [20] to 450-550 pound-inches (50.9-62.1 Newton-meters).
- 6) Continue this procedure in sequence to the highest numbered fuel nozzle that you replaced.
- (d) Make sure the fuel manifold B-nuts [20] are fully seated.
- (e) If the fuel manifold B-nuts [20] are not fully seated, do the steps that follows:
 - 1) Loosen the fuel manifold B-nuts [20].
 - 2) Do the steps above again to tighten the fuel manifold B-nuts [20].
- (f) Safety the fuel manifold B-nuts [20] to the fuel nozzles [3] starting with fuel nozzle position 1 and ending at fuel nozzle position 30.

J. Put the Airplane Back to its Usual Condition

SUBTASK 73-11-05-860-003-H01

- (1) Do these steps to put the fuel control valve and the spar valve to the serviceable condition:
 - (a) Make sure that the FUEL CONTROL switch is in the CUTOFF position.
 - (b) For the applicable engine, remove the safety tags and close these circuit breakers:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C28001	L ENGINE FUEL SPAR VALVE
A	19	C28002	R ENGINE FUEL SPAR VALVE
B	4	C76601	L ENG FUEL VALVE
B	19	C76600	R ENG FUEL VALVE

SUBTASK 73-11-05-410-001-H02



WARNING

DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (2) Do these tasks in sequence to safely close the left and right thrust reversers on the applicable engine:
 - (a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-410-816-H00.
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine
 - (b) Do this task: Close the Fan Cowl Panel (Selection), TASK 71-11-04-410-814-H00.
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine

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- (c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-805-H00.
- (d) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

K. Fuel Nozzle Installation Test

SUBTASK 73-11-05-710-001-H01

- (1) Do the tests listed in the Power Plant Test Reference Table (TASK 71-00-00-800-833-H00).

————— **END OF TASK** —————

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FUEL NOZZLE - REPAIRS

1. General

- A. This procedure has one task:
- (1) Fuel Nozzle Repair.

TASK 73-11-05-300-801-H01

2. Fuel Nozzle Repair

A. General

- (1) This task is a replacement procedure for the fuel nozzle pad inserts.
- (2) The inserts are in the combustion case fuel nozzle pads (Figure 801).
- (3) Open the fan cowl panels and the thrust reversers to get access to the fuel nozzle pad inserts.

B. References

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
27-81-00-860-805	Retract the Leading Edge Slats (P/B 201)
71-00-02-000-811-H00	Power Plant Removal (P/B 401)
71-00-02-400-811-H00	Power Plant Installation (P/B 401)
71-11-04-010-814-H00	Open the Fan Cowl Panel (Selection) (P/B 201)
71-11-04-410-814-H00	Close the Fan Cowl Panel (Selection) (P/B 201)
73-11-05-000-801-H01	Fuel Nozzle Removal (P/B 401)
73-11-05-400-801-H01	Fuel Nozzle Installation (P/B 401)
78-31-00-010-816-H00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-806-H00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)
78-31-00-410-816-H00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-805-H00	Thrust Reverser Activation After Ground Maintenance (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-292	Drill - Power, Self-Feed
COM-330	Fixture - Drill
COM-848	Swage - Tool, Drive for Thin Wall Inserts
STD-183	Cleaner - Vacuum
STD-562	Lens - Magnifying, 10x

D. Consumable Materials

Reference	Description	Specification
D00656 [C02-047]	Lubricant - Cutting Fluid - Cimperial 1070	

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Reference	Description	Specification
G02350 [C10-012]	Tape - High Temperature Masking	
G02441	Wax - Food Grade - Mobil Wax 2305	

E. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

F. Access Panels

Number	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

G. Prepare for the Repair

SUBTASK 73-11-05-010-002-H01



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO OPEN THE THRUST REVERSER(S). IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR

- (1) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:

- (a) Do this task: Retract the Leading Edge Slats, TASK 27-81-00-860-805.
- (b) Do this task: Leading Edge Slat - Deactivation, TASK 27-81-00-040-801.
- (c) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-806-H00.
- (d) For the left and right fan cowl panels, do this task:

Open the Fan Cowl Panel (Selection), TASK 71-11-04-010-814-H00

Number	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine

- (e) For the left and right thrust reversers, do this task:

Open the Thrust Reverser (Selection), TASK 78-31-00-010-816-H00

Number	Name/Location
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine

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<u>Number</u>	<u>Name/Location</u>
426AR	Right Thrust Reverser, Right Engine

SUBTASK 73-11-05-010-003-H01

- (2) Get access to the fuel nozzle pad that has the broken bolt or damaged insert (Fuel Nozzle Removal, TASK 73-11-05-000-801-H01).

SUBTASK 73-11-05-860-004-H01

- (3) Put tape, G02350 [C10-012] over the tube ends and holes in the combustion case.

H. Fuel Nozzle Pad Insert Repair

SUBTASK 73-11-05-480-001-H01

- (1) Do the steps that follow to attach the drill fixture, COM-330 to the combustion case fuel nozzle pad at the applicable fuel nozzle insert (Figure 802):
- Put the drill plate [5] on the combustion case.
 - Align the 0.500 inch (12.70 mm) hole in the plate with the damaged insert.
 - Use the three clamp screws [1] to attach the drill plate [5] to the fuel nozzle pad.
 - Fill the chip containment cup [3] with approximately 0.350 inch (8.89 mm) of Mobil Wax 2305, G02441.
 - Put the chip containment cup [3] through the fuel nozzle pad bore so that the cup is behind the damaged insert.
 - Make sure that the slot in the handle of the cup is diagonally aligned with the opposite hole in the pad and drill fixture, COM-330.
 - Use the clamp screw [1] to attach the chip containment cup [3] to the drill fixture, COM-330.
 - Make sure the Mobil Wax 2305, G02441 in the chip containment cup [3] touches the inside diameter of the pad.
 - If the inside diameter of the pad does not touch the wax in the chip containment cup [3], add more wax to the containment cup and do these steps again.
- NOTE: The center of the damaged insert should be near the center of the wax in the containment cup.
- Install the air feed bushing [4] in the drill plate [5].
 - Position the drill plate above the damaged fuel nozzle insert.
 - Use the two lockscrews [2] to attach the bushing to the drill plate [5].

**CAUTION**

MAKE SURE THE TAPE IS COMPLETELY OVER THE LARGE OPENING IN THE DRILL FIXTURE. IF THE TAPE IS NOT COMPLETELY OVER THE OPENING, METAL CHIPS CAN GET INSIDE THE ENGINE AND CAN CAUSE DAMAGE TO THE EQUIPMENT.

- (g) Put tape, G02350 [C10-012] completely over the large opening in the drill fixture, COM-330.

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SUBTASK 73-11-05-320-001-H01



ONLY USE DRILLS THAT HAVE AN AIR-POWERED DRILL MOTOR. ELECTRICAL AND BATTERY-POWERED DRILL MOTORS CAN CAUSE SPARKS. THIS CAN CAUSE A FIRE OR EXPLOSION. A FIRE OR EXPLOSION WILL CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (2) Use the self-feed drill, COM-292 to drill out the damaged threaded insert as follows:
- (a) Put a 0.3125 inch (7.937 mm) diameter drill in the self-feed drill, COM-292.
 - (b) Use a maximum of 10 drops of Cimperial 1070 lubricant, D00656 [C02-047] to cool and lubricate the self-feed drill, COM-292.
 - (c) Set the stroke of the self-feed drill, COM-292 to a depth of 0.090-0.100 inch (2.28-2.54 mm).
 - (d) Put the self-feed drill, COM-292 through the air feed bushing [4].
 - 1) Turn the self-feed drill, COM-292 counterclockwise to lock it in position.



HOLD THE SELF-FEED DRILL IN PLACE WITH YOUR HAND TO MAKE SURE THAT IT IS LOCKED IN THE CORRECT POSITION WHILE YOU DRILL. IF THE SELF-FEED DRILL IS NOT LOCKED, DAMAGE TO EQUIPMENT CAN OCCUR.

- (e) Drill the hole to the 0.090-0.100 inch (2.28-2.54 mm) depth.
- (f) Remove the self-feed drill, COM-292 from the drill fixture, COM-330.
- (g) Use a vacuum cleaner, STD-183 to remove loose metal chips from the fixture and pad.
- (h) Remove the drill fixture, COM-330 from the fuel nozzle pad.
- (i) Use a vacuum cleaner, STD-183 to remove loose metal chips from the fixture and fuel pad.
- (j) Put tape, G02350 [C10-012] completely over the bore of the fuel nozzle pad.

SUBTASK 73-11-05-020-002-H01

- (3) Do the steps that follow to remove the threaded insert (Figure 803).
- (a) Put a pointed punch, with an end diameter of 0.080 inch (2.03 mm), on one end of the lockring.
 - (b) Use a hammer to lightly hit the punch to release the lockring from the hole and the threaded insert.
 - (c) Lift the lockring out of the hole.
 - (d) Discard the lockring.
 - (e) Put a 5mm hex head drive wrench in the insert and turn it counterclockwise to remove the damaged insert.
 - (f) Use a vacuum cleaner, STD-183 to remove loose metal chips from the threaded hole area.

SUBTASK 73-11-05-210-002-H01

- (4) Examine the threads and counterbore where the insert was removed.
- (a) If the threads or counterbore are damaged, replace the engine. These are the tasks:
Power Plant Removal, TASK 71-00-02-000-811-H00 ,
Power Plant Installation, TASK 71-00-02-400-811-H00.

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SUBTASK 73-11-05-420-032-H01

- (5) Do the steps that follow to install a new insert and lockring in the fuel nozzle pad threaded hole (Figure 803).
- (a) Put a new threaded insert in the hole.
 - (b) Put a 5 mm hex head drive wrench in the insert.
 - 1) Turn the wrench clockwise until the insert is 0.010-0.030 inch (0.25-0.76 mm) below the surface of the fuel nozzle pad.
 - (c) Put a new lockring in the counterbore over the insert.
 - 1) Make sure you can see the word TOP on the lockring.
 - (d) Put the swage tool, COM-848 in the insert.
 - 1) Push down on the swage tool, COM-848 to make sure that the lockring is against the bottom of the counterbore.
 - 2) Use a hammer to lightly hit the swage tool, COM-848 until the collar of the swage tool, COM-848 touches the top of the fuel nozzle pad.
 - 3) Remove the swage tool, COM-848.
 - (e) Use a 10x magnifying lens, STD-562 to examine the top of the insert as follows:
 - 1) Make sure that the insert threads are swaged in the lockring threads.
 - 2) Make sure that the lockring and insert are below the surface of the fuel nozzle pad.
 - (f) Use a pointed pick to lightly try to lift the lockring to make sure that the lockring is attached to the insert.

SUBTASK 73-11-05-860-005-H01

- (6) Remove the tape, G02350 [C10-012] from the fuel nozzle pad, the holes in the combustion case and the tube ends.

SUBTASK 73-11-05-420-033-H01

- (7) Install the fuel nozzle on the pad (Fuel Nozzle Installation, TASK 73-11-05-400-801-H01).

I. Put the Airplane Back to Its Usual Condition

SUBTASK 73-11-05-410-002-H01



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Do these tasks in sequence to safely close the left and right thrust reversers on the applicable engine:
- (a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-410-816-H00.
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine
 - (b) Do this task: Close the Fan Cowl Panel (Selection), TASK 71-11-04-410-814-H00.

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- 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine

- (c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-805-H00.
- (d) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

———— **END OF TASK** ————

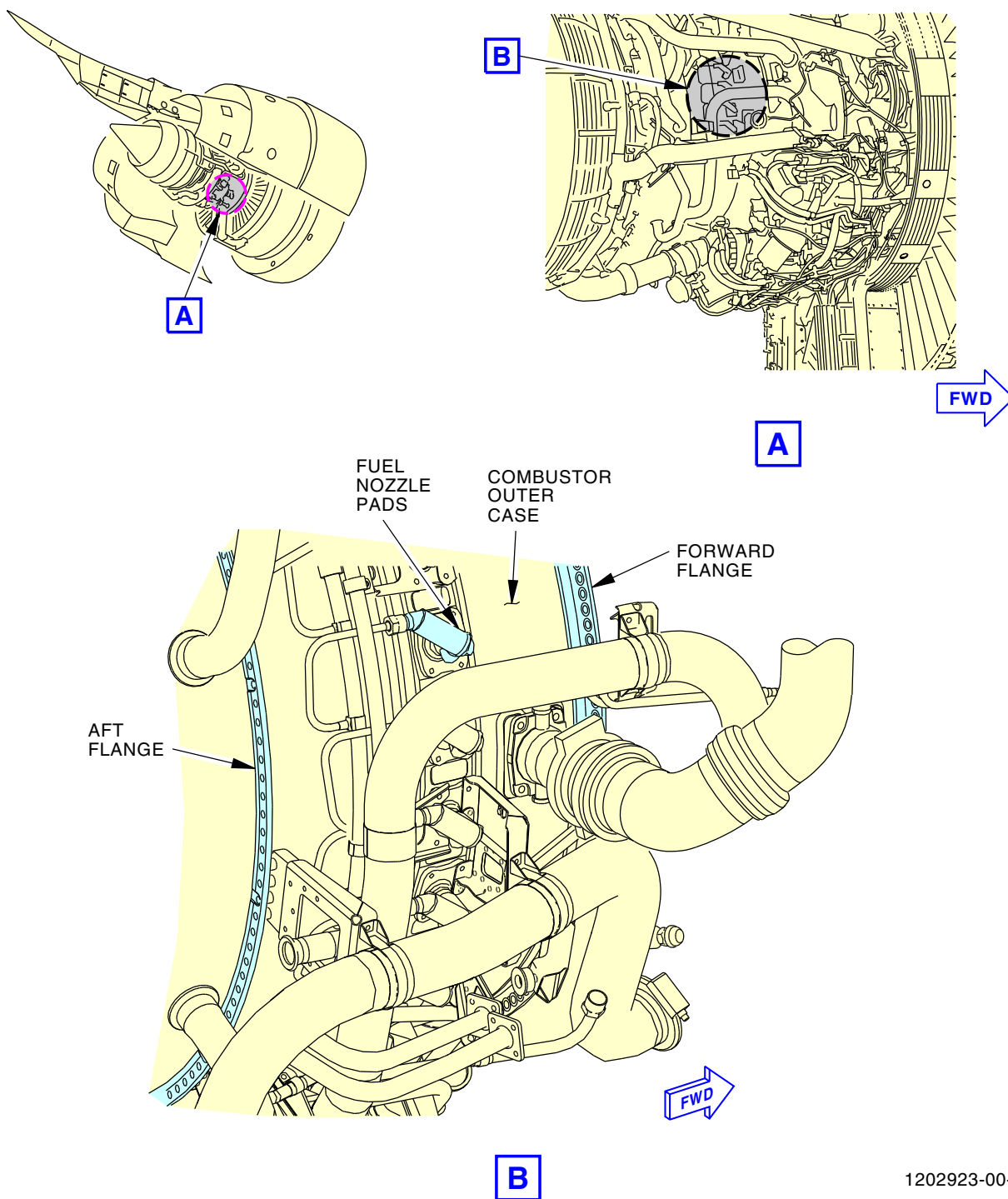
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Fuel Nozzle Pads
Figure 801/73-11-05-990-818-H01

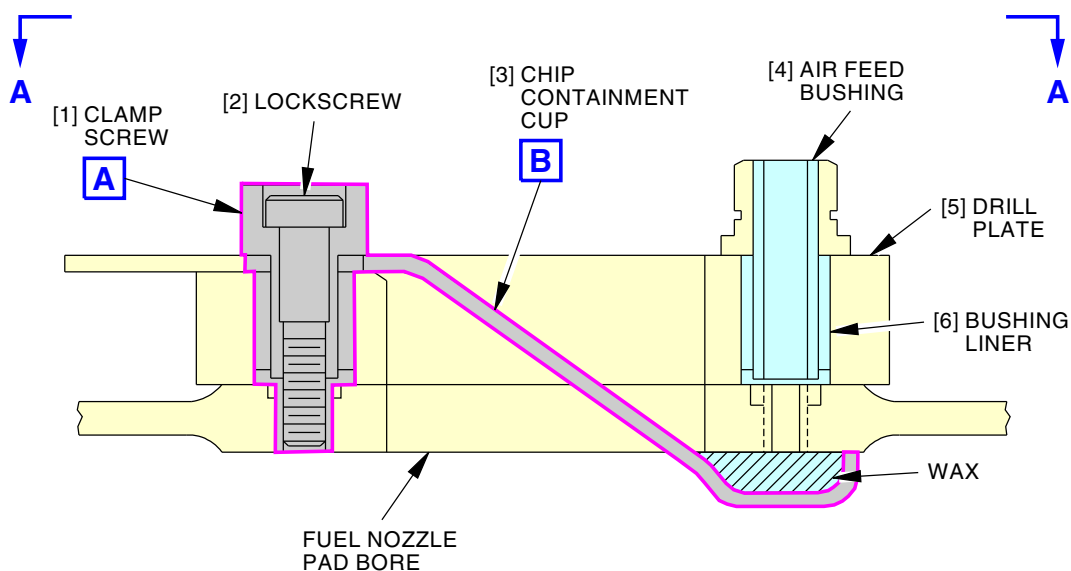
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ITEM	DESCRIPTION	MATERIAL	QTY	STOCK SIZE
1	CLAMP SCREW	DRILL ROD	3	0.625 INCH (15.87 mm) OD X 1.375 INCH (34.92 mm) LONG
2	LOCKSCREW	COMMERCIAL	2	
3	CHIP CONTAINMENT CUP	CRS	1	0.080-0.100 INCH (2.03-2.54 mm) SHEET
4	AIR FEED BUSHING	COMMERCIAL	1	
5	DRILL PLATE	AISI 4140	1	3.00 INCH (76.2 mm) X 4.00 INCH (101.6 mm) X 1.00 INCH (25.4 mm)
6	BUSHING LINER	COMMERCIAL	4	0.625 INCH (15.87 mm) OD X 0.50 INCH (12.7 mm) ID

1140018-00-A
M06954 S0004285939_V2

Drill Fixture, LMT120056A
Figure 802/73-11-05-990-819-H01 (Sheet 1 of 3)

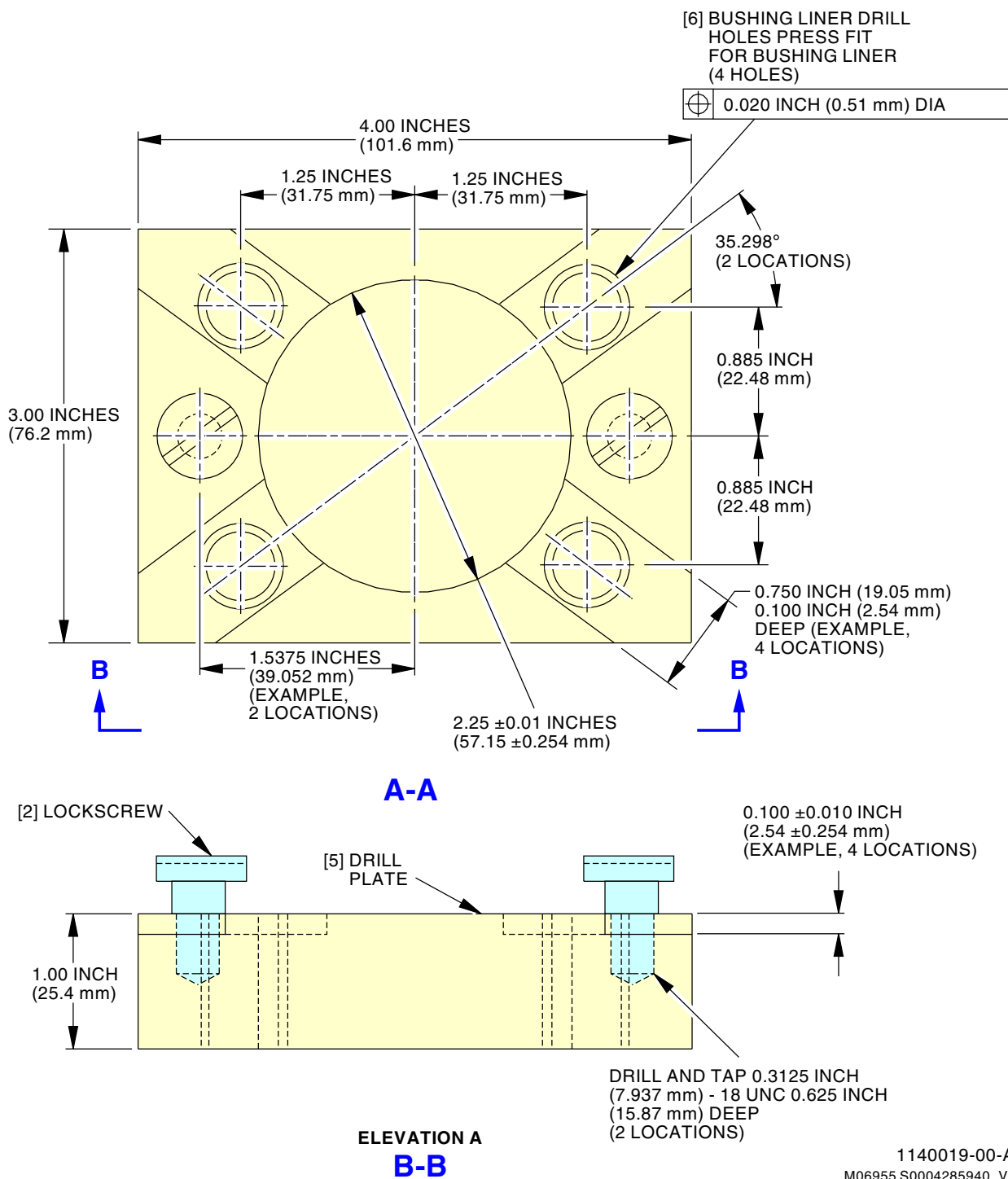
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Drill Fixture, LMT120056A
Figure 802/73-11-05-990-819-H01 (Sheet 2 of 3)

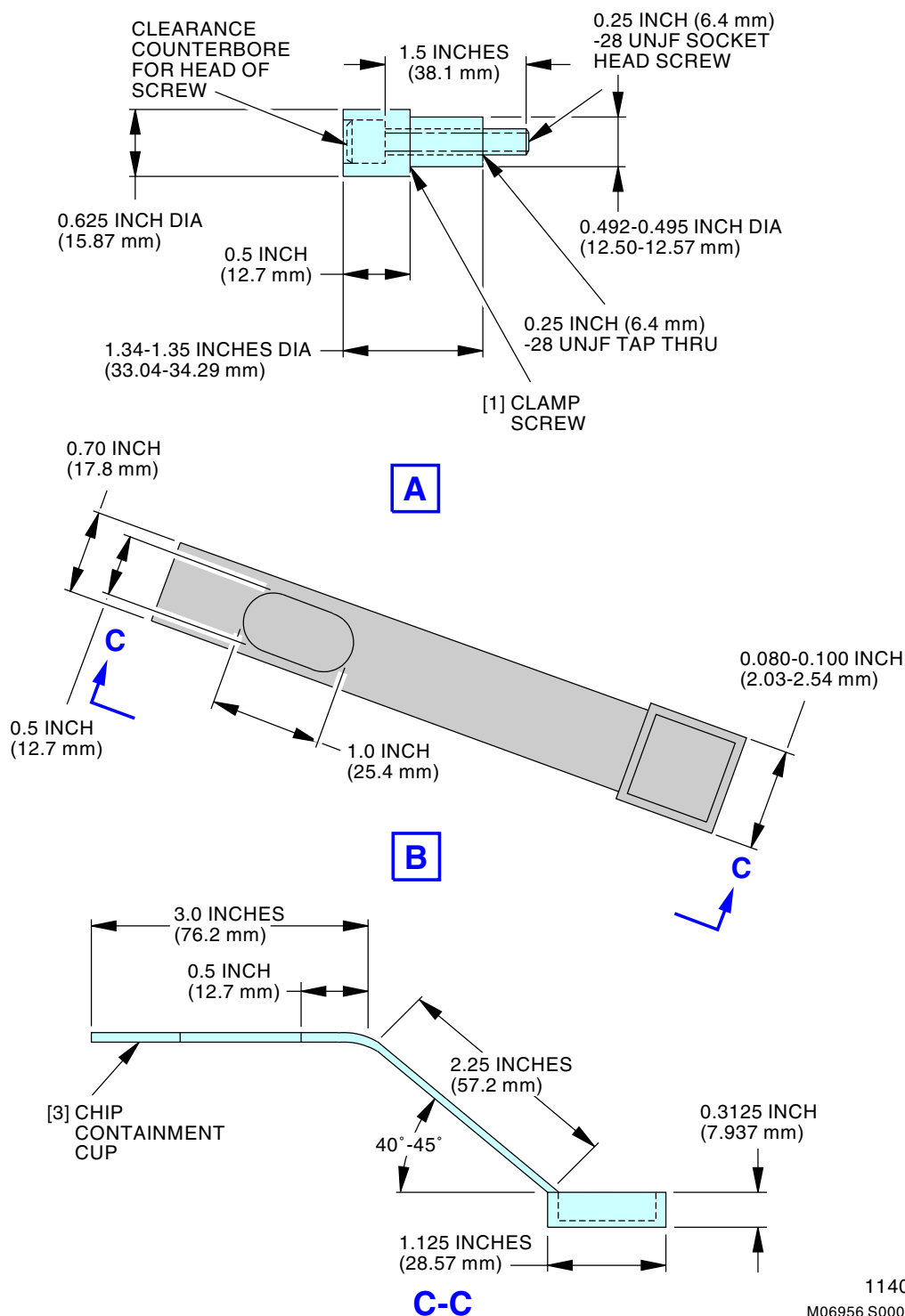
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M06956 S0004285941_V2

Drill Fixture, LMT120056A
Figure 802/73-11-05-990-819-H01 (Sheet 3 of 3)

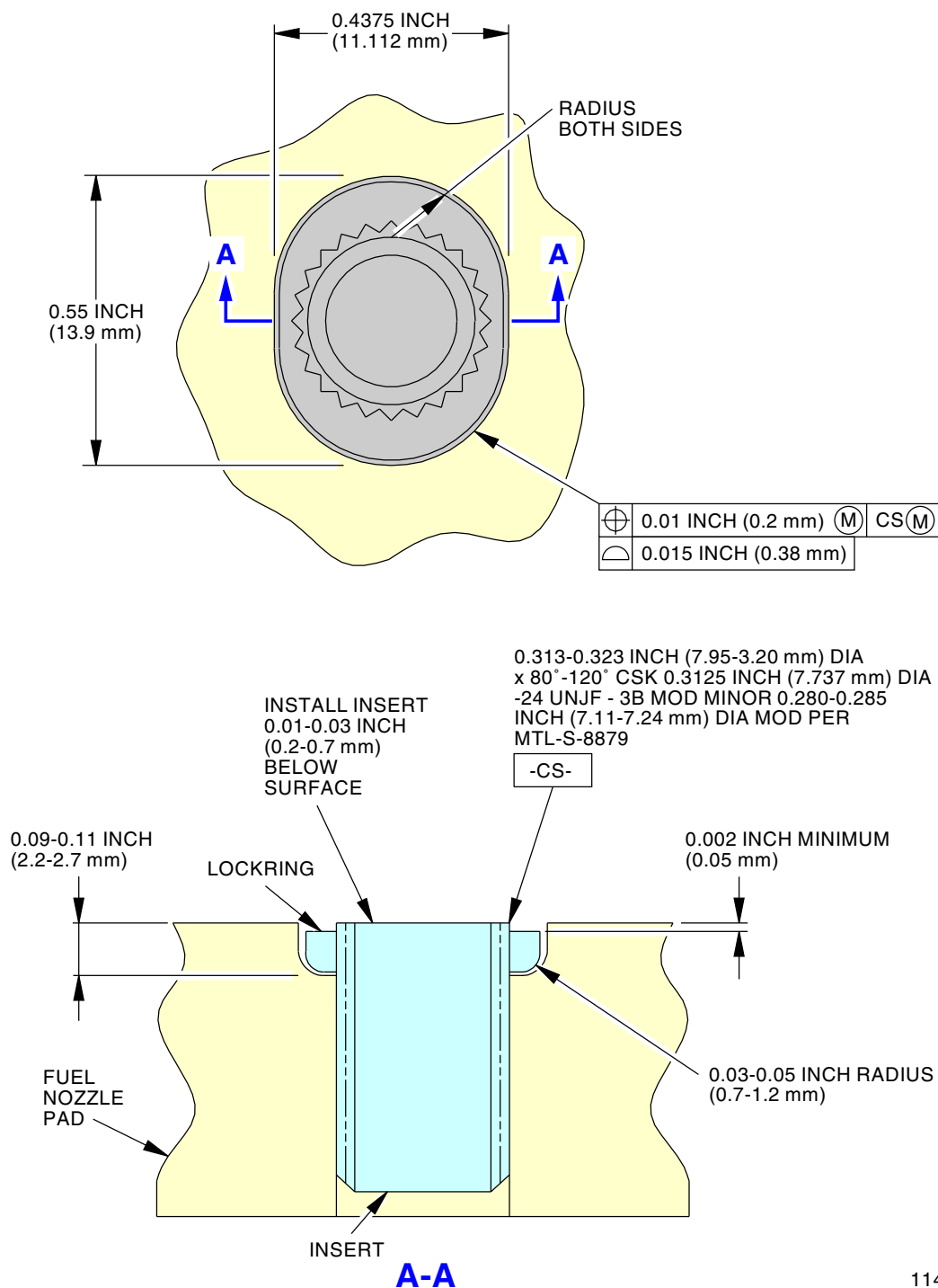
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M06957 S0004285942_V2

Fuel Nozzle Pad Threaded Hole
Figure 803/73-11-05-990-820-H01

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MAIN FUEL SUPPLY HOSE - REMOVAL/INSTALLATION

1. General

- A. This procedure contains two tasks:
- (1) A removal of the main fuel supply hose
 - (2) An installation of the main fuel supply hose.

TASK 73-11-07-000-801-H01

2. Main Fuel Supply Hose Removal

(Figure 401 and Figure 402)

A. General

- (1) This task is the removal procedure for the main fuel supply hose.
- (2) The main fuel supply hose is on the right side of engine core. One end of the hose is attached to the forward edge of the strut and the other end of the hose is attached to the inlet of the main fuel pump.
- (3) You must open the right thrust reverser to get access to the main fuel supply hose.

B. References

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
27-81-00-860-805	Retract the Leading Edge Slats (P/B 201)
71-11-04-010-814-H00	Open the Fan Cowl Panel (Selection) (P/B 201)
78-31-00-010-816-H00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-806-H00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-201	Container - Fuel Resistant, 5 U.S.-Gal (19 l)

D. Consumable Materials

Reference	Description	Specification
D00552 [C02-019]	Oil - Engine Lubricating	GE Spec. D50TF1
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A

E. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

F. Access Panels

Number	Name/Location
414AR	Right Fan Cowl Panel, Left Engine
416AR	Right Thrust Reverser, Left Engine
424AR	Right Fan Cowl Panel, Right Engine
426AR	Right Thrust Reverser, Right Engine

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G. Prepare for the Main Fuel Supply Hose Removal

SUBTASK 73-11-07-010-002-H01



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO OPEN THE THRUST REVERSER(S). IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR

- (1) Do these tasks in sequence to safely open the right thrust reverser on the applicable engine:

- (a) Do this task: Retract the Leading Edge Slats, TASK 27-81-00-860-805.
- (b) Do this task: Leading Edge Slat - Deactivation, TASK 27-81-00-040-801.
- (c) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-806-H00.
- (d) For the right fan cowl panel, do this task:

Open the Fan Cowl Panel (Selection), TASK 71-11-04-010-814-H00

<u>Number</u>	<u>Name/Location</u>
414AR	Right Fan Cowl Panel, Left Engine
424AR	Right Fan Cowl Panel, Right Engine

- (e) For the right thrust reverser, do this task:

Open the Thrust Reverser (Selection), TASK 78-31-00-010-816-H00

<u>Number</u>	<u>Name/Location</u>
416AR	Right Thrust Reverser, Left Engine
426AR	Right Thrust Reverser, Right Engine

H. Main Fuel Supply Hose Removal

SUBTASK 73-11-07-840-001-H01

- (1) Do these steps to make sure the applicable fuel control and spar valves stay in the closed position:
- (a) Make sure the FUEL CONTROL switch is in the cutoff position.
 - 1) Install a DO-NOT-OPERATE tag on the FUEL CONTROL switch.
 - (b) Push the STAT switch on the display select panel on the glareshield (P55).
 - 1) Make sure you do not see the applicable ENG FUEL VALVE L(R) or FUEL SPAR VALVE L(R) status messages.
 - (c) For the applicable engine:
 - 1) Open these circuit breakers and install safety tags:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C28001	L ENGINE FUEL SPAR VALVE
A	19	C28002	R ENGINE FUEL SPAR VALVE
B	4	C76601	L ENG FUEL VALVE
B	19	C76600	R ENG FUEL VALVE

SUBTASK 73-11-07-680-001-H01

- (2) Drain the fuel from the fuel system (Figure 401):

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DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE 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 LARGE VOLUME OF FUEL WILL DRAIN FROM THE FUEL SUPPLY SYSTEM. TO PREVENT A FUEL SPILL, YOU MUST USE A MINIMUM OF TWO CONTAINERS TO DRAIN THE FUEL SYSTEM.

- (a) Drain the main fuel pump (MFP) fuel filter:
 - 1) Put a 5 U.S.-gal (19 l) fuel resistant container, STD-201 under the MFP fuel filter bowl.
 - 2) Remove the bleeder (drain) plug [2] from the fuel filter bowl and let the fuel to drain into the container.
 - 3) Remove and discard the packing [1] from the bleeder (drain) plug [2].
 - 4) Use a cotton wiper, G00034 to clean the bleeder (drain) plug [2].
 - 5) Apply clean oil, D00552 [C02-019] on a new packing [1] for the bleeder (drain) plug [2].
 - 6) Put the packing [1] on the bleeder (drain) plug [2].
 - 7) Install the bleeder (drain) plug [2] in the fuel filter bowl drain hole.
 - 8) Tighten the bleeder (drain) plug [2] to 105-120 pound-inches (11.9-13.6 Newton-meters).
- (b) Drain the MFP fuel supply system:
 - 1) Put a 5 U.S.-gal (19 l) fuel resistant container, STD-201 under the MFP strainer.
 - 2) Remove the locking drain plug [4] from the MFP inlet strainer and let the fuel to drain into the container.
 - 3) Remove and discard the packing [3] from the locking drain plug [4].
 - 4) Apply clean oil, D00552 [C02-019] on a new packing [3] for the locking drain plug [4].
 - 5) Put the packing [3] on the locking drain plug [4].
 - 6) Install the locking drain plug [4] in the MFP inlet strainer drain hole.
 - 7) Tighten the locking drain plug [4] to 105-120 pound-inches (11.9-13.6 Newton-meters).

SUBTASK 73-11-07-030-001-H01

- (3) Disconnect the main fuel supply hose [11] from the MFP (Figure 402):
 - (a) Loosen the four bolts [17] that attach the main fuel supply hose [11] and the fuel hose shroud [19] to the MFP inlet port.
 - 1) Let the unwanted fuel drain into the 5 U.S.-gal (19 l) fuel resistant container, STD-201.
 - (b) Remove the four bolts [17] .
 - (c) Remove the fuel hose shroud [19].
 - (d) Remove the gasket seal [18] from the inlet port of the MFP and discard.

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- (e) Install a protective cover in the main fuel supply hose [11] and the inlet port of the MFP.

SUBTASK 73-11-07-020-001-H01

- (4) Disconnect the main fuel supply hose [11] from the strut:
- (a) Loosen the fuel spray blanket [12] from the main fuel supply hose [11].
 - (b) Pull the locking collar to disengage the locking teeth.
 - (c) Turn the lock ring on the main fuel supply hose [11] counter-clockwise (CCW) to disconnect it.
 - (d) Remove the bolts [13] and the bolts [15] that attach the clamps [14] and clamps [16] for the main fuel supply hose [11] to the engine.
 - (e) Carefully move the main fuel supply hose [11] away from the engine.
 - (f) Put protective covers on the openings in the strut, the main fuel pump, and the ends of the main fuel supply hose [11].

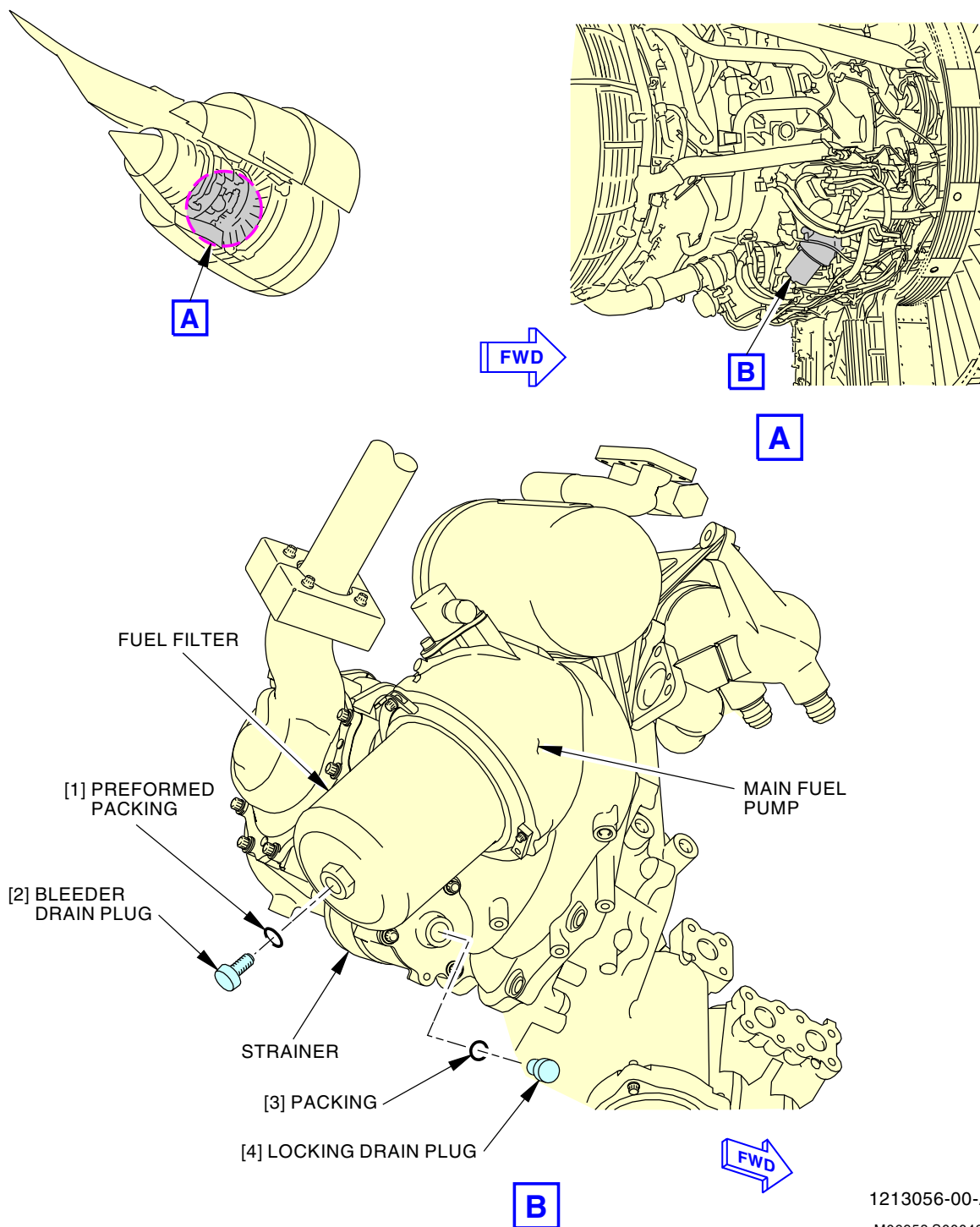
———— **END OF TASK** ————

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Drain the Fuel from the Fuel System
Figure 401/73-11-07-990-803-H01

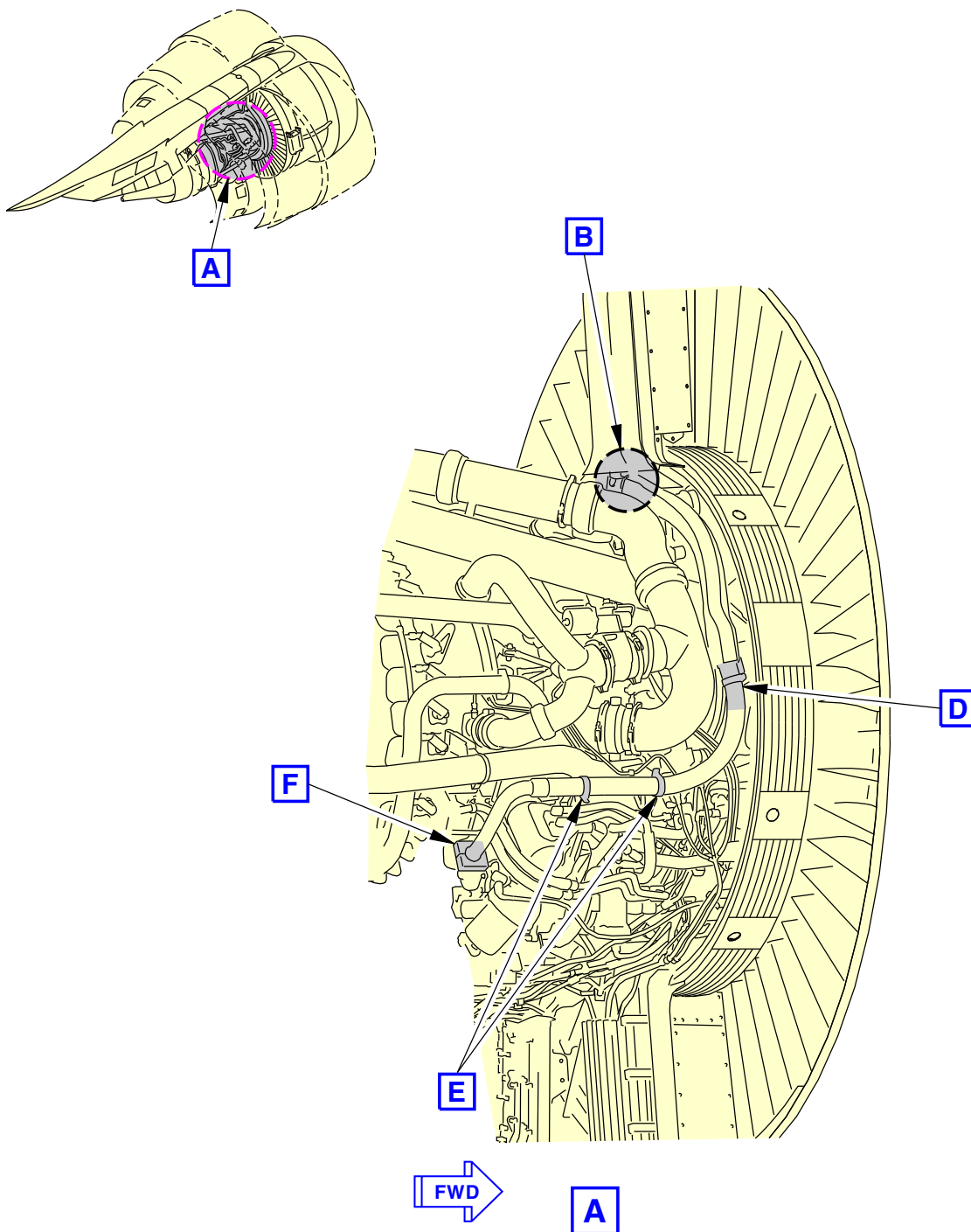
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M06959 S0004285944_V3

Main Fuel Supply Hose Installation
Figure 402/73-11-07-990-802-H01 (Sheet 1 of 4)

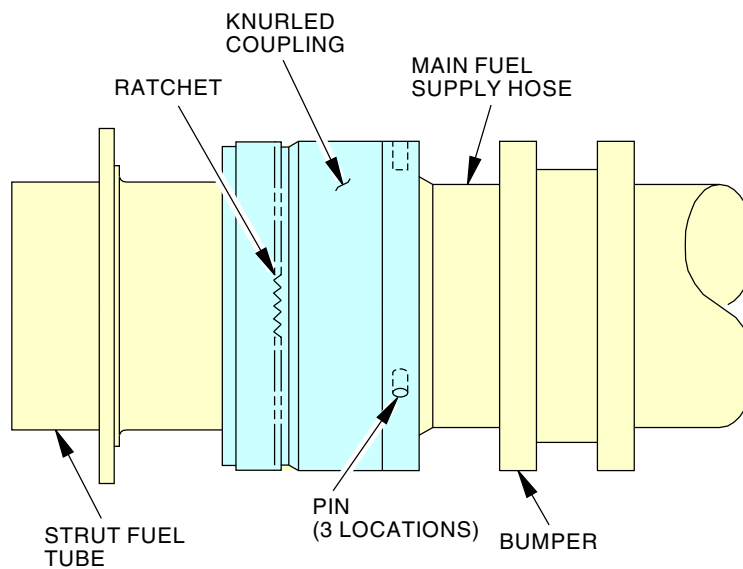
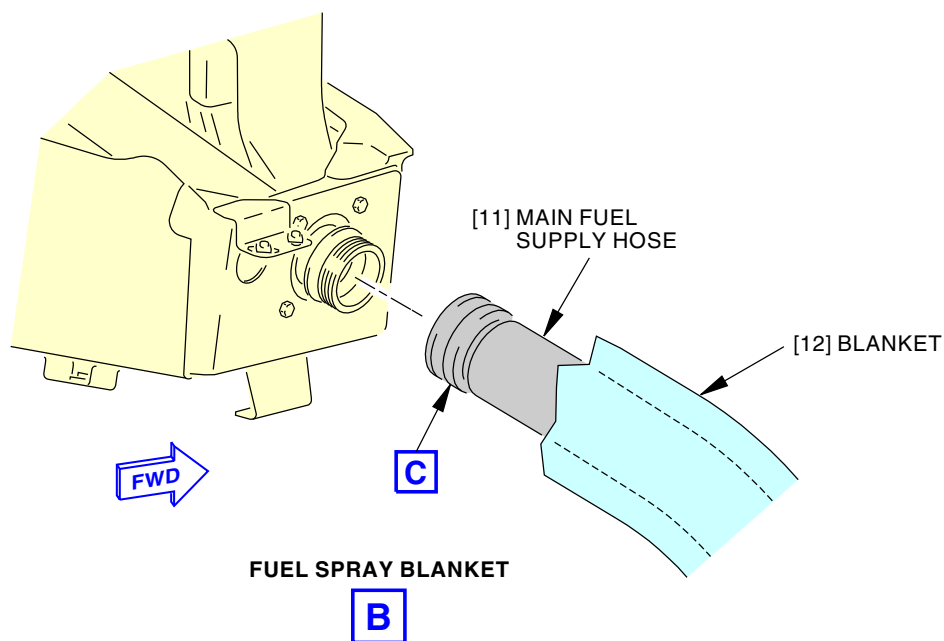
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(COUPLING IS SHOWN CONNECTED)

C

M06960 S0004285945_V4

Main Fuel Supply Hose Installation
Figure 402/73-11-07-990-802-H01 (Sheet 2 of 4)

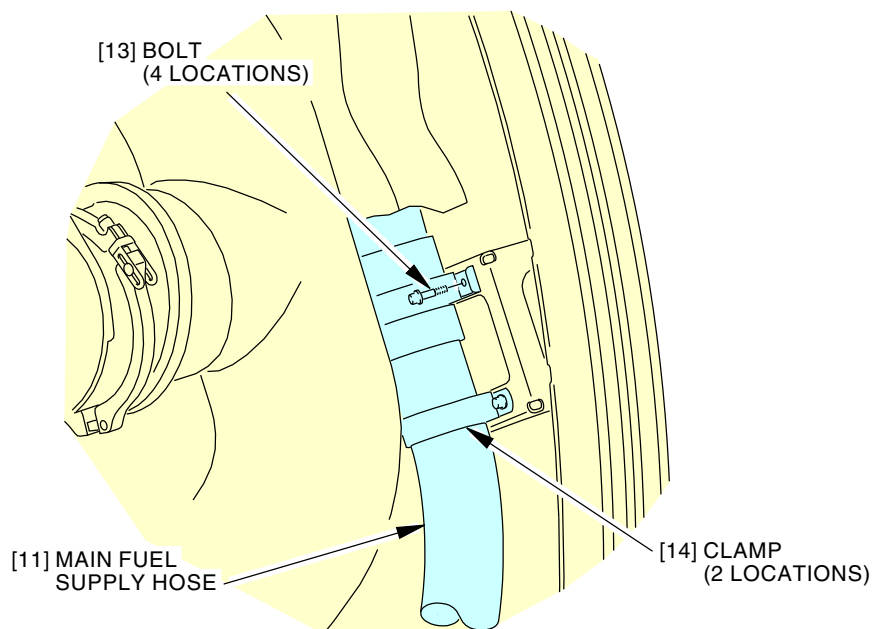
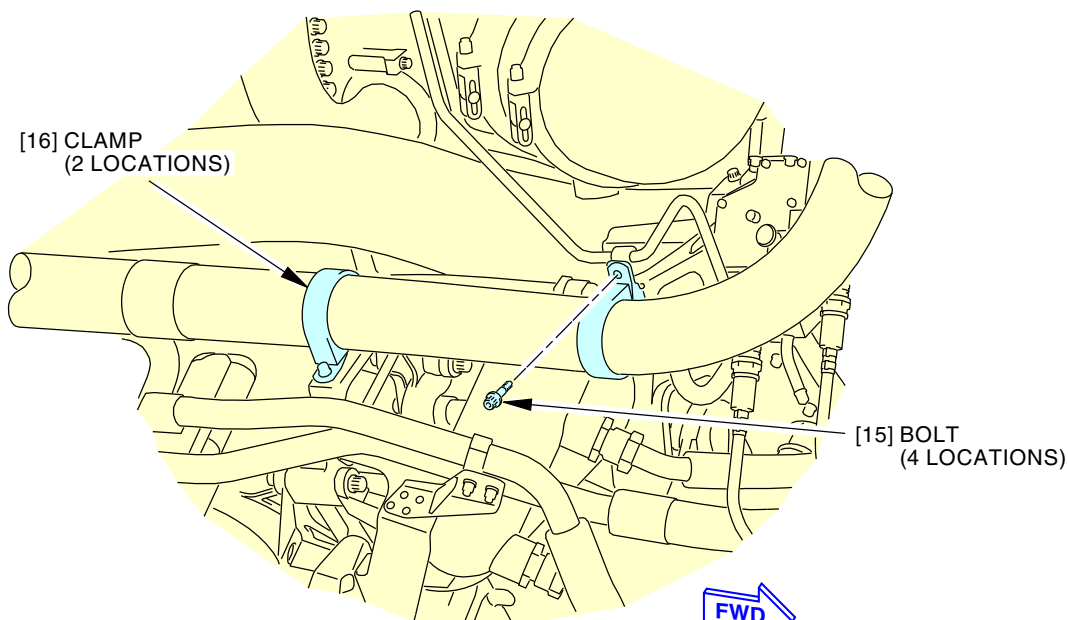
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M06961 S0004285946_V3

Main Fuel Supply Hose Installation
Figure 402/73-11-07-990-802-H01 (Sheet 3 of 4)

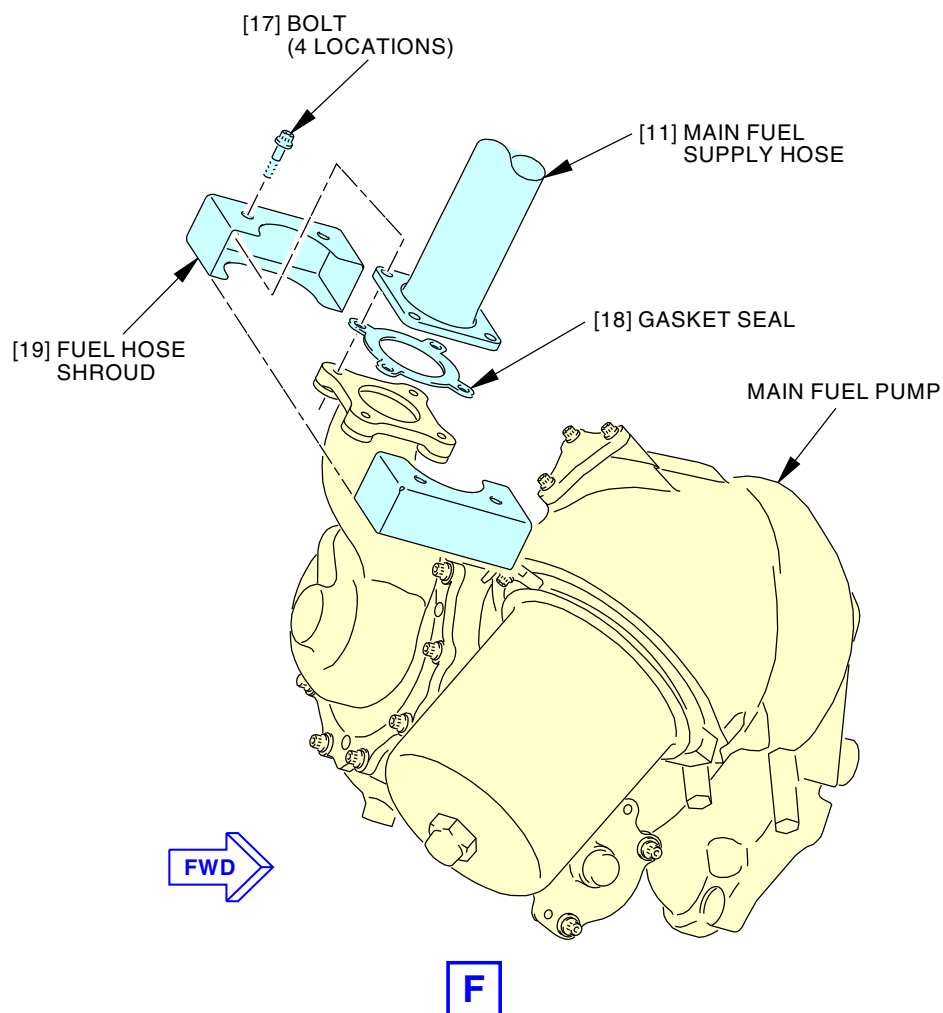
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2385715 S0000547624_V2

Main Fuel Supply Hose Installation
Figure 402/73-11-07-990-802-H01 (Sheet 4 of 4)

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TASK 73-11-07-400-801-H01

3. Main Fuel Supply Hose Installation

(Figure 401 and Figure 402)

A. General

- (1) This task contains the installation procedure for the main fuel supply hose.
- (2) You must do the tests that are listed in the power plant test reference table after you install the main fuel supply hose.

B. References

Reference	Title
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
71-00-00-800-833-H00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-814-H00	Close the Fan Cowl Panel (Selection) (P/B 201)
78-31-00-410-816-H00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-805-H00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Consumable Materials

Reference	Description	Specification
D00552 [C02-019]	Oil - Engine Lubricating	GE Spec. D50TF1
G00834	Cloth - Lint-free Cotton	

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
11	Main fuel supply hose	73-11-07-03B-025	ARO ALL
18	Gasket seal	73-11-07-03B-030	ARO ALL

E. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

F. Access Panels

Number	Name/Location
414AR	Right Fan Cowl Panel, Left Engine
416AR	Right Thrust Reverser, Left Engine
424AR	Right Fan Cowl Panel, Right Engine
426AR	Right Thrust Reverser, Right Engine

G. Main Fuel Supply Hose Installation

SUBTASK 73-11-07-430-001-H01

- (1) Install the main fuel supply hose [11]:
 - (a) Carefully put the main fuel supply hose [11] and clamps [14] and clamps [16] in their positions on the engine.
 - (b) Loosely install the bolts [13] and bolts [15] that attach the main fuel supply hose [11] to the engine.

SUBTASK 73-11-07-430-002-H01

- (2) Connect the main fuel supply hose [11] to the inlet of the Main Fuel Pump (MFP):
 - (a) Remove the protective cover in the main fuel supply hose [11] and the inlet port of the MFP.

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- (b) Lubricate a new gasket seal [18] with clean oil, D00552 [C02-019].
- (c) Put the gasket seal [18] in its position on the inlet port of the MFP.
- (d) Put the main fuel supply hose [11] in its position on the inlet port of the MFP.
- (e) Install the two fuel hose shrouds [19] over the flanges of the fuel hose and the MFP.
 - 1) Make sure that the bolt holes in the fuel hose shrouds align with the bolt holes in the flanges.
- (f) Loosely install the bolts [17] that connect the main fuel supply hose [11] and the fuel hose shrouds [19] to the inlet port of the MFP.

SUBTASK 73-11-07-430-003-H01

- (3) Connect the main fuel supply hose to the strut.
 - (a) Remove the protective covers from the main fuel supply hose [11] and fitting in the strut.
 - (b) Make sure that the preformed packing and the backup o-rings inside the strut coupling are not damage.
 - (c) Make sure the retainer ring is installed on the hose fitting of the main fuel supply hose [11].
 - (d) Engage the hose fitting with the strut coupling.



USE YOUR HAND TO TIGHTEN THE COUPLING. DO NOT USE PLIERS.
DAMAGE TO THE COUPLING CAN OCCUR.

- (e) Use your hand to tighten the hose nut.

NOTE: The three pins in the lock ring turn the hose nut when the lock ring is turned.

 - 1) Make sure the final large notch of the hose nut is engaged with the tab of the locknut.
- (f) Use a clean, dry lint-free cloth, G00834 to remove fuel that is on the surface of the main fuel supply hose [11].
- (g) Install the fuel spray blanket [12] on the main fuel supply hose [11].
 - 1) Safety the Velcro double seam along the entire length of the tab below the forward strut.
- (h) Adjust the main fuel supply hose [11] to make sure that there is no preload on the fuel supply hose.

NOTE: If it is necessary to use excessive force to put the ends of the hose in their position on the MFP and the strut, there is a preload on the hose. Loosen the clamps and do the adjusting tasks again.
- (i) Tighten the four bolts [17] that connect the main fuel supply hose [11], the fuel hose shrouds [19], and the MFP to 180-220 pound-inches (20.3-24.9 Newton-meters).
- (j) Tighten the bolts [13] and bolts [15] that attach the clamps [14] and clamps [16] on the main fuel supply hose to the engine.
- (k) Tighten the coupling at the strut.

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H. Put the Airplane Back to its Usual Condition

SUBTASK 73-11-07-410-001-H01



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Do these tasks in sequence to safely close the right thrust reverser on the applicable engine:

(a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-410-816-H00.

1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
416AR	Right Thrust Reverser, Left Engine
426AR	Right Thrust Reverser, Right Engine

(b) Do this task: Close the Fan Cowl Panel (Selection), TASK 71-11-04-410-814-H00.

1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
414AR	Right Fan Cowl Panel, Left Engine
424AR	Right Fan Cowl Panel, Right Engine

(c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-805-H00.

(d) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

SUBTASK 73-11-07-840-003-H01

(2) Put the fuel control valve and spar valve back to their usual condition:

(a) Make sure the FUEL CONTROL switch is in the CUTOFF position.

1) Remove the DO-NOT-OPERATE tag.

(b) For the applicable engine:

Remove the safety tags and close these circuit breakers:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C28001	L ENGINE FUEL SPAR VALVE
A	19	C28002	R ENGINE FUEL SPAR VALVE
B	4	C76601	L ENG FUEL VALVE
B	19	C76600	R ENG FUEL VALVE

I. Main Fuel Supply Hose Installation Test

SUBTASK 73-11-07-710-001-H01

(1) Do the tests that are listed in the Power Plant Test Reference Table, TASK 71-00-00-800-833-H00.

————— END OF TASK —————

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FUEL CONTROL SYSTEM - INSPECTION/CHECK

1. General

- A. This procedure contains scheduled maintenance task data.
- B. This procedure has three tasks:
 - (1) A fuel control system inspection
 - (2) The engine control C2 messages Inspection.
 - (3) Inspection of the Moeller lockrings on the EEC (FADEC) PS3 and P3B pressure sense fittings.

TASK 73-21-00-200-801-H01

2. Fuel Control System Inspection

A. General

- (1) This procedure has one task. An examination of the fuel control system.
- (2) To examine the fuel control system, you must open the left and right thrust reversers.
- (3) This procedure will examine the parts that follow:
 - (a) The T12 sensor
 - (b) The control alternator and rotor
 - (c) The hydromechanical unit (referred to as the HMU)
 - (d) The EEC (FADEC)
 - (e) The rating plug
 - (f) The fuel filter differential pressure (DP) sensor
 - (g) The bleed bias flow (P3B) sensor
 - (h) The compressor inlet pressure and temperature sensor (referred as to the PT25 sensor)
 - (i) The T25 sensor
 - (j) The T3 sensor
 - (k) The fuel manifold pressure (FMP) sensor.

B. References

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
27-81-00-860-805	Retract the Leading Edge Slats (P/B 201)
71-11-04-010-814-H00	Open the Fan Cowl Panel (Selection) (P/B 201)
71-11-04-410-814-H00	Close the Fan Cowl Panel (Selection) (P/B 201)
73-21-06-000-801-H01	T12 Sensor Removal (P/B 401)
73-21-06-400-801-H01	T12 Sensor Installation (P/B 401)
73-21-08-000-801-H01	Control Alternator (Stator) Removal (P/B 401)
73-21-08-400-801-H01	Control Alternator (Stator) Installation (P/B 401)
73-21-14-000-801-H01	Hydromechanical Unit Removal (P/B 401)
73-21-14-400-801-H01	Hydromechanical Unit Installation (P/B 401)
73-21-15-000-801-H01	EEC (FADEC) Removal (P/B 401)
73-21-15-400-801-H01	EEC (FADEC) Installation (P/B 401)
73-21-19-000-801-H01	Engine Rating Plug Removal (P/B 401)

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Reference	Title
73-21-19-400-801-H01	Engine Rating Plug Installation (P/B 401)
73-21-55-000-801-H01	Fuel Filter Differential Pressure Sensor Removal (P/B 401)
73-21-55-400-801-H01	Fuel Filter Differential Pressure Sensor Installation (P/B 401)
73-21-62-000-801-H01	Bleed Bias Flow (P3B) Sensor Removal (P/B 401)
73-21-62-400-801-H01	Bleed Bias Flow (P3B) Sensor Installation (P/B 401)
73-21-63-400-801-H01	PT25 Sensor Installation (P/B 401)
73-21-64-000-801-H01	T3 Sensor Assembly Removal (P/B 401)
73-21-64-400-801-H01	T3 Sensor Assembly Installation (P/B 401)
73-21-67-000-801-H01	Fuel Manifold Pressure Sensor Removal (P/B 401)
73-21-67-400-801-H01	Fuel Manifold Pressure Sensor Installation (P/B 401)
78-31-00-010-816-H00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-806-H00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)
78-31-00-410-816-H00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-805-H00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

D. Access Panels

Number	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

E. Prepare for the Inspection

SUBTASK 73-21-00-010-003-H01



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO OPEN THE THRUST REVERSER(S). IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR

- (1) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:
 - (a) Do this task: Retract the Leading Edge Slats, TASK 27-81-00-860-805.
 - (b) Do this task: Leading Edge Slat - Deactivation, TASK 27-81-00-040-801.
 - (c) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-806-H00.

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- (d) For the left and right fan cowl panels, do this task:
Open the Fan Cowl Panel (Selection), TASK 71-11-04-010-814-H00

<u>Number</u>	<u>Name/Location</u>
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine

- (e) For the left and right thrust reversers, do this task:
Open the Thrust Reverser (Selection), TASK 78-31-00-010-816-H00

<u>Number</u>	<u>Name/Location</u>
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

F. Fuel Control System Inspection

SUBTASK 73-21-00-210-001-H01

- (1) Examine the T12 sensor:
- (a) Make sure the T12 sensor is not loose.
 - 1) If the T12 sensor is loose, tighten the bolts (TASK 73-21-06-400-801-H01).
 - (b) Look for cracks in the mounting flange of the T12 sensor.
 - 1) If you see cracks, replace the T12 sensor. These are the tasks:
T12 Sensor Removal, TASK 73-21-06-000-801-H01,
T12 Sensor Installation, TASK 73-21-06-400-801-H01.

SUBTASK 73-21-00-210-002-H01

- (2) Examine the control alternator:
- (a) Look for signs of oil leaks.
 - 1) If you see signs of oil leaks between the control alternator and the gearbox, replace the packing. These are the tasks:
Control Alternator (Stator) Removal, TASK 73-21-08-000-801-H01,
Control Alternator (Stator) Installation, TASK 73-21-08-400-801-H01.
 - (b) Look for cracks in the mounting flange.
 - 1) If you see cracks, replace the control alternator. These are the tasks:
Control Alternator (Stator) Removal, TASK 73-21-08-000-801-H01,
Control Alternator (Stator) Installation, TASK 73-21-08-400-801-H01.
 - (c) Look for dents in the control alternator.
 - 1) If you see dents, replace the control alternator. These are the tasks:
Control Alternator (Stator) Removal, TASK 73-21-08-000-801-H01,
Control Alternator (Stator) Installation, TASK 73-21-08-400-801-H01.
 - (d) Make sure the electrical connectors are not loose.

SUBTASK 73-21-00-210-003-H01

- (3) Examine the HMU:

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- (a) Look for signs of fuel leaks between the HMU and the fuel adapter.
 - 1) If you see signs of fuel leaks, replace the seals. These are the tasks:
Hydromechanical Unit Removal, TASK 73-21-14-000-801-H01,
Hydromechanical Unit Installation, TASK 73-21-14-400-801-H01.
- (b) Make sure the HMU is not loose.
 - 1) If the HMU is loose, tighten the bolts and the nuts (TASK 73-21-14-400-801-H01).
- (c) Look for cracks in the HMU.
 - 1) If you see cracks, replace the HMU. These are the tasks:
Hydromechanical Unit Removal, TASK 73-21-14-000-801-H01,
Hydromechanical Unit Installation, TASK 73-21-14-400-801-H01.
- (d) Make sure the electrical connectors are not loose.

SUBTASK 73-21-00-210-004-H01

- (4) Examine the EEC (FADEC):
 - (a) Make sure the EEC (FADEC) is not loose.
 - 1) If the EEC (FADEC) is loose, tighten the bolts (TASK 73-21-15-400-801-H01).
 - (b) Look for cracks in the EEC (FADEC) housing.
 - 1) If you see cracks, replace the EEC (FADEC). These are the tasks:
EEC (FADEC) Removal, TASK 73-21-15-000-801-H01,
EEC (FADEC) Installation, TASK 73-21-15-400-801-H01.
 - (c) Make sure the B-nuts connected to the pressure sense ports are not loose.

NOTE: The P25 port is not used and connected to a pressure sense hose. There is no requirement to cap off the P25 port.

 - 1) If any B-nut is loose, tighten the applicable B-nuts (TASK 73-21-15-400-801-H01).
 - (d) Make sure the electrical connectors are not loose.

SUBTASK 73-21-00-210-005-H01

- (5) Examine the rating plug:
 - (a) Look for signs of arcing.
 - 1) If you see signs of arcing, replace the rating plug. These are the tasks:
Engine Rating Plug Removal, TASK 73-21-19-000-801-H01,
Engine Rating Plug Installation, TASK 73-21-19-400-801-H01.
 - (b) Make sure the electrical connector is not loose.

SUBTASK 73-21-00-210-006-H01

- (6) Examine the fuel filter differential pressure (DP) sensor:
 - (a) Look for signs of fuel leaks.
 - 1) If you see signs of fuel leaks, replace the gasket. These are the tasks:
Fuel Filter Differential Pressure Sensor Removal, TASK 73-21-55-000-801-H01,
Fuel Filter Differential Pressure Sensor Installation, TASK 73-21-55-400-801-H01.
 - (b) Make sure the fuel filter DP sensor is not loose.
 - 1) If the sensor is loose, tighten the bolts that attach the sensor to the main fuel pump (TASK 73-21-55-400-801-H01).

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- (c) Make sure the electrical connector is not loose.

SUBTASK 73-21-00-210-008-H01

- (7) Examine the bleed bias flow (P3B) sensor:
- (a) Look for signs of air leaks around the E-seal.
 - 1) If you see signs of air leaks, replace the E-seal. These are the tasks:
Bleed Bias Flow (P3B) Sensor Removal, TASK 73-21-62-000-801-H01,
Bleed Bias Flow (P3B) Sensor Installation, TASK 73-21-62-400-801-H01.
 - (b) Make sure the P3B sensor is not loose.
 - 1) If the sensor is loose, tighten the bolts (TASK 73-21-62-400-801-H01).
 - (c) Look for cracks.
 - 1) If you see cracks, replace the P3B sensor. These are the tasks:
Bleed Bias Flow (P3B) Sensor Removal, TASK 73-21-62-000-801-H01,
Bleed Bias Flow (P3B) Sensor Installation, TASK 73-21-62-400-801-H01.

ARO ALL PRE SB 777-GE90-75-0020**SUBTASK 73-21-00-210-009-H01**

- (8) Examine the PT25 sensor:
- (a) Make sure the PT25 sensor is not loose.
 - 1) If the sensor is loose, tighten the bolts (TASK 73-21-63-400-801-H01).
 - (b) Make sure the electrical connectors are not loose.
 - (c) Look for signs of air leaks at the B-nut connection to the sensor.
 - 1) If you see signs of air leakage, tighten the B-nut.

ARO ALL POST SB 777-GE90-75-0020**SUBTASK 73-21-00-210-014-H00**

- (9) Examine the T25 sensor:
- (a) Make sure the T25 sensor is not loose.
 - 1) If the sensor is loose, tighten the bolts (TASK 73-21-63-400-801-H01).
 - (b) Make sure the electrical connectors are not loose.
 - (c) Look for signs of air leaks at the heating air tube B-nut connection to the sensor.
 - 1) If you see signs of air leakage, tighten the B-nut.

ARO ALL POST SB 777-GE90-75-0020 AND POST SB 777-GE90-75-0032**SUBTASK 73-21-00-210-015-H00**

- (10) Examine the T25 sensor:
- (a) Make sure the T25 sensor is not loose.
 - 1) If the sensor is loose, tighten the bolts (TASK 73-21-63-400-801-H01).
 - (b) Make sure the electrical connectors are not loose.

ARO ALL**SUBTASK 73-21-00-210-010-H01**

- (11) Examine the T3 sensor:
- (a) Look for signs of air leaks.

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- 1) If you see signs of air leaks, replace the gasket. These are the tasks:
T3 Sensor Assembly Removal, TASK 73-21-64-000-801-H01,
T3 Sensor Assembly Installation, TASK 73-21-64-400-801-H01.
- (b) Make sure the T3 sensor is not loose.
 - 1) If the T3 sensor is loose, tighten the bolts (TASK 73-21-64-400-801-H01).
- (c) Look for cracks.
 - 1) If you see cracks, replace the T3 sensor. These are the tasks:
T3 Sensor Assembly Removal, TASK 73-21-64-000-801-H01,
T3 Sensor Assembly Installation, TASK 73-21-64-400-801-H01.
- (d) Look for signs of chaffing/wear on the electrical lead.
 - 1) If you see chaffing or wear, replace the electrical lead for the T3 sensor. These are the tasks:
T3 Sensor Assembly Removal, TASK 73-21-64-000-801-H01,
T3 Sensor Assembly Installation, TASK 73-21-64-400-801-H01.
- (e) Make sure the electrical connectors are not loose.

SUBTASK 73-21-00-210-012-H01

- (12) Examine the fuel manifold pressure sensor:
 - (a) Look for signs of fuel leaks.
 - 1) If you see signs of fuel leaks, replace the preformed packing. These are the tasks:
Fuel Manifold Pressure Sensor Removal, TASK 73-21-67-000-801-H01,
Fuel Manifold Pressure Sensor Installation, TASK 73-21-67-400-801-H01.
 - (b) Make sure the fuel manifold pressure sensor is not loose.
 - 1) If the sensor is loose, tighten the bolts (TASK 73-21-67-400-801-H01).
 - (c) Make sure the electrical connectors are not loose.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 73-21-00-410-003-H01



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Do these tasks in sequence to safely close the left and right thrust reversers on the applicable engine:
 - (a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-410-816-H00.
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine
 - (b) Do this task: Close the Fan Cowl Panel (Selection), TASK 71-11-04-410-814-H00.

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- 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine

- (c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-805-H00.
- (d) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

— END OF TASK —

TASK 73-21-00-700-801-H01

3. Engine Control C2 Messages Inspection

NOTE: This procedure is a scheduled maintenance task.

A. General

- (1) This procedure gives instructions to find and correct the engine control C2 messages.
- (2) The Existing SMTs display shows the active or latched scheduled maintenance tasks and their correlated maintenance messages (if any). Each scheduled maintenance task and each maintenance message is initially labeled ACTIVE or LATCHED. A scheduled maintenance task or maintenance message that becomes NOT ACTIVE will stay on the display until you select the display again.
- (3) If the ENG EEC C2 SMT message is set, then a maintenance access terminal is necessary to identify the correlated maintenance messages. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

B. References

<u>Reference</u>	<u>Title</u>
31-61-00-800-802	Erasing a EICAS Status Message Latched by AIMS (P/B 201)
31-61-00-800-815	Showing Scheduled Maintenance Tasks (P/B 201)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)

C. Location Zones

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

D. Engine Control C2 Messages Inspection

SUBTASK 73-21-00-860-001-H01

- (1) Set the EEC MAINT L or R ENG POWER switch on the aft overhead maintenance panel, P61, to the TEST position.
 - (a) Wait 30 seconds before you start the test.

SUBTASK 73-21-00-810-001-H01

- (2) Get access to the Maintenance Task page on EICAS Multi-Function Display (Showing Scheduled Maintenance Tasks, TASK 31-61-00-800-815), and look for the ENG EEC C2 Scheduled Maintenance Task (SMT) messages.

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SUBTASK 73-21-00-810-002-H01

- (3) If you do not see an ENG EEC C2 SMT message, then no more action is necessary.

SUBTASK 73-21-00-810-003-H01

- (4) If you see an ENG EEC C2 SMT message, then continue.

SUBTASK 73-21-00-740-001-H01

- (5) Use a maintenance access terminal (MAT) to find the engine control C2 scheduled maintenance task.

- (a) Make these selections on the MAT:

- 1) ONBOARD MAINTENANCE
- 2) EXTENDED MAINTENANCE
- 3) MAINTENANCE PLANNING
- 4) INBOUND SCHEDULED MAINTENANCE TASKS
- 5) CONTINUE

- (b) Look for one or more of these scheduled maintenance tasks (SMTs) and their correlated maintenance messages.

NOTE: Maintenance messages that show below the SMT on the screen are correlated to the SMT.

Table 601/73-21-00-993-801-H01 SCHEDULED MAINTENANCE TASKS

Scheduled Maintenance Tasks	
731 452 51	ENG EEC C2 (L)
731 452 51	ENG EEC C2 (R)

- 1) If you find the SMTs and their correlated maintenance messages, do the corrective action in the FIM for the maintenance messages.
- (c) After you correct the maintenance messages, do the steps to erase the EICAS ENG EEC C2 SMT (TASK 31-61-00-800-802).
- (d) Select EXIT MAINTENANCE from the Extended Maintenance menu.

SUBTASK 73-21-00-860-002-H01

- (6) Set the EEC MAINT L or R ENG POWER switch on the aft overhead maintenance panel, P61, to the NORM position.

————— **END OF TASK** —————

TASK 73-21-00-210-801-H01

4. **Moeller Lockrings Inspection (EEC (FADEC) PS3 and P3B Pressure Sense Fittings)**

A. General

- (1) This task is the inspection of the Moeller lockrings on the EEC (FADEC) PS3 and P3B pressure sense fittings.
- (2) The EEC (FADEC) is on the fan case at approximately the 2:30 o'clock position.
- (3) You must open the right fan cowl panel to get access to the EEC (FADEC).

B. References

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)

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Reference	Title
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
27-81-00-860-805	Retract the Leading Edge Slats (P/B 201)
71-11-04-010-814-H00	Open the Fan Cowl Panel (Selection) (P/B 201)
71-11-04-410-814-H00	Close the Fan Cowl Panel (Selection) (P/B 201)

C. Location Zones

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

D. Access Panels

Number	Name/Location
414AR	Right Fan Cowl Panel, Left Engine
424AR	Right Fan Cowl Panel, Right Engine

E. PS3 and P3B Moeller Lockring Inspection

SUBTASK 73-21-00-980-001-H01



RETRACT THE LEADING EDGE SLATS AND DO THE DEACTIVATION PROCEDURE BEFORE YOU OPEN THE FAN COWL PANELS. IF THE LEADING EDGE SLATS ARE NOT RETRACTED, THE FAN COWL PANELS WILL HIT THEM AND CAUSE DAMAGE.

- (1) Do this task: Retract the Leading Edge Slats, TASK 27-81-00-860-805.

SUBTASK 73-21-00-040-001-H01

- (2) Do this task: Leading Edge Slat - Deactivation, TASK 27-81-00-040-801.

SUBTASK 73-21-00-010-002-H01

- (3) For the right fan cowl panel on the applicable engine, do this task:
Open the Fan Cowl Panel (Selection), TASK 71-11-04-010-814-H00

Number	Name/Location
414AR	Right Fan Cowl Panel, Left Engine
424AR	Right Fan Cowl Panel, Right Engine

SUBTASK 73-21-00-210-013-H01

- (4) Visually inspect the Moeller lockrings installed on the EEC (FADEC) PS3 and P3B pressure sense fittings.

SUBTASK 73-21-00-220-001-H01

- (5) If the Moeller lockrings are missing or more than 50 percent of the fingers are missing, do the step that follows:
- (a) Repair the Moeller lockrings within 250 hours.

SUBTASK 73-21-00-350-001-H01

- (6) To repair the broken or missing Moeller lockring(s) do the steps that follow:
- (a) Remove the retaining pin using pliers.
- (b) Remove the Moeller lockring from the EEC (FADEC).
- (c) Put the new Moeller lockring on the EEC (FADEC) pressure sense fittings PS3 or P3B with retaining hole facing you.

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- (d) Push the retaining pin into the hole of the Moeller lockring as far as possible.
- (e) Carefully hit the retaining pin with a hammer to make sure the pin is fully installed.

NOTE: The head of the retaining ring should almost touch the Moeller lockring.

SUBTASK 73-21-00-410-002-H01

- (7) Do this task: Close the Fan Cowl Panel (Selection), TASK 71-11-04-410-814-H00.

- (a) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
414AR	Right Fan Cowl Panel, Left Engine
424AR	Right Fan Cowl Panel, Right Engine

SUBTASK 73-21-00-440-001-H01

- (8) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

———— **END OF TASK** ————

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T12 SENSOR - REMOVAL/INSTALLATION

1. General

- A. This procedure has two tasks:
- (1) A removal of the T12 sensor
 - (2) An installation of the T12 sensor.

TASK 73-21-06-000-801-H01

2. T12 Sensor Removal

A. General

- (1) This task contains the removal procedure for the T12 sensor.
- (2) The T12 sensor is at the 12:30 o'clock position on the inlet cowl.
- (3) You must open an access panel on the outer surface of the inlet cowl to get access to the T12 sensor.

B. References

Reference	Title
54-52-00-910-804-001	Fall Arrest Lifeline Procedure (P/B 201)
70-00-01-400-807-H01	Electrical Connector - Disconnect and Connect (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-4122	Screwdriver - Hi-Torque Bit

D. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

E. Access Panels

Number	Name/Location
412BR	T12 Inlet Temperature Sensor Panel, Left Engine
422BR	T12 Inlet Temperature Sensor Panel, Right Engine

F. Prepare for the T12 Sensor Removal

SUBTASK 73-21-06-490-002-H01



USE THE FALL ARREST LIFELINE PROCEDURE IF YOU DO NOT USE OTHER SAFETY EQUIPMENT. IF YOU USE THE SAFETY EQUIPMENT OR PROCEDURES INCORRECTLY, IT CAN CAUSE INJURY OR KILL YOU.

- (1) If you do not use other safety equipment, do the (strut-mounted) Fall Arrest Lifeline Procedure (TASK 54-52-00-910-804-001).

SUBTASK 73-21-06-010-001-H01

- (2) Remove the T12 access panel [5]:
 - (a) Remove the screws [6] that attach the T12 access panel [5] to the inlet cowl.

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- (b) Remove the access panels

<u>Number</u>	<u>Name/Location</u>
412BR	T12 Inlet Temperature Sensor Panel, Left Engine
422BR	T12 Inlet Temperature Sensor Panel, Right Engine

G. T12 Sensor Removal

SUBTASK 73-21-06-020-001-H01



USE TEFLON-JAWED PLIERS TO LOOSEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.



MAKE SURE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU DISCONNECT THEM. CONTAMINATION OF ELECTRICAL CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.

- (1) Use a teflon-jawed pliers, STD-664 to disconnect the electrical connector (CH B) [9] and electrical connector (CH A) [10] from the T12 sensor [1] (TASK 70-00-01-400-807-H01) (Figure 401).
 - (a) Install protective covers on the T12 sensor [1] and the electrical connector (CH B) [9] and the electrical connector (CH A) [10].

SUBTASK 73-21-06-020-002-H01



MAKE SURE YOU BE EXTRA CAREFUL WHEN YOU WORK ON THE T12 SENSOR. DO NOT DROP TOOL OR COMPONENTS INTO THE INLET VACUUM WHEN YOU WORK ON THE T12 SENSOR. IF YOU DO, DAMAGE TO THE INLET COWL CAN OCCUR.

- (2) Remove the bolts [11] and washers [12] that connect the bracket [13] and the T12 sensor [1] assembly to the inlet cowl.
 - (a) Remove the bracket [13] and the T12 sensor [1] assembly.

SUBTASK 73-21-06-020-004-H01

- (3) Use a screwdriver, STD-4122 to remove the nuts [3] and bolts [7] that connect the T12 sensor [1] to the bracket [13].
 - (a) Remove the T12 sensor [1]

SUBTASK 73-21-06-020-005-H01

- (4) Remove the isolation pad [4].

SUBTASK 73-21-06-210-001-H01

- (5) Examine the isolation pad [4] for damage.
 - (a) If the isolation pad is not damaged, then keep it for the subsequent installation.
 - (b) If the isolation pad is damaged, then replace it.

SUBTASK 73-21-06-020-006-H01

- (6) Remove the grommets [2].

SUBTASK 73-21-06-210-002-H01

- (7) Examine the grommets [2] for damage.
 - (a) If the grommets are not damaged, then keep them for the subsequent installation.

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- (b) If the grommets are damaged, then replace them.

————— **END OF TASK** —————

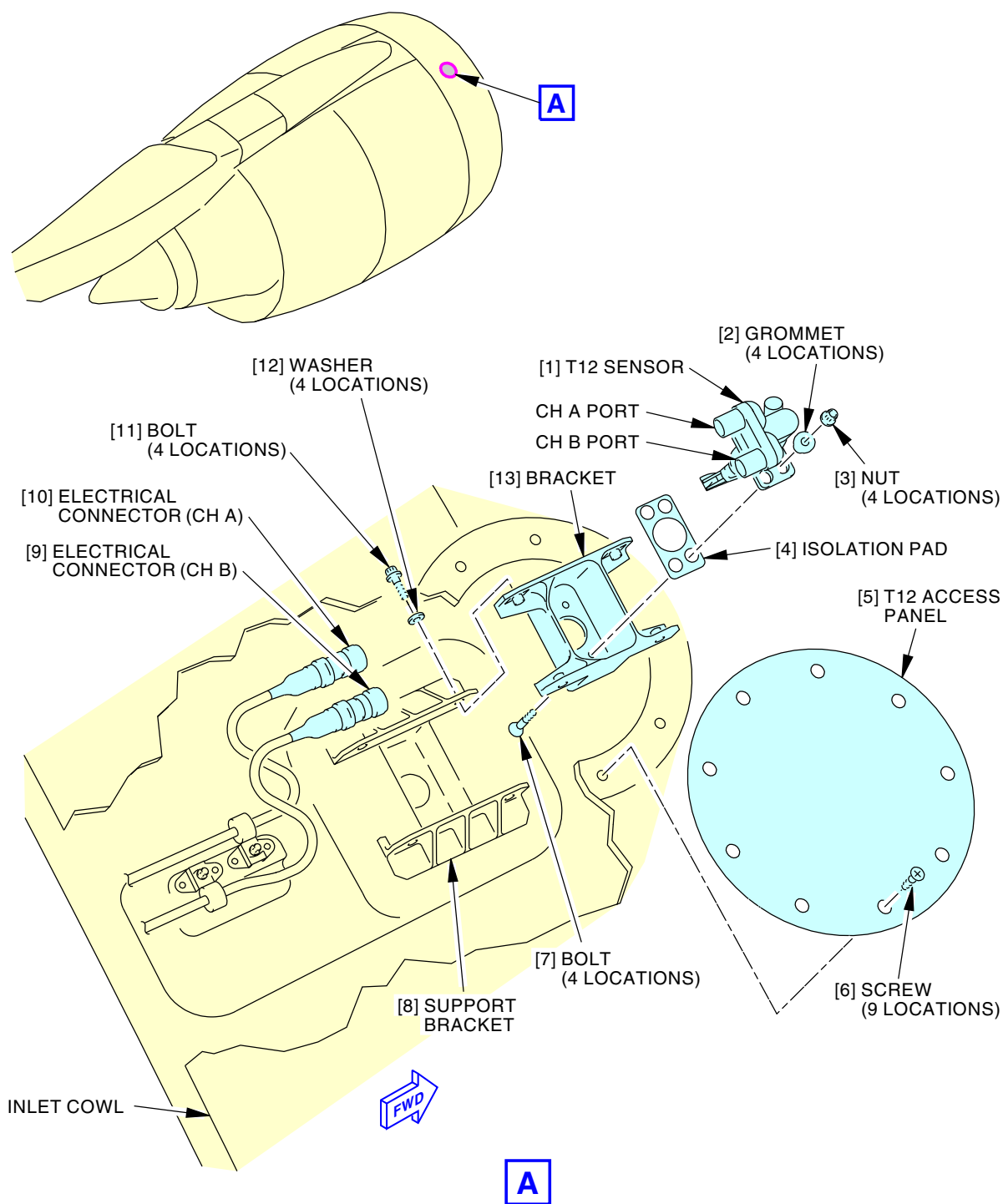
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T12 Sensor Installation
Figure 401/73-21-06-990-801-H01

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TASK 73-21-06-400-801-H01

3. T12 Sensor Installation

A. General

- (1) This task is the installation procedure for the T12 sensor.
- (2) You must do the tests listed in the power plant test reference table after you replace the T12 sensor.

B. References

Reference	Title
54-52-00-910-804-001	Fall Arrest Lifeline Procedure (P/B 201)
70-00-01-400-807-H01	Electrical Connector - Disconnect and Connect (P/B 201)
71-00-00-800-833-H00	Power Plant Test Reference Table (P/B 501)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-4122	Screwdriver - Hi-Torque Bit

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	T12 sensor	73-21-06-03-085	ARO ALL
4	Isolation pad	73-21-06-03-080	ARO ALL

E. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

F. Access Panels

Number	Name/Location
412BR	T12 Inlet Temperature Sensor Panel, Left Engine
422BR	T12 Inlet Temperature Sensor Panel, Right Engine

G. T12 Sensor Installation

SUBTASK 73-21-06-490-001-H01



WARNING

USE THE FALL ARREST LIFELINE PROCEDURE IF YOU DO NOT USE OTHER SAFETY EQUIPMENT. IF YOU USE THE SAFETY EQUIPMENT OR PROCEDURES INCORRECTLY, IT CAN CAUSE INJURY OR KILL YOU.

- (1) If you do not use other safety equipment, do the (strut-mounted) Fall Arrest Lifeline Procedure (TASK 54-52-00-910-804-001).

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SUBTASK 73-21-06-420-001-H01



MAKE SURE YOU BE EXTRA CAREFUL WHEN YOU WORK ON THE T12 SENSOR. DO NOT DROP TOOL OR COMPONENTS INTO THE INLET VACUUM WHEN YOU WORK ON THE T12 SENSOR. IF YOU DO, DAMAGE TO THE INLET COWL CAN OCCUR.

- (2) Put the T12 sensor [1] and bracket [13] assembly together (Figure 401):

NOTE: You can put the T12 sensor and bracket assembly together before you get access to the top of the engine.

- (a) Install the grommets [2] in the mounting flange of the T12 sensor [1].
- (b) Install the isolation pad [4] on the mounting flange of the T12 sensor [1].
- (c) Put the T12 sensor [1] in its position on the bracket [13].
- (d) Use a screwdriver, STD-4122 to install the bolts [7] and nuts [3] that attach the T12 sensor [1] to the bracket [13].
 - 1) Tighten the bolts [7] to 90-125 pound-inches (10.1-14.1 Newton-meters).

SUBTASK 73-21-06-420-002-H01



MAKE SURE YOU BE EXTRA CAREFUL WHEN YOU WORK ON THE T12 SENSOR. DO NOT DROP TOOL OR COMPONENTS INTO THE INLET VACUUM WHEN YOU WORK ON THE T12 SENSOR. IF YOU DO, DAMAGE TO THE INLET COWL CAN OCCUR.

- (3) Install the T12 sensor [1] and bracket [13] assembly in its correct position in the support bracket [8] on the inlet cowl.
- (a) Install the bolts [11] and washers [12] that connect the bracket [13] to the support bracket [8].
 - 1) Tighten the bolts [11] to 100-150 pound-inches (11.3-16.9 Newton-meters).

SUBTASK 73-21-06-420-003-H01



MAKE SURE THE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU CONNECT THEM. THE CONTAMINATION OF THE ELECTRICAL CONNECTOR CAN CAUSE DAMAGE TO THE EQUIPMENT.



USE TEFLON-JAWED PLIERS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

- (4) Use a teflon-jawed pliers, STD-664 to connect the electrical connector (CH B) [9] and electrical connector (CH A) [10] TASK 70-00-01-400-807-H01:
- (a) Remove the protective covers from the electrical receptacles on the T12 sensor [1] and the electrical connector (CH B) [9] and electrical connector (CH A) [10].
 - (b) Connect the electrical connector (CH B) [9] and the electrical connector (CH A) [10] to the T12 sensor [1].
 - (c) Tighten the electrical connector (CH B) [9] and the electrical connector (CH A) [10].

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SUBTASK 73-21-06-410-001-H01

- (1) Install the T12 access panel [5]:
 - (a) Put the T12 access panel [5] in its position on the inlet cowl.
 - 1) Install the applicable access panels:

<u>Number</u>	<u>Name/Location</u>
412BR	T12 Inlet Temperature Sensor Panel, Left Engine
422BR	T12 Inlet Temperature Sensor Panel, Right Engine
 - (b) Install the screws [6] that attach the T12 access panel [5] to the inlet cowl.
 - (c) Tighten the screws [6].

SUBTASK 73-21-06-080-001-H01

- (2) Remove the fall arrest equipment Fall Arrest Lifeline Procedure, TASK 54-52-00-910-804-001.

I. T12 Sensor Installation Test

SUBTASK 73-21-06-710-001-H01

- (1) Do the tests listed in the Power Plant Test Reference Table (TASK 71-00-00-800-833-H00).

———— **END OF TASK** ————

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CONTROL ALTERNATOR (STATOR) - REMOVAL/INSTALLATION

1. General

- A. This procedure contains two tasks:
- (1) Control alternator (stator) removal
 - (2) Control alternator (stator) installation.

TASK 73-21-08-000-801-H01

2. Control Alternator (Stator) Removal

(Figure 401 and Figure 402)

A. General

- (1) This task is the removal procedure for the control alternator (stator).
- (2) The control alternator (stator) is at the 6:00 o'clock position on the forward face of the main gearbox.
- (3) You must open the thrust reversers to get access to the control alternator (stator).

B. References

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
27-81-00-860-805	Retract the Leading Edge Slats (P/B 201)
70-00-01-400-807-H01	Electrical Connector - Disconnect and Connect (P/B 201)
71-11-04-010-814-H00	Open the Fan Cowl Panel (Selection) (P/B 201)
78-31-00-010-816-H00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-806-H00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

C. Tools/Equipment

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

Reference	Description
SPL-769	Set - Pin, Control Alternator and VBV Actuator Guide Part #: 9C1163G02 Supplier: 06083
STD-205	Container - Oil Resistant, 5 U.S.-Gal (19 l)
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)

D. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

E. Access Panels

Number	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
423AL	Left Fan Cowl Panel, Right Engine

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(Continued)

Number	Name/Location
424AR	Right Fan Cowl Panel, Right Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

F. Prepare for the Removal

SUBTASK 73-21-08-010-001-H01



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO OPEN THE THRUST REVERSER(S). IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR

- (1) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:

- (a) Do this task: Retract the Leading Edge Slats, TASK 27-81-00-860-805.
- (b) Do this task: Leading Edge Slat - Deactivation, TASK 27-81-00-040-801.
- (c) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-806-H00.
- (d) For the left and right fan cowl panels, do this task:

Open the Fan Cowl Panel (Selection), TASK 71-11-04-010-814-H00

Number	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine

- (e) For the left and right thrust reversers, do this task:

Open the Thrust Reverser (Selection), TASK 78-31-00-010-816-H00

Number	Name/Location
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

G. Control Alternator (Stator) Removal

SUBTASK 73-21-08-010-006-H01

- (1) Disconnect the electrical harness (W723) [12] and the electrical harness (W724) [13] from the control alternator (stator) [6]:
- (a) Make sure that you protect the alternator ablative coating with cloth or other material when you work near the alternator (stator).
 - (b) Remove the two bolts [11] that attach the electrical harness (W723) [12] to the low right front end of the gearbox.
 - (c) Remove the two bolts [14] the attach the electrical harness (W724) [13] to the left front end of the gearbox.

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MAKE SURE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU DISCONNECT THEM. CONTAMINATION OF ELECTRICAL CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.



USE TEFLON-JAWED PLIERS TO LOOSEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

- (d) Use teflon-jawed pliers, STD-664 to disconnect the electrical connector (CH A) [10] and electrical connector (CH B) [9] from the N2 speed sensor [15] (TASK 70-00-01-400-807-H01):
 - 1) Install protective covers on the electrical receptacles of the N2 speed sensor [15], electrical connector (CH A) [10] and the electrical connector (CH B) [9].
- (e) Move the electrical harness (W723) [12] and the electrical harness (W724) [13] away from the N2 speed sensor [15].

SUBTASK 73-21-08-020-001-H01



MAKE SURE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU DISCONNECT THEM. CONTAMINATION OF ELECTRICAL CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.



USE TEFLON-JAWED PLIERS TO LOOSEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

- (2) Use teflon-jawed pliers, STD-664 to disconnect the electrical connector (CH A) [4] and the electrical connector (CH B) [5] from the control alternator (stator) [6] (TASK 70-00-01-400-807-H01):
 - (a) Disconnect the electrical connector (CH A) [4] and the electrical connector (CH B) [5] from the control alternator (stator) [6].
 - (b) Install protective covers on the electrical receptacles on the control alternator (stator) [6] and the electrical connector (CH A) [4] and the electrical connector (CH B) [5].
 - (c) Move the electrical connector (CH A) [4] and the electrical connector (CH B) [5] out of the way.

SUBTASK 73-21-08-020-002-H01



DO NOT HIT THE CONTROL ALTERNATOR HOUSING WITH A HAMMER (OR OTHER OBJECT) TO REMOVE IT FROM THE GEARBOX. DAMAGE TO THE WINDINGS CAN OCCUR IF THE CONTROL ALTERNATOR HITS THE GUIDE PINS OR STUDS DURING REMOVAL.

- (3) Remove the control alternator (stator) [6]:
 - (a) Remove the four nuts [3] that attach the control alternator (stator) [6] to the gearbox.

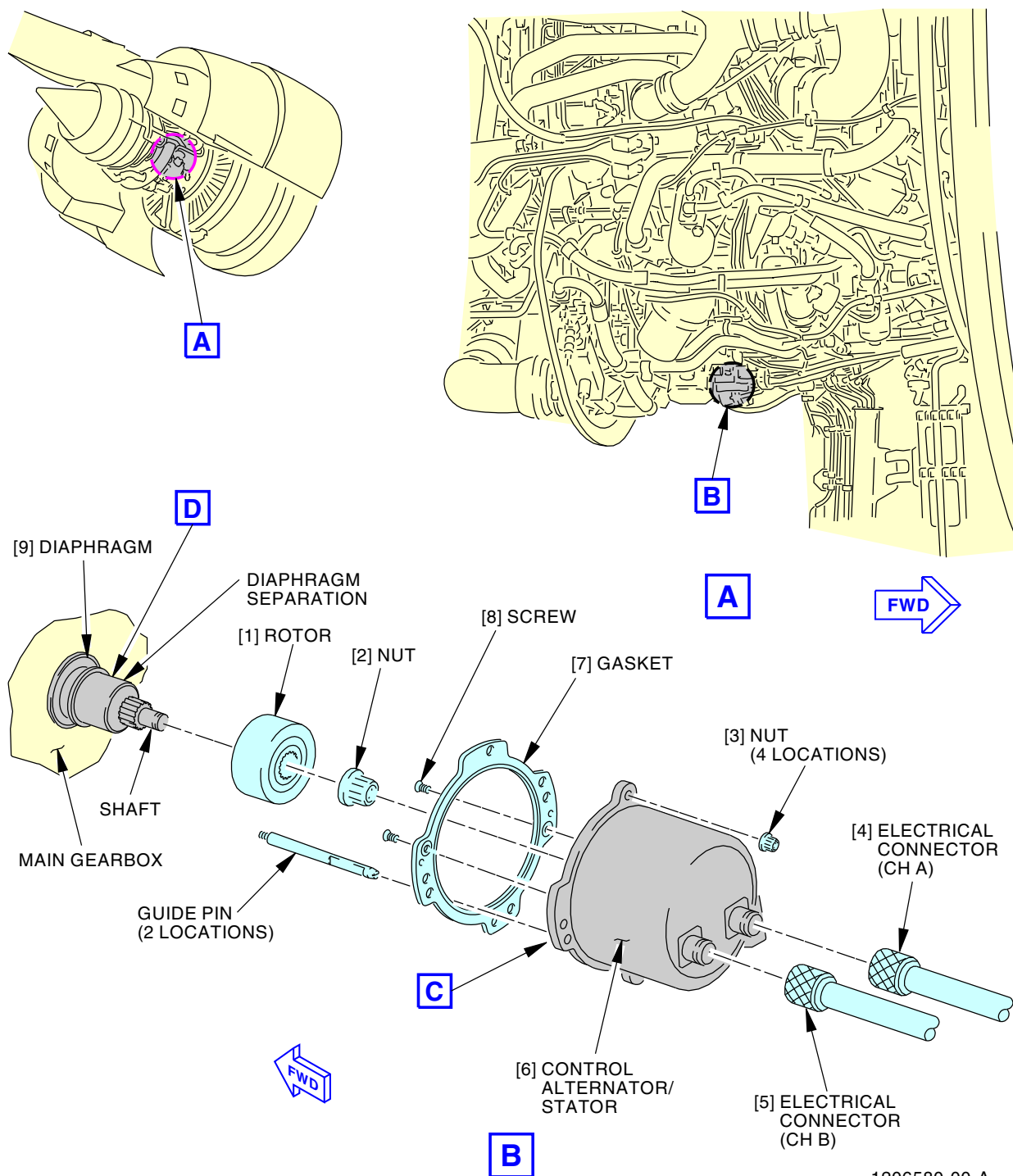
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- (b) Install the two guide pins (9C1163P05) from the control alternator and VBV actuator guide pin set, SPL-769 through the guide pin holes in the control alternator (stator) [6] and into the gearbox.

NOTE: The control alternator and VBV actuator guide pin set, SPL-769 contains the control alternator guide pins - 9C1163P05

- (c) Move the control alternator/stator away from the accessory gearbox and permit the engine oil to drain into a clean 5 U.S.-gal (19 l) oil resistant container, STD-205.
- (d) Remove the control alternator (stator) [6].
- (e) Pull the control alternator (stator) [6] off the guide pins.
- (f) Remove the guide pins from the from the main gearbox.
- (g) Examine the gasket seal [7] for damage.
- 1) If the gasket seal [7] is damaged, remove and discard the gasket seal [7].
- (h) Install a protective cover on the opening on the accessory gearbox and the control alternator (stator) [6].

———— **END OF TASK** ————

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Control Alternator (Stator) Installation
Figure 401/73-21-08-990-804-H00 (Sheet 1 of 2)

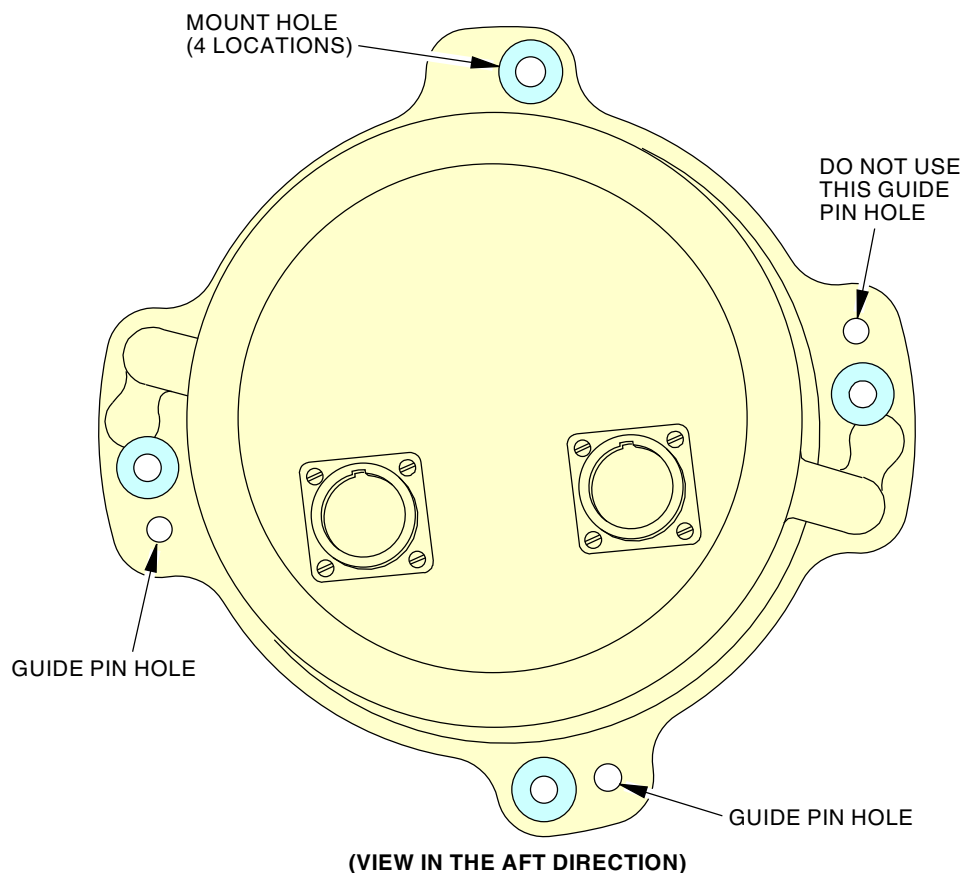
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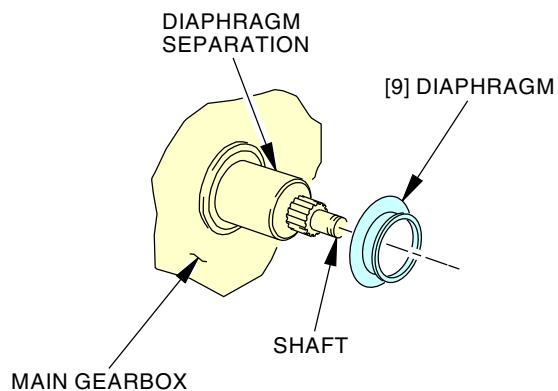
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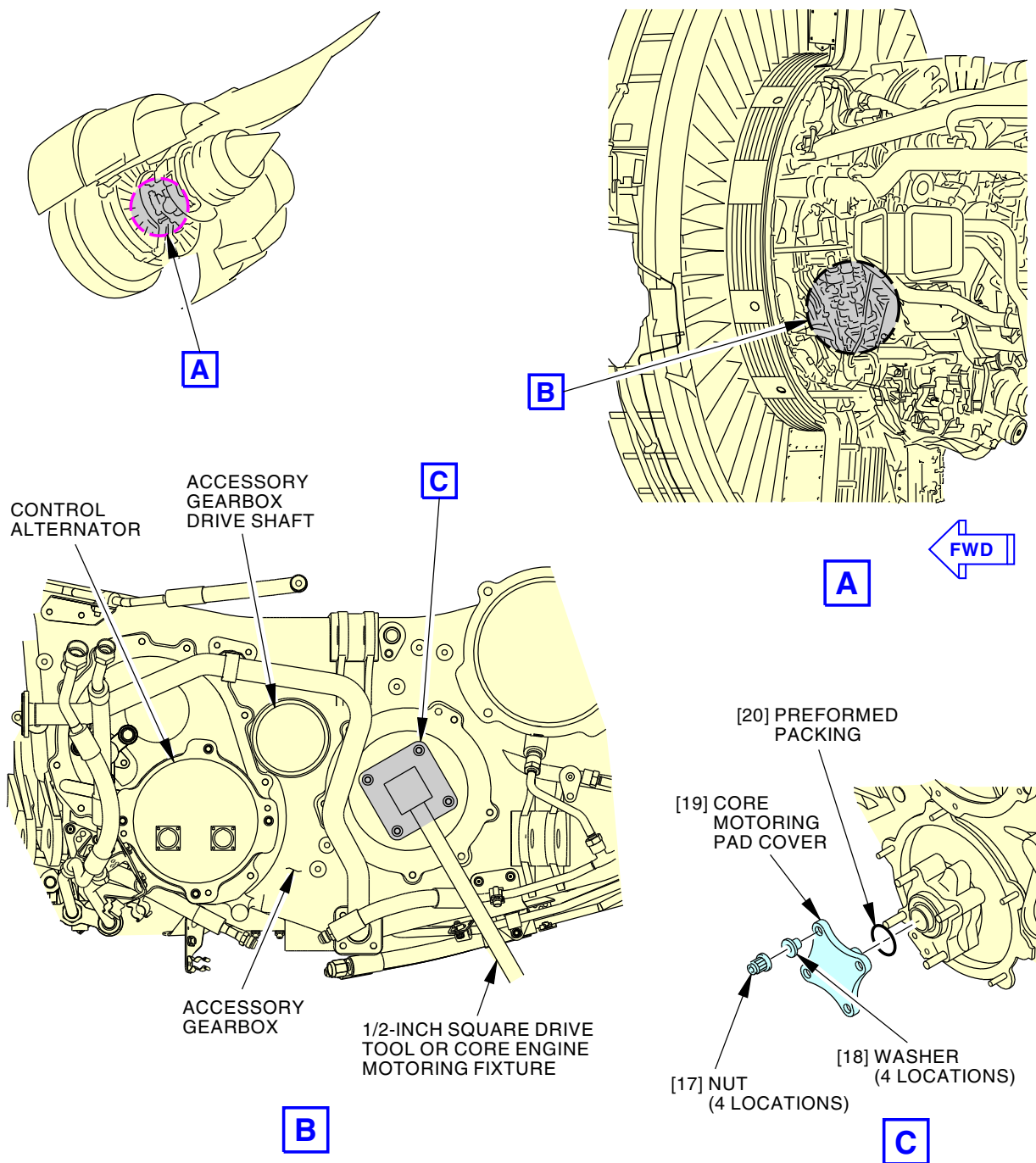
Control Alternator (Stator) Installation
Figure 401/73-21-08-990-804-H00 (Sheet 2 of 2)

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**Core Motoring Pad Installation
Figure 402/73-21-08-990-805-H00**
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TASK 73-21-08-400-801-H01

3. Control Alternator (Stator) Installation

(Figure 401 and Figure 402)

A. General

- (1) This task is the installation procedure for the control alternator (stator).
- (2) You must do the test listed in the power plant test reference table after you install the control alternator (stator).

B. References

Reference	Title
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
70-00-01-400-807-H01	Electrical Connector - Disconnect and Connect (P/B 201)
71-00-00-800-833-H00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-814-H00	Close the Fan Cowl Panel (Selection) (P/B 201)
73-21-09-400-801-H00	Control Alternator Rotor Installation (P/B 401)
78-31-00-410-816-H00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-805-H00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Tools/Equipment

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

Reference	Description
SPL-769	Set - Pin, Control Alternator and VBV Actuator Guide Part #: 9C1163G02 Supplier: 06083
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)

D. Consumable Materials

Reference	Description	Specification
D50043 [C02-058]	Compound - Antiseize, Acheson GP460 (For Threaded Fasteners 0.250 Inches Diameter Or Larger, C02-079 Is An Alternative)	GE A50TF201 Class A

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
6	Control alternator (stator)	73-21-08-03-015	ARO ALL
7	Gasket seal	73-21-08-03-006	ARO ALL

F. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

G. Access Panels

Number	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine

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Number	Name/Location
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

H. Control Alternator (Stator) Installation

SUBTASK 73-21-08-420-001-H01

(1) Install the control alternator rotor (TASK 73-21-09-400-801-H00).

SUBTASK 73-21-08-420-002-H01

(2) Install the control alternator (stator) [6]:

- (a) If the gasket seal [7] is damaged, replace with a new gasket seal [7].
 - 1) Install the new gasket seal [7] on the control alternator (stator) [6] with the two screws [8].
 - 2) Tighten screws [8] to 12 ± 1 pound-inches (1.36 ± 0.12 Newton-meters).
- (b) Apply a thin coat of Acheson GP460 compound, D50043 [C02-058] on the studs at the gearbox accessory.
- (c) Install the two guide pins from the control alternator and VBV actuator guide pin set, SPL-769 in the gearbox.

NOTE: The control alternator and VBV actuator guide pin set, SPL-769 contains the guide pins 9C1163P05.
- (d) Carefully align the control alternator (stator) [6] with the guide pins and push the control alternator (stator) [6] over the rotor until it seats in the gearbox.
- (e) Remove the guide pins.
- (f) Install the nuts [3].
- (g) Tighten the nuts [3] to 60 ± 10 pound-inches (6.8 ± 1.12 Newton-meters).

SUBTASK 73-21-08-420-003-H01



MAKE SURE THE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU CONNECT THEM. THE CONTAMINATION OF THE ELECTRICAL CONNECTOR CAN CAUSE DAMAGE TO THE EQUIPMENT.



USE TEFLON-JAWED PLIERS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

- (3) Use teflon-jawed pliers, STD-664 to connect the electrical connector (CH A) [4] and the electrical connector (CH B) [5] to the control alternator (stator) [6] (TASK 70-00-01-400-807-H01):
 - (a) Remove the protective covers from the receptacles, the electrical connector (CH A) [4] and the electrical connector (CH B) [5].
 - (b) Connect the electrical connector (CH A) [4] and the electrical connector (CH B) [5] to the control alternator (stator) [6].
 - (c) Tighten the electrical connector (CH A) [4] and the electrical connector (CH B) [5].

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SUBTASK 73-21-08-410-007-H01

- (4) Connect the electrical harness (W723) [12] and the electrical harness (W724) [13] to the N2 speed sensor [15] :

- (a) Remove the protective covers from the receptacles on the N2 speed sensor [15], the electrical connector (CH B) [9], and the electrical connector (CH A) [10].



MAKE SURE THE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU CONNECT THEM. THE CONTAMINATION OF THE ELECTRICAL CONNECTOR CAN CAUSE DAMAGE TO THE EQUIPMENT.



USE TEFLON-JAWED PLIERS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

- (b) Use teflon-jawed pliers, STD-664 to connect the electrical connector (CH B) [9], and the electrical connector (CH A) [10](TASK 70-00-01-400-807-H01).
- (c) Move the electrical harness (W724) [13] into position on the bracket at the left front end of the gearbox.
- (d) Attach the electrical harness (W724) [13] on the bracket with two bolts [14].
- 1) Tighten the bolts [14] to 118 ± 9 pound-inches (13.3 ± 1.0 Newton-meters).
- (e) Move the electrical harness (W723) [12] into position on the bracket at the low right front end of the gearbox.
- (f) Attach the electrical harness (W723) [12] on the bracket with the two bolts [11].
- 1) Tighten the bolts [11] to 118 ± 9 pound-inches (13.3 ± 1.0 Newton-meters).

I. Put the Airplane Back to its Usual Condition

SUBTASK 73-21-08-410-002-H01



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Do these tasks in sequence to safely close the left and right thrust reversers on the applicable engine:

- (a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-410-816-H00.

- 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

- (b) Do this task: Close the Fan Cowl Panel (Selection), TASK 71-11-04-410-814-H00.

- 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
413AL	Left Fan Cowl Panel, Left Engine

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<u>Number</u>	<u>Name/Location</u>
414AR	Right Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine

- (c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-805-H00.
- (d) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

J. Control Alternator Rotor Test

SUBTASK 73-21-08-710-001-H01

- (1) Do the tests listed in the Power Plant Test Reference Table (TASK 71-00-00-800-833-H00).

———— **END OF TASK** ————

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CONTROL ALTERNATOR (STATOR) - INSPECTION/CHECK

1. General

- A. This procedure has one task:
- (1) Control alternator (Stator) inspection.

TASK 73-21-08-200-801-H01

2. Control Alternator (Stator) Inspection

A. General

- (1) This task provides the inspection of the control alternator (stator) ablative coating.
- (2) The ablative coating can be examined with the control alternator in place (when the alternator (stator) is accessible) on the wing or in a shop.
- (3) When you examine an installed control alternator (stator), you must open the thrust reversers to get access to the control alternator (stator).
- (4) The control alternator (stator) is at the 6:00 o'clock position on the forward face of the main gearbox.

B. References

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
27-81-00-860-805	Retract the Leading Edge Slats (P/B 201)
71-11-04-010-814-H00	Open the Fan Cowl Panel (Selection) (P/B 201)
71-11-04-410-814-H00	Close the Fan Cowl Panel (Selection) (P/B 201)
73-21-08-000-801-H01	Control Alternator (Stator) Removal (P/B 401)
73-21-08-300-801-H01	Control Alternator (Stator) Repair (P/B 801)
73-21-08-400-801-H01	Control Alternator (Stator) Installation (P/B 401)
78-31-00-010-816-H00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-806-H00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)
78-31-00-410-816-H00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-805-H00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

D. Access Panels

Number	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine
425AL	Left Thrust Reverser, Right Engine

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Number	Name/Location
426AR	Right Thrust Reverser, Right Engine

E. Prepare for the Inspection

SUBTASK 73-21-08-010-003-H01



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO OPEN THE THRUST REVERSER(S). IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR

- (1) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:

- (a) Do this task: Retract the Leading Edge Slats, TASK 27-81-00-860-805.
- (b) Do this task: Leading Edge Slat - Deactivation, TASK 27-81-00-040-801.
- (c) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-806-H00.

- (d) For the left and right fan cowl panels, do this task:

Open the Fan Cowl Panel (Selection), TASK 71-11-04-010-814-H00

Number	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine

- (e) For the left and right thrust reversers, do this task:

Open the Thrust Reverser (Selection), TASK 78-31-00-010-816-H00

Number	Name/Location
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

F. Control Alternator (Stator) Inspection

SUBTASK 73-21-08-210-001-H01

- (1) Examine the ablative coating of the control alternator (stator):

- (a) Look for indications of ablative coating that is separated from the housing, that does not have a good bond, or that is missing.
 - 1) Separated ablative coating or ablative coating that does not have a good bond is not permitted.
 - 2) Replace the control alternator (stator) (TASK 73-21-08-000-801-H01 and TASK 73-21-08-400-801-H01).

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- (b) Look for ablative coating that has cuts, peeling, flaking, missing coating, or other conditions that decreases the coating thickness.

NOTE: Conditions which decrease the coating thickness are not permitted and must be repaired.

NOTE: There is no limit on how much coating can be repaired. Scuffing, which is the result of use, is permitted.

- 1) Do this task: Control Alternator (Stator) Repair, TASK 73-21-08-300-801-H01

G. Put the Airplane Back to Its Usual Condition

SUBTASK 73-21-08-410-004-H01



WARNING

DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Do these tasks in sequence to safely close the left and right thrust reversers on the applicable engine:

- (a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-410-816-H00.

- 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

- (b) Do this task: Close the Fan Cowl Panel (Selection), TASK 71-11-04-410-814-H00.

- 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine

- (c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-805-H00.

- (d) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

————— **END OF TASK** —————

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CONTROL ALTERNATOR (STATOR) - REPAIR

1. General

- A. This procedure has one task:
- (1) Control alternator (stator) repair.

TASK 73-21-08-300-801-H01**2. Control Alternator (Stator) Repair**

(Figure 801)

A. General

- (1) This task provides the instructions on how to repair (peeling or flaking) ablative coating on the outside surface of the control alternator (stator).
- (2) The ablative coating can be repaired with the control alternator (stator) in place (when the alternator is accessible) on the wing or off-wing.
- (3) The repair steps are the same for an on wing (installed) or off wing (removed) control alternator (stator), except for the accessing steps.
- (4) To repair the ablative coating, you must open the thrust reversers to get access to the control alternator (stator).
- (5) The control alternator (stator) is at the 6:00 o'clock position on the forward face of the main gearbox.

B. References

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
27-81-00-860-805	Retract the Leading Edge Slats (P/B 201)
71-11-04-010-814-H00	Open the Fan Cowl Panel (Selection) (P/B 201)
71-11-04-410-814-H00	Close the Fan Cowl Panel (Selection) (P/B 201)
78-31-00-010-816-H00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-806-H00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)
78-31-00-410-816-H00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-805-H00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-421	Goggles - Eye Protection
STD-552	Knife - Utility
STD-739	Respirator - Supplied Air
STD-763	Scraper
STD-2486	Gloves - Rubber

D. Consumable Materials

Reference	Description	Specification
A01058	Compound - Ablative Coating - Unison 9043860	
B00130	Alcohol - Isopropyl	TT-I-735

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Reference	Description	Specification
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A
G01043	Cloth - Lint-free	
G02408	Abrasive - Paper, #50 to #400 grit	

E. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

F. Access Panels

Number	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

G. Prepare for the Repair

SUBTASK 73-21-08-010-005-H01



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO OPEN THE THRUST REVERSER(S). IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR

- (1) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:

- (a) Do this task: Retract the Leading Edge Slats, TASK 27-81-00-860-805.
- (b) Do this task: Leading Edge Slat - Deactivation, TASK 27-81-00-040-801.
- (c) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-806-H00.

- (d) For the left and right fan cowl panels, do this task:

Open the Fan Cowl Panel (Selection), TASK 71-11-04-010-814-H00

<u>Number</u>	<u>Name/Location</u>
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine

- (e) For the left and right thrust reversers, do this task:

Open the Thrust Reverser (Selection), TASK 78-31-00-010-816-H00

<u>Number</u>	<u>Name/Location</u>
415AL	Left Thrust Reverser, Left Engine

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<u>Number</u>	<u>Name/Location</u>
416AR	Right Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

H. Ablative Coating Repair

SUBTASK 73-21-08-350-001-H01

- (1) Do the steps that follow to repair damaged ablative coating with the 9043860 repair kit:

NOTE: There is some export control regulations on the 9043860 repair kit, make sure that you contact the local GE Representative prior purchase or shipment.

NOTE: The steps for the repair are the same for an on wing (installed) or off wing (removed) control alternator.

- (a) Use a scraper, STD-763 to remove all loose or peeling ablative coating.
- (b) Use a sharp utility knife, STD-552 to feather the edge of the coating.
- (c) Where the ablative coating is removed from the control alternator (stator), use #50 to #400 grit abrasive paper, G02408 to make the metal surface rough.



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

- (d) Use cotton wiper, G00034 and alcohol, B00130 to clean the damaged area and the adjacent coated surfaces on the control alternator (stator).
 - 1) The adjacent area must be cleaned a minimum of 0.5 inch (12.7 mm) around the damaged area.
- (e) Let the cleaned area dry completely.
- (f) Get Unison 9043860 compound, A01058.



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

- (g) Put on a supplied air respirator, STD-739, eye protection goggles, STD-421 and rubber gloves, STD-2486 when you use the primer.
- (h) Use the brush that is supplied with the Unison 9043860 compound, A01058 or a lint-free cloth, G01043 to apply the primer to the damaged area of the control alternator (stator).
 - 1) It is permitted for the primer to overlap the ablative coating that is on the control alternator (stator).
 - 2) If the primer becomes a chalky color, there is too much primer on the control alternator (stator).

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**WARNING**

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

- a) Use alcohol, B00130 to remove the primer.
 - b) Apply a new coat of primer.
- 3) Let the primer dry for a minimum of one hour.

NOTE: When the air humidity is high, the primer will take longer than one hour to dry.

- (i) Do the steps that follow to mix the ablative coating:

**WARNING**

DO NOT GET ABLATIVE COATING IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE ABLATIVE COATING. PUT ON A RESPIRATOR AND OTHER EQUIPMENT FOR PROTECTION WHEN YOU APPLY THE ABLATIVE COATING. KEEP THE ABLATIVE COATING AWAY FROM SPARKS, FLAME, AND HEAT. THE ABLATIVE COATING IS POISONOUS AND FLAMMABLE, AND CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

**CAUTION**

DO NOT USE A HIGH-SPEED MIXER TO MIX THE ABLATIVE COATING. A HIGH-SPEED MIXER CAN CHANGE THE PROPERTIES OF THE CURED ABLATIVE COATING.

- 1) Put the part B catalyst into the jar that contains the part A resin.
 - 2) Use the wood stick to hand mix the ablative coating compound for 2 to 5 minutes.
- (j) Do the steps that follow to apply the ablative coating to the damaged area of the control alternator (stator).

NOTE: You can use the brush or you can use a new wood stick to apply the ablative coating.

- 1) Apply the new ablative coating so that it overlaps the old ablative coating for approximately 0.25 inch (6.35 mm).
 - 2) Blend the edges of the ablative coating.
 - 3) Let the ablative coating air dry for 30 minutes.
- (k) Do one of the steps that follows to cure the ablative coating:

NOTE: If the control alternator (stator) is off wing, a circulating air oven, set at the specified temperatures and for the specified time, can be used.

- 1) Use a heat gun for 15 minutes at 200° F (93° C).
- 2) Use a heat gun for 5 minutes at 300° F (149° C).
- 3) If the control alternator (stator) is repaired on wing and the specified temperature cannot be maintained for the specified time, apply the heat only until the ablative coating has set and is dry to the touch.

NOTE: Heat supplied by the engine operation will cause a complete cure to occur.

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SUBTASK 73-21-08-340-001-H00

- (2) Do these steps to repair the ablative coating with the 513558 repair kit.

NOTE: The 513558 ablative coating repair kit can be shipped worldwide.

NOTE: Sliced coating where no metal is exposed is repairable. Scuffs in the coating with no metal exposed or metal exposed that is no more than 0.25 inch (6.35 mm) in diameter is also repairable. If more than 10% of the stator surface is exposed, the coating is not repairable.

- (a) Prepare the surface as follows:

- 1) Remove all coating that is separated or not bonded to the housing.
- 2) Use a #50 to #400 grit abrasive paper, G02408 to make the metal surface of the housing rough.



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

- 3) Clean the metal surface and a minimum of 0.5 inch (12.7 mm) of the compound around it with a clean lint-free cloth, G01043 moisten with alcohol, B00130.
 - 4) Let the surface and the compound air dry.
- (b) Mix and apply the repair coating as follows:



DO NOT GET ABLATIVE COATING IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE ABLATIVE COATING. PUT ON A RESPIRATOR AND OTHER EQUIPMENT FOR PROTECTION WHEN YOU APPLY THE ABLATIVE COATING. KEEP THE ABLATIVE COATING AWAY FROM SPARKS, FLAME, AND HEAT. THE ABLATIVE COATING IS POISONOUS AND FLAMMABLE, AND CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.



DO NOT USE A HIGH-SPEED MIXER TO MIX THE ABLATIVE COATING. A HIGH-SPEED MIXER CAN CHANGE THE PROPERTIES OF THE CURED ABLATIVE COATING.

- 1) Put the Catalyst Part "A" into the container of Base Resin Part "B", then hand-mix with a plastic or metal tool for two to five minutes.

NOTE: Contact with rubber or wooden surfaces can cause the material to not cure properly.

- 2) Apply the new coating with a plastic or metal tool as follows:
 - a) Make an overlap with the used coating of approximately 0.25 inch (6.35 mm).
- 3) Let the new coating air-dry for 4 hours minimum followed by another 4 hours or more at 140° - 160° F (60° - 71.2° C).

NOTE: You can also let it air dry for a minimum of 24 hours at 55° - 95°F (22.8° - 35° C).

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- 4) If you repair the control alternator (stator) on the wing and you cannot maintain the specified temperature for the specified time, do these step:
 - a) Apply the heat only until the ablative coating has set and is dry to the touch.
- (c) Do these steps to discard the ablative coating repair compound that is not used:
 - 1) Apply heat per the above step to cure the compound that remains in the container.
 - 2) Keep the container open during heat application.
 - 3) Discard the cured compound and the unused primer as usual unwanted material.

NOTE: Special procedures are not necessary.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 73-21-08-410-006-H01



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Do these tasks in sequence to safely close the left and right thrust reversers on the applicable engine:
 - (a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-410-816-H00.
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine
 - (b) Do this task: Close the Fan Cowl Panel (Selection), TASK 71-11-04-410-814-H00.
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine
 - (c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-805-H00.
 - (d) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

————— **END OF TASK** —————

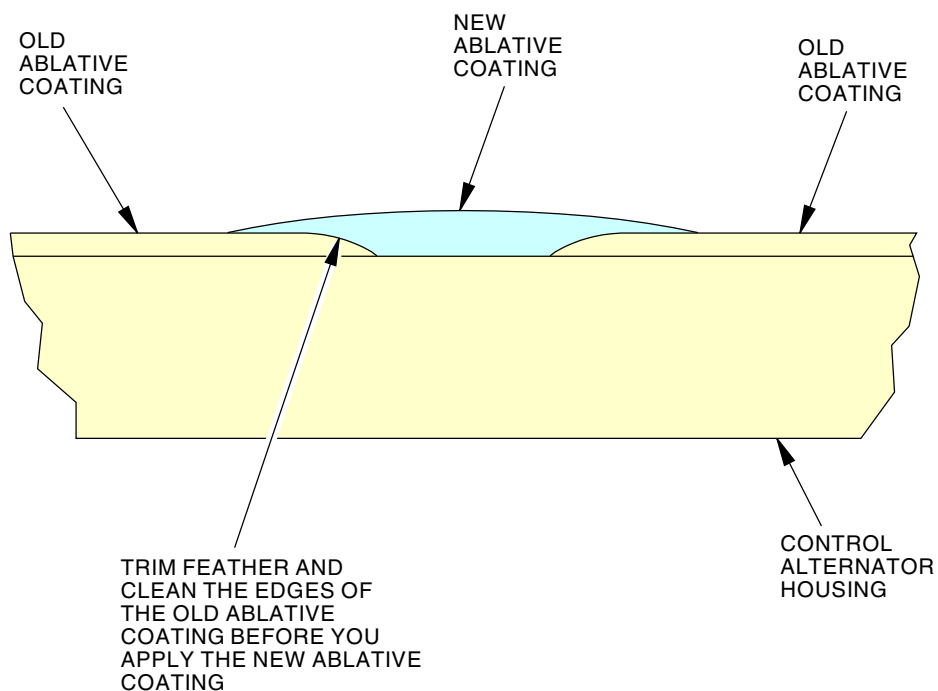
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Control Alternator (Stator) Repair
Figure 801/73-21-08-990-803-H01

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CONTROL ALTERNATOR ROTOR - REMOVAL/INSTALLATION

1. General

- A. This procedure contains two tasks:
- (1) Control alternator rotor removal
 - (2) Control alternator rotor installation.

TASK 73-21-09-000-801-H00

2. Control Alternator Rotor Removal

(Figure 401 and Figure 402)

A. General

- (1) This task provides the instructions on how to remove the control alternator rotor.
- (2) The control alternator rotor is at the 6:00 o'clock position on the forward face of the main gearbox.
- (3) You must open the thrust reversers to get access to the control alternator rotor.

B. References

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
27-81-00-860-805	Retract the Leading Edge Slats (P/B 201)
70-00-01-400-807-H01	Electrical Connector - Disconnect and Connect (P/B 201)
71-11-04-010-814-H00	Open the Fan Cowl Panel (Selection) (P/B 201)
73-21-08-000-801-H01	Control Alternator (Stator) Removal (P/B 401)
78-31-00-010-816-H00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-806-H00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)

D. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

E. Access Panels

Number	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

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F. Prepare for the Removal

SUBTASK 73-21-09-010-001-H00



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO OPEN THE THRUST REVERSER(S). IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR

- (1) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:

- (a) Do this task: Retract the Leading Edge Slats, TASK 27-81-00-860-805.
- (b) Do this task: Leading Edge Slat - Deactivation, TASK 27-81-00-040-801.
- (c) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-806-H00.
- (d) For the left and right fan cowl panels, do this task:
Open the Fan Cowl Panel (Selection), TASK 71-11-04-010-814-H00

<u>Number</u>	<u>Name/Location</u>
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine

- (e) For the left and right thrust reversers, do this task:
Open the Thrust Reverser (Selection), TASK 78-31-00-010-816-H00

<u>Number</u>	<u>Name/Location</u>
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

G. Control Alternator Rotor Removal

SUBTASK 73-21-09-010-002-H00

- (1) Disconnect the electrical harness (W723) [12] and the electrical harness (W724) [13] at the control alternator (stator) [6]:
- (a) Make sure that you protect the alternator ablative coating with cloth or other material when you work near the alternator (stator).
 - (b) Remove the two bolts [11] that attach the electrical harness (W723) [12] to the low right front end of the gearbox.
 - (c) Remove the two bolts [14] that attach the electrical harness (W724) [13] to the left front end of the gearbox.



MAKE SURE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU DISCONNECT THEM. CONTAMINATION OF ELECTRICAL CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.

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USE TEFLON-JAWED PLIERS TO LOOSEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

- (d) Use teflon-jawed pliers, STD-664 to disconnect the electrical connector (CH A) [10] and the electrical connector (CH B) [9] from the N2 speed sensor [15] (TASK 70-00-01-400-807-H01):
 - 1) Install protective covers on the electrical receptacles of the N2 speed sensor [15], electrical connector (CH A) [10] and the electrical connector (CH B) [9].
- (e) Move the electrical harness (W723) [12] and the electrical harness (W724) [13] away from the N2 speed sensor [15].

SUBTASK 73-21-09-020-001-H00



MAKE SURE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU DISCONNECT THEM. CONTAMINATION OF ELECTRICAL CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.



USE TEFLON-JAWED PLIERS TO LOOSEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

- (2) Use teflon-jawed pliers, STD-664 to disconnect the electrical connector (CH A) [4] and the electrical connector (CH B) [5] from the control alternator (stator) [6] (TASK 70-00-01-400-807-H01):
 - (a) Disconnect the electrical connector (CH A) [4] and the electrical connector (CH B) [5] from the control alternator (stator) [6].
 - (b) Install protective covers on the electrical receptacles on the control alternator (stator) [6] and the electrical connector (CH A) [4] and the electrical connector (CH B) [5].
 - (c) Move the electrical connector (CH A) [4] and the electrical connector (CH B) [5] out of the way.

SUBTASK 73-21-09-020-002-H00



DO NOT HIT THE CONTROL ALTERNATOR HOUSING WITH A HAMMER (OR OTHER OBJECT) TO REMOVE IT FROM THE GEARBOX. DAMAGE TO THE WINDINGS CAN OCCUR IF THE CONTROL ALTERNATOR HITS THE GUIDE PINS OR STUDS DURING REMOVAL.

- (3) Do this task: Control Alternator (Stator) Removal, TASK 73-21-08-000-801-H01.

SUBTASK 73-21-09-020-003-H00

- (4) Remove the control alternator rotor [1]:
 - (a) Remove the four nuts [17] and the washers [18] which attach the core motoring pad cover [19] to the accessory gearbox.
 - (b) Remove the core motoring pad cover [19].
 - (c) Remove and discard the preformed packing [20] from the motoring pad cover.

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DO NOT INSTALL THE TOOL UNLESS THERE IS SUFFICIENT CLEARANCE BETWEEN THE STUDS, AND THE TOOL HANDLE. THE TOOL CAN CAUSE DAMAGE TO THE STUDS, OR THE ACCESSORY GEARBOX.

- (d) Insert a 1/2-inch square drive tool into the accessory gearbox motoring drive.
- (e) Put a 1-inch box-end wrench over the nut [2] that attaches the control alternator rotor [1] to the gearbox drive shaft.
- (f) Hold the accessory gearbox drive securely with the tool while you loosen the nut [2] with the wrench.
- (g) Loosen (but do not fully remove) the nut [2].
- (h) Remove the breaker bar, six point adapter, and the wrench.
- (i) Remove the nut [2] with your hand.

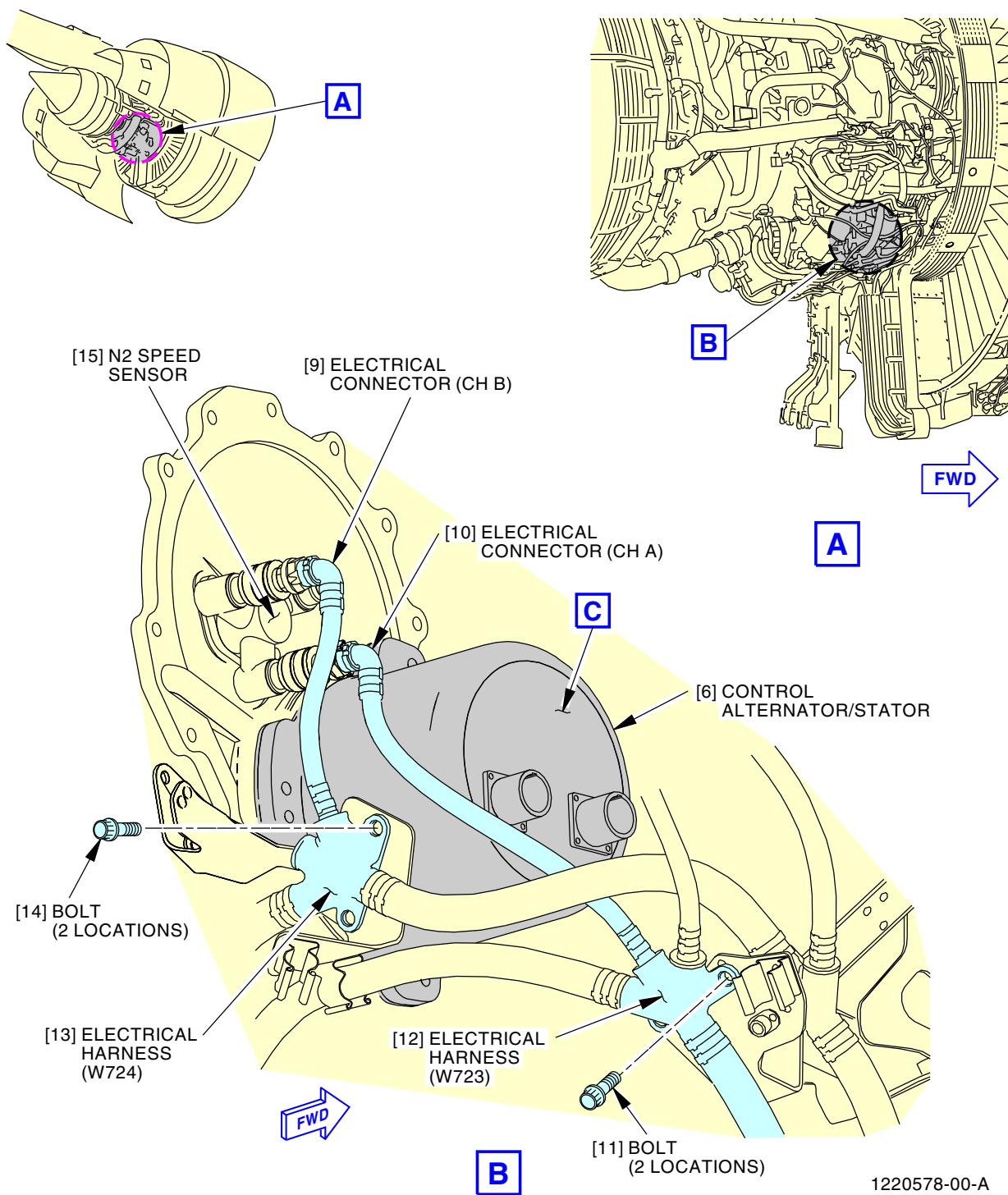


DO NOT REMOVE THE DIAPHRAGM DURING THE REMOVAL OF THE CONTROL ALTERNATOR ROTOR FROM THE GEARBOX ROTOR DRIVE SHAFT. IF THE DIAPHRAGM IS REMOVED, DAMAGE TO THE ROTOR CAN OCCUR.

- (j) Use your hand to carefully remove the control alternator rotor [1].
- (k) Put the control alternator rotor [1] in a protective cover.
- (l) Install a protective cover on the gearbox rotor drive shaft.

———— **END OF TASK** ————

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1220578-00-A
M06964 S0004285950_V4

Control Alternator Rotor Installation
Figure 401/73-21-09-990-801-H00 (Sheet 1 of 2)

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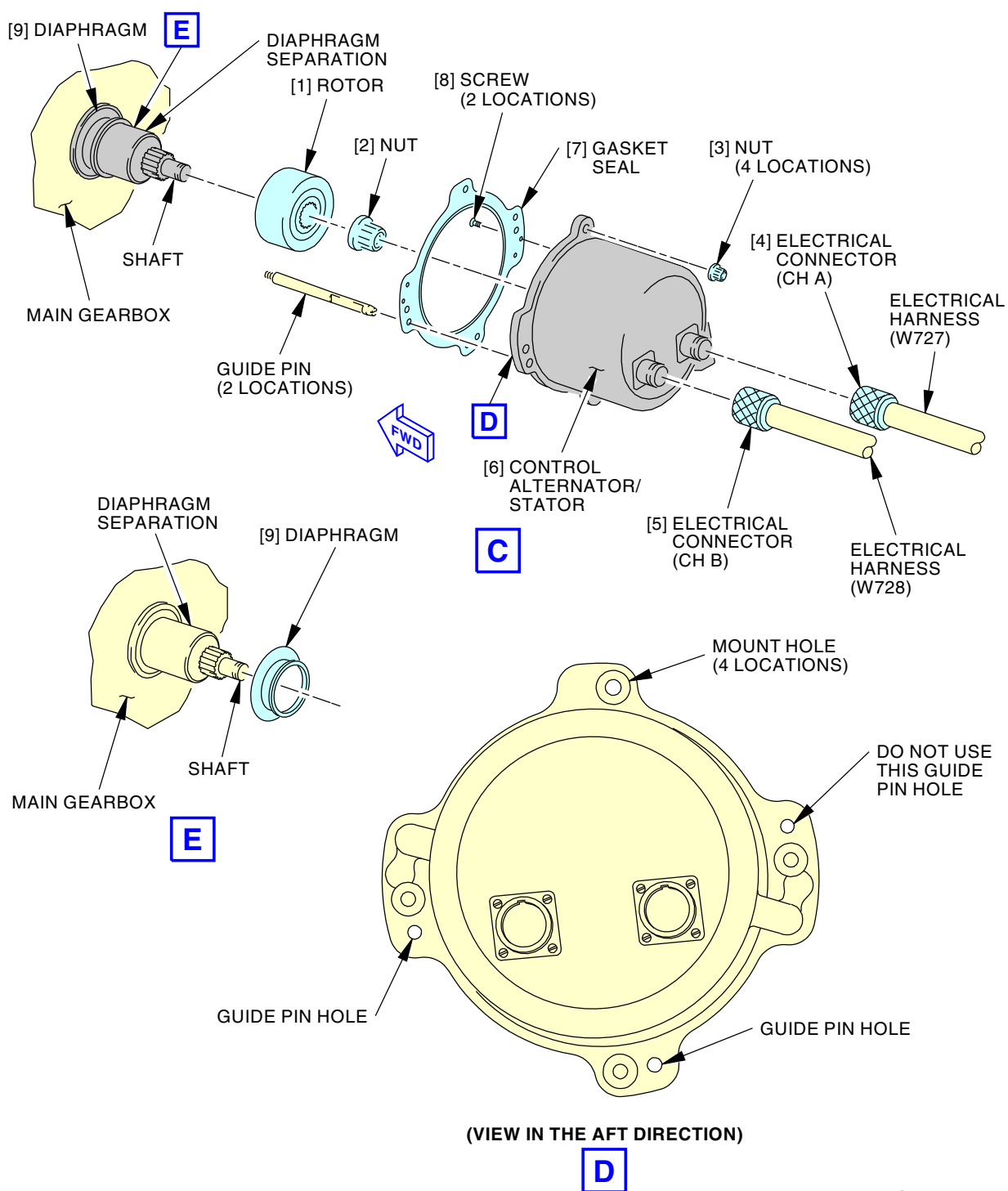
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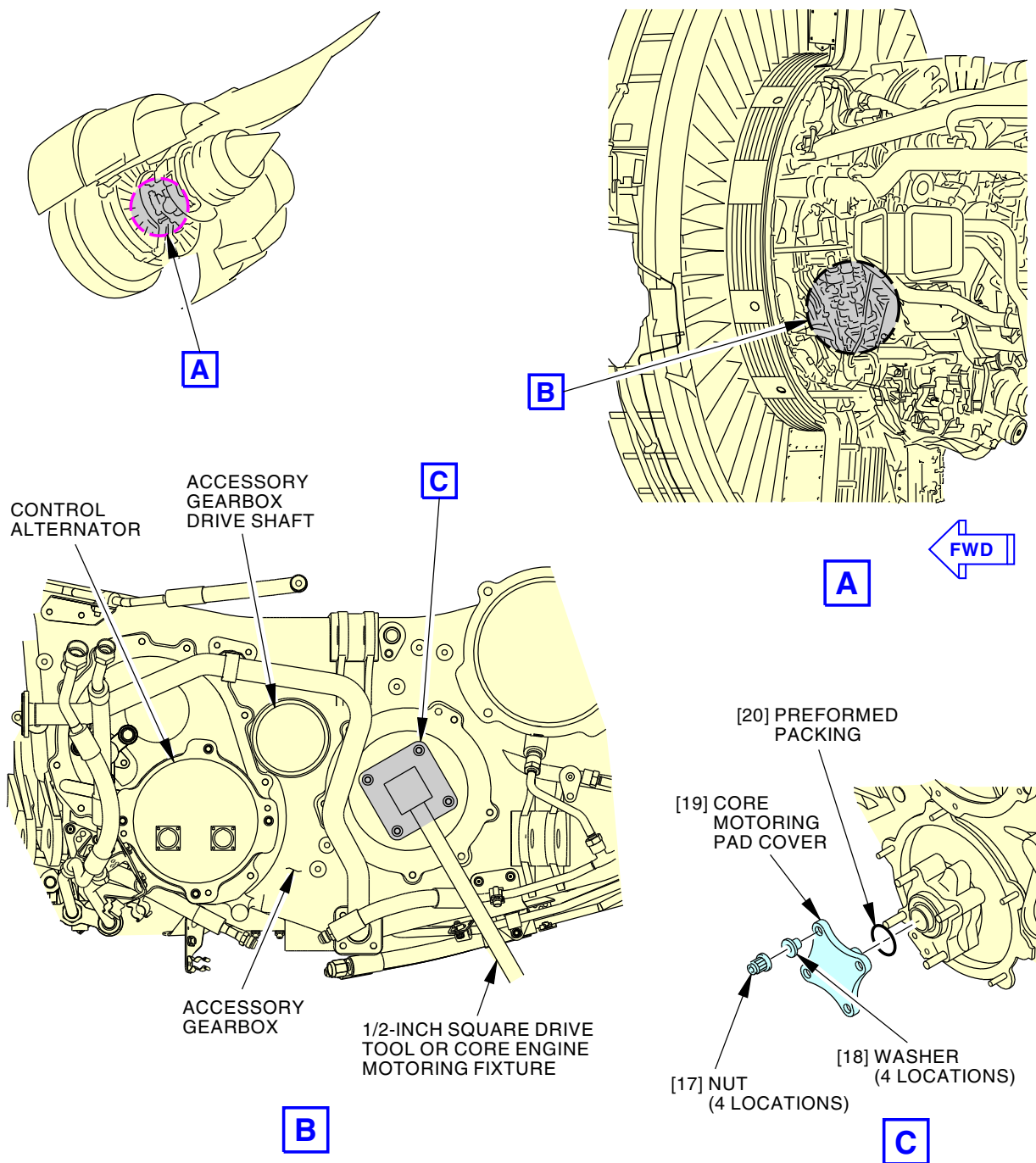
Control Alternator Rotor Installation
Figure 401/73-21-09-990-801-H00 (Sheet 2 of 2)

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1200647-00-A

M97275 S0000103902_V3

Core Motoring Pad Installation
Figure 402/73-21-09-990-802-H00

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TASK 73-21-09-400-801-H00

3. Control Alternator Rotor Installation

Figure 401 and Figure 402

A. General

- (1) This task provides the instructions on how to install the control alternator rotor.
- (2) You must do the test listed in the power plant test reference table after you install the control alternator rotor.

B. References

Reference	Title
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
70-00-01-400-807-H01	Electrical Connector - Disconnect and Connect (P/B 201)
71-00-00-800-833-H00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-814-H00	Close the Fan Cowl Panel (Selection) (P/B 201)
73-21-08-400-801-H01	Control Alternator (Stator) Installation (P/B 401)
78-31-00-410-816-H00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-805-H00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)

D. Consumable Materials

Reference	Description	Specification
D00552 [C02-019]	Oil - Engine Lubricating	GE Spec. D50TF1

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Control alternator rotor	73-21-08-03-020	ARO ALL
20	Preformed packing	72-64-01-02-045	ARO ALL

F. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

G. Access Panels

Number	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

H. Control Alternator Rotor Installation

SUBTASK 73-21-09-420-001-H00

- (1) Install the control alternator rotor [1]:

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- (a) Make sure that you protect the alternator ablative coating with cloth or other material when you work near the alternator (stator).
- (b) Remove the protective cover from the gearbox drive shaft.
- (c) Align the control alternator rotor [1] with the gearbox drive shaft.

**CAUTION**

MAKE SURE THAT THE DIAPHRAGM IS INSTALLED AND CORRECTLY SEATED BETWEEN THE AGB AND THE CONTROL ALTERNATOR ROTOR. IF THE DIAPHRAGM IS NOT CORRECTLY INSTALLED, DAMAGE TO THE ROTOR CAN OCCUR.

- (d) Put the control alternator rotor [1] on the drive shaft.
- (e) Install the 12 point nut [2] on the drive shaft and tighten with your hand.

**CAUTION**

DO NOT INSTALL THE TOOL UNLESS THERE IS SUFFICIENT CLEARANCE BETWEEN THE STUDS, AND THE TOOL HANDLE. THE TOOL CAN CAUSE DAMAGE TO THE STUDS, OR THE ACCESSORY GEARBOX.

- (f) Insert a 1/2-inch square drive tool into the accessory gearbox motoring drive.
- (g) Put a torque wrench, with a 1-inch box-end adapter attached, on the drive shaft nut [2].
- (h) Hold the accessory gearbox motoring drive securely with the tool while you tighten the nut [2] with the wrench.
- (i) Tighten the nut [2] to 475 $\pm$ 25 in-lb (53.7 $\pm$ 2.9 N·m).
- (j) Remove the drive tool from the accessory gearbox drive.

SUBTASK 73-21-09-410-001-H00

- (2) Install the core motoring pad cover [19] to the accessory gearbox:

**WARNING**

DO NOT LET OIL STAY ON YOUR SKIN. YOU CAN ABSORB POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.

- (a) Put clean oil, D00552 [C02-019] on the new preformed packing [20] for the core motoring pad cover [19].
- (b) Put the new preformed packing [20] on the core motoring pad cover [19].
- (c) Put the core motoring pad cover [19] on the accessory gearbox.
- (d) Put the four washers [18] and nuts [17] on the motoring pad studs to attach the core motoring pad cover [19] to the accessory gearbox.
 - 1) Tighten the nuts [17] to 62.5 $\pm$ 7.5 in-lb (7.1 $\pm$ 0.9 N·m).

SUBTASK 73-21-09-410-002-H00

- (3) Install the control alternator (stator) (TASK 73-21-08-400-801-H01).

SUBTASK 73-21-09-420-002-H00**CAUTION**

MAKE SURE THE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU CONNECT THEM. THE CONTAMINATION OF THE ELECTRICAL CONNECTOR CAN CAUSE DAMAGE TO THE EQUIPMENT.

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AIRCRAFT MAINTENANCE MANUAL****(CAUTION PRECEDES)****CAUTION**

USE TEFLON-JAWED PLIERS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

- (4) Use teflon-jawed pliers, STD-664 to connect the electrical connector (CH A) [4] and the electrical connector (CH B) [5] to the control alternator (stator) [6] (TASK 70-00-01-400-807-H01):
- Remove the protective covers from the receptacles, the electrical connector (CH A) [4] and the electrical connector (CH B) [5].
 - Connect the electrical connector (CH A) [4] and the electrical connector (CH B) [5] to the control alternator/stator.
 - Tighten the electrical connector (CH A) [4] and the electrical connector (CH B) [5].

SUBTASK 73-21-09-420-003-H00

- (5) Connect the electrical harness (W723) [12] and the electrical harness (W724) [13] at the control alternator (stator) [6]:
- Remove the protective covers from the receptacles on the N2 speed sensor [15], the electrical connector (CH A) [10] and the electrical connector (CH B) [9].

**CAUTION**

MAKE SURE THE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU CONNECT THEM. THE CONTAMINATION OF THE ELECTRICAL CONNECTOR CAN CAUSE DAMAGE TO THE EQUIPMENT.

**CAUTION**

USE TEFLON-JAWED PLIERS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

- Use teflon-jawed pliers, STD-664 to connect the electrical connector (CH A) [10] and the electrical connector (CH B) [9] (TASK 70-00-01-400-807-H01).
- Move the electrical harness (W724) [13] into position on the bracket at the left front end of the gearbox.
- Attach the electrical harness (W724) [13] on the bracket with two bolts [14].
 - Tighten the bolts [14] to 118 ±9 in-lb (13.3 ±1.0 N·m).
- Move the electrical harness (W723) [12] into position on the bracket at the low right front end of the gearbox.
- Attach the electrical harness (W723) [12] on the bracket with the two electrical harness (W723) [12].
 - Tighten the electrical harness (W723) [12] to 118 ±9 in-lb (13.3 ±1.0 N·m).

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I. Put the Airplane Back to its Usual Condition

SUBTASK 73-21-09-410-003-H00



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Do these tasks in sequence to safely close the left and right thrust reversers on the applicable engine:
 - (a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-410-816-H00.
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine
 - (b) Do this task: Close the Fan Cowl Panel (Selection), TASK 71-11-04-410-814-H00.
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine
 - (c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-805-H00.
 - (d) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

J. Control Alternator Rotor Test

SUBTASK 73-21-09-710-001-H00

- (1) Do the tests listed in the Power Plant Test Reference Table (TASK 71-00-00-800-833-H00).

————— **END OF TASK** —————

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HYDROMECHANICAL UNIT - REMOVAL/INSTALLATION

1. General

- A. This procedure contains two tasks:
- (1) A removal of the hydromechanical unit (HMU)
 - (2) An installation of the HMU.

TASK 73-21-14-000-801-H01

2. Hydromechanical Unit Removal

(Figure 401, Figure 402 and Figure 403)

A. General

- (1) This task provides the instructions on how to remove the hydromechanical unit (referred to as the HMU).
- (2) The HMU is on the aft face of the accessory gearbox at approximately the 5:00 o'clock position.
- (3) You must open the thrust reversers to get access to the HMU.

B. References

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
27-81-00-860-805	Retract the Leading Edge Slats (P/B 201)
70-00-01-400-807-H01	Electrical Connector - Disconnect and Connect (P/B 201)
71-11-04-010-814-H00	Open the Fan Cowl Panel (Selection) (P/B 201)
73-21-67-000-801-H01	Fuel Manifold Pressure Sensor Removal (P/B 401)
78-31-00-010-816-H00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-806-H00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

C. Tools/Equipment

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

Reference	Description
SPL-331	Fixture - Installation/Removal, Line Replaceable Units Part #: 9C1132G06 Supplier: 06083 Opt Part #: 9C1132G03 Supplier: 06083 Opt Part #: 9C1132G04 Supplier: 06083 Opt Part #: 9C1132G05 Supplier: 06083
STD-201	Container - Fuel Resistant, 5 U.S.-Gal (19 l)
STD-247	Crane - Lift, 250 lb (113 kg) Capacity, Lift Range 20 to 60 in (508 to 1524 mm)
STD-474	Hook - Safety, 300 lb (136 kg) Lift Capacity
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)

D. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

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E. Access Panels

Number	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

F. Prepare for the Removal

SUBTASK 73-21-14-010-001-H01



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO OPEN THE THRUST REVERSER(S). IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR

- (1) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:

- (a) Do this task: Retract the Leading Edge Slats, TASK 27-81-00-860-805.
- (b) Do this task: Leading Edge Slat - Deactivation, TASK 27-81-00-040-801.
- (c) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-806-H00.
- (d) For the left and right fan cowl panels, do this task:
Open the Fan Cowl Panel (Selection), TASK 71-11-04-010-814-H00

<u>Number</u>	<u>Name/Location</u>
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine

- (e) For the left and right thrust reversers, do this task:
Open the Thrust Reverser (Selection), TASK 78-31-00-010-816-H00

<u>Number</u>	<u>Name/Location</u>
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

SUBTASK 73-21-14-860-001-H01

- (2) Do these steps to make sure the fuel control valve and the spar valve stay in the closed position:
- (a) Make sure that the FUEL CONTROL switch is in the CUTOFF position.
 - 1) Install a DO-NOT-OPERATE tag on the FUEL CONTROL switch.
 - (b) Push the STAT switch on the display select panel of the glareshield (P55).

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- 1) Make sure you do not see the applicable ENG FUEL VALVE L(R) or FUEL SPAR VALVE L(R) status messages.
- (c) For the applicable engines, open these circuit breakers and install safety tags:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
A	5	C28001	L ENGINE FUEL SPAR VALVE
A	19	C28002	R ENGINE FUEL SPAR VALVE
B	4	C76601	L ENG FUEL VALVE
B	19	C76600	R ENG FUEL VALVE

G. Hydromechanical Unit Removal

SUBTASK 73-21-14-020-001-H01



MAKE SURE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU DISCONNECT THEM. CONTAMINATION OF ELECTRICAL CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.



USE TEFLON-JAWED PLIERS TO LOOSEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

- (1) Use the teflon-jawed pliers, STD-664 to disconnect the channel B electrical connector [3] from the HMU [1] (TASK 70-00-01-400-807-H01):
 - (a) Disconnect the channel B electrical connector [3] and harness.
 - (b) Move the channel B electrical connector [3] and harness out of the way.
 - (c) Install protective covers on the CH B electrical receptacle on the HMU [1] and the channel B electrical connector [3].

SUBTASK 73-21-14-020-002-H01



MAKE SURE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU DISCONNECT THEM. CONTAMINATION OF ELECTRICAL CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.



USE TEFLON-JAWED PLIERS TO LOOSEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

- (2) Use the teflon-jawed pliers, STD-664 to disconnect the channel A electrical connector [2] from the HMU [1] (TASK 70-00-01-400-807-H01):
 - (a) Disconnect the channel A electrical connector [2] and harness.
 - (b) Move the channel A electrical connector [2] and harness out of the way.
 - (c) Install protective covers on the channel A electrical connector [2] and the CH A electrical receptacle on the HMU [1].

SUBTASK 73-21-14-020-003-H01

- (3) Do this task: Fuel Manifold Pressure Sensor Removal, TASK 73-21-67-000-801-H01.

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SUBTASK 73-21-14-020-004-H01

**CAUTION**

MAKE SURE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU DISCONNECT THEM. CONTAMINATION OF ELECTRICAL CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.

**CAUTION**

USE TEFLON-JAWED PLIERS TO LOOSEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

- (4) Use the teflon-jawed pliers, STD-664 to disconnect the airframe shutoff connector [5] (A/F S/O) from the HMU [1] (TASK 70-00-01-400-807-H01):
- (a) Move the wiring harness out of the way.
 - (b) Install protective covers on the airframe shutoff connector [5] and the electrical receptacle on the HMU [1].

SUBTASK 73-21-14-020-005-H01

- (5) Remove the fuel supply manifold No. 2 [6] from the HMU [1]:
- (a) Put a 5 U.S.-gal (19 l) fuel resistant container, STD-201 below the HMU [1].
 - (b) Remove the four bolts [8] that attach the fuel supply manifold No. 2 [6] to the MAN 2 fuel port on the HMU [1].
 - (c) Move the fuel supply manifold No. 2 [6] away from the HMU [1] and let the fuel to drain from the manifold into the 5 U.S.-gal (19 l) fuel resistant container, STD-201.
 - (d) Remove the flange gasket [7B] from the HMU [1].
 - (e) Examine the flange gasket [7B] for damage.
 - 1) If it is not damaged, use the flange gasket [7B] for the installation.
 - (f) Install protective covers in the MAN 2 fuel port in the HMU [1], and on the fuel supply manifold No. 2 [6].

SUBTASK 73-21-14-020-006-H01

- (6) Remove the fuel supply manifold No. 1 [9] from the HMU [1]:
- (a) Remove the four bolts [8] that attach the fuel supply manifold No. 1 [9] to the MAN 1 fuel port on the HMU [1].
 - (b) Move the fuel supply manifold No. 1 [9] away from the HMU [1] and let the fuel to drain from the manifold into the 5 U.S.-gal (19 l) fuel resistant container, STD-201.
 - (c) Remove the flange gasket [7A] from the HMU [1].
 - (d) Examine the flange gasket [7A] for damage.
 - 1) If it is not damaged, use the flange gasket [7A] for the installation.
 - (e) Install protective covers in the MAN 1 fuel port of the HMU [1] and on the fuel supply manifold No. 1 [9] fitting.

SUBTASK 73-21-14-020-007-H01

- (7) Disconnect the variable stator vane VSV fuel tube [11] and the VSV fuel tube [12] from the HMU [1]:
- (a) Remove the bolts [31] and the two single tube clamp [28] that attach the VSV fuel tube [11] and the VSV fuel tube [12] to the support bracket [25] on the AGB.

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- (b) Disconnect the B-nuts on the VSV fuel tube [11] and the VSV fuel tube [12] from these fittings on the HMU [1]:
 - 1) The VSV head fitting (VSV head) [13].
 - 2) The VSV rod fitting (VSV rod) [14].
- (c) Move the VSV fuel tube [11] and the VSV fuel tube [12] away from the HMU [1] and let the fuel to drain into the 5 U.S.-gal (19 l) fuel resistant container, STD-201.
- (d) Install protective covers on these fittings:
 - 1) The VSV head fitting (VSV head) [13] on the HMU [1].
 - 2) The VSV rod fitting (VSV rod) [14] on the HMU [1].
 - 3) The B-nuts on the VSV fuel tube [11] and the VSV fuel tube [12].

SUBTASK 73-21-14-020-008-H01

- (8) Disconnect the VBV fuel tube [15] and the VBV fuel tube [16] from the HMU [1]:
 - (a) Remove the bolts [31] and the two single tube clamps [28] that attach the VBV fuel tube [15] and the VBV fuel tube [16] to the support bracket [26] on the AGB.
 - (b) Disconnect the B-nuts on the VBV fuel tube [15] and the VBV fuel tube [16] from these fittings on the HMU [1]:
 - 1) The VBV retract fitting (VBV ret) [17].
 - 2) The VBV extend fitting (VBV ext) [18].
 - (c) Move the VBV fuel tube [15] and the VBV fuel tube [16] away from the HMU [1] and let the fuel to drain from the VBV fuel tubes into the 5 U.S.-gal (19 l) fuel resistant container, STD-201.
 - (d) Install protective covers on these fittings:
 - 1) The VBV retract fitting (VBV ret) [17] on the HMU [1].
 - 2) The VBV extend fitting (VBV ext) [18] on the HMU [1].
 - 3) The B-nuts on the VBV fuel tube [15] and the VBV fuel tube [16].

SUBTASK 73-21-14-020-009-H01

- (9) Disconnect the heated servo supply PHS fuel tube [19], and the high pressure turbine active clearance control HPTACC fuel tube [20] from the HMU [1]:
 - (a) Remove the single tube clamps [30] from the PHS fuel tube [19], and the HPTACC fuel tube [20] and the support bracket [27]:
 - 1) Remove the bolts [32] and the single tube clamps [30] that attach the PHS fuel tube [19] and the HPTACC fuel tube [20] to the support bracket [27] on the AGB.
 - (b) Disconnect the B-nut on the PHS fuel tube [19] from the PHS fitting (PS) [22].
 - (c) Disconnect the B-nut on the HPTACC fuel tube [20] from the HPTACC head fitting (HPT) [23].
 - (d) Move the PHS fuel tube [19] and the HPTACC fuel tube [20] away from the HMU [1].
 - 1) Let the fuel to drain into the 5 U.S.-gal (19 l) fuel resistant container, STD-201.
 - (e) Install protective covers on these fittings:
 - 1) The PHS fitting (PS) [22] on the HMU [1].
 - 2) The HPTACC head fitting (HPT) [23] on the HMU [1].
 - 3) The B-nut on the PHS fuel tube [19].
 - 4) The B-nut on the HPTACC fuel tube [20].

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SUBTASK 73-21-14-480-001-H01

- (10) Connect the line replaceable units fixture, SPL-331 to the mounting pad of the HMU [1]:
- Hold the mounting adapter of the line replaceable units fixture, SPL-331 with your hand.
 - Remove the adjustment knob that attaches the mounting adapter to the cradle.
 - Remove the mounting adapter from the cradle and attach it to the mounting pad on the HMU [1] with three of the four captive bolts and the four washers.
 - Move the line replaceable units fixture, SPL-331 into its position below the HMU [1], and align the cradle with the adapter.
 - Apply pressure to the hydraulic pump foot pedal of the line replaceable units fixture, SPL-331 and lift the cradle to the mounting adapter.
- NOTE:** Do not fully engage the cradle and the mounting adapter at this time.
- Adjust the line replaceable units fixture, SPL-331 to align the cradle with the mounting adapter.
 - Apply pressure to the hydraulic pump foot pedal until the adapter and cradle engage.
 - Install the adjustment knob in the cradle and the mounting adapter.

SUBTASK 73-21-14-020-010-H01



MOVE THE HMU CAREFULLY. THE HMU WEIGHS 83 POUNDS (38 KG).
INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (11) Remove the HMU [1]:
- Remove the five nuts [50] and the three bolts [57] that attach the HMU [1] to the fuel adapter [56].



DO NOT USE THE FUEL TORQUE MOTORS AS HANDLES TO REMOVE
THE HMU FROM THE FUEL ADAPTER ON THE GEARBOX DRIVE.
DAMAGE TO THE FUEL TORQUE MOTORS WILL OCCUR.

- Carefully move the HMU [1] aft and away from the fuel adapter [56].
- Lower the HMU [1] and move the HMU [1] away from the engine.
- Remove and discard the seal [51], the seal [52], and the seals [55] from the HMU [1].
- Install protective covers into these ports in the HMU [1]:
 - Fuel supply
 - Fuel bypass
 - Servo supply
 - Fuel flowmeter inlet
 - Fuel flowmeter outlet.
- Remove and discard the preformed packing [53] from the HMU mounting flange.
- Remove and discard the preformed packing [54] from the HMU drive shaft.
- Install a protective cover on the HMU drive shaft and skirt.

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SUBTASK 73-21-14-020-011-H01

- (12) If you must remove the HMU [1] from the line replaceable units fixture, SPL-331, use the 250 lb (113 kg) Capacity, Lift Range 20 to 60 in lift crane, STD-247 to lift the HMU [1] off of the line replaceable units fixture, SPL-331:
- (a) Attach the safety hook, STD-474 to the 250 lb (113 kg) Capacity, Lift Range 20 to 60 in lift crane, STD-247.
 - (b) Attach the other end of the safety hook, STD-474 to the lift strap on the HMU [1].
 - (c) Operate the 250 lb (113 kg) Capacity, Lift Range 20 to 60 in lift crane, STD-247 to remove the slack in the cable.
 - (d) Slowly lift the HMU [1] until you can release the adjustment knob that attaches the LRU mounting adapter to the line replaceable units fixture, SPL-331.
 - (e) Use the 250 lb (113 kg) Capacity, Lift Range 20 to 60 in lift crane, STD-247 to lift the HMU [1] and LRU mounting adapter off the line replaceable units fixture, SPL-331 and move the line replaceable units fixture, SPL-331 out of the way.
 - (f) Loosen the four captive bolts and the four washers that attach the LRU mounting adapter to the HMU [1] and remove the adapter.
 - (g) Carefully lower the HMU [1] on to a clean surface and remove the safety hook, STD-474 from the lift eye on the HMU [1].

———— **END OF TASK** ————

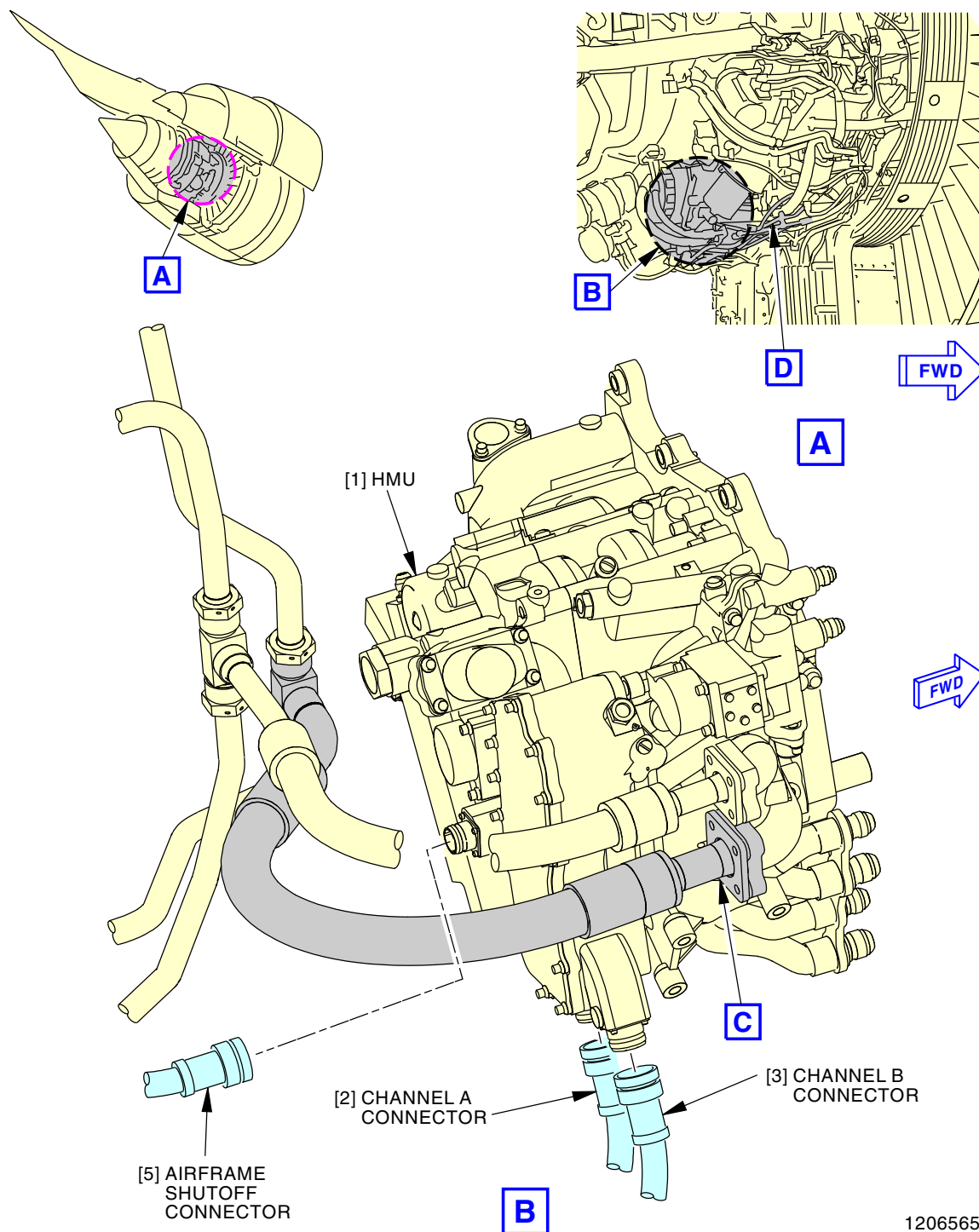
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1206565-02-A
M06978 S0004285953_V4

HMU Installation
Figure 401/73-21-14-990-801-H01 (Sheet 1 of 4)

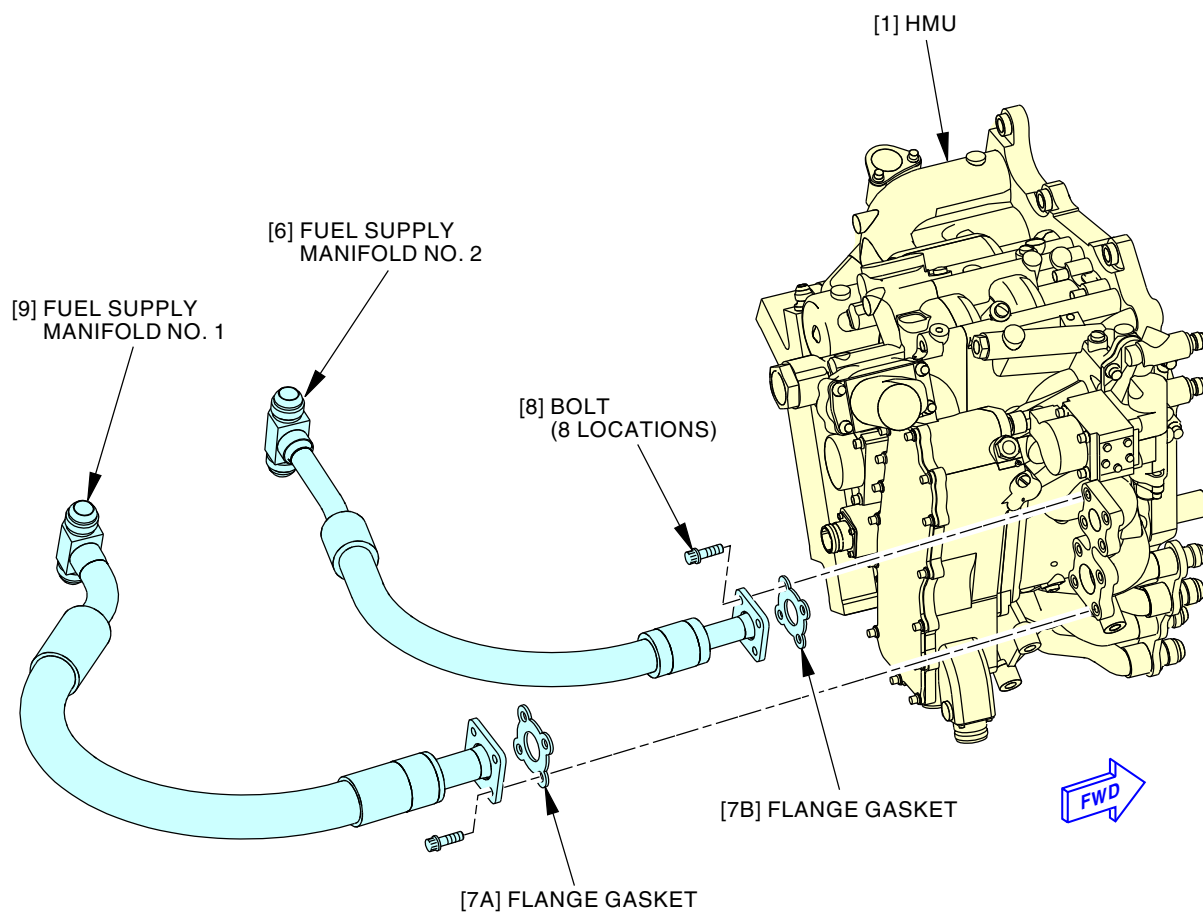
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C

1206567-03-A
M06980 S0004285955_V5

HMU Installation
Figure 401/73-21-14-990-801-H01 (Sheet 2 of 4)

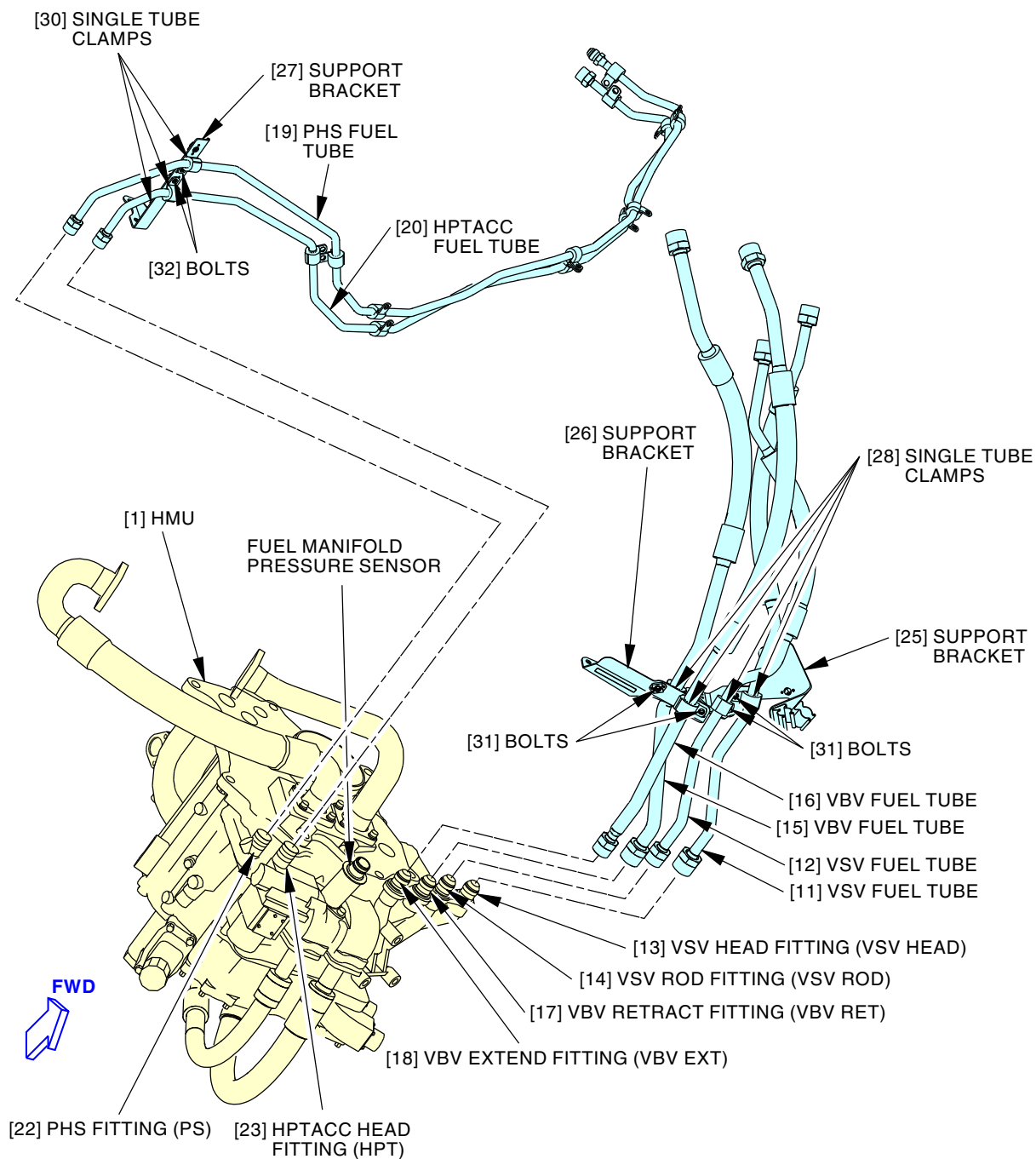
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1206568-02-A
M06981 S0004285956_V4

HMU Installation
Figure 401/73-21-14-990-801-H01 (Sheet 3 of 4)

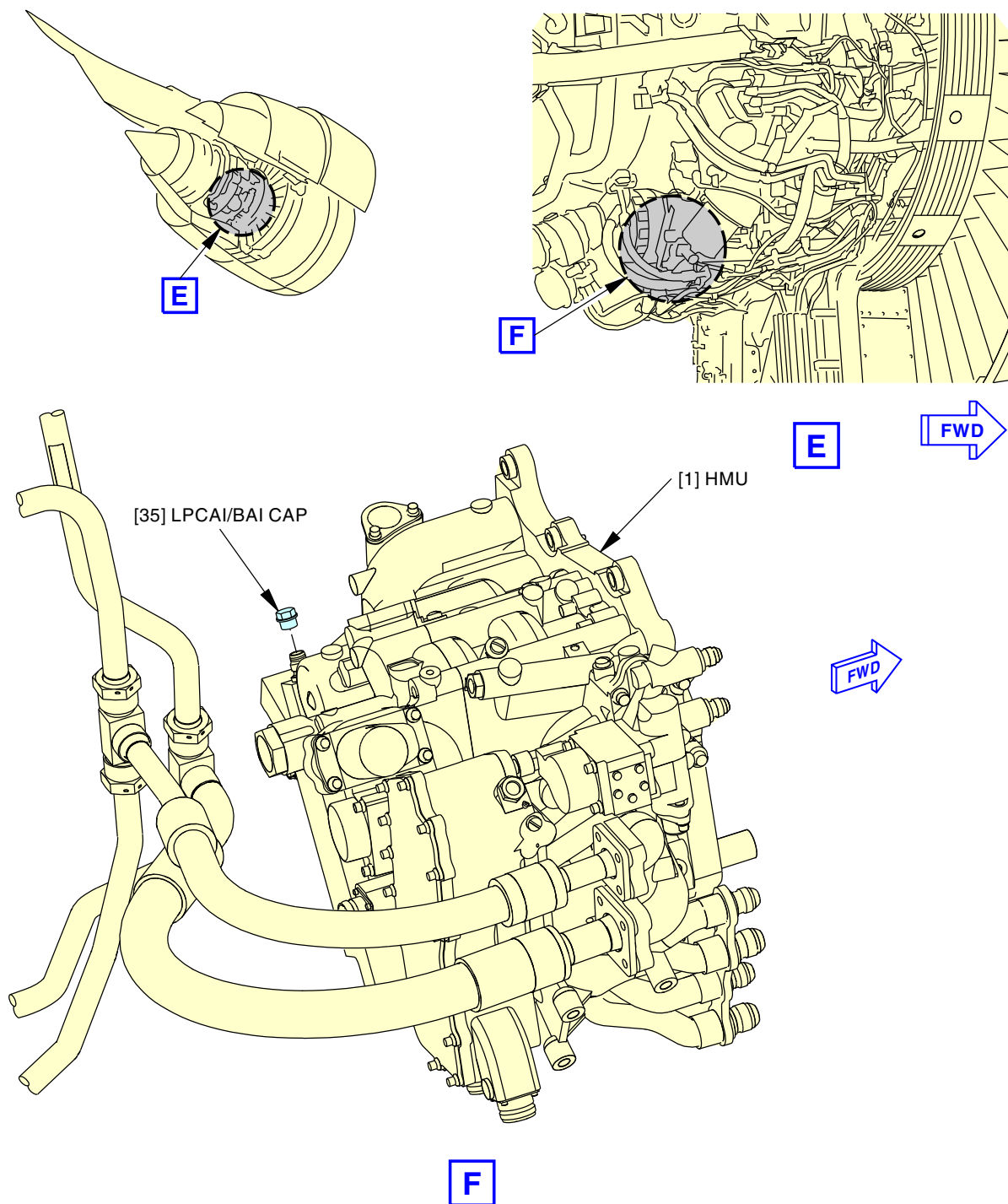
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1823928 S0000321968_V4

HMU Installation
Figure 401/73-21-14-990-801-H01 (Sheet 4 of 4)

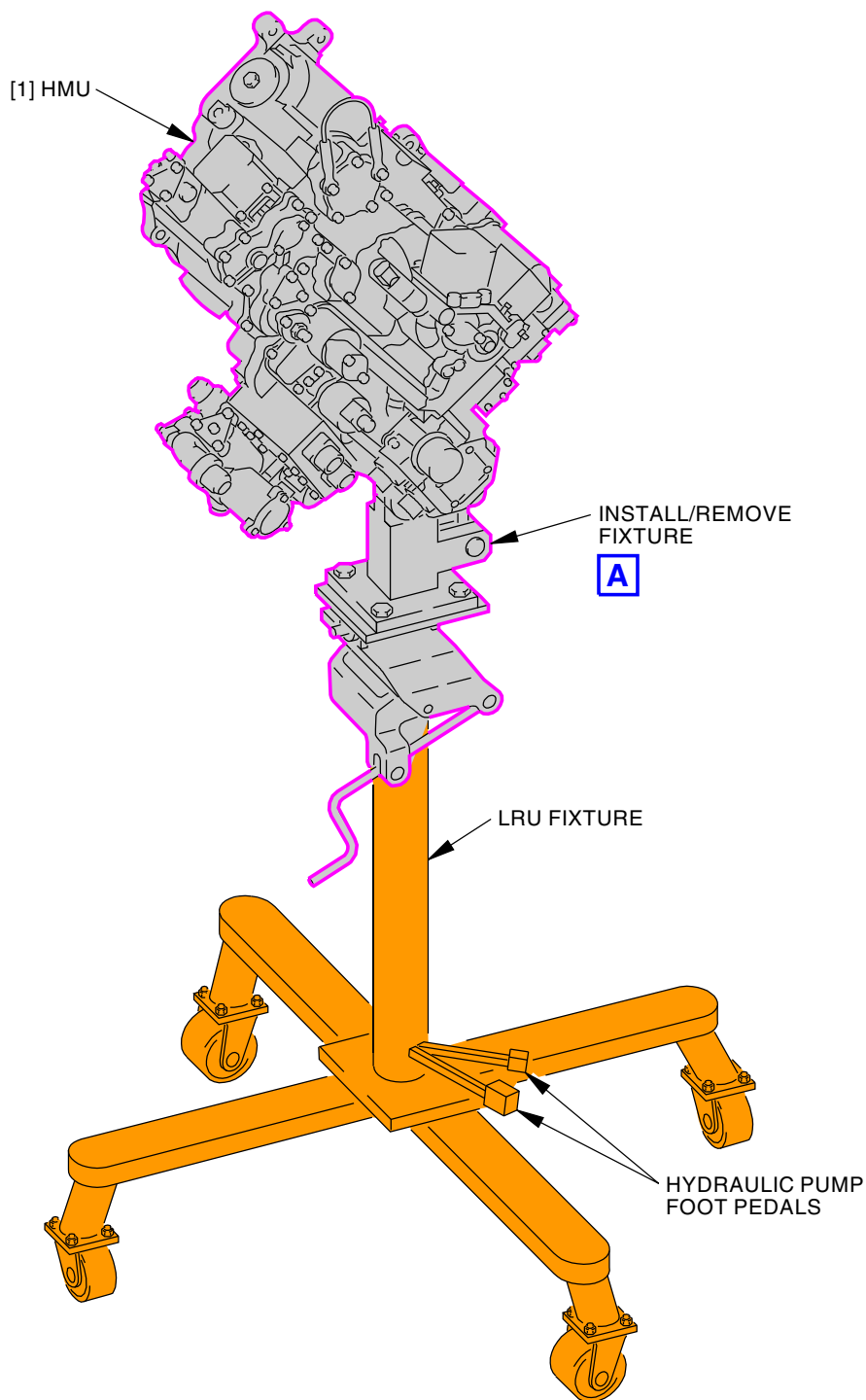
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M06982 S0004285957_V2

HMU Installation Tool
Figure 402/73-21-14-990-804-H01 (Sheet 1 of 2)

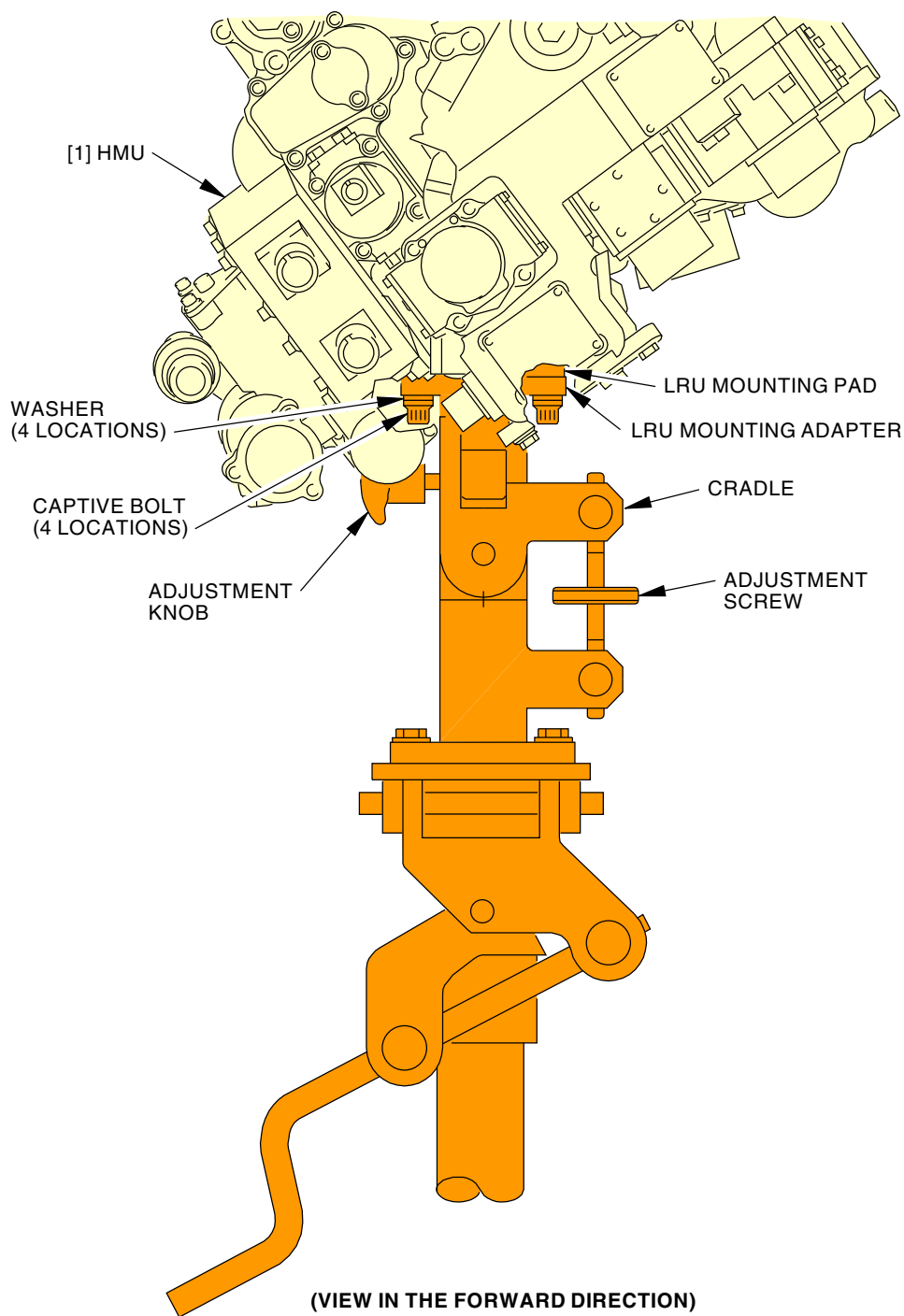
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A

M06984 S0004285958_V2

HMU Installation Tool
Figure 402/73-21-14-990-804-H01 (Sheet 2 of 2)

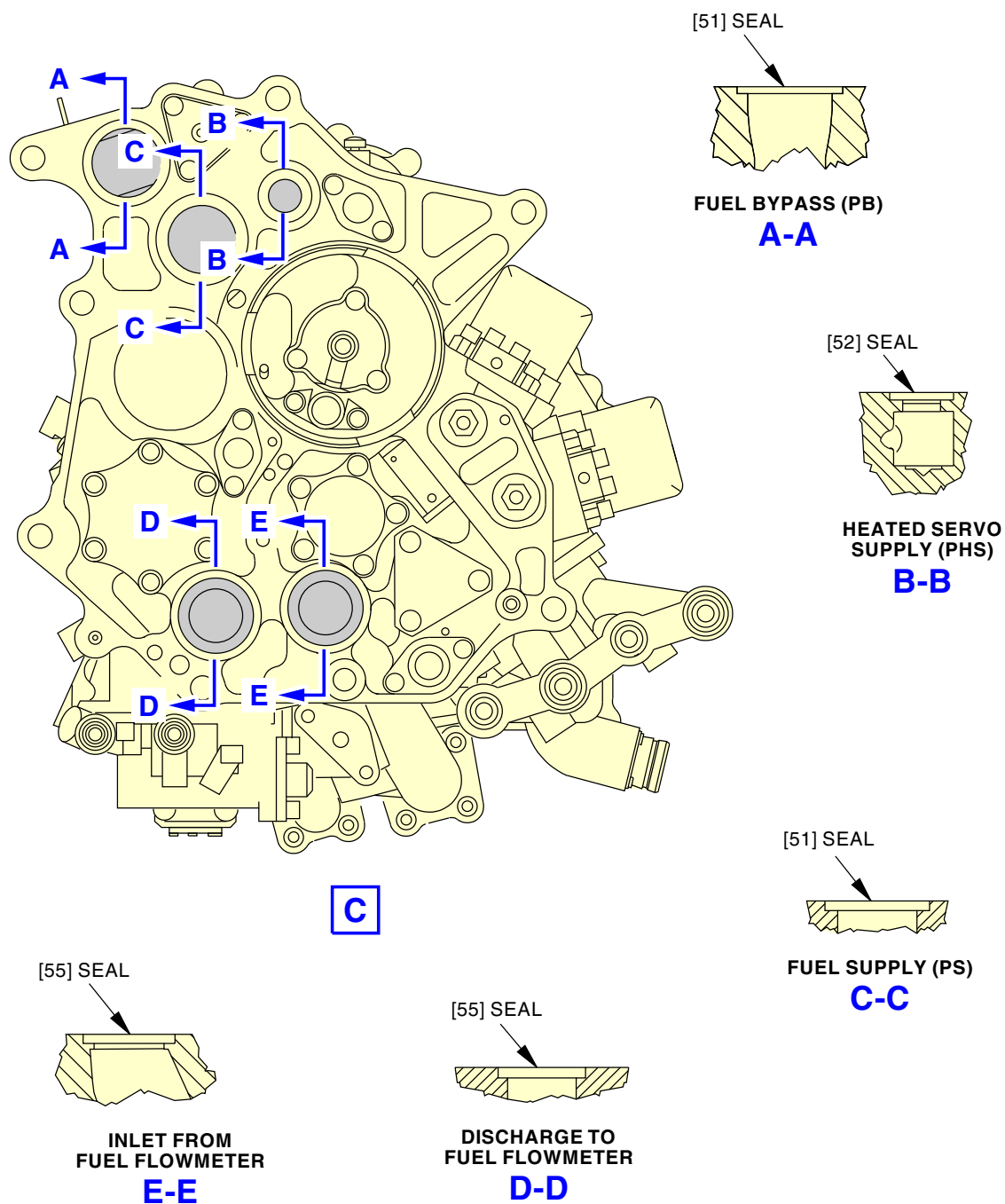
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1145763-01-A
M06985 S0004285959_V4

HMU to Accessory Gearbox Installation
Figure 403/73-21-14-990-805-H01 (Sheet 1 of 2)

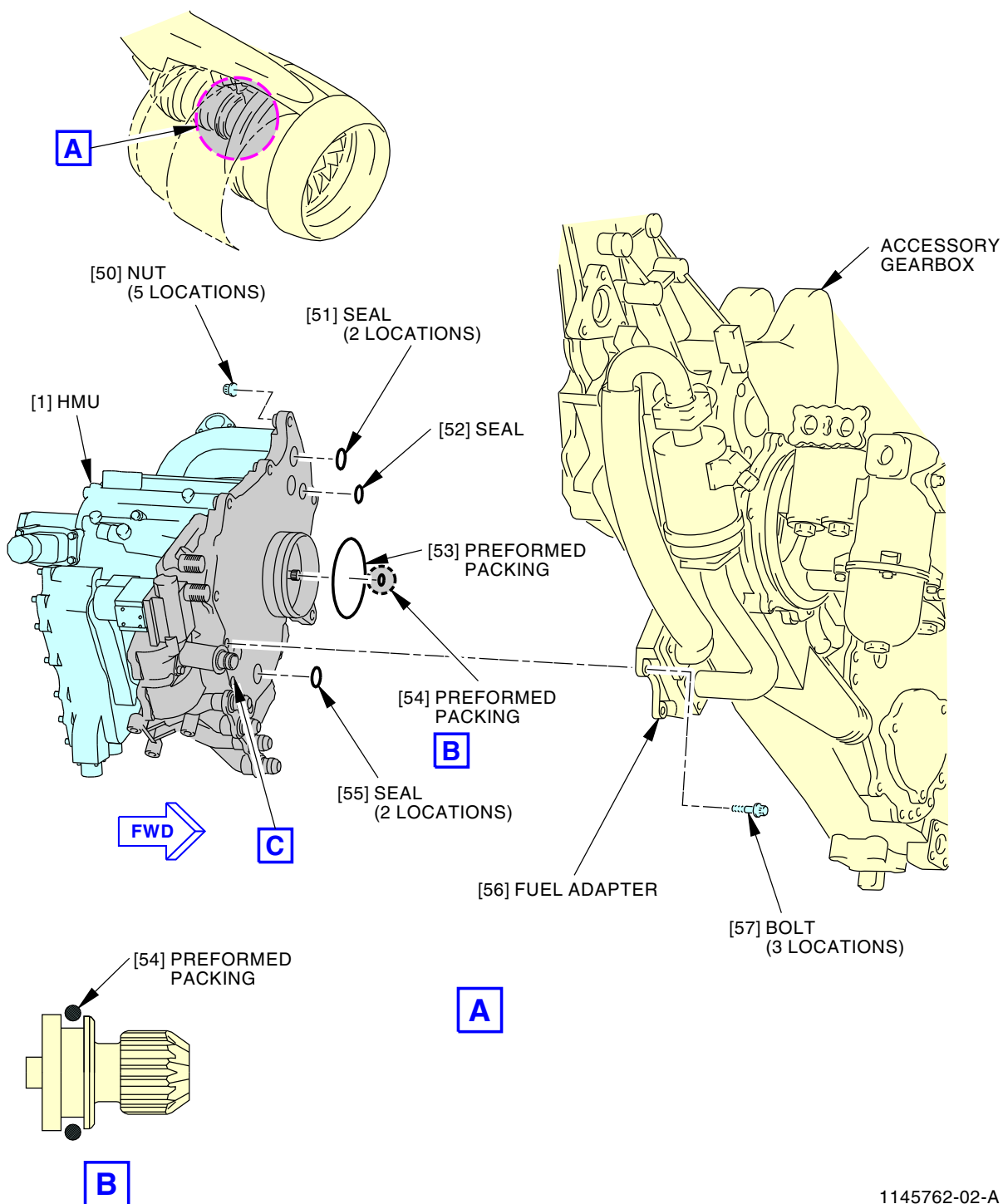
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1145762-02-A
M06986 S0004285960_V4

HMU to Accessory Gearbox Installation
Figure 403/73-21-14-990-805-H01 (Sheet 2 of 2)

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TASK 73-21-14-400-801-H01

3. Hydromechanical Unit Installation

(Figure 401, Figure 402 and Figure 403)

A. General

- (1) This task provides the instructions on how to install the hydromechanical unit (HMU).
- (2) You must do the tests listed in the power plant test reference table after you install the hydromechanical unit (HMU).

B. References

Reference	Title
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
70-00-01-400-807-H01	Electrical Connector - Disconnect and Connect (P/B 201)
70-51-00-910-801-H01	Instruction for Torque (P/B 201)
71-00-00-800-833-H00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-814-H00	Close the Fan Cowl Panel (Selection) (P/B 201)
72-00-00-980-801-H01	Manual Motoring of the HPC Rotor (P/B 201)
72-00-00-980-802-H01	Electrical Motoring of the HPC Rotor (P/B 201)
73-21-67-400-801-H01	Fuel Manifold Pressure Sensor Installation (P/B 401)
78-31-00-410-816-H00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-805-H00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Tools/Equipment

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

Reference	Description
SPL-331	Fixture - Installation/Removal, Line Replaceable Units Part #: 9C1132G06 Supplier: 06083 Opt Part #: 9C1132G03 Supplier: 06083 Opt Part #: 9C1132G04 Supplier: 06083 Opt Part #: 9C1132G05 Supplier: 06083
STD-247	Crane - Lift, 250 lb (113 kg) Capacity, Lift Range 20 to 60 in (508 to 1524 mm)
STD-474	Hook - Safety, 300 lb (136 kg) Lift Capacity
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)

D. Consumable Materials

Reference	Description	Specification
D00552 [C02-019]	Oil - Engine Lubricating	GE Spec. D50TF1
D50043 [C02-058]	Compound - Antiseize, Acheson GP460 (For Threaded Fasteners 0.250 Inches Diameter Or Larger, C02-079 Is An Alternative)	GE A50TF201 Class A
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	HMU	73-21-14-05-040	ARO ALL

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(Continued)

AMM Item	Description	AIPC Reference	AIPC Effectivity
51	Seal	73-21-14-05-025	ARO ALL
52	Seal	73-21-14-05-035	ARO ALL
53	Preformed packing	73-21-14-05-015	ARO ALL
54	Preformed packing	73-21-14-05-020	ARO ALL
55	Seal	73-21-14-05-030	ARO ALL

F. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

G. Access Panels

Number	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

H. Prepare for the Installation

SUBTASK 73-21-14-890-002-H01

**WARNING**

DO NOT LIFT THE HMU WITH YOUR HANDS. BECAUSE THE HMU WEIGHS 83 POUNDS (38 KG), INJURIES TO PERSONS CAN OCCUR.

- (1) If the HMU [1] is not installed on the tooling, use the 250 lb (113 kg) Capacity, Lift Range 20 to 60 in lift crane, STD-247 to put the HMU [1] on the line replaceable units fixture, SPL-331.
- (a) Attach the safety hook, STD-474 to the lift equipment.
 - (b) Attach the other end of the safety hook, STD-474 to the lift eye on the HMU.
 - (c) Operate the 250 lb (113 kg) Capacity, Lift Range 20 to 60 in lift crane, STD-247 to remove the slack in the cable.

**WARNING**

MOVE THE HMU CAREFULLY. THE HMU WEIGHS 83 POUNDS (38 KG). INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (d) Carefully lift the HMU [1] enough to attach the LRU mounting adapter.
- (e) Install the four captive bolts and the four washers that attach the LRU mounting adapter to the HMU mount pad.
- (f) Put the HMU [1] and LRU mounting adapter in its position on the line replaceable units fixture, SPL-331, and install the adjustment knob.

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- (g) Lower the 250 lb (113 kg) Capacity, Lift Range 20 to 60 in lift crane, STD-247 and remove the safety hook, STD-474 from the lift eye on the HMU [1].
- (h) Remove the safety hook, STD-474 from the 250 lb (113 kg) Capacity, Lift Range 20 to 60 in lift crane, STD-247 and move the 250 lb (113 kg) Capacity, Lift Range 20 to 60 in lift crane, STD-247 out of the way.

I. Hydromechanical Unit Installation

SUBTASK 73-21-14-420-001-H01



MOVE THE HMU CAREFULLY. THE HMU WEIGHS 83 POUNDS (38 KG). INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.



DO NOT CAUSE DAMAGE TO THE PACKING WHEN YOU INSTALL THE HMU. A DAMAGED PACKING CAN CAUSE ENGINE OIL LEAKS. OIL LEAKS CAN CAUSE AN IN-FLIGHT SHUTDOWN

- (1) Prepare for the HMU [1] installation:
 - (a) Do the steps to prepare for core motoring (TASK 72-00-00-980-801-H01 or TASK 72-00-00-980-802-H01).
 - (b) Remove these protective covers from these ports on the HMU [1]:
 - 1) Servo supply port
 - 2) HMU fuel supply port
 - 3) HMU fuel bypass port
 - 4) Fuel flowmeter discharge port
 - 5) Fuel flowmeter inlet port
 - 6) HMU drive shaft skirt
 - 7) HMU/fuel adapter mating flange.



MAKE SURE THAT THE PREFORMED PACKINGS ARE INSTALLED ON THE DRIVE SHAFT AND MOUNTING FLANGE. A MISSING PACKING CAN CAUSE ENGINE OIL LEAKS.

- (c) Apply clean oil, D00552 [C02-019] on a new preformed packing [54] for the HMU drive shaft.
- (d) Put the preformed packing [54] on the HMU drive shaft.
- (e) Apply clean engine oil, D00552 [C02-019] on a new preformed packing [53] for the HMU mounting flange.
- (f) Put the preformed packing [53] on the HMU mounting flange.
- (g) Wipe the HMU fuel port counterbores with a clean cotton wiper, G00034.
 - 1) Make sure you clean the AGB or LRU counterbores.
- NOTE:** Contamination in the AGB or LRU counterbores can cause leakage.
- (h) Apply clean engine oil, D00552 [C02-019] on the new seal [51], the seal [52], and the seals [55].

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- (i) Put the new seal [51], the seal [52], and the seals [55] in the applicable ports in the HMU [1].
- (j) Look at the ID of the seal [51], the seal [52], and the seals [55], to make sure the spring did not push out of the groove when you installed them in the counterbores.
 - 1) Replace the seal if the spring is pushed out of the groove.

SUBTASK 73-21-14-420-002-H01

- (2) Install the HMU [1]:
 - (a) Move the HMU [1] under the engine with the line replaceable units fixture, SPL-331.
 - (b) Operate the fixture to put the HMU [1] in front of the mount pad on the accessory gearbox fuel adapter [56].



DO NOT CAUSE DAMAGE TO THE PACKING WHEN YOU INSTALL THE HMU. A DAMAGED PACKING CAN CAUSE ENGINE OIL LEAKS. OIL LEAKS CAN CAUSE AN IN-FLIGHT SHUTDOWN

- (c) Carefully move the HMU [1] forward to the fuel adapter [56].
- (d) Adjust the line replaceable units fixture, SPL-331 to align the HMU dowel pin, studs, and drive shaft with the fuel adapter [56].



MAKE SURE THAT THE HMU IS CORRECTLY ALIGNED WITH THE AGB, AND HELD AT ALL TIMES. IF YOU DO NOT HOLD THE HMU AND KEEP IT ALIGNED DURING INSTALLATION, DAMAGE TO THE SPLINED DRIVE SHAFT CAN OCCUR.



DO NOT USE THE FUEL TORQUE MOTORS AS HANDLES TO INSTALL THE HMU TO THE FUEL ADAPTER ON THE GEARBOX DRIVE. DAMAGE TO THE FUEL TORQUE MOTORS WILL OCCUR.



DO NOT USE TOO MUCH FORCE TO PUSH THE HMU INTO THE GEARBOX DRIVE OR FUEL ADAPTER. DAMAGE TO THE HMU DRIVE SHAFT AND THE GEARBOX DRIVE WILL OCCUR.

- (e) Do these steps at the same time:
 - 1) Turn the accessory gearbox motoring drive in a counterclockwise direction to turn the high pressure compressor rotor (TASK 72-00-00-980-801-H01 or TASK 72-00-00-980-802-H01).
 - 2) Push the HMU [1] gently until the HMU drive shaft starts into the gearbox drive.



DO NOT FORCE THE HMU SPLINE, STUD, OR DOWEL PIN ENGAGEMENT. IF YOU USE TOO MUCH FORCE, YOU WILL CAUSE DAMAGE TO THE HMU.

- (f) If the HMU drive shaft does not start onto the gearbox drive, or if there is any problem with the spline, stud, or dowel pin engagement, stop the core engine motoring drive, move the HMU [1] away from the fuel adapter and start over again.
- (g) When the HMU drive shaft starts onto the gearbox drive, stop turning the core engine motoring drive and move the HMU [1] into the fuel adapter with a positive forward motion until completely seated.

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- (h) Apply a light coat of Acheson GP460 compound, D50043 [C02-058] to the threads of the mount studs and the bolts [57].
- (i) Install the five nuts [50] and the three bolts [57] that attach the HMU [1] to the fuel adapter [56].
 - 1) Initially, tighten the nuts [50] and the bolts [57] to 50 pound-inches (5.6 Newton-meters) in a crisscross pattern, in the CW direction.
NOTE: Start with the nut position that is nearest to the engine assembled orientation.
 - 2) Tighten the nuts [50] and the bolts [57] again to 125 pound-inches (14.1 Newton-meters) in a crisscross pattern, in the CW direction.
NOTE: Start with the nut position that is nearest to the engine assembled orientation.
 - 3) Finally, tighten the nuts [50] and the bolts [57] again to 237–262 pound-inches (26.8–29.6 Newton-meters) in a crisscross pattern, in the CW direction.
NOTE: Start with the nut position that is nearest to the engine assembled orientation.

SUBTASK 73-21-14-080-001-H01

- (3) Remove the line replaceable units fixture, SPL-331 from the HMU [1]:
 - (a) Remove the four captive bolts and the four washers that attach the line replaceable units fixture, SPL-331 to the HMU [1].
 - (b) Lower the lift fixture and move it away from the engine.

SUBTASK 73-21-14-420-003-H01

- (4) Do the steps to remove the core motoring tool and install the motoring pad cover to the gearbox (TASK 72-00-00-980-801-H01 or TASK 72-00-00-980-802-H01).

SUBTASK 73-21-14-420-004-H01

- (5) Connect the PHS fuel tube [19] and the HPTACC fuel tube [20] to the HMU [1]:
 - (a) Remove the protective covers from these fittings:
 - 1) The PHS fitting (PS) [22] on the HMU [1]
 - 2) The HPTACC head fitting (HPT) [23] on the HMU [1]
 - 3) The B-nut on the PHS fuel tube [19]
 - 4) The B-nut on the HPTACC fuel tube [20].
 - (b) Put the PHS fuel tube [19] and the HPTACC fuel tube [20] in their positions on the HMU [1].
 - (c) Apply a light coat of Acheson GP460 compound, D50043 [C02-058] to the threads of the bolts [32].
 - (d) Attach the PHS fuel tube [19] and the HPTACC fuel tube [20] to the support bracket [27] on the AGB:
 - 1) Put the single tube clamps [30] in position on the PHS fuel tube [19], the HPTACC fuel tube [20] and the support bracket [27].
 - 2) Install the bolts [32] through the single tube clamps [30] and into the support bracket [27].
 - a) Tighten the bolts [32] to 110-120 pound-inches (12.4-13.6 Newton-meters).
 - (e) Connect the PHS fuel tube [19] and the HPTACC fuel tube [20] to the HMU [1]:

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- 1) Connect the B-nut on the PHS fuel tube [19] to the PHS fitting (PS) [22].
 - a) Tighten the B-nut with your hand.
- 2) Connect the B-nut on the HPTACC fuel tube [20] to the HPTACC head fitting (HPT) [23].
 - a) Tighten the B-nut with your hand.
- 3) Tighten the B-nut on the fuel tubes (TASK 70-51-00-910-801-H01).

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SUBTASK 73-21-14-420-011-H00

- (6) Install the LPCAI/BAI cap [35] on the HMU LPCAI fitting as follows:

NOTE: The term LPCAI (Low Pressure Compressor Anti-Ice) is the same as BAI (Booster Anti-Ice).

- (a) Remove the protective covers from the LPCAI/BAI cap [35] and the LPCAI fitting.
- (b) Install the LPCAI/BAI cap [35] on the LPCAI fitting.
- (c) Tighten the LPCAI/BAI cap [35] (TASK 70-51-00-910-801-H01).

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SUBTASK 73-21-14-420-005-H01

- (7) Connect the VSV fuel tube [11] and the VSV fuel tube [12] to the HMU [1]:
 - (a) Remove the protective covers from these fittings:
 - 1) The VSV head fitting (VSV head) [13] on the HMU [1]
 - 2) The VSV rod fitting (VSV rod) [14] on the HMU [1]
 - 3) The B-nuts on the VSV fuel tube [11] and the VSV fuel tube [12].
 - (b) Put the VSV fuel tube [11] and the VSV fuel tube [12] in their positions on the HMU [1].
 - (c) Connect the VSV fuel tube [11] and the VSV fuel tube [12] to the HMU [1]:
 - 1) Connect the B-nut on the VSV fuel tube [11] to the VSV head fitting (VSV head) [13].
 - a) Tighten the B-nut with your hand.
 - b) Tighten VSV fuel tube [11] with the triple torque method as follows:
 - <1> Tighten the B-nut connection to 662-778 pound-inches (75-88 Newton-meters).
 - <2> Loosen the B-nut of the fuel tube and tighten it again to 662-778 pound-inches (75-88 Newton-meters).
 - <3> Apply the specified torque again to make sure the torque of the B-nut of the oil tube/hose is 662-778 pound-inches (75-88 Newton-meters).
 - 2) Connect the B-nut on the VSV fuel tube [12] to the VSV rod fitting (VSV rod) [14].
 - a) Tighten the B-nut with your hand.
 - b) Tighten VSV fuel tube [12] with the triple torque method as follows:
 - <1> Tighten the B-nut connection to 460-540 pound-inches (52-61 Newton-meters).
 - <2> Loosen the B-nut of the fuel tube and tighten it again to 460-540 pound-inches (52-61 Newton-meters).

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- <3> Apply the specified torque again to make sure the torque of the B-nut of the oil tube/hose is 460-540 pound-inches (52-61 Newton-meters).
- (d) Attach the VSV fuel tube [11] and the VSV fuel tube [12] to the support bracket [25] on the AGB.
 - 1) Put the single tube clamps [28] in its position on the VSV fuel tube [11], the VSV fuel tube [12] and the support bracket [25].
 - 2) Install the bolts [31] through the single tube clamps [28] and into the support bracket [25].
 - a) Tighten the bolts [31] to 55-70 pound-inches (6.2-7.9 Newton-meters).

SUBTASK 73-21-14-420-006-H01

- (8) Connect the VBV fuel tube [15] and the VBV fuel tube [16] to the HMU [1]:
 - (a) Remove the protective covers from these fittings on the HMU [1].
 - 1) The VBV retract fitting (VBV ret) [17] on the HMU [1]
 - 2) The VBV extend fitting (VBV ext) [18] on the HMU [1]
 - 3) The B-nuts on the VBV fuel tube [15] and the VBV fuel tube [16].
 - (b) Put the VBV fuel tube [15] and the VBV fuel tube [16] in their positions on the HMU [1].
 - (c) Connect the VBV fuel tube [15] and the VBV fuel tube [16] to the HMU [1]:
 - 1) Connect the B-nut on the VBV fuel tube [15] to the VBV retract fitting (VBV ret) [17].
 - a) Tighten the B-nut with your hand.
 - b) Tighten VBV fuel tube [15] with the triple torque method as follows:
 - <1> Tighten the B-nut connection to 662-778 pound-inches (75-88 Newton-meters).
 - <2> Loosen the B-nut of the fuel tube and tighten it again to 662-778 pound-inches (75-88 Newton-meters).
 - <3> Apply the specified torque again to make sure the torque of the B-nut of the oil tube/hose is 662-778 pound-inches (75-88 Newton-meters).
 - 2) Connect the B-nut on the VBV fuel tube [16] to the VBV extend fitting (VBV ext) [18].
 - a) Tighten the B-nut with your hand.
 - b) Tighten VBV fuel tube [16] with the triple torque method as follows:
 - <1> Tighten the B-nut connection to 460-540 pound-inches (52-61 Newton-meters).
 - <2> Loosen the B-nut of the fuel tube and tighten it again to 460-540 pound-inches (52-61 Newton-meters).
 - <3> Apply the specified torque again to make sure the torque of the B-nut on the oil tube/hose is 460-540 pound-inches (52-61 Newton-meters).
 - (d) Attach the VBV fuel tube [15] and the VBV fuel tube [16] to the support bracket [26] on the AGB.
 - 1) Put the single tube clamps [28] in position on the VBV fuel tube [15], the VBV fuel tube [16] and the support bracket [26].
 - 2) Install the bolts [31] through the single tube clamps [28] and into the support bracket [26].
 - a) Tighten the bolts [31] to 55-70 pound-inches (6.2-7.9 Newton-meters).

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- (9) Install the fuel supply manifold No. 1 [9] on the HMU [1]:
- Remove the protective covers from these fittings:
 - The MAN 1 fuel port in the HMU [1]
 - The flange on the fuel supply manifold No. 1 [9]
 - Install a flange gasket [7A] in its position on the HMU [1].
 - Lubricate the threads of the bolts [8] with Acheson GP460 compound, D50043 [C02-058]
 - Install the four bolts [8] that attach the fuel supply manifold No. 1 [9] to the MAN 1 port of the HMU [1].
 - Tighten the bolts [8] to 110-120 pounds-inches (12.4-13.6 Newton-meters).

SUBTASK 73-21-14-420-007-H01

- (10) Install the fuel supply manifold No. 2 [6] on the HMU [1]:
- Remove the protective covers from these fittings:
 - The MAN 2 fuel port in the HMU [1]
 - The flange on the fuel supply manifold No. 2 [6].
 - Install a flange gasket [7B] in its position on the HMU [1].
 - Lubricate the threads of the bolts [8] with Acheson GP460 compound, D50043 [C02-058].
 - Install the four bolts [8] that attach the fuel supply manifold No. 2 [6] to the MAN 2 port of the HMU [1].
 - Tighten the four bolts [8] to 110-120 pounds-inches (12.4-13.6 Newton-meters).

SUBTASK 73-21-14-420-008-H01

- (11) Do this task: Fuel Manifold Pressure Sensor Installation, TASK 73-21-67-400-801-H01.

SUBTASK 73-21-14-420-009-H01

MAKE SURE THE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU CONNECT THEM. THE CONTAMINATION OF THE ELECTRICAL CONNECTOR CAN CAUSE DAMAGE TO THE EQUIPMENT.



USE TEFLON-JAWED PLIERS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

- (12) Use the teflon-jawed pliers, STD-664 to connect the channel A electrical connector [2], the channel B electrical connector [3], and the airframe shutoff connector [5] on the HMU [1] (TASK 70-00-01-400-807-H01):
- Remove the protective covers.
 - Put the airframe shutoff connector [5] into its position on the HMU [1].
 - Connect the airframe shutoff connector [5] to the HMU [1].
 - Tighten the airframe shutoff connector [5].
 - Put the CH A electrical harness into its position.
 - Connect the channel A electrical connector [2] to the HMU [1].
 - Tighten the channel A electrical connector [2].

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- (f) Put the CH B electrical harness into its position.
- (g) Connect the channel B electrical connector [3] to the HMU [1].
 - 1) Tighten the channel B electrical connector [3].

J. Put the Airplane Back to its Usual Condition

SUBTASK 73-21-14-860-002-H01

- (1) Do these steps to put the fuel control valve and the spar valve to the serviceable condition:
 - (a) Make sure that the FUEL CONTROL switch is in the CUTOFF position.
 - (b) For the applicable engine, remove the safety tags and close these circuit breakers:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C28001	L ENGINE FUEL SPAR VALVE
A	19	C28002	R ENGINE FUEL SPAR VALVE
B	4	C76601	L ENG FUEL VALVE
B	19	C76600	R ENG FUEL VALVE

SUBTASK 73-21-14-410-002-H01



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (2) Do these tasks in sequence to safely close the left and right thrust reversers on the applicable engine:
 - (a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-410-816-H00.
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine
 - (b) Do this task: Close the Fan Cowl Panel (Selection), TASK 71-11-04-410-814-H00.
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine
 - (c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-805-H00.
 - (d) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

K. HMU Installation Test

SUBTASK 73-21-14-710-001-H01

- (1) Do the tests listed in the Power Plant Test Reference Table (TASK 71-00-00-800-833-H00).

————— END OF TASK —————

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EEC (FADEC) - MAINTENANCE PRACTICES

1. General

A. This procedure has two tasks:

- (1) EEC (FADEC) Software Installation on the MAT
- (2) EEC (FADEC) Software Installation with the Portable Data Loader (PDL).

TASK 73-21-15-400-802-H01**2. EEC (FADEC) Software Installation (on the MAT)****A. General**

- (1) This procedure tells you how to install software in the EEC (FADEC). The EEC (FADEC) must contain this piece of software:
 - EEC OPS
 REF: AIPC 46-00-00-73C
- (2) You must install software in each channel of the EEC (FADEC).
- (3) A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.
- (4) If you do not know if the EEC (FADEC) needs new software, you can first do the software configuration check. It will save time if you only install software when the software is missing or the part number is incorrect. You can find the software configuration check in this task: EEC (FADEC) Software Installation (on the MAT), TASK 73-21-15-400-802-H01.
- (5) You can install the software from disks, the MAT hard drive or the PMAT hard drive (if available). It is recommended that you install software from the MAT or PMAT hard drive. To install new software on the MAT or PMAT hard drive, do this task: How to Add Software to the Hard Drive, TASK 45-10-00-860-812.

NOTE: When new software is installed in the EEC (FADEC), the load process first erases the old software and then installs the new software. If you install software directly to the EEC (FADEC) from a faulty disk, the load process may erase the old software and then fail, so that no software is installed. If you install a faulty disk to the MAT or PMAT hard drive, the load may fail, but you will not erase the software from the EEC (FADEC).

- (a) It is recommended that you remove old software part numbers from the MAT or PMAT hard drive after new software is installed. To remove software from the hard drive, do this task: How to Remove Software from the Hard Drive, TASK 45-10-00-860-813.
- (6) The airplane must be on the ground with the engines not in operation before you can install the EEC software.
- (7) To read about the conditions and times necessary for software installation, do this task: On-Airplane Software Installation, TASK 20-15-11-400-801.
- (8) It is recommended to load the same software version into the FADEC of both engines to prevent differences in operation between the engines.

B. References

Reference	Title
20-15-11-400-801	On-Airplane Software Installation (P/B 201)

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(Continued)

Reference	Title
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
45-10-00-860-810	How to Change the Primary CMCF (P/B 201)
45-10-00-860-812	How to Add Software to the Hard Drive (P/B 201)
45-10-00-860-813	How to Remove Software from the Hard Drive (P/B 201)
73-21-15-000-801-H01	EEC (FADEC) Removal (P/B 401)
73-21-15-400-801-H01	EEC (FADEC) Installation (P/B 401)
79-00-00-200-804-H01	Engine Oil System (DMS) (Scheduled Maintenance Task) Inspection (P/B 601)
AIPC 46-00-00-73C	Aircraft Illustrated Parts Catalog

C. Location Zones

Zone	Area
212	Flight Compartment, Right
411	Engine, Left
421	Engine, Right

D. Procedure**SUBTASK 73-21-15-470-007-H00**

- (1) Make a record of the values for cumulative and current flight leg DMS chip count from the ACMS oil report at the last taxi-in.

SUBTASK 73-21-15-470-008-H00

- (2) Make a record of any DMS system faults reported (79-14551 or 79-14552) in the AHM fault summary report from the last flight leg.

SUBTASK 73-21-15-470-001-H01

- (3) Use a maintenance access terminal (MAT) to install software in the EEC (FADEC).

NOTE: Make sure you know the correct software part number for the EEC (FADEC) before you select the software part number on the display. For the EEC (FADEC) to be an approved installation, the correct software must be installed in each channel.

- (a) If the software is on a disk, put the correct disk in the disk drive.
- (b) Make these selections on the MAT:
 - 1) ONBOARD MAINTENANCE
 - 2) EXTENDED MAINTENANCE
 - 3) DATA LOAD.
- (c) Make these selections to select the component that will receive the software:
 - 1) SELECT DESTINATION
 - a) 71 - 80 Left (Right) Engine
 - b) Electronic ENG Control (FADEC) (L (R) Eng, Ch A (B)).
 - 2) CONTINUE
 - a) Do a check of the current hardware and software configuration when the system configuration page is displayed.
 - b) Make sure the new EEC SW PN you will install is compatible with the EEC Hardware PN.

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- (d) Make these selections to select the source of the software:
- 1) SELECT SOURCE
 - 2) Select the source of the software (if the Disk Drive is the only selection, it is automatically selected).
 - 3) Select the correct software part number from the display.
NOTE: The software part number does not highlight when selected, but the CONTINUE button will be selectable.
 - 4) CONTINUE.
- (e) Select START to start the software installation.
- 1) A screen titled DATA LOAD will show with the preconditions necessary to do a data load. Make sure you do the steps that are listed on the MAT screen to prepare the airplane for the data load.
 - 2) CONTINUE
 - 3) Make sure you see the message 'The data load is in progress.'
NOTE: The screen will show a status bar of the data load (in percent). It will take approximately 10-15 minutes to load the EEC (FADEC) software for each channel.
- (f) When the software installation is completed, make sure the correct software part number shows on the display.
- (g) Select CONTINUE to remove the configuration display.

SUBTASK 73-21-15-470-002-H01

- (4) If the MAT shows: THE REQUEST IS OPERATING. TO STOP THIS SESSION, SELECT THE EXIT MAINTENANCE BUTTON, do these steps:

NOTE: This condition occurs when the software data load is stopping at 99% complete. You need to do the following steps to continue loading all of the software data.

- (a) Make sure that the EICAS Advisory message ENG CONTROL L (R) is shown for the engine being loaded.
- (b) Make these selections on the MAT:
 - 1) EXIT MAINTENANCE
 - 2) ONBOARD MAINTENANCE
 - 3) LINE MAINTENANCE
 - 4) SYSTEM CONFIGURATION
 - 5) 71 - 80 Left (Right) ENGINE
 - 6) CONTINUE.
- (c) Make sure that the software part number on the display is the same as the software part number being loaded.
 - 1) If the software part numbers are the same then the software data load was successful.

SUBTASK 73-21-15-470-003-H01

- (5) Install the software in the other channel.

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- (6) If the MAT shows: THE REQUEST IS OPERATING. TO STOP THIS SESSION, SELECT THE EXIT MAINTENANCE BUTTON, do these steps:

NOTE: This condition occurs when the software data load is stopping at 99% complete. You need to do the following steps to continue loading all of the software data.

- (a) Make sure that the EICAS Advisory message ENG CONTROL L (R) is NOT shown for the engine being loaded.
- (b) Make these selections on the MAT:
 - 1) EXIT MAINTENANCE
 - 2) ONBOARD MAINTENANCE
 - 3) LINE MAINTENANCE
 - 4) SYSTEM CONFIGURATION
 - 5) 71 - 80 Left (Right) ENGINE
 - 6) CONTINUE.
- (c) Make sure that the software part number on the display is the same as the software part number being loaded.
 - 1) If the software part numbers are the same then the software data load was successful.

SUBTASK 73-21-15-470-006-H00

- (7) If you have problems to load the FADEC software, do the steps that follow:

- (a) Try to install the FADEC software again.
- (b) If problems continue, try to install the FADEC software with the other CMCF.
 - 1) Cycle power to the AIMS, the EDIU and the FADEC and then change the primary CMCF (TASK 45-10-00-860-810).
- (c) If problems continue, check the MAT EXISTING FAULTS and MAT FAULT HISTORY displays for occurrence of these maintenance messages during any of the 3 flight legs that occurred before: 73-3111(2), 73-23111(2), 73-35431(2), 73-35441(2), 73-35451(2), 73-35461(2), 73-35471(2) or 73-35481(2).
 - 1) If you find one or more of these maintenance messages occurred during the current or 3 flight legs that occurred before (-3, -2, -1), do the fault isolation for the messages that you find.
- (d) If problems continue, load the software again to the MAT or PMAT hard drive (TASK 45-10-00-860-812 and TASK 45-10-00-860-813).
 - 1) If loading from a disk, try another copy of the software disk.
- (e) If problems continue, replace the FADEC (TASK 73-21-15-000-801-H01 and TASK 73-21-15-400-801-H01).
- (f) If problems continue, as an alternative procedure, the FADEC can be programmed on another airplane and then installed or you can load the software with a Portable Data Loader (PDL) and necessary cables (TASK 73-21-15-000-802-H01).

SUBTASK 73-21-15-470-009-H00

- (8) If both the cumulative and current flight leg DMS chip counts are zero and there is no maintenance message 79-14551 or 79-14552 for DMS system fault recorded from steps (1) and (2), then no physical inspection of the DMS sensor is necessary after you successfully load the FADEC software.

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SUBTASK 73-21-15-470-010-H00

- (9) If both the cumulative and current flight leg DMS chip counts are one or more, or there is maintenance message 79-14551 or 79-14552 for DMS system fault, after you successfully load the FADEC software, do this task: Engine Oil System (DMS) (Scheduled Maintenance Task) Inspection, TASK 79-00-00-200-804-H01.

NOTE: Clean the DMS sensor before installation. This will make sure the FADEC chip count is zero to match the physical chip count on the DMS.

————— **END OF TASK** —————

TASK 73-21-15-000-802-H01

3. **EEC (FADEC) Software Installation (with a Portable Data Loader (PDL))**

(Figure 201)

A. General

- (1) This procedure is an alternate task to load the Engine Electronic Controller (EEC) Full Authority Digital Engine Control (FADEC) software with a Portable Data Loader (PDL).
- (2) It is recommended that you use the Maintenance Access Terminal (MAT) procedure to install the software (TASK 73-21-15-400-802-H01).
- (3) This procedure tells you how to install software in the EEC FADEC. The EEC FADEC must contain this piece of software:
 - (a) Operational Program Software (OPS).
- (4) You must open the right fan cowl panel to get access to the EEC FADEC.
- (5) Load the same software version into the EEC FADEC of both engines to prevent differences in operation between the engines.

B. References

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
27-81-00-860-805	Retract the Leading Edge Slats (P/B 201)
70-00-01-400-807-H01	Electrical Connector - Disconnect and Connect (P/B 201)
71-00-00-700-815-H01	Test No. 16 - Engine Electronic Control (EEC) Test (MAT Initiated Test) (P/B 501)
71-11-04-010-814-H00	Open the Fan Cowl Panel (Selection) (P/B 201)
71-11-04-410-814-H00	Close the Fan Cowl Panel (Selection) (P/B 201)
73-21-19-000-801-H01	Engine Rating Plug Removal (P/B 401)
73-21-19-400-801-H01	Engine Rating Plug Installation (P/B 401)
79-00-00-200-804-H01	Engine Oil System (DMS) (Scheduled Maintenance Task) Inspection (P/B 601)

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.

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Reference	Description
COM-261	Data Loader - ARINC 615 Part #: 11615-50 Supplier: 0D4J3 Part #: CEI-715-DL-2 Supplier: 0BPH5 Opt Part #: 11615-20 Supplier: 0D4J3 Opt Part #: 30100 Supplier: 0BAW0 Opt Part #: 964-0400-025 Supplier: 97896 Opt Part #: 964-0400-030 Supplier: 97896 Opt Part #: 964-0400-055 Supplier: 97896 Opt Part #: 964-0400-060 Supplier: 97896 Opt Part #: 964-0400-064 Supplier: 97896 Opt Part #: 964-0400-065 Supplier: 97896
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)

D. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

E. Access Panels

Number	Name/Location
414AR	Right Fan Cowl Panel, Left Engine
424AR	Right Fan Cowl Panel, Right Engine

F. Prepare for the Software Installation

SUBTASK 73-21-15-860-008-H01



RETRACT THE LEADING EDGE SLATS AND DO THE DEACTIVATION PROCEDURE BEFORE YOU OPEN THE FAN COWL PANELS. IF THE LEADING EDGE SLATS ARE NOT RETRACTED, THE FAN COWL PANELS WILL HIT THEM AND CAUSE DAMAGE.

- (1) Do this task: Retract the Leading Edge Slats, TASK 27-81-00-860-805.

SUBTASK 73-21-15-040-004-H01

- (2) Do this task: Leading Edge Slat - Deactivation, TASK 27-81-00-040-801.

SUBTASK 73-21-15-040-005-H01

- (3) For the right fan cowl panel on the applicable engine, do this task:
Open the Fan Cowl Panel (Selection), TASK 71-11-04-010-814-H00

Number	Name/Location
414AR	Right Fan Cowl Panel, Left Engine
424AR	Right Fan Cowl Panel, Right Engine

G. Procedure

SUBTASK 73-21-15-860-005-H01

- (1) Make sure that the EEC MAINT POWER switch on the overhead maintenance panel, P61 is in the NORM position.

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SUBTASK 73-21-15-420-004-H01



MAKE SURE THE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU CONNECT THEM. THE CONTAMINATION OF THE ELECTRICAL CONNECTOR CAN CAUSE DAMAGE TO THE EQUIPMENT.



USE TEFLON-JAWED PLIERS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

- (2) Use the teflon-jawed pliers, STD-664 to connect the PDL cable 856A1616G02 Cable Assembly to the connector J1 of the ARINC 615 data loader, COM-261 (TASK 70-00-01-400-807-H01) (Figure 201).

SUBTASK 73-21-15-020-005-H01



MAKE SURE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU DISCONNECT THEM. CONTAMINATION OF ELECTRICAL CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.



USE TEFLON-JAWED PLIERS TO LOOSEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

- (3) Use the teflon-jawed pliers, STD-664 to disconnect the electrical connectors from the EEC FADEC.
- (a) Disconnect the J2 (DM73003B) and J4 (DM73003D) electrical connectors from the EEC FADEC.
- NOTE: It is necessary to disconnect the J4 connector because the EEC FADEC routes ARINC 429 receiver for the J4 and P15. In this case, only P11 is used and parallel connection of J4 may affect the ARINC signal quality to the J4 and P15.
- (b) Disconnect the Engine Rating Plug from the EEC FADEC. Refer to Engine Rating Plug Removal, TASK 73-21-19-000-801-H01.

SUBTASK 73-21-15-420-005-H01



MAKE SURE THE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU CONNECT THEM. THE CONTAMINATION OF THE ELECTRICAL CONNECTOR CAN CAUSE DAMAGE TO THE EQUIPMENT.



USE TEFLON-JAWED PLIERS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

- (4) Connect the PDL to the EEC FADEC.
- (a) Use the teflon-jawed pliers, STD-664 to connect the PDL cable 856A1616G02 J15 to the connector P15 of the EEC FADEC.
- NOTE: 115V AC (400 Hz) electrical power will be supplied to the EEC FADEC through the J1 and J2 connectors.

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- (b) Use the teflon-jawed pliers, STD-664 to connect the PDL cable 856A1616G02 P2A connector to the J2 (DM73003B) connector of the EEC FADEC.
- (c) Use the teflon-jawed pliers, STD-664 to connect the PDL cable 856A1616G02 J2A connector to the airplane side of DM73003B connector.

SUBTASK 73-21-15-470-005-H01

- (5) Load the software.

NOTE: You must do these steps in sequence stated for the proper software loading. One disk will be needed to load the channel A and channel B with the Non Volatile Memory (NVM) and the operating program software.

- (a) Put the EEC MAINT POWER switch on the overhead maintenance panel, P61 to the TEST position.

- (b) Switch on the ARINC 615 data loader, COM-261 with the disk not inserted.

NOTE: The PDL display will show DISK NOT INSERTED after the PDL is initiated.

- (c) Make sure you use the correct EEC FADEC software version disk.

- 1) The software disk that is necessary to load the PDL is not the same disk necessary to install software on the MAT.

- (d) Make sure the software disk is not write protected before you load the new software.

NOTE: Look at the write protect tab position. The window on the disk must be blocked by the write protect tab.

- (e) Insert the appropriate disk into the PDL drive within 5 minutes of the EEC MAINT POWER switch on the overhead maintenance panel, P61 being put to the TEST position.

NOTE: The PDL will automatically load the NVM and the operating program software to the two channels of the EEC FADEC. If it is successful, the PDL will display LOAD COMPLETE.

NOTE: It will take up to 20 minutes to load the EEC FADEC. If the software loading has failed, it may take an additional 3-5 minutes before the transfer fail lamp illuminates.

- (f) If the transfer fail lamp illuminates, make sure the cable connections are correct.

- 1) Remove the power and repeat the software loading steps above.

NOTE: Three attempts can be made if the failure recurs.

- (g) If LOAD COMPLETE is displayed on the ARINC 615 data loader, COM-261, switch off the ARINC 615 data loader, COM-261 and the 115 VAC or 28 V DC.

- (h) Remove the disk from the ARINC 615 data loader, COM-261.

SUBTASK 73-21-15-860-006-H01

- (6) Remove all electrical power from the EEC FADEC and the ARINC 615 data loader, COM-261.

- (a) Position the EEC MAINT POWER switch on the overhead maintenance panel, P61 to the NORM position.

SUBTASK 73-21-15-080-001-H01

- (7) Remove the ARINC 615 data loader, COM-261.



MAKE SURE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU DISCONNECT THEM. CONTAMINATION OF ELECTRICAL CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.

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(CAUTION PRECEDES)



USE TEFLON-JAWED PLIERS TO LOOSEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

- (a) Use the teflon-jawed pliers, STD-664 to remove the PDL cable 856A1616G02 from the EEC FADEC connector J2 (DM73003B).
- (b) Remove the PDL cable 856A1616G02 from the ARINC 615 data loader, COM-261.
- (c) Use the teflon-jawed pliers, STD-664 to connect the J2 (DM73003A) and J4 (DM73003D) electrical connectors to the EEC FADEC.
- (d) Connect the Engine Rating Plug to the EEC FADEC. Refer to Engine Rating Plug Installation, TASK 73-21-19-400-801-H01.

SUBTASK 73-21-15-730-001-H01

- (8) Do this task: Test No. 16 - Engine Electronic Control (EEC) Test (MAT Initiated Test), TASK 71-00-00-700-815-H01.

SUBTASK 73-21-15-200-004-H00

- (9) After loading the FADEC software, do this task: Engine Oil System (DMS) (Scheduled Maintenance Task) Inspection, TASK 79-00-00-200-804-H01.

- (a) Clean the DMS sensor before installation.

NOTE: Clean the DMS sensor before installation will make sure EEC FADEC chip count zero to match the physical chip count on the DMS.

H. Put the Airplane Back to its Usual Condition

SUBTASK 73-21-15-440-007-H01

- (1) Do this task: Close the Fan Cowl Panel (Selection), TASK 71-11-04-410-814-H00.
- (a) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
414AR	Right Fan Cowl Panel, Left Engine
424AR	Right Fan Cowl Panel, Right Engine

SUBTASK 73-21-15-440-008-H01

- (2) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

— END OF TASK —

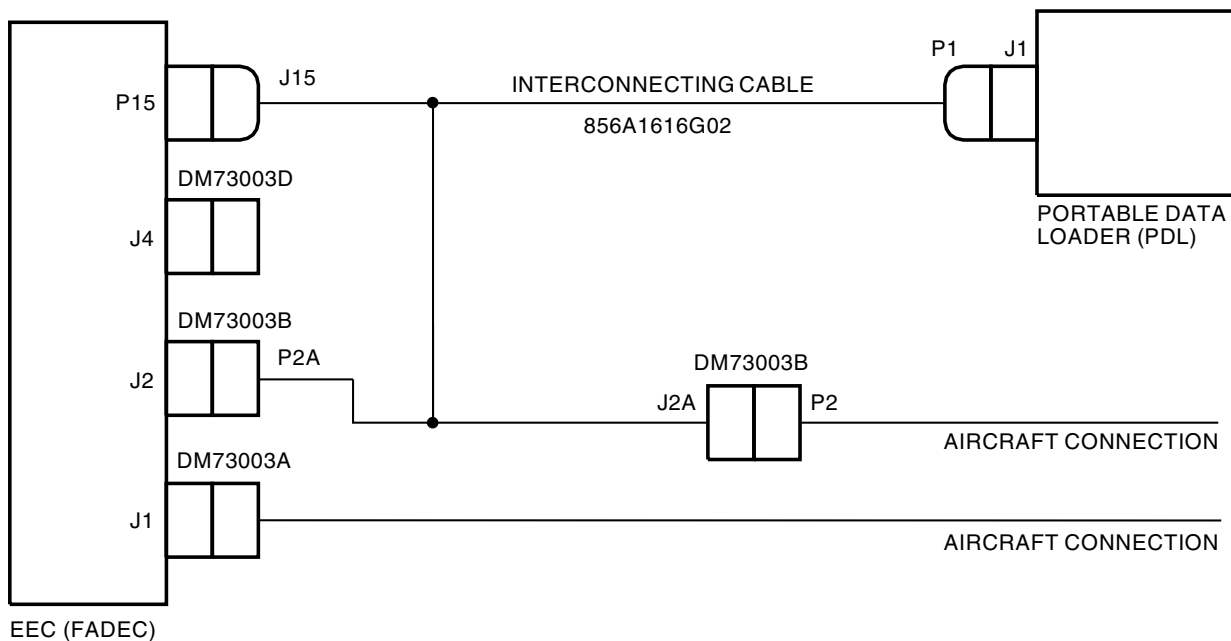
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**NOTE:**

DURING REPROGRAMMING, DISCONNECT THE EEC (FADEC) J4 CONNECTOR (DM73003D).

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Reprogramming Cable Installation
Figure 201/73-21-15-990-803-H01

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EEC (FADEC) - REMOVAL/INSTALLATION

1. General

A. This procedure contains two tasks:

- (1) A removal of the Electronic Engine Control (referred to as the EEC (FADEC))
- (2) An installation of the EEC (FADEC).

TASK 73-21-15-000-801-H01

2. EEC (FADEC) Removal

(Figure 401)

A. **General**

- (1) This task is the removal procedure for the electronic engine control (referred to as the EEC (FADEC)).
- (2) The EEC (FADEC) is on the fan case at approximately the 2:30 o'clock position.
- (3) You must open the right fan cowl panel to get access to remove the EEC (FADEC).

B. **References**

Reference	Title
70-00-01-400-807-H01	Electrical Connector - Disconnect and Connect (P/B 201)
70-00-01-400-809-H01	Hose Installation (P/B 201)
71-00-00-700-811-H01	Test No. 12A - Low Pressure System (Fan/LPT) Trim Balance (For SCU P/N S332W401-200) (P/B 501)
71-00-00-700-821-H02	Test No. 12B - Low Pressure System (Fan/LPT) Trim Balance (For SCU P/N 241-322-008-022 or 241-322-007-021, Media P/N 241-322-915-001) (P/B 501)
71-11-04-010-814-H00	Open the Fan Cowl Panel (Selection) (P/B 201)

C. **Tools/Equipment**

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)

D. **Location Zones**

Zone	Area
411	Engine, Left
421	Engine, Right

E. **Access Panels**

Number	Name/Location
414AR	Right Fan Cowl Panel, Left Engine
424AR	Right Fan Cowl Panel, Right Engine

F. **Prepare for EEC Removal**

SUBTASK 73-21-15-010-001-H01

- (1) For the right fan cowl panel on the applicable engine, do this task:
Open the Fan Cowl Panel (Selection), TASK 71-11-04-010-814-H00

Number	Name/Location
414AR	Right Fan Cowl Panel, Left Engine
424AR	Right Fan Cowl Panel, Right Engine

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SUBTASK 73-21-15-970-002-H00

- (2) Record the fan balance weight before you remove the EEC (TASK 71-00-00-700-811-H01 or TASK 71-00-00-700-821-H02)

NOTE: The engine balance related data stored in the AVM is erased when the engine serial number is changed. This data includes such as the balance weight, the vibration history, and the specific balance coefficients.

G. EEC (FADEC) Removal

SUBTASK 73-21-15-020-001-H01



MAKE SURE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU DISCONNECT THEM. CONTAMINATION OF ELECTRICAL CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.



USE TEFLON-JAWED PLIERS TO LOOSEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

- (1) Use teflon-jawed pliers, STD-664 to disconnect the electrical harnesses from the EEC (FADEC) [1] (TASK 70-00-01-400-807-H01).
- (a) The DM73003A J1 [15]
 - (b) The DM73003C J3 [16]
 - (c) The DM73003D J4 [17]
 - (d) The DP70912 J12 [18]
 - (e) The DM73003B J2 [19]
 - (f) The DP70913 J13 [14]
 - (g) The DP70707 J7 [13]
 - (h) The DP70305 J5 [12]
 - (i) The DP70406 J6 [11]
 - (j) The DP70808 J8 [10]
 - (k) The DP70109 J9 [2]
 - (l) The DP70210 J10 [3].



DO NOT REMOVE THE ENGINE RATING PLUG FROM THE ENGINE. THE ENGINE RATING PLUG MUST STAY WITH THE ENGINE. IF YOU REMOVE THE RATING PLUG, YOU COULD CAUSE INCORRECT DATA INPUT TO THE EEC (FADEC).

- (m) Disconnect the P11 rating plug [4] from the EEC (FADEC) [1].
- (n) Install protective covers on the electrical connectors and the EEC (FADEC) [1] receptacles.
- (o) Move the electrical connectors and cables away from the EEC (FADEC) [1].

SUBTASK 73-21-15-020-002-H01

- (2) Disconnect the pressure sense hose B-nuts from the EEC (FADEC) [1] (TASK 70-00-01-400-809-H01).
- (a) The P3B [9]

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- (b) The P0 [8]
- (c) The PS3 [6].
- (d) Install protective covers on the pressure fittings on the EEC (FADEC) [1] and the pressure sense hose B-nuts.

NOTE: The P25 [7] port is not used and is not connected to a pressure sense hose. There is no requirement to put a cap on the P25 [7] port.

SUBTASK 73-21-15-020-004-H01

- (3) Do these steps to remove the EEC (FADEC) [1] from the fan case.
 - (a) Loosen the four captive bolts [5] that attach the EEC (FADEC) [1] to the fan case mount brackets.

NOTE: The EEC (FADEC) bonding jumper is connected to the EEC attachment bolt head and is removed with the EEC (FADEC).

NOTE: The four bolts are the captive type and cannot be removed. Do not remove the vibration mounts, bolts, bushings, or washers from the EEC (FADEC).

**WARNING**

BE CAREFUL WHEN YOU LIFT THE EEC (FADEC). THE EEC (FADEC) WEIGHS 51 POUNDS (23 KG), AND IS A TWO PERSON LIFT. INJURIES TO PERSONS CAN OCCUR.

**CAUTION**

DO NOT PUT THE EEC (FADEC) ON ITS PRESSURE FITTINGS OR ELECTRICAL RECEPTACLES. DAMAGE TO THE PRESSURE FITTINGS OR ELECTRICAL RECEPTACLES CAN OCCUR.

- (b) Remove the EEC (FADEC) [1].

———— **END OF TASK** ————

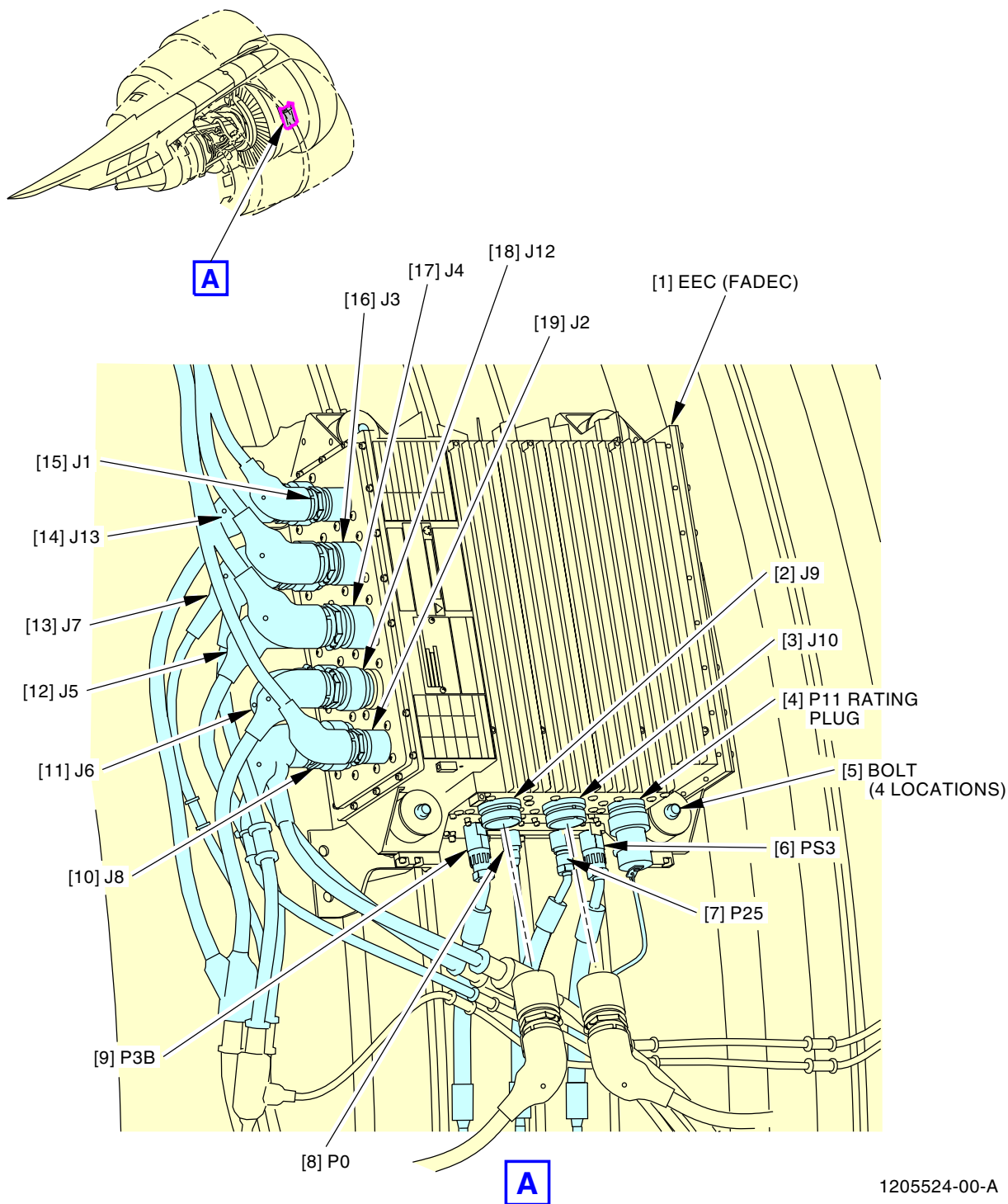
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EEC (FADEC) Installation
Figure 401/73-21-15-990-801-H01

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TASK 73-21-15-400-801-H01

3. EEC (FADEC) Installation

(Figure 401)

A. General

- (1) This task is the installation procedure for the electronic engine control (referred to as the EEC (FADEC)).
- (2) You must do tests that are listed in the power plant test reference table after the EEC (FADEC) installation.

B. References

Reference	Title
45-10-00-750-803	How to Find the Hardware or Software Configuration of a System (P/B 201)
70-00-01-400-807-H01	Electrical Connector - Disconnect and Connect (P/B 201)
70-51-00-910-801-H01	Instruction for Torque (P/B 201)
71-00-00-700-811-H01	Test No. 12A - Low Pressure System (Fan/LPT) Trim Balance (For SCU P/N S332W401-200) (P/B 501)
71-00-00-700-821-H02	Test No. 12B - Low Pressure System (Fan/LPT) Trim Balance (For SCU P/N 241-322-008-022 or 241-322-007-021, Media P/N 241-322-915-001) (P/B 501)
71-00-00-800-833-H00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-814-H00	Close the Fan Cowl Panel (Selection) (P/B 201)
73-21-15-400-802-H01	EEC (FADEC) Software Installation (on the MAT) (P/B 201)
73-21-20-800-801-H00	Engine Identification (Serial Number) Installation (ESN Special Function) (P/B 201)
79-00-00-200-804-H01	Engine Oil System (DMS) (Scheduled Maintenance Task) Inspection (P/B 601)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	EEC (FADEC)	73-21-51-04-010	ARO ALL

E. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

F. Access Panels

Number	Name/Location
414AR	Right Fan Cowl Panel, Left Engine
424AR	Right Fan Cowl Panel, Right Engine

G. EEC (FADEC) Installation

SUBTASK 73-21-15-420-001-H01

- (1) Install the EEC (FADEC) [1].

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**WARNING**

BE CAREFUL WHEN YOU LIFT THE EEC (FADEC). THE EEC (FADEC) WEIGHS 51 POUNDS (23 KG), AND IS A TWO PERSON LIFT. INJURIES TO PERSONS CAN OCCUR.

- (a) Use the four captive bolts [5] to connect the EEC (FADEC) [1] to the fan case brackets.
- (b) Tighten the captive bolts [5] to 216.0 in-lb (24.4 N·m) - 240.0 in-lb (27.1 N·m).

SUBTASK 73-21-15-010-002-H01

- (2) Remove the protective covers from the pressure sense hoses and pressure sense fittings on the EEC (FADEC) [1] and connect these pressure sense hose B-nuts.

NOTE: The P25 [7] port is not used and is not connected to a pressure sense hose. There is no requirement to put a cap on the P25 [7] port.

- (a) The PS3 [6]
- (b) The P0 [8]
- (c) The P3B [9].
- (d) Tighten the P25 [7], P0 [8] and P3B [9], B-nuts on the pressure sense hoses to 265.0 in-lb (29.9 N·m) - 305.0 in-lb (34.5 N·m)(TASK 70-51-00-910-801-H01).
- (e) Tighten the PS3 [6] with the triple torque method as follows:
 - 1) Torque the B-nut connection to 265.0 in-lb (29.9 N·m) - 305.0 in-lb (34.5 N·m).
 - 2) Loosen the B-nut of the PS3 and torque it again to 265.0 in-lb (29.9 N·m) - 305.0 in-lb (34.5 N·m).
 - 3) Apply the specified torque again to do a check of the torque of the PS3 B-nut to 265.0 in-lb (29.9 N·m) - 305.0 in-lb (34.5 N·m).

SUBTASK 73-21-15-420-002-H01**CAUTION**

MAKE SURE THE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU CONNECT THEM. THE CONTAMINATION OF THE ELECTRICAL CONNECTOR CAN CAUSE DAMAGE TO THE EQUIPMENT.

**CAUTION**

USE TEFLON-JAWED PLIERS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

- (3) Use teflon-jawed pliers, STD-664 to connect the electrical connectors (TASK 70-00-01-400-807-H01).
 - (a) Remove the protective covers from the EEC (FADEC) electrical receptacles on the EEC (FADEC) [1] and the electrical connectors.
 - (b) Move the electrical cables and connectors into their position on the EEC (FADEC) [1].
 - (c) Connect the electrical harnesses to the EEC (FADEC) [1].
 - 1) The DP70913 J13 [14]
 - 2) The DP70707 J7 [13]
 - 3) The DP70305 J5 [12]
 - 4) The DP70406 J6 [11]
 - 5) The DP70808 J8 [10]
 - 6) The DM73003A J1 [15]

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- 7) The DM73003C J3 [16]
- 8) The DM 73003D J4 [17]
- 9) The DP70912 J12 [18]
- 10) The DM73003B J2 [19]
- 11) The DP70109 J9 [2]
- 12) The DP70210 J10 [3].

(d) Tighten the electrical connectors.

SUBTASK 73-21-15-420-003-H01



MAKE SURE THE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU CONNECT THEM. THE CONTAMINATION OF THE ELECTRICAL CONNECTOR CAN CAUSE DAMAGE TO THE EQUIPMENT.



USE TEFLON-JAWED PLIERS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

- (4) Use teflon-jawed pliers, STD-664 to connect the engine P11 rating plug [4] to the EEC (FADEC) [1] (TASK 70-00-01-400-807-H01).

(a) Tighten the P11 rating plug [4].

H. Put the Airplane Back to its Usual Condition

SUBTASK 73-21-15-410-002-H01

- (1) Do this task: Close the Fan Cowl Panel (Selection), TASK 71-11-04-410-814-H00.

(a) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
414AR	Right Fan Cowl Panel, Left Engine
424AR	Right Fan Cowl Panel, Right Engine

I. EEC (FADEC) Installation Test

SUBTASK 73-21-15-860-009-H00

- (1) Make sure there is power to the low range radio altimeters (LRRAs).

NOTE: When there is power to the LRRAs, the altitude for the selected LRRAs is shown at the bottom of the PFD.

SUBTASK 73-21-15-210-001-H00

- (2) Do a check of the EEC software part number and engine rating plug on the MAT:
- (a) Set the applicable EEC MAINT L(R) ENG POWER switch on the overhead maintenance panel, P61, to the TEST position.
 - (b) After 30 seconds, look at the MAT EEC configuration data page for hardware and software (TASK 45-10-00-750-803).
 - 1) Make sure that the Engine Rating is correct.
 - 2) Make sure that the Channel A and B S/W P/Ns are correct and agree.
 - a) If it is necessary, do this task: EEC (FADEC) Software Installation (on the MAT), TASK 73-21-15-400-802-H01.

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- (3) Set the applicable EEC MAINT L(R) ENG POWER switch on the overhead maintenance panel, P61, to the NORM position.

SUBTASK 73-21-15-840-002-H00

- (4) Install (load) the engine identification number (serial number) into the EEC (FADEC), M73003, (TASK 73-21-20-800-801-H00).

SUBTASK 73-21-15-200-002-H00

- (5) Do a balance weights list check for the fan (TASK 71-00-00-700-811-H01 or TASK 71-00-00-700-821-H02).
- (a) Make sure that the fan balance weight shown on the EXISTING BALANCE WEIGHTS display is the same as the previously recorded fan balance weight.

SUBTASK 73-21-15-200-001-H00

- (6) Do this task: Engine Oil System (DMS) (Scheduled Maintenance Task) Inspection, TASK 79-00-00-200-804-H01.

SUBTASK 73-21-15-710-001-H01

- (7) Do the tests listed in the Power Plant Test Reference Table (TASK 71-00-00-800-833-H00).

———— **END OF TASK** ————

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ENGINE RATING PLUG - MAINTENANCE PRACTICES

1. General

- A. This procedure contains this task:
- (1) To do a check on the engine rating data.

TASK 73-21-19-400-802-H01

2. Engine Rating Data Check

A. General

- (1) This task gives instructions to access the maintenance access terminal (MAT) for the engine rating data check.
- (2) A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

B. References

Reference	Title
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)

C. Location Zones

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

D. Procedure

SUBTASK 73-21-19-860-001-H01

- (1) Put the EEC MAINT L or R ENG POWER switch on the aft overhead maintenance panel, P61, to the TEST position.
 - (a) Stop for 30 seconds.

SUBTASK 73-21-19-210-001-H01

- (2) Use a maintenance access terminal (MAT) to do the System Configuration check for the correct engine rating for the applicable engine:
 - (a) Make these selections on the MAT:
 - 1) ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) SYSTEM CONFIGURATION
 - 4) Select the ATA system 71-80 for L or R engine.
 - 5) CONTINUE
 - 6) Read the engine rating for the applicable engine (use the scroll bar to see all of the data).

SUBTASK 73-21-19-860-002-H01

- (3) Do these steps to go back to the initial MAT screen menu:
 - (a) Select GO BACK (if it shows).
 - (b) Select LINE MAINTENANCE from the CMCS main menu.
 - (c) Select EXIT MAINTENANCE from the line maintenance menu.

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SUBTASK 73-21-19-860-003-H01

- (4) Put the EEC MAINT L or R ENG POWER switch on the aft overhead maintenance panel, P61, to the NORM position.

———— **END OF TASK** ————

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ENGINE RATING PLUG - REMOVAL/INSTALLATION

1. General

- A. This procedure contains two tasks:
- (1) A removal of the engine rating plug
 - (2) An installation of the engine rating plug.

TASK 73-21-19-000-801-H01

2. Engine Rating Plug Removal

A. General

- (1) This task is the removal procedure for the engine rating plug.
- (2) The engine rating plug is attached to the Electronic Engine Control - EEC (FADEC). The EEC (FADEC) is mounted on the fan case at approximately the 2:00 o'clock position.
- (3) You must open the right fan cowl panel to get access to the engine rating plug.

B. References

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
27-81-00-860-805	Retract the Leading Edge Slats (P/B 201)
70-00-01-400-807-H01	Electrical Connector - Disconnect and Connect (P/B 201)
71-11-04-010-814-H00	Open the Fan Cowl Panel (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)

D. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

E. Access Panels

Number	Name/Location
414AR	Right Fan Cowl Panel, Left Engine
424AR	Right Fan Cowl Panel, Right Engine

F. Prepare for the Engine Rating Plug Removal

SUBTASK 73-21-19-860-001-H02



RETRACT THE LEADING EDGE SLATS AND DO THE DEACTIVATION PROCEDURE BEFORE YOU OPEN THE FAN COWL PANELS. IF THE LEADING EDGE SLATS ARE NOT RETRACTED, THE FAN COWL PANELS WILL HIT THEM AND CAUSE DAMAGE.

- (1) Do this task: Retract the Leading Edge Slats, TASK 27-81-00-860-805.

SUBTASK 73-21-19-040-002-H01

- (2) Do this task: Leading Edge Slat - Deactivation, TASK 27-81-00-040-801.

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SUBTASK 73-21-19-010-003-H01

- (3) For the right fan cowl panel on the applicable engine, do this task:
Open the Fan Cowl Panel (Selection), TASK 71-11-04-010-814-H00

<u>Number</u>	<u>Name/Location</u>
414AR	Right Fan Cowl Panel, Left Engine
424AR	Right Fan Cowl Panel, Right Engine

G. Engine Rating Plug Removal

SUBTASK 73-21-19-020-001-H01



USE TEFLON-JAWED PLIERS TO LOOSEN THE ENGINE RATING PLUG. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ENGINE RATING PLUG COULD OCCUR. MAKE SURE THE ENGINE RATING PLUG IS CLEAN WHEN YOU DISCONNECT IT. THE CONTAMINATION OF THE ENGINE RATING PLUG CAN CAUSE DAMAGE TO THE EEC (FADEC).

- (1) Use the teflon-jawed pliers, STD-664 to disconnect the engine rating plug [2] from the J15 receptacle on the EEC (FADEC) [1](TASK 70-00-01-400-807-H01) (Figure 401).

SUBTASK 73-21-19-020-002-H01

- (2) Install protective covers on engine rating plug [2]and the J15 receptacle on the EEC (FADEC) [1].

SUBTASK 73-21-19-020-003-H01

- (3) Disconnect the lanyard [5] from the fan case:
- Remove the nut [7] and the spacer [6].
 - Remove the bolt [3], the washer [4], and the lanyard [5], from bolt hole number 34 of the fan case.
 - Remove the engine rating plug [2].

———— **END OF TASK** ————

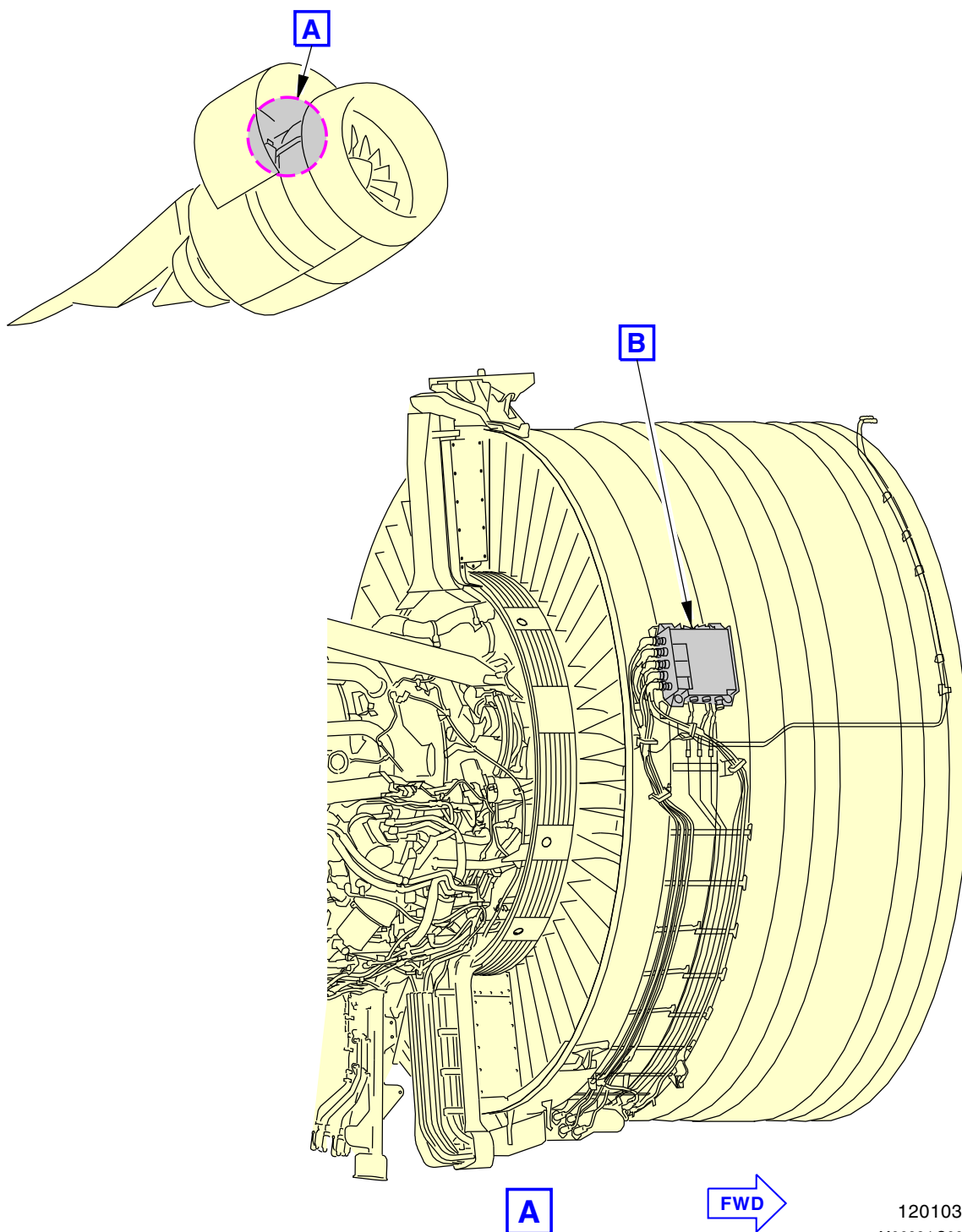
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Engine Rating Plug Installation
Figure 401/73-21-19-990-801-H01 (Sheet 1 of 2)

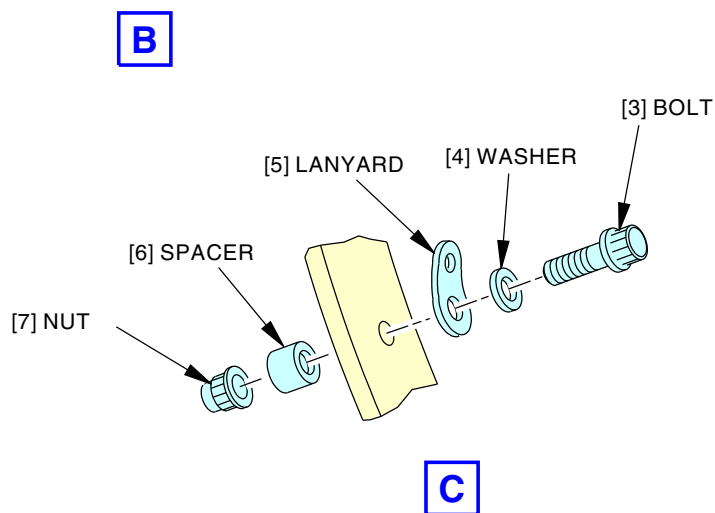
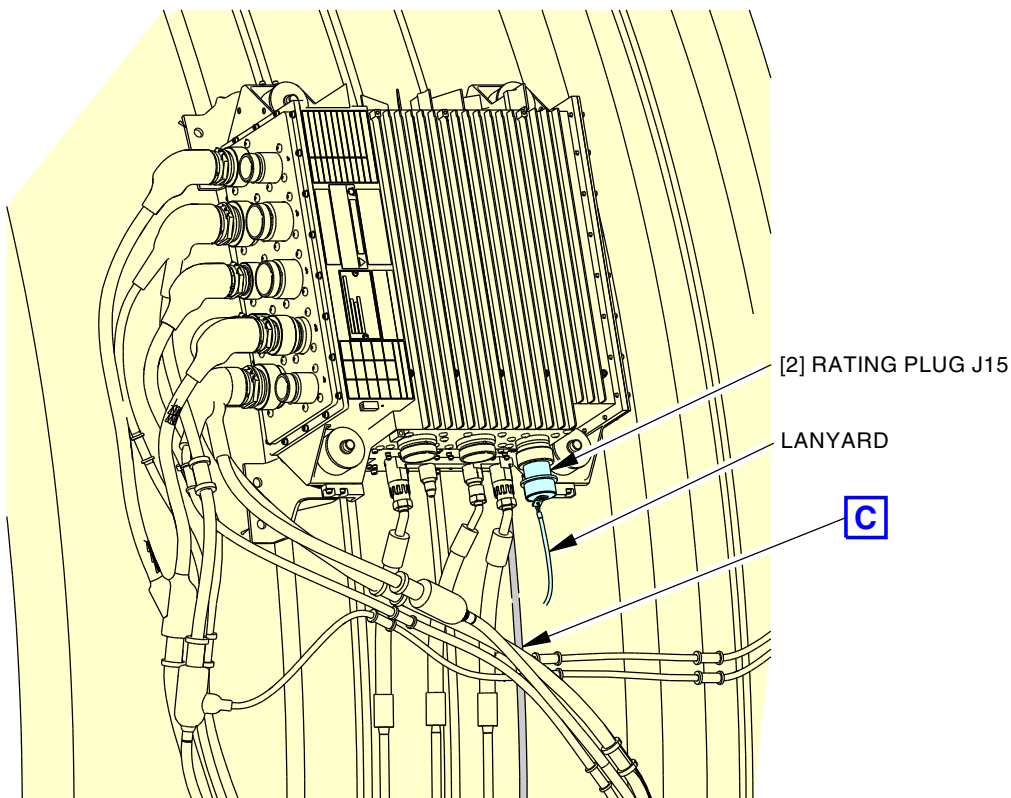
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M06995 S0004285969_V2

Engine Rating Plug Installation
Figure 401/73-21-19-990-801-H01 (Sheet 2 of 2)

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TASK 73-21-19-400-801-H01

3. Engine Rating Plug Installation

A. General

- (1) This task is the installation procedure for the engine rating plug.
- (2) You must do the tests listed in the power plant test reference table after you install the engine rating plug.

B. References

Reference	Title
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
70-00-01-400-807-H01	Electrical Connector - Disconnect and Connect (P/B 201)
71-00-00-800-833-H00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-814-H00	Close the Fan Cowl Panel (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)

D. Consumable Materials

Reference	Description	Specification
C00941 [C03-001]	Primer - Zinc Chromate	TT-P-1757, Type 1 or 2, Class C or Class N, AMS 3110 Color Y
D50043 [C02-058]	Compound - Antiseize, Acheson GP460 (For Threaded Fasteners 0.250 Inches Diameter Or Larger, C02-079 Is An Alternative)	GE A50TF201 Class A

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Engine rating plug	73-21-51-04-005	ARO ALL
		73-21-51-04-008	ARO ALL

F. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

G. Access Panels

Number	Name/Location
414AR	Right Fan Cowl Panel, Left Engine
424AR	Right Fan Cowl Panel, Right Engine

H. Engine Rating Plug Installation

SUBTASK 73-21-19-420-001-H01

- (1) Connect the lanyard [5] to the fan case:Figure 401
 - (a) Apply primer, C00941 [C03-001] to the mating surfaces of these parts:
 - 1) the bolt [3]
 - 2) the washer [4]
 - 3) the spacer [6]

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- 4) the lanyard eyelet
- 5) the inside diameter of the mating hole of the fan case.
- (b) Apply a light coat of Acheson GP460 compound, D50043 [C02-058] to the threads of the bolt [3].
- (c) Install the washer [4] on the bolt [3].
- (d) Install the eyelet part of the lanyard [5] on the bolt [3].
- (e) Install the lanyard, washer, and bolt from the forward side of the engine in bolt hole 34 of the fan case.
- (f) Install the spacer [6] on the bolt [3].
- (g) Install the nut [7] on the bolt [3].
- (h) Tighten the nut [7] to 220-240 pound-inches (24.9-27.1 Newton-meters).

SUBTASK 73-21-19-420-002-H01

- (2) Remove the protective covers from the engine rating plug [2] and the J15 receptacle on the EEC (FADEC) [1].

SUBTASK 73-21-19-420-003-H01



MAKE SURE THAT THE ENGINE RATING PLUG IS CLEAN BEFORE YOU CONNECT IT. A DIRTY ENGINE RATING PLUG CAN CAUSE DAMAGE TO THE EEC (FADEC).



USE TEFLON-JAWED PLIERS TO TIGHTEN THE ENGINE RATING PLUG. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ENGINE RATING PLUG COULD OCCUR.

- (3) Use the teflon-jawed pliers, STD-664 to connect the engine rating plug [2] to the J15 receptacle on the EEC (FADEC) [1] TASK 70-00-01-400-807-H01 Figure 401.
- (a) Tighten the engine rating plug [2].

I. Put the Airplane Back to its Usual Condition

SUBTASK 73-21-19-410-001-H01

- (1) Do this task: Close the Fan Cowl Panel (Selection), TASK 71-11-04-410-814-H00.
- (a) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
414AR	Right Fan Cowl Panel, Left Engine
424AR	Right Fan Cowl Panel, Right Engine

SUBTASK 73-21-19-440-001-H01

- (2) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

J. Engine Rating Plug Installation Test

SUBTASK 73-21-19-710-001-H01

- (1) Do the tests listed in the Power Plant Test Reference Table (TASK 71-00-00-800-833-H00).

————— END OF TASK —————

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ENGINE IDENTIFICATION (SERIAL NUMBER) - MAINTENANCE PRACTICES

1. General

A. This procedure contains one task:

- (1) Install the engine identification (serial number) to the EEC (FADEC).

TASK 73-21-20-800-801-H00

2. Engine Identification (Serial Number) Installation (ESN Special Function)

A. General

- (1) This task is the procedure to electronically install the engine identification (serial number) to the EEC (FADEC) using the ESN special function.
- (2) A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

B. References

Reference	Title
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)

C. Location Zones

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

D. Procedure

SUBTASK 73-21-20-860-001-H00

- (1) Put the EEC MAINT L or R ENG POWER switch on the aft overhead maintenance panel, P61, to the TEST position.
 - (a) Wait 30 seconds before you continue.

SUBTASK 73-21-20-860-002-H00

- (2) Use a maintenance access terminal (MAT) to do the special function for the applicable engine.
 - (a) Make these selections on the MAT main menu:
 - 1) ONBOARD MAINTENANCE
 - 2) OTHER FUNCTIONS
 - 3) 71-80 Left Engine or Right Engine
 - 4) Left Engine Serial Number Special Function or
 - 5) Right Engine Serial Number Special Function
 - 6) CONTINUE
 - (b) Do the instructions that show on the MAT display and then make these selections:
 - 1) CONTINUE
 - 2) START FUNCTION
 - (c) If STOPPED shows adjacent to FUNCTION CONDITION, and you did not stop the function, look at the cause.
 - 1) If a member system stopped the function, select TO START FUNCTION.

NOTE: The MAT shows instructions to let the function operate.

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- 2) Do the instructions that show on the MAT display.
- 3) Select CONTINUE.
- (d) Do the instructions that show on the MAT display.
- (e) When the function is complete, make sure that COMPLETE shows adjacent to FUNCTION CONDITION on the MAT display.
- (f) Make a different selection on the MAT main menu to exit the special function.
- (g) Use the MAT to do the system configuration check of the correct engine serial number for the applicable engine.
 - 1) Make these selections on the MAT:
 - a) ONBOARD MAINTENANCE
 - b) LINE MAINTENANCE
 - c) SYSTEM CONFIGURATION
 - d) 71-80 Left Engine or Right Engine
 - e) CONTINUE
 - 2) Read the engine serial number for the applicable engine. Use the scroll bar to see all of the data.
- (h) If the engine serial number is not correct, repeat this procedure.

E. Put the Airplane Back to Its Usual Condition.**SUBTASK 73-21-20-860-003-H00**

- (1) To go back to the initial MAT display menu, make these selections:
 - (a) GO BACK (if it shows)
 - (b) LINE MAINTENANCE
 - (c) EXIT MAINTENANCE

SUBTASK 73-21-20-860-004-H00

- (2) Put the EEC MAINT L or R ENG POWER switch on the aft overhead maintenance panel, P61, to the NORM position.

———— **END OF TASK** ————

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CONFIGURATION TYPE BOX - REMOVAL/INSTALLATION

1. General

- A. This procedure contains these tasks:
- (1) A removal of the configuration type box
 - (2) An installation of the configuration type box.

TASK 73-21-21-000-801-H01

2. Configuration Type Box Removal

A. General

- (1) This task is the removal procedure for the configuration type box.
- (2) The configuration box is on the right side of the fan hub frame at the 8:00 o'clock position on the engine core.
- (3) You must open the left thrust reverser to get access to the configuration box.

B. References

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
27-81-00-860-805	Retract the Leading Edge Slats (P/B 201)
70-00-01-400-807-H01	Electrical Connector - Disconnect and Connect (P/B 201)
71-11-04-010-814-H00	Open the Fan Cowl Panel (Selection) (P/B 201)
78-31-00-010-816-H00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-806-H00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)

D. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

E. Access Panels

Number	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
415AL	Left Thrust Reverser, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
425AL	Left Thrust Reverser, Right Engine

F. Procedure

SUBTASK 73-21-21-010-001-H02



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO OPEN THE THRUST REVERSER(S). IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR

- (1) Do these tasks in sequence to safely open the left thrust reverser on the applicable engine:

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- (a) Do this task: Retract the Leading Edge Slats, TASK 27-81-00-860-805.
- (b) Do this task: Leading Edge Slat - Deactivation, TASK 27-81-00-040-801.
- (c) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-806-H00.

- (d) For the left fan cowl panel, do this task:

Open the Fan Cowl Panel (Selection), TASK 71-11-04-010-814-H00

<u>Number</u>	<u>Name/Location</u>
413AL	Left Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine

- (e) For the left thrust reverser, do this task:

Open the Thrust Reverser (Selection), TASK 78-31-00-010-816-H00

<u>Number</u>	<u>Name/Location</u>
415AL	Left Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine

SUBTASK 73-21-21-020-001-H01

- (2) Remove the configuration type box [1] (Figure 401):



CAUTION

MAKE SURE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU DISCONNECT THEM. CONTAMINATION OF ELECTRICAL CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.



CAUTION

USE TEFLON-JAWED PLIERS TO LOOSEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

- (a) Use a teflon-jawed pliers, STD-664 to disconnect the electrical connector [3] from the configuration type box [1] (TASK 70-00-01-400-807-H01).
- (b) Install the protective covers on the electrical connector [3] and the configuration type box [1].
- (c) Remove the three bolts [2] that connect the configuration type box [1] to the bracket [4] at the fan hub frame.
- (d) Remove the configuration type box [1] from the bracket [4].

————— **END OF TASK** —————

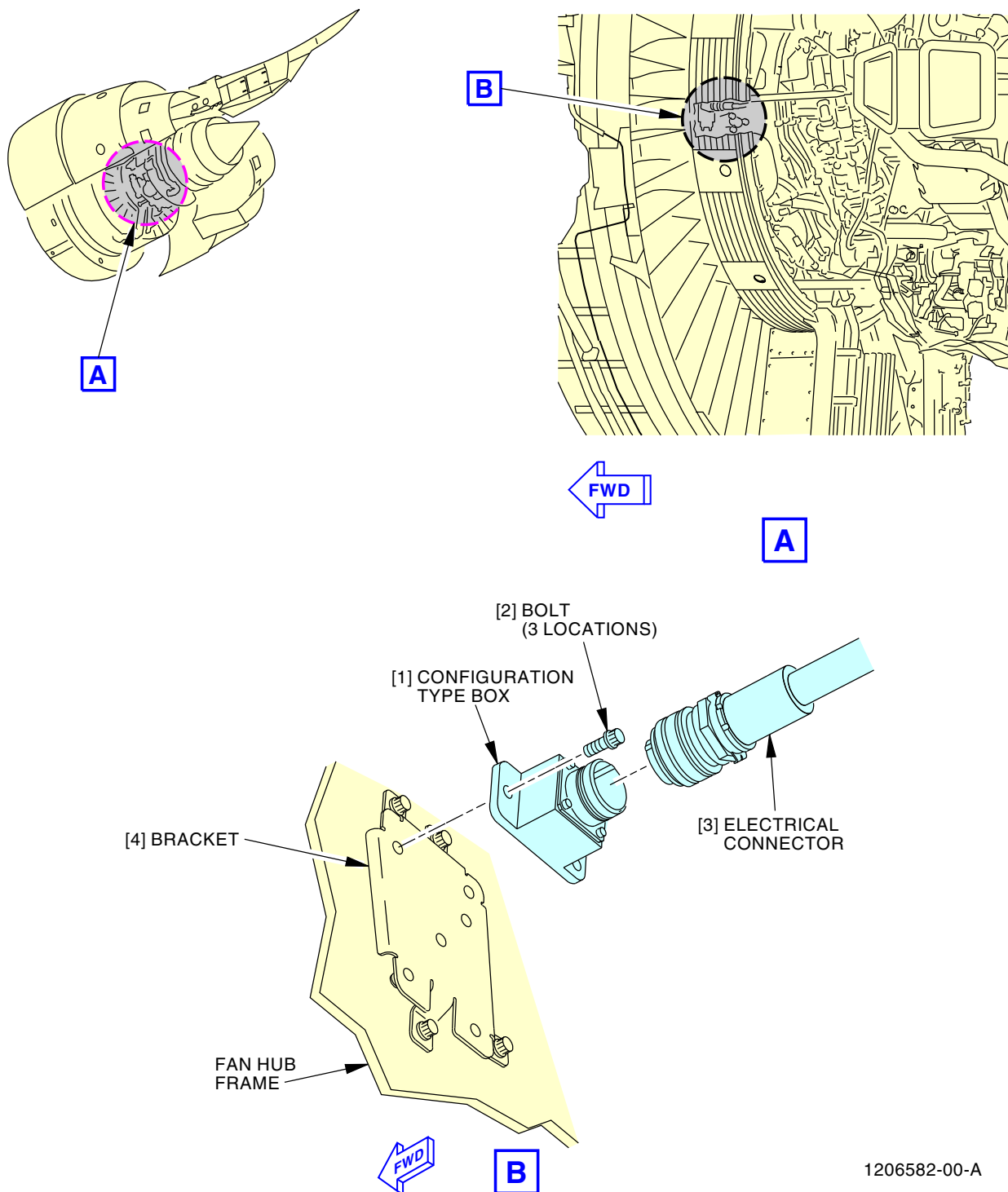
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Configuration Type Box Installation
Figure 401/73-21-21-990-801-H01

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TASK 73-21-21-400-801-H01

3. Configuration Type Box Installation

A. General

- (1) This task is the installation procedure for the configuration type box.
- (2) You must do the tests that are listed in the power plant test reference table after you install the configuration type box.

B. References

Reference	Title
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
70-00-01-400-807-H01	Electrical Connector - Disconnect and Connect (P/B 201)
71-00-00-800-833-H00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-814-H00	Close the Fan Cowl Panel (Selection) (P/B 201)
78-31-00-410-816-H00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-805-H00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)

D. Consumable Materials

Reference	Description	Specification
D50043 [C02-058]	Compound - Antiseize, Acheson GP460 (For Threaded Fasteners 0.250 Inches Diameter Or Larger, C02-079 Is An Alternative)	GE A50TF201 Class A

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Configuration type box	73-21-21-02-010	ARO ALL

F. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

G. Access Panels

Number	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
415AL	Left Thrust Reverser, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
425AL	Left Thrust Reverser, Right Engine

H. Procedure

SUBTASK 73-21-21-420-001-H01

- (1) Install the configuration type box [1] (Figure 401):
 - (a) Lightly lubricate the thread of the three bolts [2] with the Acheson GP460 compound, D50043 [C02-058].
 - (b) Put the configuration type box [1] in its correct position on the bracket [4] at the fan hub frame.
 - (c) Install the three bolts [2] that connect the configuration type box [1] to the bracket [4].

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- 1) Tighten the three bolts [2] to 80-100 pound-inches (9.0-11.3 Newton-meters).

SUBTASK 73-21-21-420-002-H01



MAKE SURE THE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU CONNECT THEM. THE CONTAMINATION OF THE ELECTRICAL CONNECTOR CAN CAUSE DAMAGE TO THE EQUIPMENT.



USE TEFLON-JAWED PLIERS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

- (2) Use a teflon-jawed pliers, STD-664 to connect the electrical connector [3] (TASK 70-00-01-400-807-H01).
 - (a) Remove the protective covers from the configuration type box [1] and the electrical connector [3].
 - (b) Connect the electrical connector [3] to the configuration type box [1].
 - 1) Tighten the electrical connector [3].

I. Put the airplane Back to its Usual Condition

SUBTASK 73-21-21-410-001-H02



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Do these tasks in sequence to safely close the left thrust reverser on the applicable engine:
 - (a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-410-816-H00.
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
415AL	Left Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine
 - (b) Do this task: Close the Fan Cowl Panel (Selection), TASK 71-11-04-410-814-H00.
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
413AL	Left Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
 - (c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-805-H00.
 - (d) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

J. Configuration Box Installation Test

SUBTASK 73-21-21-710-001-H01

- (1) Do the tests listed in the Power Plant Test Reference Table (TASK 71-00-00-800-833-H00).

————— END OF TASK —————

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ENGINE DATA INTERFACE UNIT (EDIU) - MAINTENANCE PRACTICES

TASK 73-21-22-400-807-H00

1. Engine Data Interface Unit (EDIU) Software Installation

A. General

- (1) This procedure tells you how to install software in the Engine Data Interface Unit (EDIU). The EDIU must contain this piece of software:

EDIU OPS

REF: AIPC 46-00-00-73D

- (2) A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.
- (3) If you do not know if the EDIU needs new software, you can first do the software configuration check. It will save time if you only install software when the software is missing or the part number is incorrect. You can find the software configuration check in this task: Engine Data Interface Unit (EDIU) Installation, TASK 73-21-22-400-808-H00.
- (4) You can install the software from disks, the MAT hard drive or the PMAT hard drive (if available). It is recommended that you install software from the MAT or PMAT hard drive. To install new software on the MAT or PMAT hard drive, do this task: How to Add Software to the Hard Drive, TASK 45-10-00-860-812.

NOTE: When new software is installed in the EDIU, the load process first erases the old software and then installs the new software. If you install software directly to the EDIU from a faulty disk, the load process may erase the old software and then fail, so that no software is installed. If you install a faulty disk to the MAT or PMAT hard drive, the load may fail, but you will not erase the software from the EDIU.

- (a) It is recommended that you remove old software part numbers from the MAT or PMAT hard drive after new software is installed. To remove software from the hard drive, do this task: How to Remove Software from the Hard Drive, TASK 45-10-00-860-813.
- (5) The airplane must be on the ground with the engines shut off before you can install software.
- (6) To read about the time that is necessary for software installation, do this task: On-Airplane Software Installation, TASK 20-15-11-400-801.

B. References

Reference	Title
20-15-11-400-801	On-Airplane Software Installation (P/B 201)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
45-10-00-860-812	How to Add Software to the Hard Drive (P/B 201)
45-10-00-860-813	How to Remove Software from the Hard Drive (P/B 201)
73-21-22-400-808-H00	Engine Data Interface Unit (EDIU) Installation (P/B 401)
AIPC 46-00-00-73D	Aircraft Illustrated Parts Catalog

C. Location Zones

Zone	Area
212	Flight Compartment, Right

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SUBTASK 73-21-22-470-002-H01

- (1) Use a maintenance access terminal (MAT) to install software in the EDIU:

NOTE: Make sure you know the correct software part number for the EDIU before you select the software part number on the display. For the EDIU to be an approved installation, the correct software must be installed.

- (a) If the software is on a disk, put the correct disk in the disk drive.
- (b) Make these selections on the MAT:
 - 1) ONBOARD MAINTENANCE
 - 2) EXTENDED MAINTENANCE
 - 3) DATA LOAD
- (c) Make these selections to select the component that will receive the software:
 - 1) SELECT DESTINATION
 - 2) 71-80 Left Engine or 71-80 Right Engine
 - 3) CONTINUE
- (d) Make these selections to select the source of the software:
 - 1) SELECT SOURCE
 - 2) Select the source of the software (if Disk Drive is the only selection, it is automatically selected).
 - 3) Select the correct software part number from the display.
 - 4) CONTINUE
- (e) Select START to start the software installation.
- (f) If you get dialog box "LRU Does Not Respond", do these steps:
 - 1) Make these selections on the MAT:
 - a) GO BACK (to close the dialog box)
 - b) EXTENDED MAINTENANCE
 - c) EXISTING FAULTS
 - d) 73 Engine and Fuel Control (ATA System)
 - 2) Look for these maintenance messages: 73-04091, 73-04101, 73-04201, 73-04291, 73-04301, 73-04391 73-04092, 73-04102, 73-04202, 73-04292, 73-04302, 73-04392
 - 3) Go to the task in the FIM and do the steps in the task to correct the maintenance message.
 - 4) Do the steps above to install software in the EDIU again.
- (g) When the software installation is completed, make sure the correct software part number shows on the display.
- (h) Select CONTINUE to remove the configuration display.

———— **END OF TASK** ————

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ENGINE DATA INTERFACE UNIT (EDIU) - REMOVAL/INSTALLATION

1. General

A. This procedure has two tasks:

- (1) A removal of the Engine Data Interface Unit (EDIU)
- (2) An installation of the Engine Data Interface Unit (EDIU).

TASK 73-21-22-000-804-H00

2. Engine Data Interface Unit (EDIU) Removal

(Figure 401)

A. General

- (1) This task is the removal procedure for the engine data interface unit (EDIU).
- (2) The two Engine Data Interface Units (EDIU) are in the main equipment center. The left EDIU (M73103) is on the E1 electronics equipment rack, shelf No. 5. The right EDIU (M73203) is on the E4 electronics equipment rack, shelf No. 1.

B. References

Reference	Title
20-10-01-000-801	E/E Box Removal (P/B 401)
20-41-01-000-803	ESDS Handling for Metal Encased Unit Removal (P/B 201)

C. Location Zones

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

D. EDIU Removal

SUBTASK 73-21-22-010-001-H01

- (1) If you will remove the left EDIU, open these circuit breakers and install safety tags:

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
M	17	C73601	L EDIU 2A
M	18	C73603	L EDIU 1B

Standby Power Management Panel, P310

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C73605	L EDIU 1A
E	3	C73607	L EDIU 2B

SUBTASK 73-21-22-010-002-H01

- (2) If you will remove the right EDIU, open these circuit breakers and install safety tags:

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
N	9	C73602	R EDIU 2A
N	10	C73604	R EDIU 1B

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	2	C73606	R EDIU 1A
E	4	C73608	R EDIU 2B

SUBTASK 73-21-22-862-001-H01

**CAUTION**

DO NOT TOUCH THE EDIU BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE EDIU.

- (3) Before you touch the EDIU, do the procedure for devices that are sensitive to electrostatic discharge (TASK 20-41-01-000-803).

SUBTASK 73-21-22-020-001-H01

- (4) Remove the left EDIU, M73103 [1] or the right EDIU, M73203 [2] (TASK 20-10-01-000-801).

———— **END OF TASK** ————

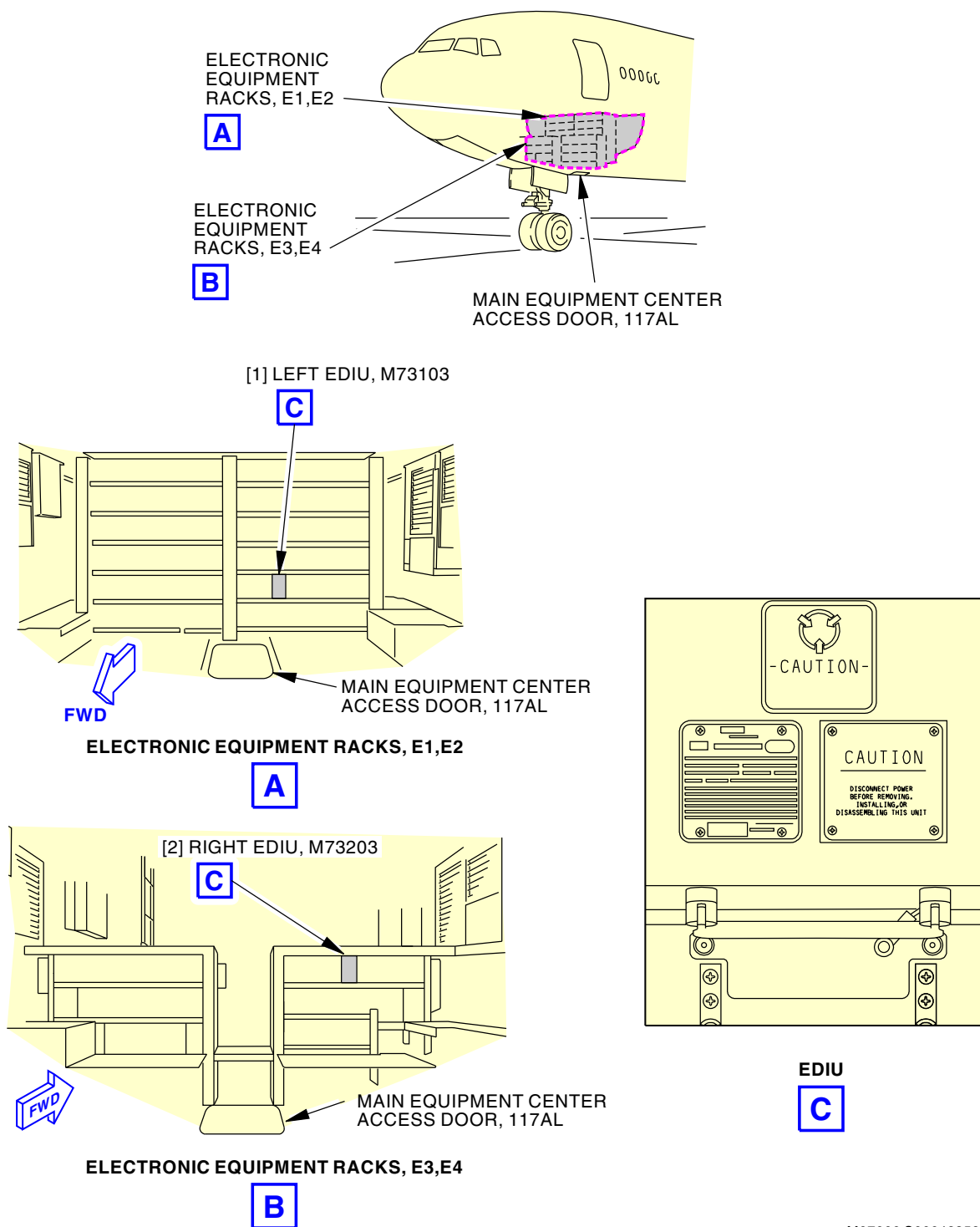
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Engine Data Interface Unit (EDIU) Installation Figure 401/73-21-22-990-801-H01

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TASK 73-21-22-400-808-H00

3. Engine Data Interface Unit (EDIU) Installation

(Figure 401)

A. General

- (1) This task is the installation procedure for the engine data interface unit (EDIU).
- (2) A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.
- (3) You must do a software configuration test after you install the EDIU.

B. References

Reference	Title
20-10-01-400-801	E/E Box Installation (P/B 401)
20-41-01-000-803	ESDS Handling for Metal Encased Unit Removal (P/B 201)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
45-10-00-750-803	How to Find the Hardware or Software Configuration of a System (P/B 201)
73-21-22-400-807-H00	Engine Data Interface Unit (EDIU) Software Installation (P/B 201)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Left EDIU, M73103	25-17-01-32-105	ARO ALL
		73-21-22-01-009	ARO ALL
2	Right EDIU, M73203	25-71-91-50A-065	ARO ALL

D. Location Zones

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

E. EDIU Installation

SUBTASK 73-21-22-420-001-H01

- (1) If you will install the left EDIU, make sure that these circuit breakers are open:

Left Power Management Panel, P110

Row	Col	Number	Name
M	17	C73601	L EDIU 2A
M	18	C73603	L EDIU 1B

Standby Power Management Panel, P310

Row	Col	Number	Name
E	1	C73605	L EDIU 1A
E	3	C73607	L EDIU 2B

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SUBTASK 73-21-22-420-002-H01

- (2) If you will install the right EDIU, make sure that these circuit breakers are open:

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
N	9	C73602	R EDIU 2A
N	10	C73604	R EDIU 1B

Standby Power Management Panel, P310

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	2	C73606	R EDIU 1A
E	4	C73608	R EDIU 2B

SUBTASK 73-21-22-862-002-H01



DO NOT TOUCH THE EDIU BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE EDIU.

- (3) Before you touch the EDIU, do the procedure for devices that are sensitive to electrostatic discharge (TASK 20-41-01-000-803).

SUBTASK 73-21-22-420-003-H01

- (4) Install the left EDIU, M73103 [1] or the right EDIU, M73203 [2] (TASK 20-10-01-400-801).

SUBTASK 73-21-22-420-004-H01

- (5) If you will install the left EDIU, remove the safety tags and close these circuit breakers:

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
M	17	C73601	L EDIU 2A
M	18	C73603	L EDIU 1B

Standby Power Management Panel, P310

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C73605	L EDIU 1A
E	3	C73607	L EDIU 2B

SUBTASK 73-21-22-420-005-H01

- (6) If you will install the right EDIU, remove the safety tags and close these circuit breakers:

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
N	9	C73602	R EDIU 2A
N	10	C73604	R EDIU 1B

Standby Power Management Panel, P310

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	2	C73606	R EDIU 1A
E	4	C73608	R EDIU 2B

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**777-200/300
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SUBTASK 73-21-22-869-002-H01

- (1) Use a maintenance access terminal (MAT) to do a software configuration check of the EDIU (TASK 45-10-00-750-803):

NOTE: Make sure you know the correct software part number for the EDIU when you look at the software part number on the display. For the EDIU to be an approved installation, the correct software part number must be installed.

- (a) Make these selections on the MAT:
- 1) ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) SYSTEM CONFIGURATION
 - 4) 71 - 80 Left(Right) Engine
 - 5) CONTINUE
- (b) Find Eng Data Interface Unit (EDIU) L Eng(R Eng) on the display and make sure that the software part number is correct.
- (c) Select GO BACK to remove the display.

SUBTASK 73-21-22-470-001-H01

- (2) If the part number is incorrect, do the task to install software in the EDIU (TASK 73-21-22-400-807-H00).

————— **END OF TASK** —————

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FUEL FILTER DIFFERENTIAL PRESSURE SENSOR - REMOVAL/INSTALLATION

1. General

A. This procedure contains two tasks:

- (1) A removal of the fuel filter differential pressure sensor
- (2) An installation of the fuel filter differential pressure sensor.

TASK 73-21-55-000-801-H01

2. Fuel Filter Differential Pressure Sensor Removal

(Figure 401)

A. **General**

- (1) This task is the removal procedure for the fuel filter differential pressure (FDP) sensor.
- (2) The fuel filter differential pressure (FDP) sensor is on the fuel filter. The fuel filter is on the main fuel pump, which is on the aft accessory gearbox at approximately the 3:30 o'clock position.
- (3) You must open the right thrust reverser to get access to the fuel filter differential pressure (FDP) sensor.

B. **References**

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
27-81-00-860-805	Retract the Leading Edge Slats (P/B 201)
70-00-01-400-807-H01	Electrical Connector - Disconnect and Connect (P/B 201)
71-11-04-010-814-H00	Open the Fan Cowl Panel (Selection) (P/B 201)
78-31-00-010-816-H00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-806-H00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

C. **Tools/Equipment**

Reference	Description
STD-201	Container - Fuel Resistant, 5 U.S.-Gal (19 l)
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)

D. **Consumable Materials**

Reference	Description	Specification
D00552 [C02-019]	Oil - Engine Lubricating	GE Spec. D50TF1
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A

E. **Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
4	Packing	73-21-55-03-025	ARO ALL
5	Packing	73-21-55-03-020	ARO ALL
7	Packing	73-11-01-03-095	ARO ALL
9	Packing	73-11-01-03-065	ARO ALL
10	Backing ring	73-21-55-03-035	ARO ALL

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F. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

G. Access Panels

Number	Name/Location
414AR	Right Fan Cowl Panel, Left Engine
416AR	Right Thrust Reverser, Left Engine
424AR	Right Fan Cowl Panel, Right Engine
426AR	Right Thrust Reverser, Right Engine

H. Procedure

SUBTASK 73-21-55-010-001-H01



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO OPEN THE THRUST REVERSER(S). IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR

- (1) Do these tasks in sequence to safely open the right thrust reverser on the applicable engine:
- (a) Do this task: Retract the Leading Edge Slats, TASK 27-81-00-860-805.
 - (b) Do this task: Leading Edge Slat - Deactivation, TASK 27-81-00-040-801.
 - (c) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-806-H00.

- (d) For the right fan cowl panel, do this task:

Open the Fan Cowl Panel (Selection), TASK 71-11-04-010-814-H00

<u>Number</u>	<u>Name/Location</u>
414AR	Right Fan Cowl Panel, Left Engine
424AR	Right Fan Cowl Panel, Right Engine

- (e) For the right thrust reverser, do this task:

Open the Thrust Reverser (Selection), TASK 78-31-00-010-816-H00

<u>Number</u>	<u>Name/Location</u>
416AR	Right Thrust Reverser, Left Engine
426AR	Right Thrust Reverser, Right Engine

SUBTASK 73-21-55-860-001-H01

- (2) Do these steps to make sure the fuel control valve and the spar valve stay in the closed position:
- (a) Make sure that the FUEL CONTROL switch is in the CUTOFF position.
 - 1) Install a DO-NOT-OPERATE tag on the FUEL CONTROL switch.
 - (b) Push the STAT switch on the display select panel of the glareshield (P55).
 - 1) Make sure you do not see the applicable ENG FUEL VALVE L(R) or FUEL SPAR VALVE L(R) status messages.

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- (c) For the applicable engines, open these circuit breakers and install safety tags:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C28001	L ENGINE FUEL SPAR VALVE
A	19	C28002	R ENGINE FUEL SPAR VALVE
B	4	C76601	L ENG FUEL VALVE
B	19	C76600	R ENG FUEL VALVE

SUBTASK 73-21-55-860-002-H01



WARNING

DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. KEEP THE FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE, WHICH CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.



CAUTION

A LARGE VOLUME OF FUEL WILL DRAIN FROM THE FUEL SUPPLY SYSTEM. TO PREVENT A FUEL SPILL, YOU MUST USE A MINIMUM OF TWO CONTAINERS TO DRAIN THE FUEL SYSTEM.



CAUTION

PUT A NEW PREFORMED PACKING ON THE BLEEDER (DRAIN) PLUG. THE FAILURE OF THE PACKING CAN CAUSE DAMAGE TO EQUIPMENT.

- (3) Do these steps to drain the fuel filter bowl on the main fuel pump (Figure 401):
- (a) Put a 5 U.S.-gal (19 l) fuel resistant container, STD-201 below the fuel filter bowl.
 - (b) Remove the bleeder (drain) plug [8] from the fuel filter bowl.
 - 1) Let the fuel to drain into the container.
 - (c) Remove and discard the packing [9] from the bleeder (drain) plug [8].
 - (d) Use a cotton wiper, G00034 to clean the bleeder (drain) plug [8].
 - (e) Put clean oil, D00552 [C02-019] on a new packing [9].
 - 1) Make sure that you put the correct packing [9] on the bleeder (drain) plug [8].
- NOTE: Do not twist the preformed packing, fuel leakage can occur.
- (f) Put a short piece of string through the new packing [9].



CAUTION

MAKE SURE THAT THE BLEEDER DRAIN PLUG THREADS DO NOT TOUCH THE PERFORMED PACKINGS. IF IT TOUCHES, IT CAN CAUSE DAMAGE TO THE PERFORMED PACKINGS AND CAN CAUSE FUEL LEAKAGE.

- (g) Put the packing [9] on the bleeder (drain) plug [8].
- (h) Use the string to pull the new packing [9] away from the threads of the drain plug.
 - 1) Pull the string around the new packing [9] twice to remove any twisting of the packing [9].
- (i) Install the bleeder (drain) plug [8] in the fuel filter bowl.

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- 1) Make sure that you feel the plug makes a click sound during the installation.

NOTE: If you do not feel the plug makes a click sound, the bleeder drain plug can be damaged.

- (j) Use the torque wrench when you install the bleeder (drain) plug [8].
 - 1) Tighten the bleeder (drain) plug [8] to 105-120 pound-inches (11.9-13.6 Newton-meters).

SUBTASK 73-21-55-860-003-H01

DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. KEEP THE FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE, WHICH CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.



A LARGE VOLUME OF FUEL WILL DRAIN FROM THE FUEL SUPPLY SYSTEM. TO PREVENT A FUEL SPILL, YOU MUST USE A MINIMUM OF TWO CONTAINERS TO DRAIN THE FUEL SYSTEM.



PUT A NEW PREFORMED PACKING ON THE DRAIN PLUG. USED PACKING WILL NOT SEAL CORRECTLY. IF THE PACKING DOES NOT SEAL, DAMAGE TO THE EQUIPMENT CAN OCCUR.

- (4) Do these steps to drain the fuel supply system at the main fuel pump:
 - (a) Put a 5 U.S.-gal (19 l) fuel resistant container, STD-201 below the strainer on the main fuel pump.
 - (b) Remove the locking drain plug [6] from the inlet strainer.
 - 1) Let the fuel to drain into the container.
 - (c) Remove and discard the packing [7] from the locking drain plug [6].
 - (d) Lubricate a new packing [7] with oil, D00552 [C02-019].
 - (e) Put the new packing [7] on the locking drain plug [6].
 - (f) Install the locking drain plug [6] in the inlet strainer cover.
 - 1) Tighten the locking drain plug [6] to 105 in-lb (11.9 N·m) to 120 in-lb (13.6 N·m).

SUBTASK 73-21-55-020-001-H01

MAKE SURE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU DISCONNECT THEM. CONTAMINATION OF ELECTRICAL CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.



USE TEFLON-JAWED PLIERS TO LOOSEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

- (5) Use teflon-jawed pliers, STD-664 to disconnect the electrical connector [3] from the fuel filter DP sensor [2] (TASK 70-00-01-400-807-H01):
 - (a) Install protective covers on the electrical connector [3] and the fuel filter DP sensor [2].

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- (b) Move the electrical harness out of the way.

SUBTASK 73-21-55-020-002-H01

- (6) Remove the fuel filter DP sensor [2]:

- (a) Put a 5 U.S.-gal (19 l) fuel resistant container, STD-201 below the fuel filter DP sensor [2].
- (b) Remove the bolts [1] that hold the fuel filter DP sensor [2] to the main fuel pump.
 - 1) Remove the fuel filter DP sensor [2].
 - 2) Let the fuel drain into the 5 U.S.-gal (19 l) fuel resistant container, STD-201
- (c) Remove the packing [4], packing [5], and backing rings [10] from the fuel filter DP sensor [2].
 - 1) Discard the packing [4] and packing [5].
 - 2) Examine the backing rings [10] for damage.
 - a) If the backing rings [10] are not damaged, then keep them for the subsequent installation.
 - b) If the backing rings [10] are damaged, then replace them.
- (d) Install protective covers on the FDP port on the main fuel pump and the fuel filter DP sensor [2].

———— **END OF TASK** ————

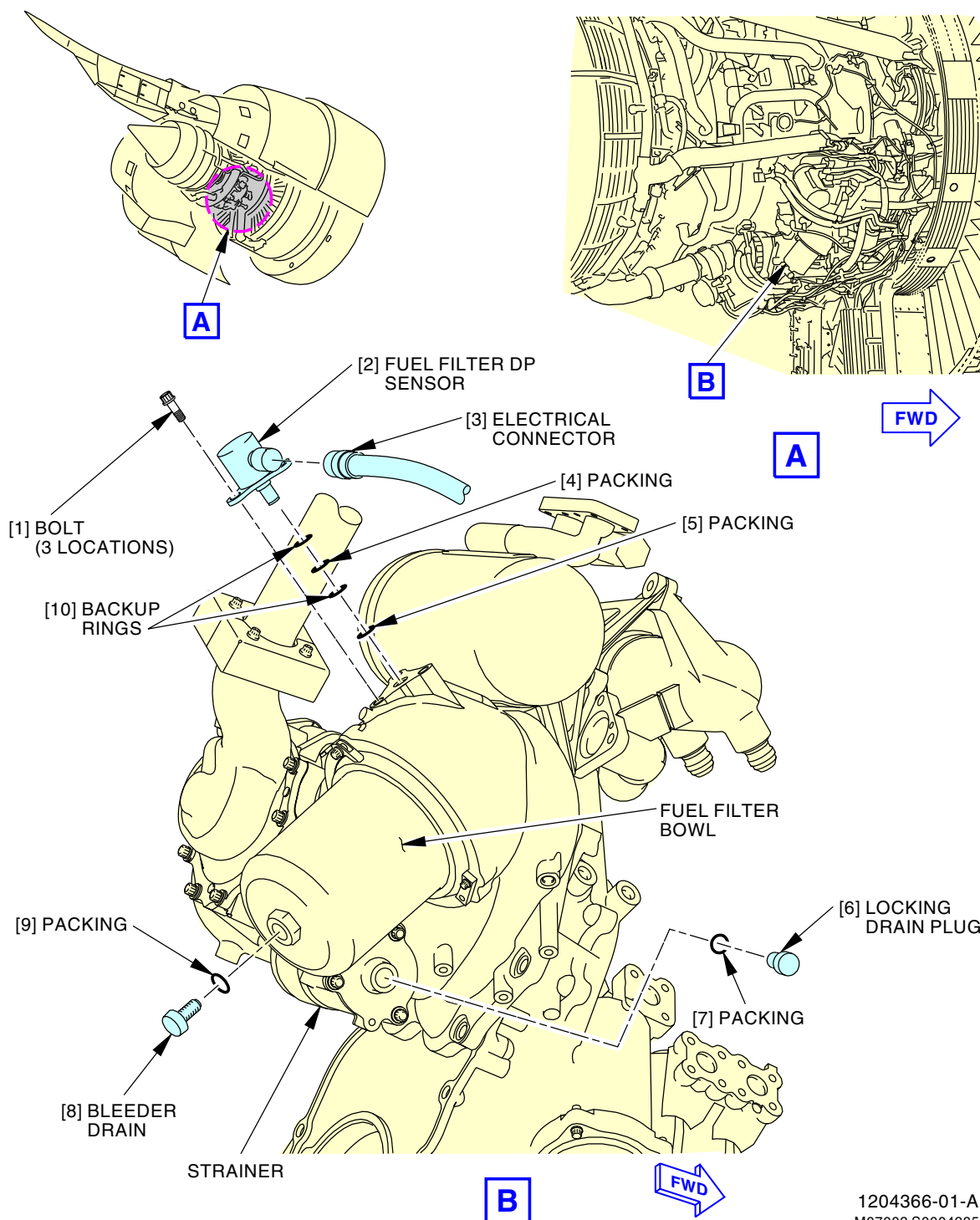
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Fuel Filter Differential Pressure Sensor Installation
Figure 401/73-21-55-990-801-H01

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TASK 73-21-55-400-801-H01

3. Fuel Filter Differential Pressure Sensor Installation

(Figure 401)

A. General

- (1) This task is the installation procedure for the fuel filter differential pressure (FDP) sensor.
- (2) You must do the tests listed in the power plant test reference table after you install the fuel filter differential pressure (FDP) sensor.

B. References

Reference	Title
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
70-00-01-400-807-H01	Electrical Connector - Disconnect and Connect (P/B 201)
71-00-00-800-833-H00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-814-H00	Close the Fan Cowl Panel (Selection) (P/B 201)
78-31-00-410-816-H00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-805-H00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)

D. Consumable Materials

Reference	Description	Specification
D00552 [C02-019]	Oil - Engine Lubricating	GE Spec. D50TF1
D50043 [C02-058]	Compound - Antiseize, Acheson GP460 (For Threaded Fasteners 0.250 Inches Diameter Or Larger, C02-079 Is An Alternative)	GE A50TF201 Class A

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Fuel filter DP sensor	73-21-55-03-010	ARO ALL
4	Packing	73-21-55-03-025	ARO ALL
5	Packing	73-21-55-03-020	ARO ALL
10	Backing ring	73-21-55-03-035	ARO ALL

F. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

G. Access Panels

Number	Name/Location
414AR	Right Fan Cowl Panel, Left Engine
416AR	Right Thrust Reverser, Left Engine
424AR	Right Fan Cowl Panel, Right Engine
426AR	Right Thrust Reverser, Right Engine

H. Fuel Filter Differential Pressure Sensor (FDP) Installation

SUBTASK 73-21-55-420-001-H01

- (1) Install the fuel filter DP sensor [2] (Figure 401):

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- (a) Remove the protective covers from the fuel filter DP sensor [2] and the FDP port in the main fuel pump.

**CAUTION**

MAKE SURE YOU INSTALL THE BACK-UP RINGS AND PREFORMED PACKING IN THE CORRECT SEQUENCE. IF YOU DO NOT, FUEL CAN LEAK AND CAUSE DAMAGE TO EQUIPMENT AND INJURIES TO PERSONS.

- (b) Install a new packing [5] and the backing ring [10] on the fuel filter DP sensor [2] in this sequence:
- 1) Lubricate the new packing [4] and the new packing [5] with oil, D00552 [C02-019].
 - 2) Install the first backing ring [10] on the fuel filter DP sensor [2].
 - 3) Install the new packing [4] on the fuel filter DP sensor [2].
 - 4) Install the second backing ring [10] on the fuel filter DP sensor [2].
 - 5) Install the new packing [5] on the fuel filter DP sensor [2].
- (c) Put the fuel filter DP sensor [2] in its correct position on the MFP.
- (d) Lightly lubricate the threads of the bolts [1] with Acheson GP460 compound, D50043 [C02-058].
- (e) Connect the fuel filter DP sensor [2] to the main fuel pump with the bolts [1].
- 1) Tighten the bolts [1] to 110-120 pound-inches (12.4-13.6 Newton-meters).

SUBTASK 73-21-55-410-001-H01

**CAUTION**

MAKE SURE THE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU CONNECT THEM. THE CONTAMINATION OF THE ELECTRICAL CONNECTOR CAN CAUSE DAMAGE TO THE EQUIPMENT.

**CAUTION**

USE TEFLON-JAWED PLIERS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

- (2) Use teflon-jawed pliers, STD-664 to connect the electrical connector [3] (TASK 70-00-01-400-807-H01):
- (a) Remove the protective covers from the fuel filter DP sensor [2] and the electrical connector [3].
 - (b) Make sure that the electrical cable is in its correct position.
 - (c) Connect the electrical connector [3] to the fuel filter DP sensor [2].
- 1) Tighten the electrical connector [3].

I. Put the Airplane Back to its Usual Condition

SUBTASK 73-21-55-410-002-H01

**WARNING**

DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Do these tasks in sequence to safely close the right thrust reverser on the applicable engine:
- (a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-410-816-H00.

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- 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
416AR	Right Thrust Reverser, Left Engine
426AR	Right Thrust Reverser, Right Engine

- (b) Do this task: Close the Fan Cowl Panel (Selection), TASK 71-11-04-410-814-H00.

- 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
414AR	Right Fan Cowl Panel, Left Engine
424AR	Right Fan Cowl Panel, Right Engine

- (c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-805-H00.

- (d) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

SUBTASK 73-21-55-860-004-H01

- (2) Do these steps to put the fuel control valve and the spar valve to the serviceable condition:

- (a) Make sure that the FUEL CONTROL switch is in the CUTOFF position.
 (b) For the applicable engine, remove the safety tags and close these circuit breakers:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C28001	L ENGINE FUEL SPAR VALVE
A	19	C28002	R ENGINE FUEL SPAR VALVE
B	4	C76601	L ENG FUEL VALVE
B	19	C76600	R ENG FUEL VALVE

J. Fuel Filter Differential Pressure Sensor Installation Test

SUBTASK 73-21-55-710-001-H01

- (1) Do the tests listed in the Power Plant Test Reference Table (TASK 71-00-00-800-833-H00).

————— **END OF TASK** —————

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BLEED BIAS FLOW (P3B) SENSOR - REMOVAL/INSTALLATION

1. General

A. This procedure has two tasks:

- (1) A removal of the bleed bias flow (P3B) sensor
- (2) An installation of the bleed bias flow (P3B) sensor.

TASK 73-21-62-000-801-H01

2. Bleed Bias Flow (P3B) Sensor Removal

(Figure 401)

A. General

- (1) This task is the removal procedure for the bleed bias flow sensor (referred to as the P3B sensor).
- (2) The P3B sensor is on the combustion diffuser case at approximately the 3:00 o'clock position.
- (3) You must open the right thrust reverser to get access to the P3B sensor.

B. References

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
27-81-00-860-805	Retract the Leading Edge Slats (P/B 201)
36-11-01-000-806-004	Engine Duct Removal (P/B 401)
71-11-04-010-814-H00	Open the Fan Cowl Panel (Selection) (P/B 201)
78-31-00-010-816-H00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-806-H00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

C. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

D. Access Panels

Number	Name/Location
414AR	Right Fan Cowl Panel, Left Engine
416AR	Right Thrust Reverser, Left Engine
424AR	Right Fan Cowl Panel, Right Engine
426AR	Right Thrust Reverser, Right Engine

E. Procedure

SUBTASK 73-21-62-010-001-H01



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO OPEN THE THRUST REVERSER(S). IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR

- (1) Do these tasks in sequence to safely open the right thrust reverser on the applicable engine:
 - (a) Do this task: Retract the Leading Edge Slats, TASK 27-81-00-860-805.
 - (b) Do this task: Leading Edge Slat - Deactivation, TASK 27-81-00-040-801.

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- (c) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-806-H00.

- (d) For the right fan cowl panel, do this task:

Open the Fan Cowl Panel (Selection), TASK 71-11-04-010-814-H00

<u>Number</u>	<u>Name/Location</u>
414AR	Right Fan Cowl Panel, Left Engine
424AR	Right Fan Cowl Panel, Right Engine

- (e) For the right thrust reverser, do this task:

Open the Thrust Reverser (Selection), TASK 78-31-00-010-816-H00

<u>Number</u>	<u>Name/Location</u>
416AR	Right Thrust Reverser, Left Engine
426AR	Right Thrust Reverser, Right Engine

SUBTASK 73-21-62-020-003-H01

- (2) Remove the HP duct [5] (TASK 36-11-01-000-806-004)

NOTE: Removal of the P3B sensor is not recommended for routine combustor access. If access is needed, remove the duct connection from the sensor and access the combustor through the sensor.

SUBTASK 73-21-62-020-001-H01

- (3) Disconnect the static air tube [2] from the P3B sensor [1].

- (a) Put the protective covers on the static air tube [2], the HP duct [5] and the P3B sensor [1].

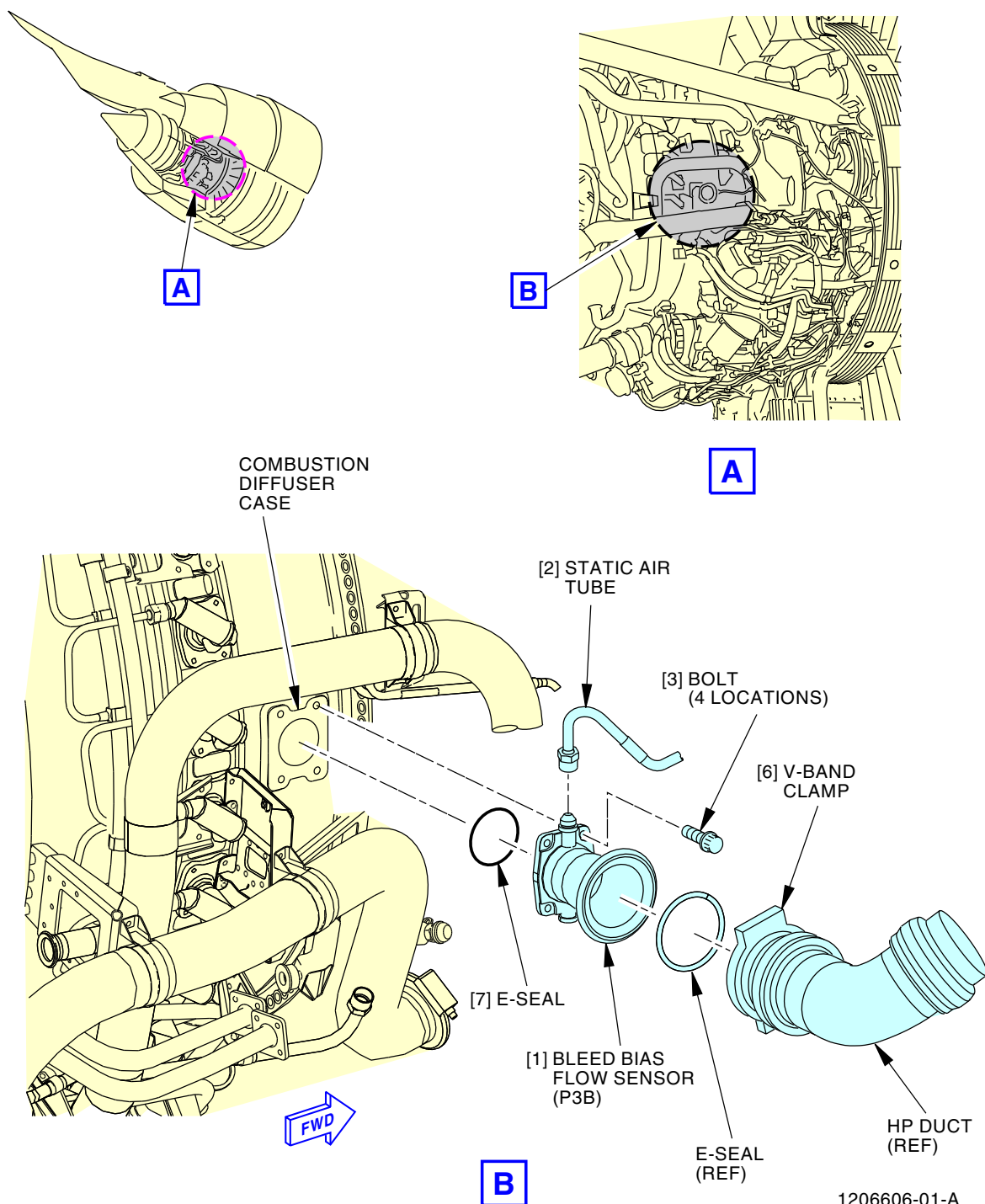
SUBTASK 73-21-62-020-002-H01

- (4) Remove the P3B sensor [1] (Figure 401).

- (a) Remove the bolts [3] that connect the P3B sensor [1] to the compressor case.
- (b) Remove the P3B sensor [1].
- (c) Install the protective covers on the P3B port in the compressor case and the HP duct [5].
- (d) Remove the E-Seal [7] from the P3B sensor [1].
 - 1) Examine the E-Seal [7] for distortion and heat damage.
 - a) If the E-Seal [7] is not damaged, then keep it for the subsequent installation.
 - b) If the E-Seal [7] is damaged, then replace it.
- (e) Install the protective cover on the P3B sensor [1].

———— **END OF TASK** ————

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M07006 S0004285978_V4

Bleed Bias Flow (P3B) Sensor Installation
Figure 401/73-21-62-990-801-H01

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TASK 73-21-62-400-801-H01

3. Bleed Bias Flow (P3B) Sensor Installation

(Figure 401)

A. General

- (1) This task is the installation procedure for the bleed bias flow sensor (referred to as the P3B sensor).
- (2) You must do the tests that are listed in the power plant test reference table after you install the P3B sensor.

B. References

Reference	Title
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
36-11-01-400-806-004	Engine Duct Installation (P/B 401)
70-51-00-910-801-H01	Instruction for Torque (P/B 201)
71-00-00-800-833-H00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-814-H00	Close the Fan Cowl Panel (Selection) (P/B 201)
78-31-00-410-816-H00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-805-H00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Consumable Materials

Reference	Description	Specification
D50043 [C02-058]	Compound - Antiseize, Acheson GP460 (For Threaded Fasteners 0.250 Inches Diameter Or Larger, C02-079 Is An Alternative)	GE A50TF201 Class A

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	P3B sensor	72-41-00-05-040	ARO ALL
7	E-Seal	72-41-00-05-035	ARO ALL

E. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

F. Access Panels

Number	Name/Location
414AR	Right Fan Cowl Panel, Left Engine
416AR	Right Thrust Reverser, Left Engine
424AR	Right Fan Cowl Panel, Right Engine
426AR	Right Thrust Reverser, Right Engine

G. Bleed Bias Flow Sensor Installation

SUBTASK 73-21-62-420-001-H01

- (1) Install the P3B sensor [1].
 - (a) Remove the protective covers from the P3B sensor [1] and from the P3B port in the compressor case.

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IF YOU SEE BOLT DAMAGE, REPLACE THE BOLTS. USE CARE WHEN YOU INSTALL BOLTS TO PREVENT DAMAGE. MAKE SURE THE THREADS ARE LUBRICATED CORRECTLY BEFORE YOU INSTALL A BOLT. DAMAGE TO THE ENGINE CASE CAN OCCUR.

- (b) Lightly lubricate the threads of the bolts [3] with Acheson GP460 compound, D50043 [C02-058].
- (c) Install an E-Seal [7] to the P3B sensor [1].
- (d) Put the P3B sensor [1] in its correct position on the combustion diffuser case.
- (e) Install the bolts [3] that attach the P3B sensor [1] to the combustion diffuser case.
 - 1) Tighten the bolts [3] to 210-230 pound-inches (23.7-26.0 Newton-meters).

SUBTASK 73-21-62-869-001-H01

- (2) Remove the protective cover on the HP duct [5].

SUBTASK 73-21-62-420-002-H01

- (3) Install the HP duct [5] to the P3B sensor [1](TASK 36-11-01-400-806-004).

SUBTASK 73-21-62-420-003-H01

- (4) Connect the static air tube [2] to the P3B sensor [1].

NOTE: The in service experience with P3B measurement problems are because of B-Nut connection problems and NOT the sensor. Make sure that the B-Nut connection is correctly done.

- (a) Tighten the B-nut (TASK 70-51-00-910-801-H01).

H. Put the Airplane Back to its Usual Condition.

SUBTASK 73-21-62-410-001-H01



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Do these tasks in sequence to safely close the right thrust reverser on the applicable engine:
 - (a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-410-816-H00.
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
416AR	Right Thrust Reverser, Left Engine
426AR	Right Thrust Reverser, Right Engine
 - (b) Do this task: Close the Fan Cowl Panel (Selection), TASK 71-11-04-410-814-H00.
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
414AR	Right Fan Cowl Panel, Left Engine
424AR	Right Fan Cowl Panel, Right Engine
 - (c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-805-H00.
 - (d) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

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AIRCRAFT MAINTENANCE MANUAL****I. Bleed Bias Flow Sensor Installation Test**

SUBTASK 73-21-62-710-001-H01

- (1) Do the tests listed in the Power Plant Test Reference Table (TASK 71-00-00-800-833-H00).

———— **END OF TASK** ————

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PT25 SENSOR - REMOVAL/INSTALLATION

1. General

- A. This procedure has two tasks:
- (1) A removal of the PT25 sensor
 - (2) An installation of the PT25 sensor.

TASK 73-21-63-000-801-H01**2. PT25 Sensor Removal****A. General**

- (1) This task provides the instructions on how to remove the PT25 sensor or the T25 sensor.
- (2) The sensor is installed together with the sensor ice shield at the 7:00 o'clock position on the fan hub frame.

B. References

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
27-81-00-860-805	Retract the Leading Edge Slats (P/B 201)
70-00-01-400-807-H01	Electrical Connector - Disconnect and Connect (P/B 201)
71-11-04-010-814-H00	Open the Fan Cowl Panel (Selection) (P/B 201)
78-31-00-010-816-H00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-806-H00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)

D. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

E. Access Panels

Number	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
415AL	Left Thrust Reverser, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
425AL	Left Thrust Reverser, Right Engine

F. Prepare for the Removal

SUBTASK 73-21-63-010-001-H01

**WARNING**

DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO OPEN THE THRUST REVERSER(S). IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR

- (1) Do these tasks in sequence to safely open the left thrust reverser on the applicable engine:
 - (a) Do this task: Retract the Leading Edge Slats, TASK 27-81-00-860-805.

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- (b) Do this task: Leading Edge Slat - Deactivation, TASK 27-81-00-040-801.
- (c) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-806-H00.
- (d) For the left fan cowl panel, do this task:

Open the Fan Cowl Panel (Selection), TASK 71-11-04-010-814-H00

<u>Number</u>	<u>Name/Location</u>
413AL	Left Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine

- (e) For the left thrust reverser, do this task:

Open the Thrust Reverser (Selection), TASK 78-31-00-010-816-H00

<u>Number</u>	<u>Name/Location</u>
415AL	Left Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine

ARO ALL PRE SB 777-GE90-75-0020

G. PT25 Removal

SUBTASK 73-21-63-020-001-H01

- (1) Remove the PT25 sensor [1] as follows (Figure 401):



CAUTION

MAKE SURE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU DISCONNECT THEM. CONTAMINATION OF ELECTRICAL CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.



CAUTION

USE TEFLON-JAWED PLIERS TO LOOSEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

- (a) Use teflon-jawed pliers, STD-664 to disconnect the electrical connector [2] and the electrical connector [3] (TASK 70-00-01-400-807-H01).
- (b) Install protective covers on the electrical receptacles on the PT25 sensor [1], the electrical connector [2], and the electrical connector [3].
- (c) Disconnect the air tube [4] B-nut from the PT25 sensor [1].
- (d) Install protective covers on the PT25 sensor [1] air fitting and on the air tube [4].
- (e) Remove the four bolts [5] that attach the PT25 sensor [1] to the fan hub frame.
- (f) Remove the PT25 sensor [1] and discard the gasket [8].
- (g) Install protective cover on the PT25 sensor [1].
- (h) Pull the ice shield [6] down and rearward in the fan hub frame.
 - 1) Remove the ice shield [6] from the fan hub frame.
- (i) Keep the PT25 sensor [1] and the ice shield [6] together.
- (j) Install protective cover in the port for the PT25 sensor [1] at the fan hub frame.

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AIRCRAFT MAINTENANCE MANUAL****ARO ALL POST SB 777-GE90-75-0020****H. T25 Removal**

SUBTASK 73-21-63-020-006-H00

- (1) Remove the T25 sensor [1] as follows (Figure 402):

**CAUTION**

MAKE SURE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU DISCONNECT THEM. CONTAMINATION OF ELECTRICAL CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.

**CAUTION**

USE TEFLON-JAWED PLIERS TO LOOSEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

- (a) Use teflon-jawed pliers, STD-664 to disconnect the electrical connector [2] and the electrical connector [3] (TASK 70-00-01-400-807-H01).
- (b) Install protective covers on the electrical receptacles on the T25 sensor [1], the electrical connector [2], and the electrical connector [3].
- (c) Disconnect the air tube [4] B-nut from the T25 sensor [1].
- (d) Install protective covers on the T25 sensor [1] air fitting and on the air tube [4].
- (e) Remove the four bolts [5] that attach the T25 sensor [1] to the fan hub frame.
- (f) Remove the T25 sensor [1].
- (g) Install protective cover on the T25 sensor [1].
- (h) Pull the ice shield [6] down and rearward in the fan hub frame.
 - 1) Remove the ice shield [6] from the fan hub frame.
- (i) Keep the T25 sensor [1] and the ice shield [6] together.
- (j) Install protective cover in the port for the T25 sensor [1] at the fan hub frame.

ARO ALL POST SB 777-GE90-75-0020 AND POST SB 777-GE90-75-0032**I. T25 Removal**

SUBTASK 73-21-63-020-007-H00

- (1) Remove the T25 sensor [1] as follows (Figure 402):

**CAUTION**

MAKE SURE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU DISCONNECT THEM. CONTAMINATION OF ELECTRICAL CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.

**CAUTION**

USE TEFLON-JAWED PLIERS TO LOOSEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

- (a) Use teflon-jawed pliers, STD-664 to disconnect the electrical connector [2] and the electrical connector [3] (TASK 70-00-01-400-807-H01).
- (b) Install protective covers on the electrical receptacles on the T25 sensor [1], the electrical connector [2], and electrical connector [3].
- (c) Install protective covers on the T25 sensor [1].

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- (d) Remove the four bolts [5] that attach the T25 sensor [1] to the fan hub frame.
- (e) Remove the T25 sensor [1].
- (f) Install protective cover on the T25 sensor [1].
- (g) Pull the ice shield [6] down and rearward in the fan hub frame.
 - 1) Remove the ice shield [6] from the fan hub frame.
- (h) Keep the T25 sensor [1] and the ice shield [6] together.
- (i) Install protective cover in the port for the T25 sensor [1] at the fan hub frame.

———— **END OF TASK** ————

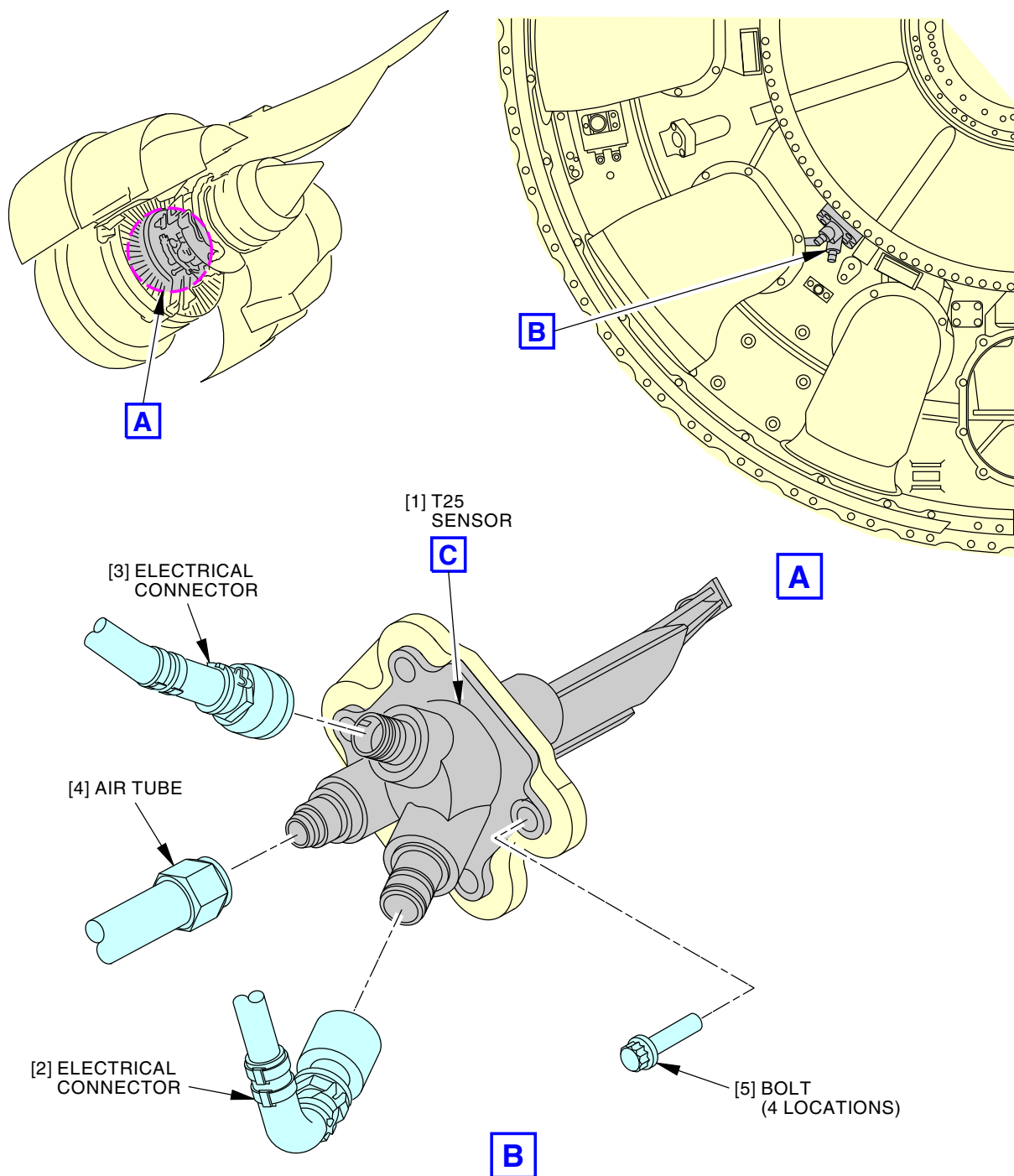
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PT25 Sensor Installation
Figure 401/73-21-63-990-801-H01 (Sheet 1 of 3)

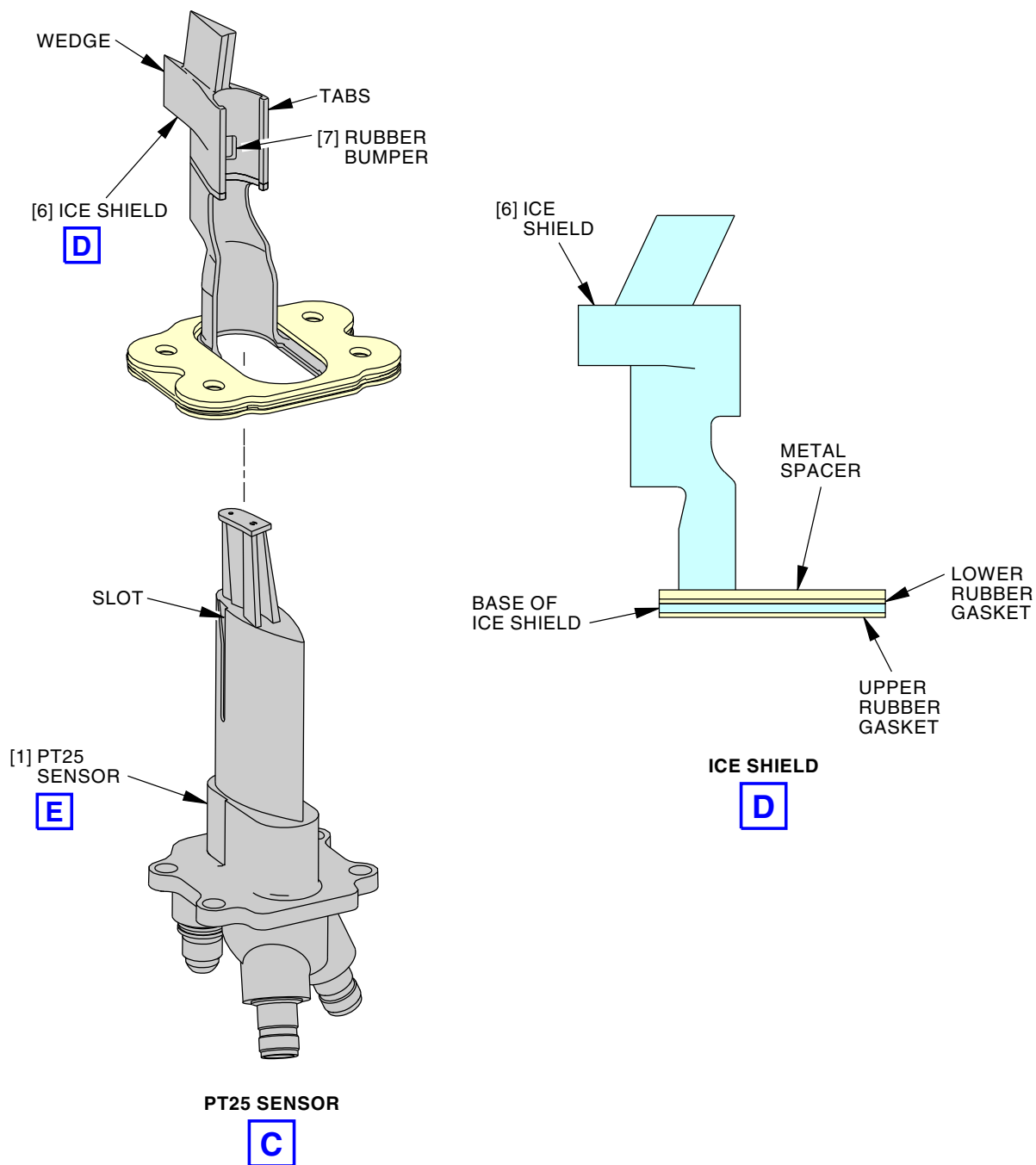
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PT25 Sensor Installation
Figure 401/73-21-63-990-801-H01 (Sheet 2 of 3)

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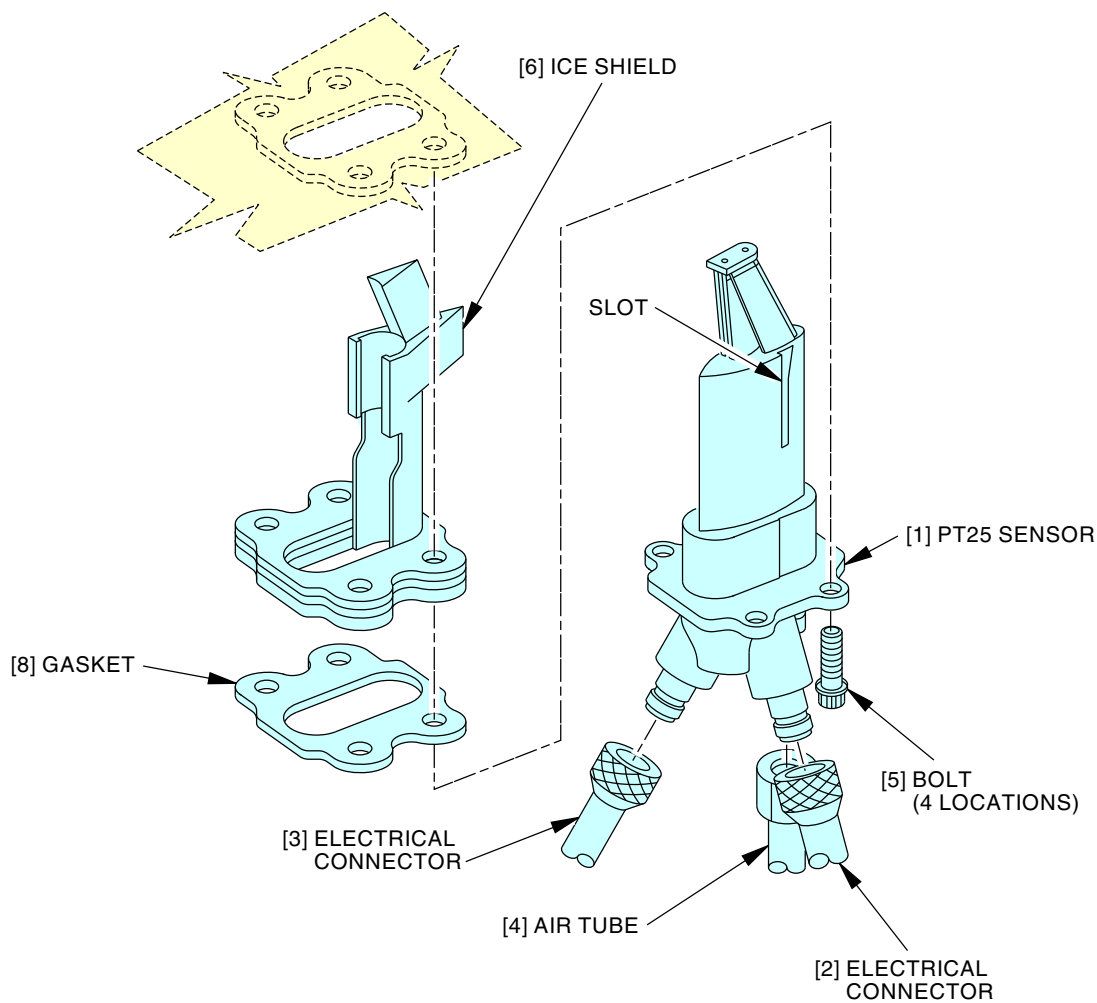
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PT25 Sensor Installation
Figure 401/73-21-63-990-801-H01 (Sheet 3 of 3)

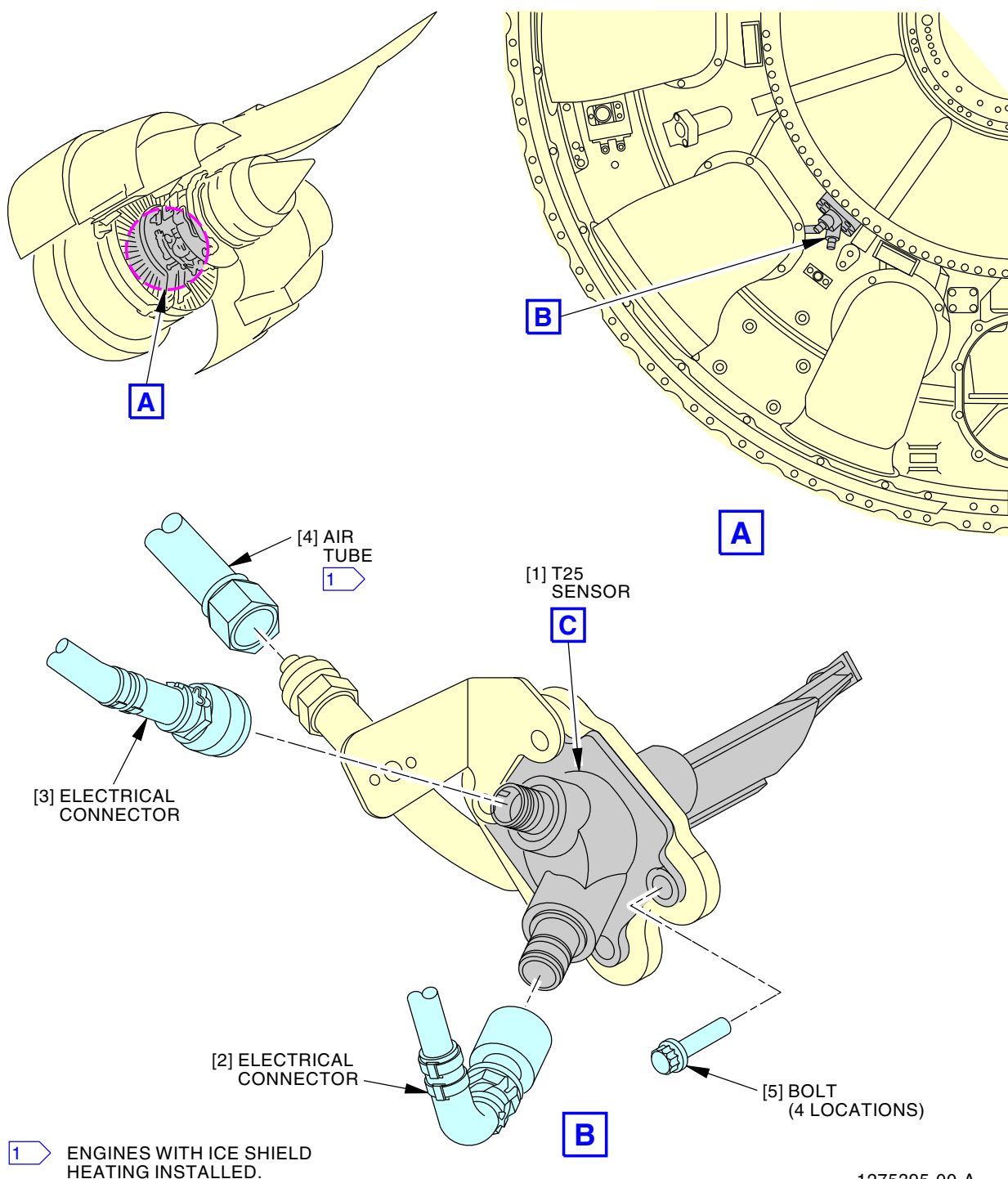
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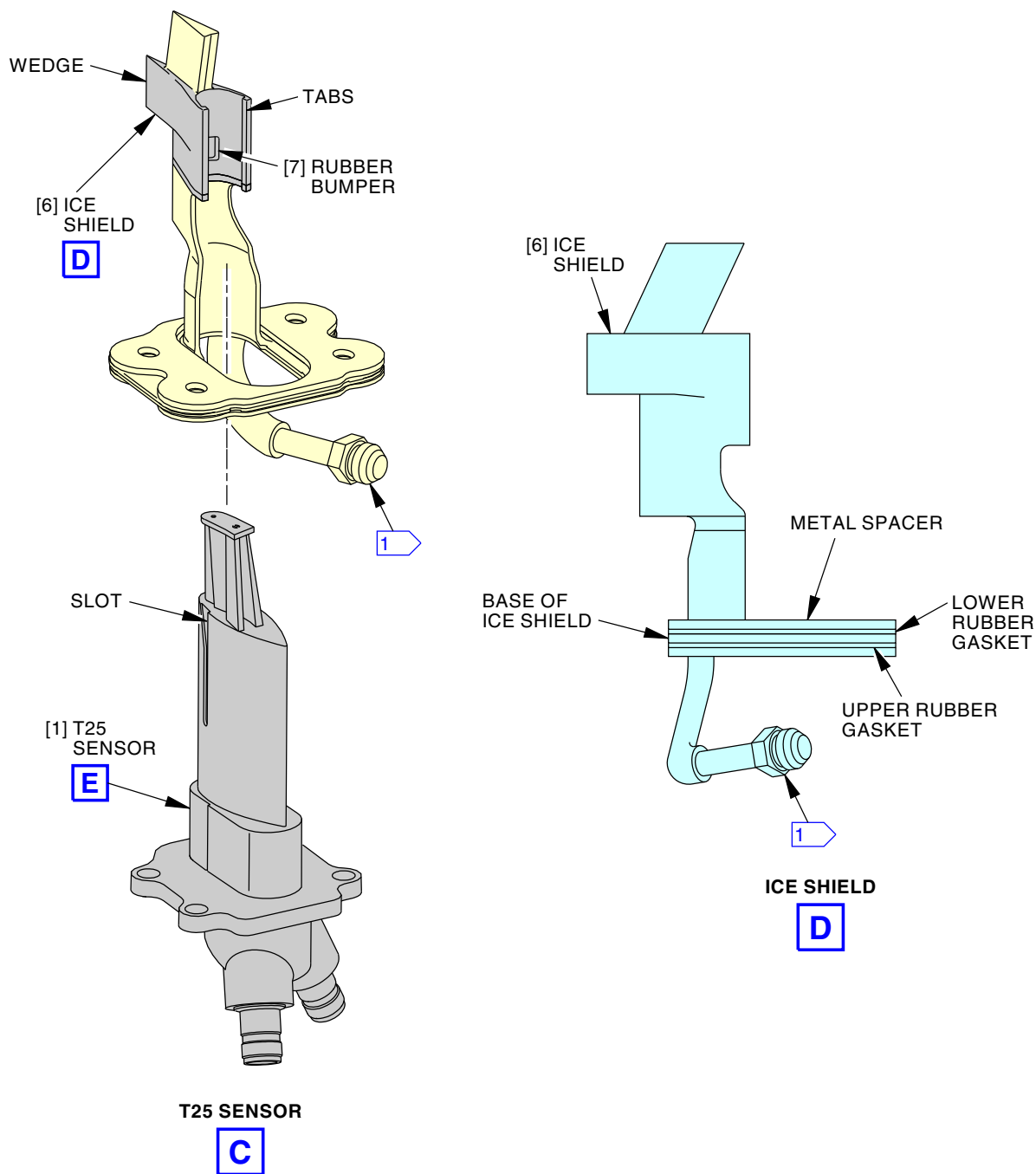
T25 Sensor Installation
Figure 402/73-21-63-990-804-H00 (Sheet 1 of 6)

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T25 Sensor Installation
Figure 402/73-21-63-990-804-H00 (Sheet 2 of 6)

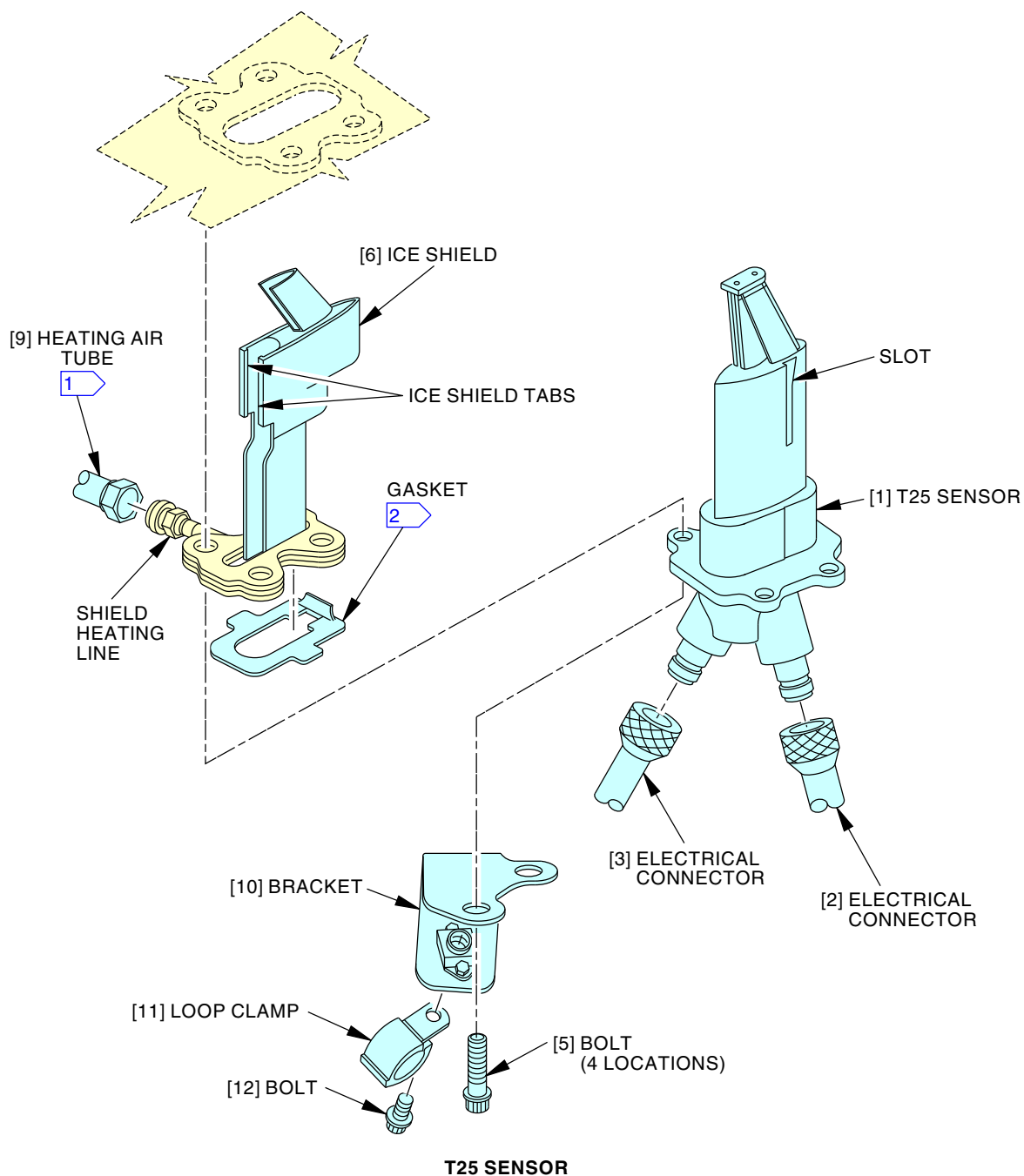
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2 THE GASKET IS AN INTEGRAL PART OF THE T25 SENSOR.

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T25 Sensor Installation
Figure 402/73-21-63-990-804-H00 (Sheet 3 of 6)

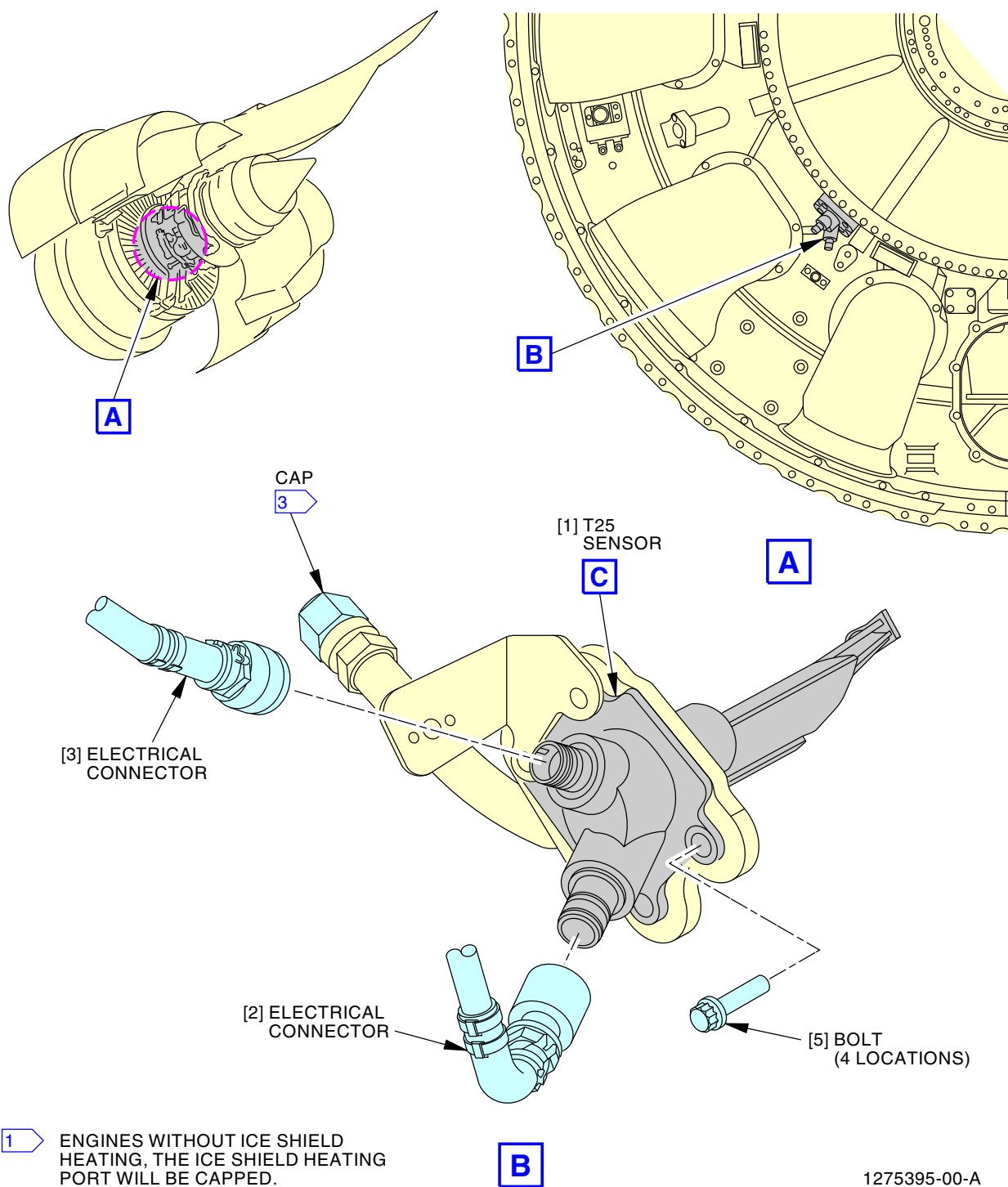
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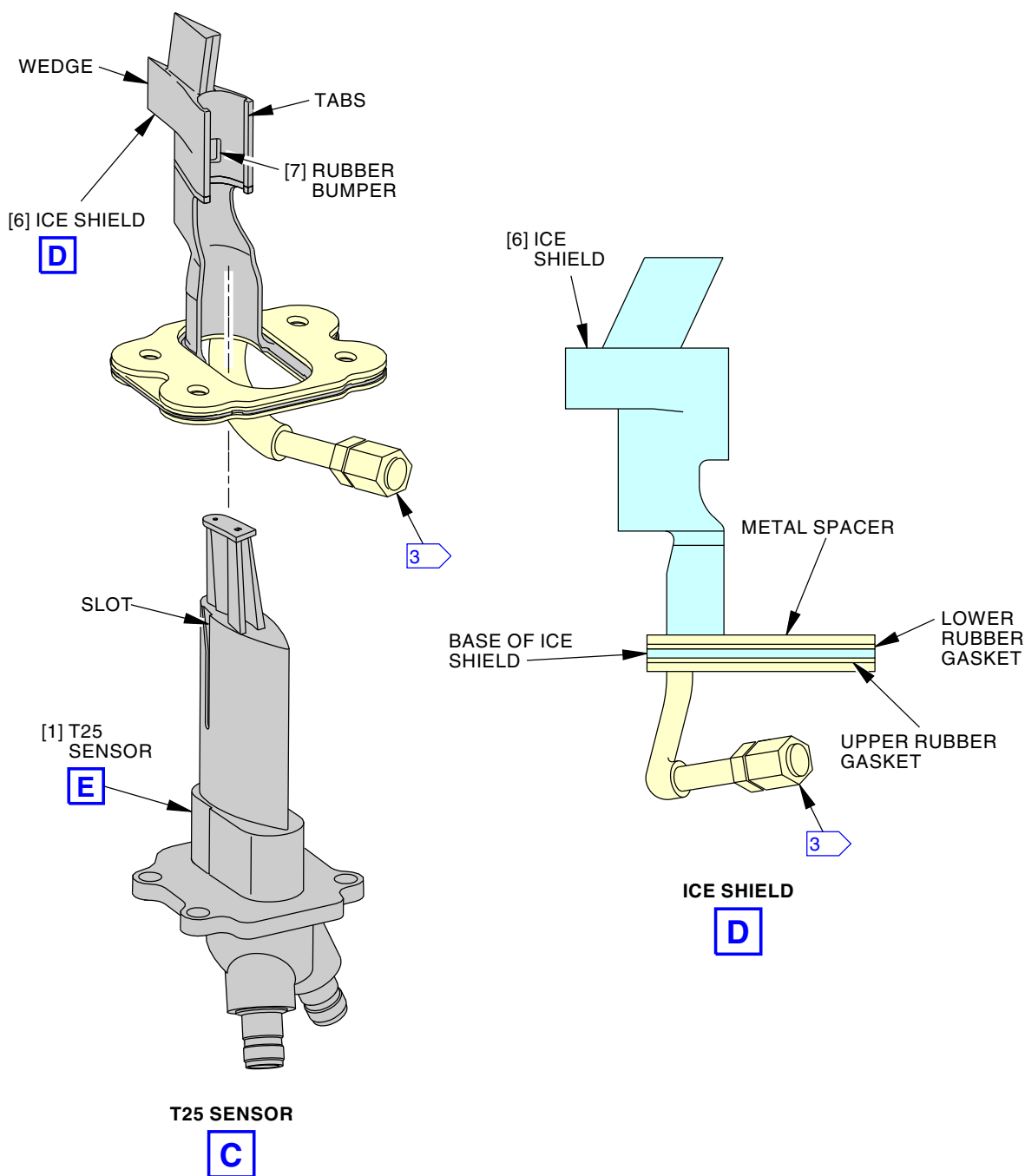
T25 Sensor Installation
Figure 402/73-21-63-990-804-H00 (Sheet 4 of 6)

EFFECTIVITY
ARO ALL POST SB 777-GE90-75-0020 AND POST
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T25 Sensor Installation
Figure 402/73-21-63-990-804-H00 (Sheet 5 of 6)

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 SB 777-GE90-75-0032

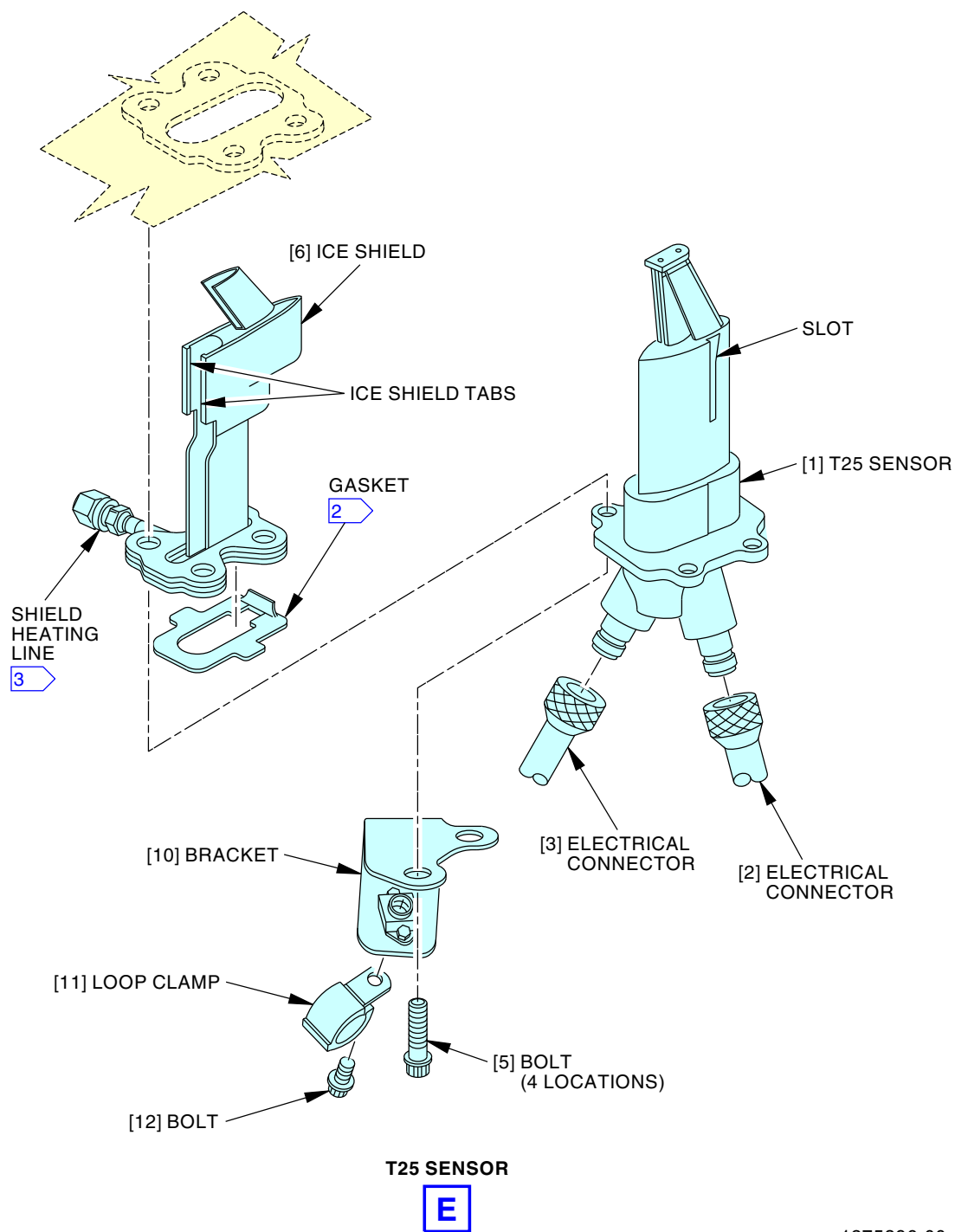
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T25 Sensor Installation
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TASK 73-21-63-400-801-H01

3. PT25 Sensor Installation

A. General

(1) This task provides the instructions for the installation of the PT25 sensor or T25 sensor.

B. References

Reference	Title
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
70-00-01-400-807-H01	Electrical Connector - Disconnect and Connect (P/B 201)
70-51-00-910-801-H01	Instruction for Torque (P/B 201)
71-00-00-800-833-H00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-814-H00	Close the Fan Cowl Panel (Selection) (P/B 201)
73-21-63-200-803-H01	PT25 Sensor Inspection (P/B 601)
78-31-00-410-816-H00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-805-H00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)

D. Consumable Materials

Reference	Description	Specification
B00138	Abrasive - Silicon Carbide Coated Cloth	
D00504	Grease - Petrolatum	VV-P-236
D50043 [C02-058]	Compound - Antiseize, Acheson GP460 (For Threaded Fasteners 0.250 Inches Diameter Or Larger, C02-079 Is An Alternative)	GE A50TF201 Class A

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	PT25 sensor	Not Specified	

F. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

G. Access Panels

Number	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
415AL	Left Thrust Reverser, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
425AL	Left Thrust Reverser, Right Engine

ARO ALL PRE SB 777-GE90-75-0020

H. PT25 Sensor Installation

SUBTASK 73-21-63-212-001-H01

(1) Do a visual check on the ice shield [6] for damage (TASK 73-21-63-200-803-H01).

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SUBTASK 73-21-63-211-001-H01

- (2) Do an interference fit check of the ice shield [6] on the PT25 sensor [1] as follows:
- (a) Apply Acheson GP460 compound, D50043 [C02-058] on the inner curved surface of the rubber bumper [7] of the ice shield [6].

**CAUTION**

DO NOT USE TOO MUCH FORCE TO ASSEMBLE THE ICE SHIELD ON THE SENSOR. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE RUBBER AREA OF THE ICE SHIELD. YOU CANNOT USE TOOLS TO REMOVE OR INSTALL THE ICE SHIELD ON THE SENSOR.

- (b) Carefully install the ice shield [6] on the PT25 sensor [1].
- (c) If the initial assembly of the PT25 sensor [1] and the ice shield [6] does not give an interference fit, do these steps:
- NOTE: The steps that follow will remove some of the thickness from the rubber bumper [7].
- 1) Use an abrasive, B00138 to remove 0.005-0.010 inch (0.130-0.250 mm) of the rubber.
- 2) Carefully and gently assemble the ice shield [6] and PT25 sensor [1] again.
- 3) If the assembly is not possible, remove the rubber to a maximum of 0.005-0.010 inch (0.130-0.250 mm) between each fit until a final minimum thickness of the rubber bumper [7] is 0.010 inch (0.250 mm).
- (d) If the interference fit is still loose, replace the ice shield [6] with a new one.
- (e) When you are satisfied with the interference fit, separate the PT25 sensor [1] from the ice shield [6].

SUBTASK 73-21-63-420-001-H01

- (3) Install the ice shield [6] to the hub frame as follows:
- (a) Put a small amount of grease, D00504 on the rubber bumper [7] inside the ice shield [6].
- (b) Remove the protective cover from the port in the fan hub frame.
- (c) Hold the ice shield [6] in your hand with its wedge away from you.
- (d) Install the ice shield [6] into the fan hub frame with the wedge in the forward direction.
- (e) Move the ice shield [6] forward to align the bolt holes of the ice shield [6] with the bolt holes in the fan hub frame.

SUBTASK 73-21-63-420-002-H01

- (4) Install the PT25 sensor [1] into the ice shield [6] at the fan hub frame as follows (Figure 401):
- (a) Remove the protective covers from the ports in the PT25 sensor [1].
- (b) Put a new gasket [8] on the PT25 sensor [1].
- (c) Put a light coat of Acheson GP460 compound, D50043 [C02-058] on the threads and friction surfaces of the bolts [5].
- (d) Put the PT25 sensor [1] as far forward into the ice shield [6] as you can at the fan hub frame.
- 1) Push the PT25 sensor [1] up into the ice shield [6].
- a) Make sure that the tabs on the ice shield [6] are engaged in the slots in the PT25 sensor [1].

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- 2) Make sure that the PT25 sensor [1] is against the ice shield [6].

NOTE: The PT25 sensor will not be against the ice shield if the tabs of the ice shield are not in the slots of the PT25 sensor.

- a) If the PT25 sensor [1] is not against the ice shield [6], remove the PT25 sensor [1] and try to install the PT25 sensor [1] into the ice shield [6] again.
- (e) Install the bolts [5] that attach the PT25 sensor [1] and the ice shield [6] to the fan hub frame.
- (f) Tighten the bolts [5] to 110-120 pound-inches (12.4-13.7 Newton-meters).

SUBTASK 73-21-63-420-003-H01

- (5) Connect the air tube [4] (Figure 401).
- (a) Remove the protective cover from the air fitting on the PT25 sensor [1] and the air tube [4].
- (b) Connect the air tube [4] to the PT25 sensor [1].
- (c) Tighten the B-nut (TASK 70-51-00-910-801-H01).

SUBTASK 73-21-63-420-004-H01

MAKE SURE THE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU CONNECT THEM. THE CONTAMINATION OF THE ELECTRICAL CONNECTOR CAN CAUSE DAMAGE TO THE EQUIPMENT.



USE TEFLON-JAWED PLIERS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

- (6) Use teflon-jawed pliers, STD-664 to connect the electrical connector [2] and the electrical connector [3] (TASK 70-00-01-400-807-H01).
- (a) Remove the protective covers from the electrical receptacles on the PT25 sensor [1], the electrical connector [2], and the electrical connector [3].
- (b) Connect the electrical connector [2] and the electrical connector [3] to the electrical receptacles on the PT25 sensor [1].
- (c) Tighten the electrical connector [2] and the electrical connector [3].

ARO ALL POST SB 777-GE90-75-0020**I. T25 Sensor Installation****SUBTASK 73-21-63-640-001-H00**

- (1) Put Acheson GP460 compound, D50043 [C02-058] on the threads and friction surfaces of the bolts [5].

SUBTASK 73-21-63-640-002-H00

- (2) Put a small amount of grease, D00504 on the rubber bumper [7] inside the ice shield [6].

SUBTASK 73-21-63-420-005-H00

- (3) Put the ice shield [6] into the pad of the fan hub frame with the wedge in the forward direction.

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SUBTASK 73-21-63-420-006-H00

**CAUTION**

MAKE SURE THAT THE ICE SHIELD TABS GO INTO THE SLOTS ON THE T25 SENSOR. IF THE TABS ARE NOT IN THE SLOTS, DAMAGE TO THE SENSOR CAN OCCUR.

- (4) Slide the T25 sensor [1] into the ice shield [6] (Figure 402).

SUBTASK 73-21-63-420-007-H00

- (5) Install the lower two bolts [5] through the T25 sensor [1], the ice shield [6] and into the pad on the hub frame.

SUBTASK 73-21-63-420-008-H00

- (6) Install the support bracket [10] as follows:
- (a) Install the upper two bolts [5] through the support bracket [10], the ice shield [6] and into the pad on the fan hub frame.
 - (b) Tighten the bolts [5] to 110-120 pound-inches (12.4-13.7 Newton-meters).

SUBTASK 73-21-63-430-001-H00

- (7) Connect the heating air tube [9] B-nut to the shield heating line.
- (a) Tighten the B-nut finger tight.

SUBTASK 73-21-63-420-009-H00

- (8) Install the loop clamp [11] for the shield heating line on the support bracket [10] with the bolt [12].
- (a) Tighten the bolt [12] to 110-120 pound-inches (12.4-13.7 Newton-meters).

SUBTASK 73-21-63-430-002-H00

- (9) Tighten the heating air tube [9] B-nut to 460-540 pound-inches (52.0-61.0 Newton-meters).

NOTE: Use the anti-rotation fitting and two wrenches to tighten the B-nut.

SUBTASK 73-21-63-430-003-H00

**CAUTION**

MAKE SURE THE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU CONNECT THEM. THE CONTAMINATION OF THE ELECTRICAL CONNECTOR CAN CAUSE DAMAGE TO THE EQUIPMENT.

**CAUTION**

USE TEFLON-JAWED PLIERS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

- (10) Use teflon-jawed pliers, STD-664 to connect the electrical connector [2] and the electrical connector [3] (TASK 70-00-01-400-807-H01).
- (a) Remove the protective covers from the electrical receptacles on the T25 sensor [1], the electrical connector [2], and the electrical connector [3].
 - (b) Connect the electrical connector [2] and the electrical connector [3] to the electrical receptacles on the T25 sensor [1].
 - (c) Tighten the electrical connector [2] and the electrical connector [3].

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SUBTASK 73-21-63-020-008-H00

- (1) Remove protective cover from the port of T25 sensor [1] at the fan hub frame.

SUBTASK 73-21-63-420-010-H00

- (2) Install the ice shield [6] down and to the rear in the fan hub frame.

SUBTASK 73-21-63-420-011-H00



MAKE SURE THAT THE ICE SHIELD TABS GO INTO THE SLOTS ON THE T25 SENSOR. IF THE TABS ARE NOT IN THE SLOTS, DAMAGE TO THE SENSOR CAN OCCUR.

- (3) Slide the T25 sensor [1] into the ice shield [6] (Figure 402).

SUBTASK 73-21-63-420-012-H00

- (4) Install the lower two bolts [5] through the T25 sensor [1], the ice shield [6] and into the pad on the hub frame.

SUBTASK 73-21-63-420-013-H00

- (5) Install the support bracket [10] as follows:
- (a) Install the upper two bolts [5] through the support bracket [10], the ice shield [6] and into the pad on the fan hub frame.
 - (b) Tighten the bolts [5] to 110-120 pound-inches (12.4-13.7 Newton-meters).

SUBTASK 73-21-63-420-014-H00

- (6) Install the loop clamp [11] for the shield heating line on the support bracket [10] with the bolt [12].
- (a) Tighten the bolt [12] to 110-120 pound-inches (12.4-13.7 Newton-meters).

SUBTASK 73-21-63-420-015-H00



MAKE SURE THE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU CONNECT THEM. THE CONTAMINATION OF THE ELECTRICAL CONNECTOR CAN CAUSE DAMAGE TO THE EQUIPMENT.



USE TEFLON-JAWED PLIERS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

- (7) Use teflon-jawed pliers, STD-664 to connect the electrical connector [2] and the electrical connector [3] (TASK 70-00-01-400-807-H01).
- (a) Remove the protective covers from the electrical receptacles on the T25 sensor [1], the electrical connector [2], and the electrical connector [3].
 - (b) Connect the electrical connector [2] and the electrical connector [3] to the electrical receptacles on the T25 sensor [1].
 - (c) Tighten the electrical connector [2] and the electrical connector [3].

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K. Put the Airplane Back to its Usual Condition.

SUBTASK 73-21-63-410-001-H01



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Do these tasks in sequence to safely close the left thrust reverser on the applicable engine:

(a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-410-816-H00.

1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
415AL	Left Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine

(b) Do this task: Close the Fan Cowl Panel (Selection), TASK 71-11-04-410-814-H00.

1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
413AL	Left Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine

(c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-805-H00.

(d) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

L. PT25 or T25 Sensor Installation Test

SUBTASK 73-21-63-710-001-H01

(1) Do the tests listed in the Power Plant Test Reference Table (TASK 71-00-00-800-833-H00).

————— **END OF TASK** —————

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PT25 SENSOR - INSPECTION/CHECK

1. General

A. This procedure has one task:

- (1) The inspection of the PT25 sensor ice shield.

TASK 73-21-63-200-803-H01

2. PT25 Sensor Inspection

A. General

- (1) This task gives the visual inspection for the PT25 sensor ice shield (referred to as the ice shield).
- (2) The PT25 sensor ice shield is at the 7:00 o'clock position on the fan hub frame and is attached to the PT25 sensor.

B. References

Reference	Title
73-21-63-000-801-H01	PT25 Sensor Removal (P/B 401)
73-21-63-300-801-H01	PT25 Sensor Repair (P/B 801)
73-21-63-400-801-H01	PT25 Sensor Installation (P/B 401)

C. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

D. PT25 Sensor Ice Shield Inspection

SUBTASK 73-21-63-020-004-H01

- (1) Do this task: PT25 Sensor Removal, TASK 73-21-63-000-801-H01.

SUBTASK 73-21-63-210-006-H01

- (2) Do a visual inspection of the metal part of the ice shield [3] (Figure 601).
 - (a) No cracks or other sign of damage are permitted.
 - 1) If the metal part is defective, replace the ice shield [3].
 - a) To replace the ice shield [3], do this task: PT25 Sensor Installation, TASK 73-21-63-400-801-H01.

SUBTASK 73-21-63-210-007-H01

- (3) Do a visual inspection of the rubber bumper [2] (Figure 601).
 - (a) Delamination, disbonding, or curling of the rubber bumper [2] is permitted if the rubber bumper [2] does not become disconnected from the ice shield [3] when assembled on the PT25 sensor [1].
 - (b) If the rubber bumper [2] is disconnected, repair or replace the ice shield [3].
 - 1) To repair the rubber bumper [2], do this task: PT25 Sensor Repair, TASK 73-21-63-300-801-H01.
 - 2) To replace the ice shield [3], do this task: PT25 Sensor Installation, TASK 73-21-63-400-801-H01.

SUBTASK 73-21-63-210-008-H01

- (4) Do a visual inspection of the upper rubber gasket [6] (Figure 601).

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- (a) Delamination, disbonding or curling of the upper rubber gasket [6] is permitted if 30 percent of the upper rubber gasket [6] is attached to the ice shield [3].
- (b) If more than 70 percent of the upper rubber gasket [6] is delaminated, disbonded or curling, repair or replace the ice shield [3].
 - 1) To repair the rubber bumper [2], do this task: PT25 Sensor Repair, TASK 73-21-63-300-801-H01.
 - 2) To replace the ice shield [3], do this task: PT25 Sensor Installation, TASK 73-21-63-400-801-H01.

SUBTASK 73-21-63-210-009-H01

- (5) Do a visual inspection of the lower rubber gasket [5] and metal spacer [4] (Figure 601).
 - (a) Delamination, disbonding or curling of the lower rubber gasket [5] is permitted, if the metal spacer [4] and lower rubber gasket [5] are still attached to the ice shield [3].
 - (b) If the lower rubber gasket [5] or metal spacer [4] become disconnected from the ice shield [3], repair or replace the ice shield [3].
 - 1) To repair the rubber bumper [2], do this task: PT25 Sensor Repair, TASK 73-21-63-300-801-H01.
 - 2) To replace the ice shield [3], do this task: PT25 Sensor Installation, TASK 73-21-63-400-801-H01.

SUBTASK 73-21-63-410-002-H01

- (6) Do this task: PT25 Sensor Installation, TASK 73-21-63-400-801-H01.

———— **END OF TASK** ————

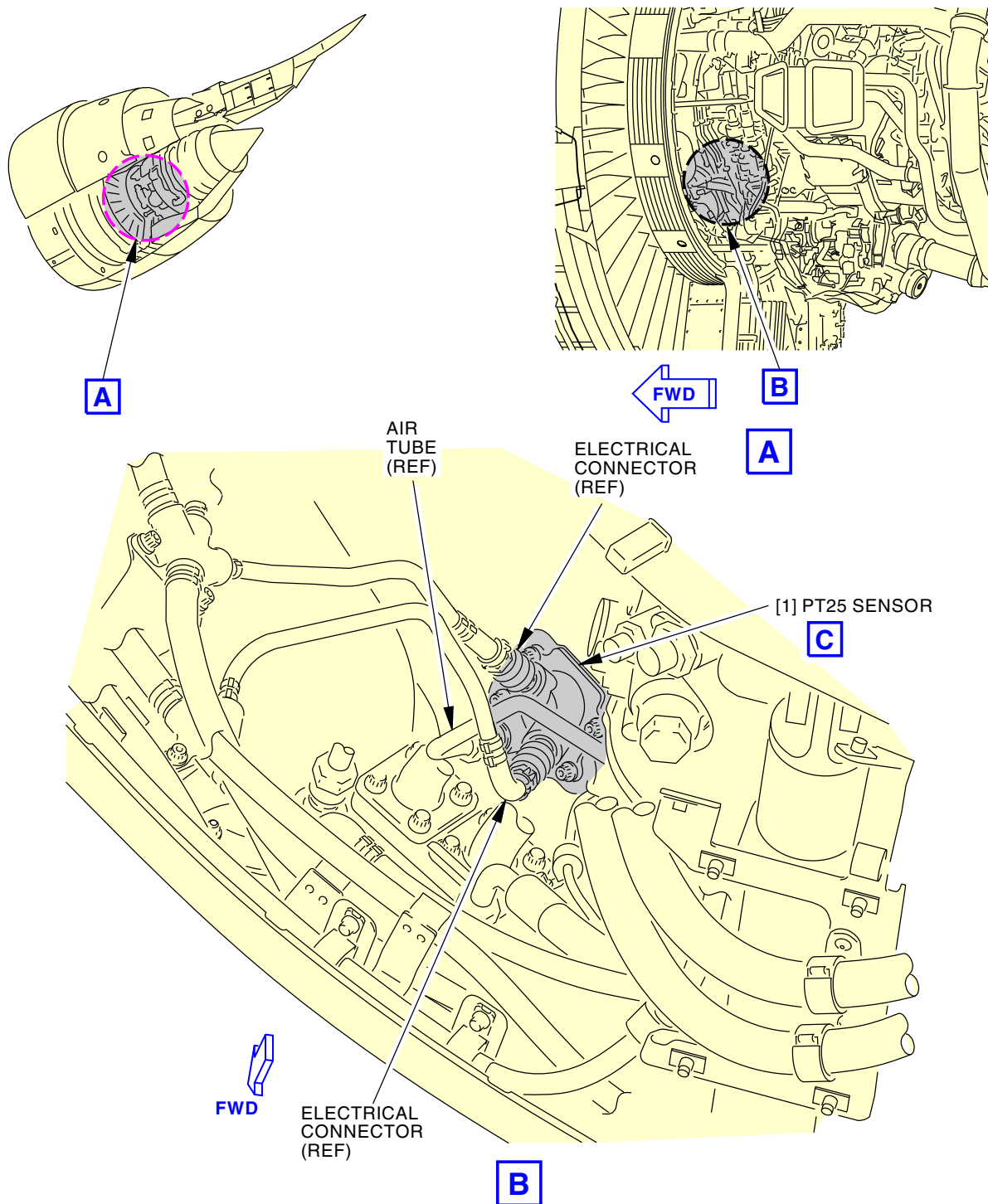
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PT25 Sensor Inspection
Figure 601/73-21-63-990-803-H01 (Sheet 1 of 2)

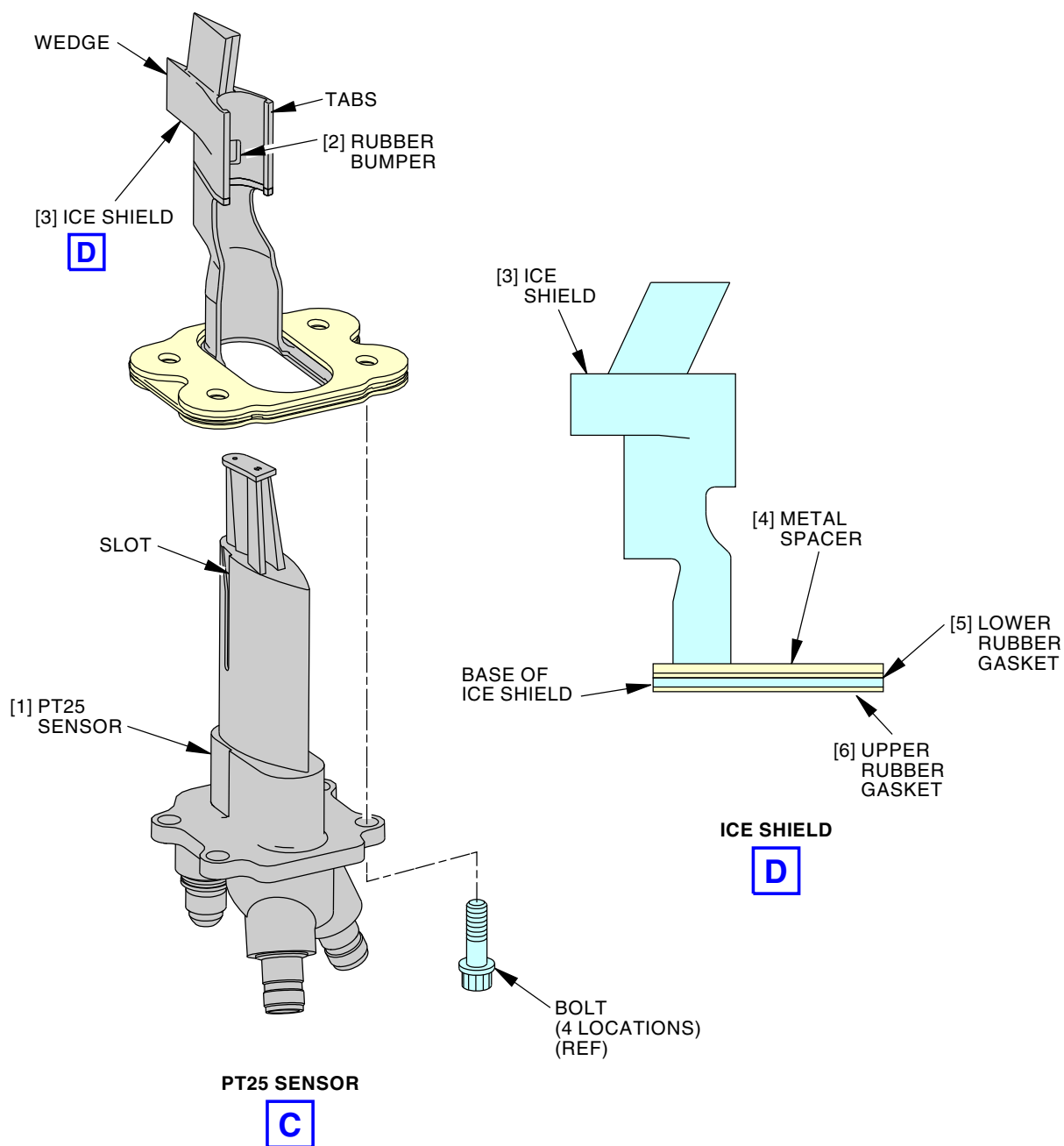
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PT25 Sensor Inspection
Figure 601/73-21-63-990-803-H01 (Sheet 2 of 2)

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PT25 SENSOR - REPAIRS

1. General

- A. This procedure has one task:
- (1) PT25 Sensor Repair.

TASK 73-21-63-300-801-H01

2. PT25 Sensor Repair

A. General

- (1) This task provides the instructions to repair the PT25 sensor ice shield.
- (2) The PT25 sensor ice shield is located at the 7:00 o'clock position on the fan hub frame and is attached to the PT25 sensor.

B. References

Reference	Title
73-21-63-000-801-H01	PT25 Sensor Removal (P/B 401)
73-21-63-400-801-H01	PT25 Sensor Installation (P/B 401)

C. Consumable Materials

Reference	Description	Specification
A01050 [C01-007]	Adhesive - Silicone Elastomer - RTV 106	
B00083	Solvent - VM&P Naphthas	TT-N-95 Type II, ASTM D-3735 Type III
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A

D. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

E. Repair of the PT25 Sensor Ice Shield

SUBTASK 73-21-63-020-005-H01

- (1) Do this task: (PT25 Sensor Removal, TASK 73-21-63-000-801-H01).

SUBTASK 73-21-63-610-001-H01

- (2) To repair the rubber bumper [2], do these steps (Figure 801):
 - (a) Remove unwanted adhesive from the ice shield [3] metal surface and the rubber bumper [2].
 - (b) Clean the metal surface of the ice shield [3] with solvent, B00083 and cotton wiper, G00034.
 - (c) Apply RTV 106 adhesive, A01050 [C01-007] to the surfaces of the rubber bumper [2] and the metal surface of the ice shield [3].
 - (d) Put the rubber bumper [2] and the ice shield [3] together.
 - (e) Put the ice shield [3] over the PT25 sensor [1] to clamp the rubber bumper [2] in place.
 - (f) Keep for 24 hours at room temperature.

SUBTASK 73-21-63-610-002-H01

- (3) To repair the upper rubber gasket [6] to the ice shield [3] bond, do these steps (Figure 801):

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- (a) Remove unwanted adhesive from the ice shield [3] metal surface and the upper rubber gasket [6].
- (b) Clean metal surface of ice shield [3] with solvent, B00083 and cotton wiper, G00034.
- (c) Apply RTV 106 adhesive, A01050 [C01-007] to the surfaces of the ice shield [3] and the upper rubber gasket [6].
 - 1) Use a roller to apply a thin smooth coat of adhesive.
- (d) Put the upper rubber gasket [6] and the ice shield [3] together.
- (e) Clamp the upper rubber gasket [6] and the ice shield [3] together on a flat surface.
 - 1) Use scrap pieces of metal or wood to hold the upper rubber gasket [6] and the ice shield [3] to the flat surface.
- (f) Keep for 24 hours at room temperature.

SUBTASK 73-21-63-610-003-H01

- (4) To repair the lower rubber gasket [5] bond to the metal spacer [4] and the ice shield [3], do these steps (Figure 801):
 - (a) Remove unwanted adhesive from the ice shield [3] metal surface, the metal spacer [4] and the lower rubber gasket [5].
 - (b) Clean the metal surfaces of the ice shield [3] and the metal spacer [4] with solvent, B00083 and cotton wiper, G00034.
 - (c) Apply RTV 106 adhesive, A01050 [C01-007] to all the surfaces to be bonded.
 - 1) Use a roller to apply a thin smooth coat of RTV 106 adhesive, A01050 [C01-007].
 - (d) Put the metal spacer [4], the lower rubber gasket [5], and the ice shield [3] together.
 - (e) Clamp the metal spacer [4], the lower rubber gasket [5], and the ice shield [3] together with a flat surface.
 - 1) Use scrap pieces of metal or wood to hold the upper rubber gasket [6] and the ice shield [3] to the flat surface.
 - (f) Keep for 24 hours at room temperature.

SUBTASK 73-21-63-410-003-H01

- (5) Do this task: (PT25 Sensor Installation, TASK 73-21-63-400-801-H01).

———— **END OF TASK** ————

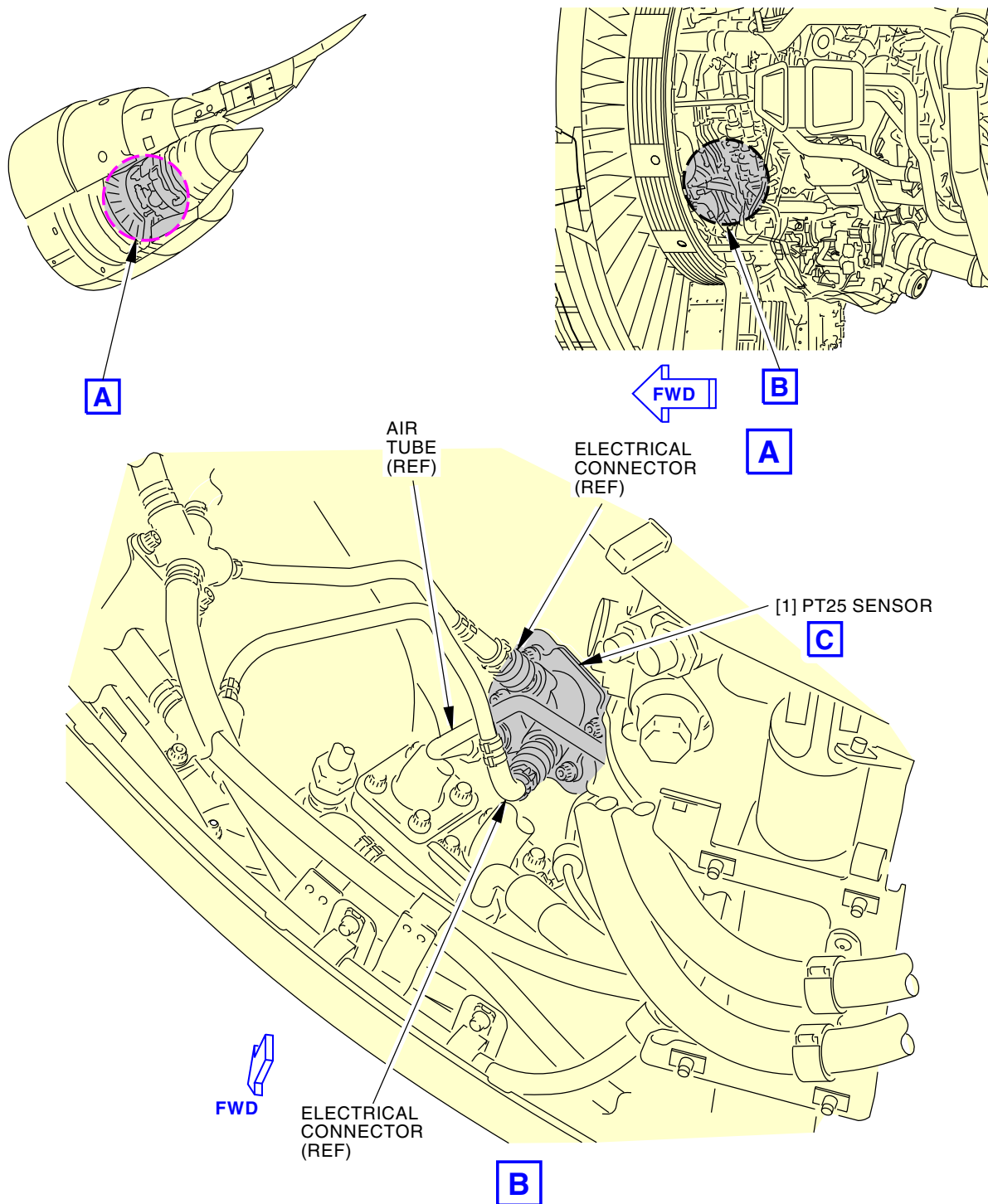
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PT25 Sensor Repairs
Figure 801/73-21-63-990-802-H01 (Sheet 1 of 2)

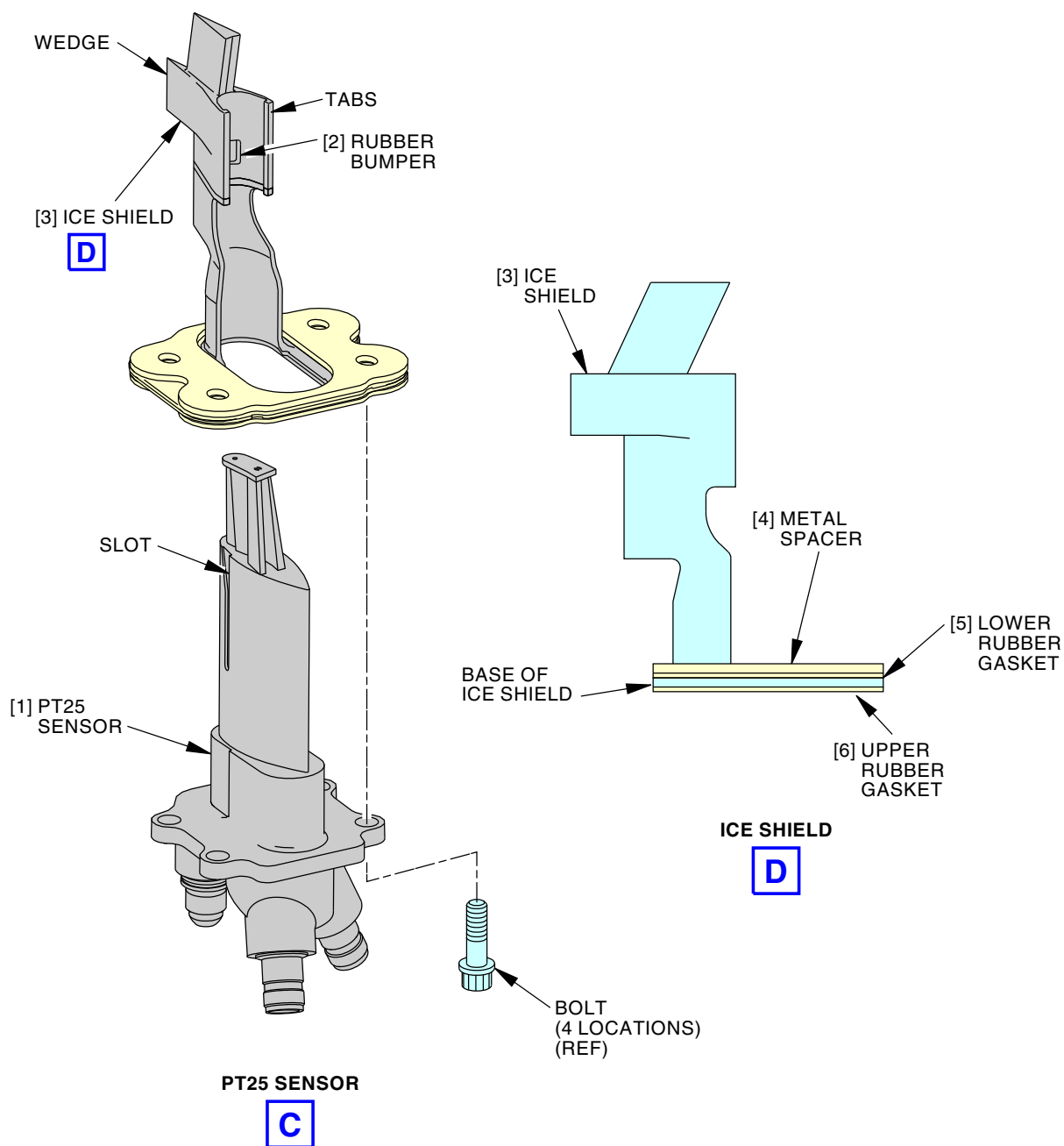
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PT25 Sensor Repairs
Figure 801/73-21-63-990-802-H01 (Sheet 2 of 2)

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T3 SENSOR ASSEMBLY - REMOVAL/INSTALLATION

1. General

- A. This procedure has two tasks:
- (1) A removal of the T3 sensor assembly
 - (2) An installation of the T3 sensor assembly.

TASK 73-21-64-000-801-H01

2. T3 Sensor Assembly Removal

A. General

- (1) This task is the removal procedure for the T3 sensor assembly (referred to as T3 sensor).
- (2) The T3 sensor is on the combustor diffuser case at approximately the 1:00 o'clock position.
- (3) You must open the right thrust reverser to get access to the T3 sensor.

B. References

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
27-81-00-860-805	Retract the Leading Edge Slats (P/B 201)
70-00-01-400-807-H01	Electrical Connector - Disconnect and Connect (P/B 201)
70-00-04-200-801-H01	Gasket Seal (with Imbedded Flexible Seal Material) Removal (P/B 201)
71-11-04-010-814-H00	Open the Fan Cowl Panel (Selection) (P/B 201)
78-31-00-010-816-H00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-806-H00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

C. Tools/Equipment

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

Reference	Description
SPL-114	Borescope - Fiberscope Part #: 9C1301P01 Supplier: 06083 Part #: 9C1301P03 Supplier: 06083
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)

D. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

E. Access Panels

Number	Name/Location
414AR	Right Fan Cowl Panel, Left Engine
416AR	Right Thrust Reverser, Left Engine
424AR	Right Fan Cowl Panel, Right Engine
426AR	Right Thrust Reverser, Right Engine

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F. Prepare for the T3 Sensor Assembly Removal

SUBTASK 73-21-64-010-001-H01



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO OPEN THE THRUST REVERSER(S). IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR

- (1) Do these tasks in sequence to safely open the right thrust reverser on the applicable engine:

- (a) Do this task: Retract the Leading Edge Slats, TASK 27-81-00-860-805.
- (b) Do this task: Leading Edge Slat - Deactivation, TASK 27-81-00-040-801.
- (c) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-806-H00.
- (d) For the right fan cowl panel, do this task:

Open the Fan Cowl Panel (Selection), TASK 71-11-04-010-814-H00

<u>Number</u>	<u>Name/Location</u>
414AR	Right Fan Cowl Panel, Left Engine
424AR	Right Fan Cowl Panel, Right Engine

- (e) For the right thrust reverser, do this task:

Open the Thrust Reverser (Selection), TASK 78-31-00-010-816-H00

<u>Number</u>	<u>Name/Location</u>
416AR	Right Thrust Reverser, Left Engine
426AR	Right Thrust Reverser, Right Engine

G. T3 Sensor Assembly Removal

SUBTASK 73-21-64-020-001-H01



MAKE SURE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU DISCONNECT THEM. CONTAMINATION OF ELECTRICAL CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.



USE TEFLON-JAWED PLIERS TO LOOSEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

- (1) Use teflon-jawed pliers, STD-664 to disconnect the electrical connector [8] and electrical connector [9] from the T3 electrical box [7] (TASK 70-00-01-400-807-H01) Figure 401.
- (a) Disconnect the W721 electrical connector [8] (DP72111) from the left side electrical receptacle on the T3 electrical box [7].
 - (b) Disconnect the W722 electrical connector [9] (DP72211) from the right side electrical receptacle on the T3 sensor [1].
 - (c) Install protective covers on the electrical receptacles on the T3 electrical box [7] and on the electrical connector [8] and electrical connector [9].

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SUBTASK 73-21-64-020-002-H01

- (2) Remove the bolts [5] that attaches the T3 electrical lead to the support bracket [11] and the support bracket [12].

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SUBTASK 73-21-64-020-012-H00

- (3) Remove the bolts [5] and the washers [15] that attach the T3 electrical lead to the support bracket [11] and the support bracket [12].

SUBTASK 73-21-64-010-002-H00

- (4) Remove the loop clamp [4], the bolt [13], the washer [16] and the nut [17] that attach the T3 electrical lead to the support bracket [14].

ARO ALL

SUBTASK 73-21-64-020-010-H01

- (5) Remove the bolts [6] that attach the T3 electrical box [7] to the bracket [10] and remove the T3 electrical box [7].

SUBTASK 73-21-64-020-005-H01

- (6) Remove the three bolts [2] that attach the T3 sensor [1] to the combustion case.

SUBTASK 73-21-64-020-006-H01



DO NOT USE FORCE TO REMOVE THE T3 SENSOR ASSEMBLY FROM THE ENGINE. IF YOU DO, YOU CAN CAUSE DAMAGE TO THE T3 SENSOR ASSEMBLY PROBE, ELECTRICAL CONDUIT, OR THE ELECTRICAL BOX.

- (7) Remove the T3 sensor [1].

SUBTASK 73-21-64-020-007-H01



DO NOT USE FORCE TO REMOVE THE GASKET SEAL FOR THE T3 SENSOR. IF YOU DO, YOU CAN CAUSE DAMAGE TO THE SPRING FINGERS THAT ARE ATTACHED TO THE GASKET SEAL.

- (8) Remove the gasket seal [3] from the T3 sensor [1].

SUBTASK 73-21-64-020-008-H01

- (9) Examine the gasket seal [3] for damage (TASK 70-00-04-200-801-H01).
(a) Use the gasket seal [3] for the installation if it is not damaged.

SUBTASK 73-21-64-210-001-H01

- (10) Look in the T3 sensor [1] inlet for loose metallic particles.
(a) If you see metallic particles, remove the particles and keep them for further evaluation.
(b) Examine the inside of the T3 sensor [1] with a fiberscope borescope, SPL-114 after you remove the particles.
1) If you see metallic particles, remove the particles and keep them for further evaluation.

SUBTASK 73-21-64-020-009-H01

- (11) Install a protective cover on the port in the combustor case for the T3 sensor [1].

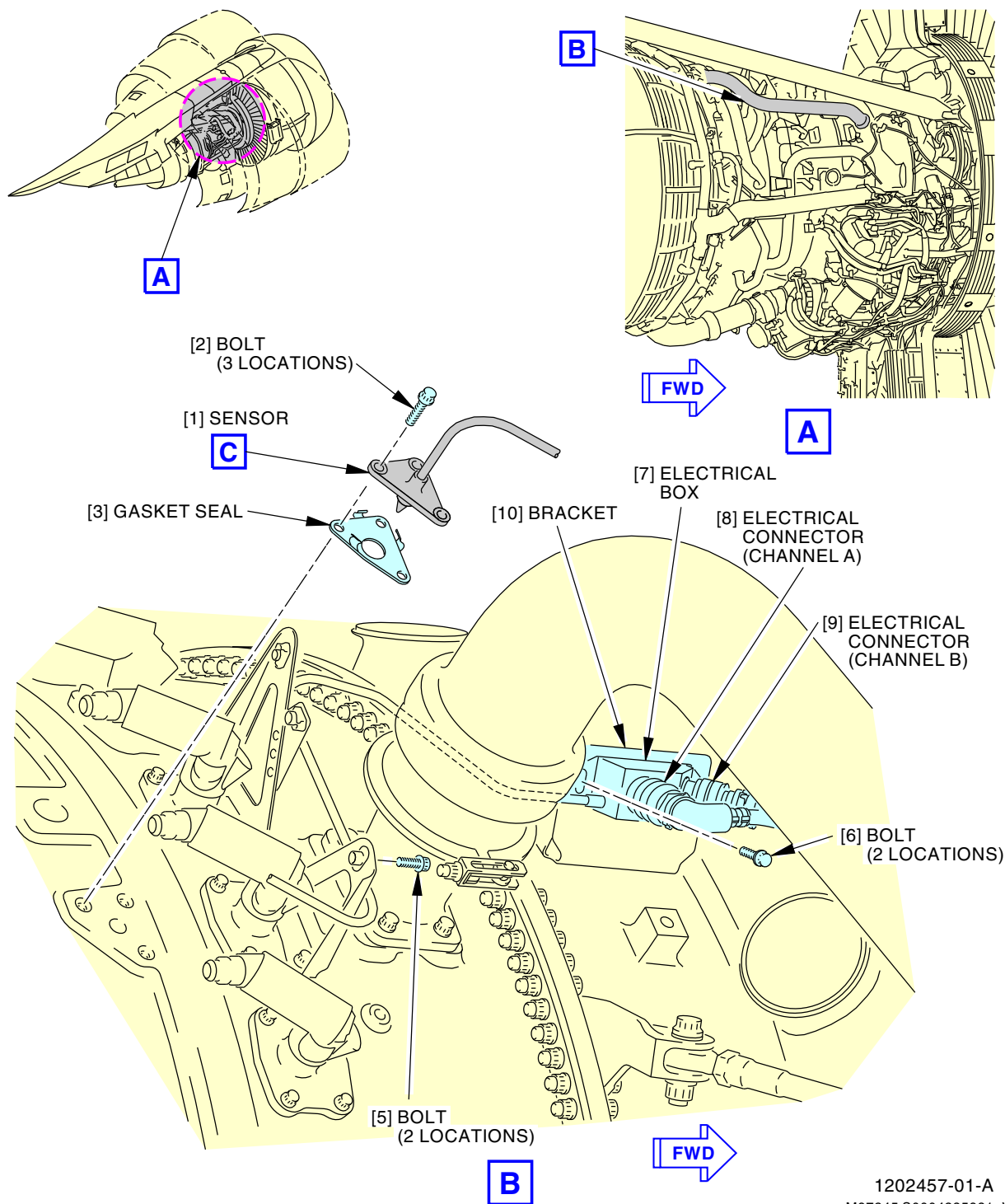
———— **END OF TASK** ————

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M97245 S0004285981_V4

T3 Sensor Installation
Figure 401/73-21-64-990-801-H01 (Sheet 1 of 4)

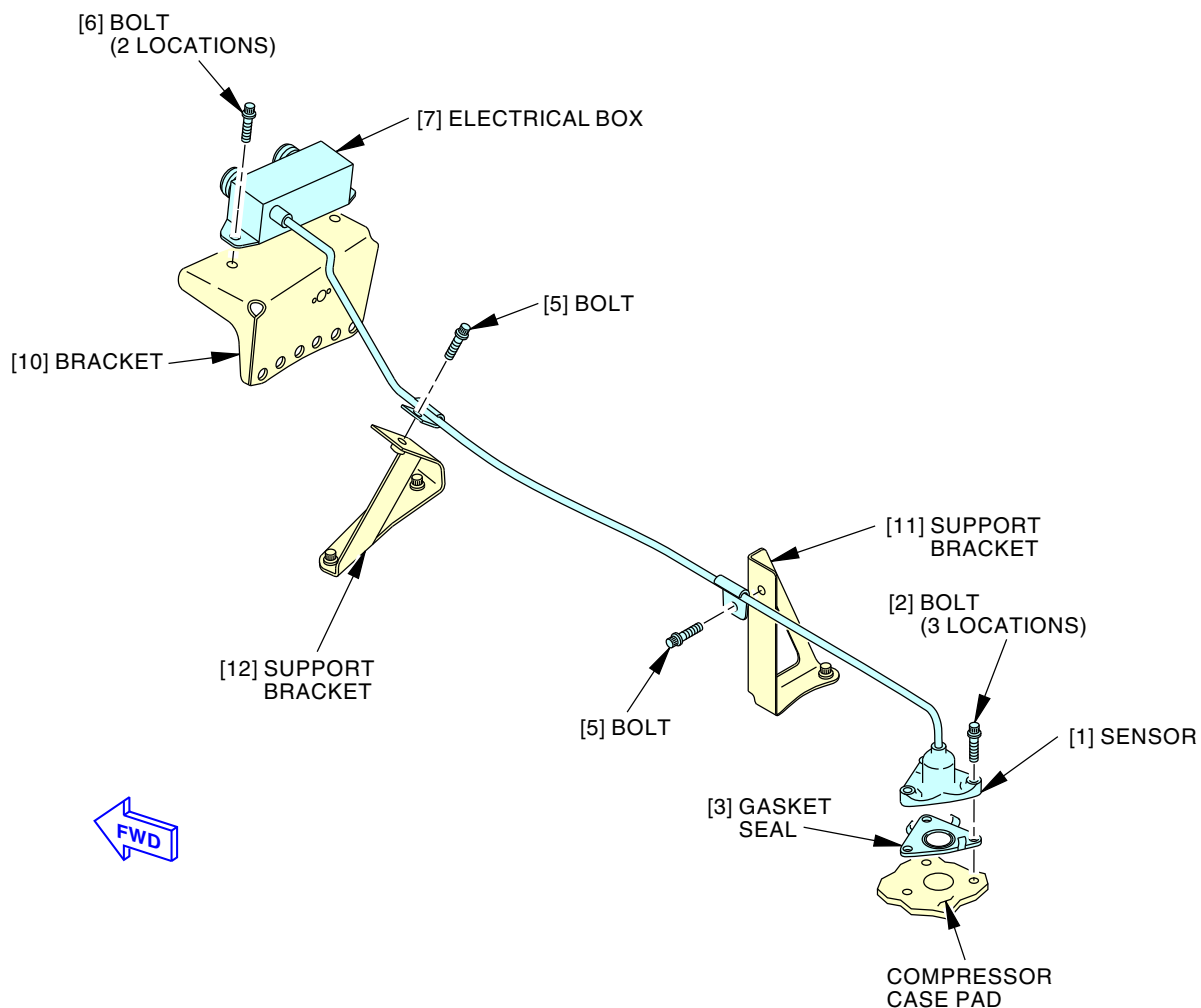
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2116703 S0000453682_V2

T3 Sensor Installation
Figure 401/73-21-64-990-801-H01 (Sheet 2 of 4)

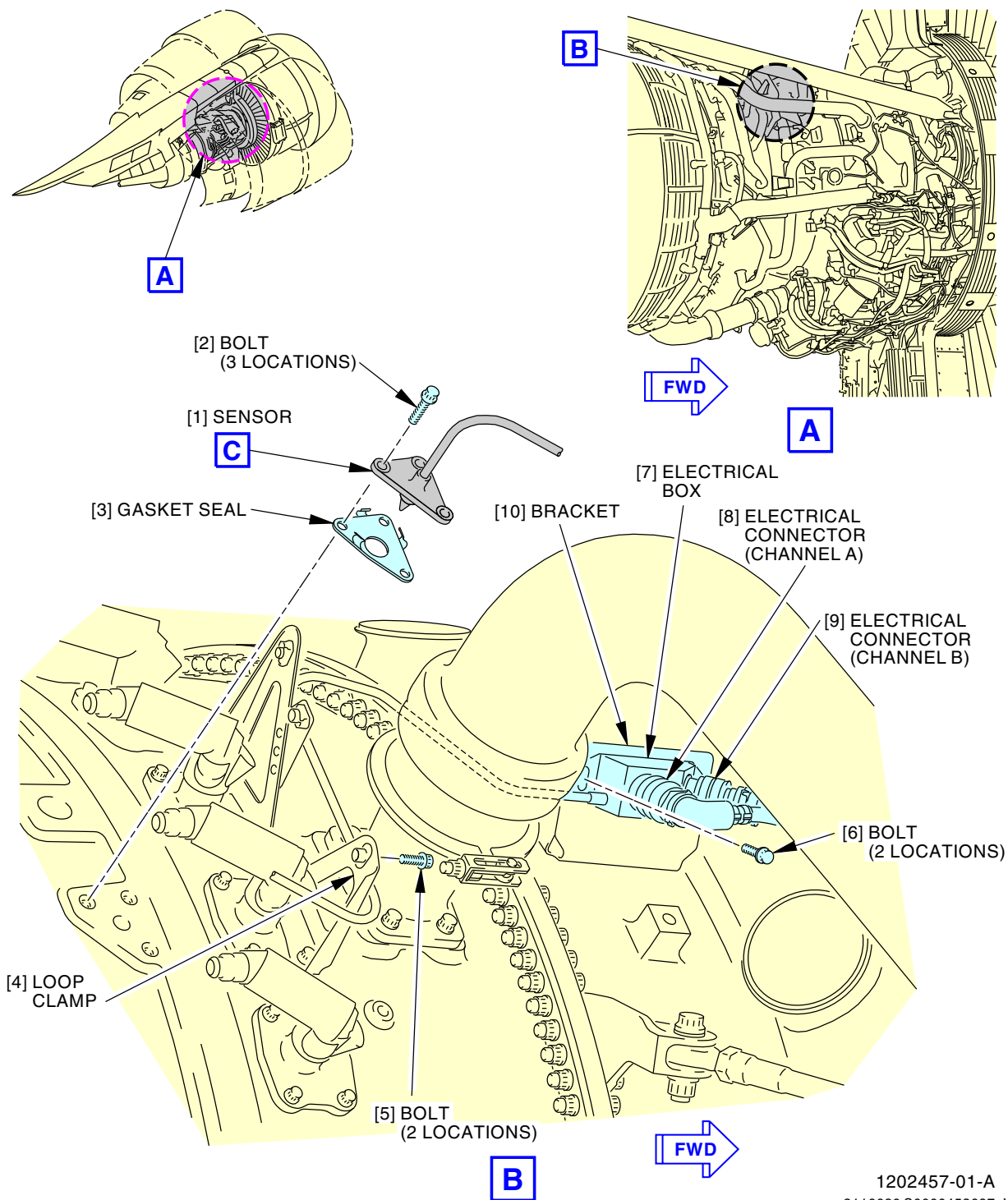
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2116680 S0000453697_V2

T3 Sensor Installation
Figure 401/73-21-64-990-801-H01 (Sheet 3 of 4)

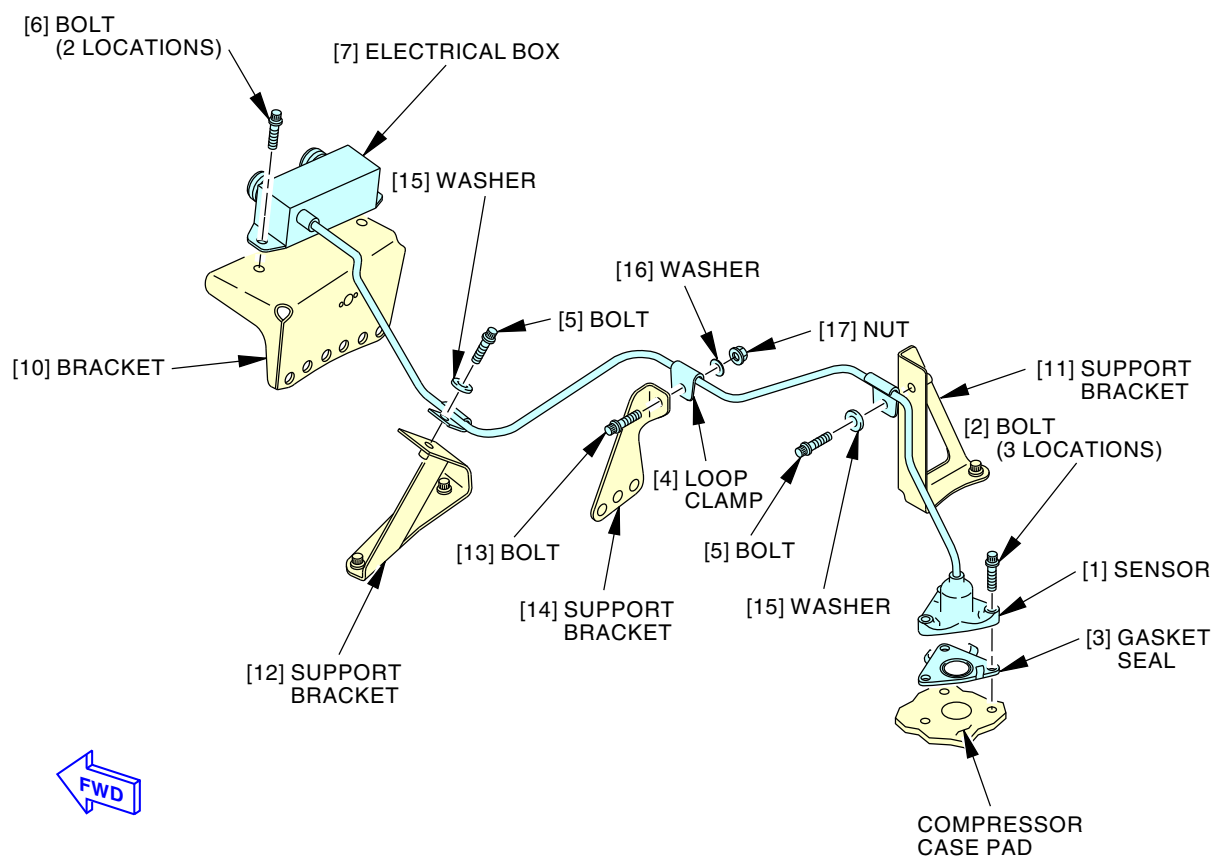
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**T3 Sensor Installation
Figure 401/73-21-64-990-801-H01 (Sheet 4 of 4)**

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TASK 73-21-64-400-801-H01

3. T3 Sensor Assembly Installation

A. General

- (1) This task is the installation procedure for the T3 sensor assembly (referred to as T3 sensor).
- (2) You must do the tests that are listed in the power plant test reference table after you install the T3 sensor.

B. References

Reference	Title
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
70-00-01-400-807-H01	Electrical Connector - Disconnect and Connect (P/B 201)
71-00-00-800-833-H00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-814-H00	Close the Fan Cowl Panel (Selection) (P/B 201)
78-31-00-410-816-H00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-805-H00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)

D. Consumable Materials

Reference	Description	Specification
D50043 [C02-058]	Compound - Antiseize, Acheson GP460 (For Threaded Fasteners 0.250 Inches Diameter Or Larger, C02-079 Is An Alternative)	GE A50TF201 Class A

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Gasket seal	73-21-64-02-035	ARO ALL

F. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

G. Access Panels

Number	Name/Location
414AR	Right Fan Cowl Panel, Left Engine
416AR	Right Thrust Reverser, Left Engine
424AR	Right Fan Cowl Panel, Right Engine
426AR	Right Thrust Reverser, Right Engine

H. T3 Sensor Assembly Installation

SUBTASK 73-21-64-420-001-H01

- (1) Remove the protective covers from the T3 sensor [1], and the port in the combustion case for the T3 sensor [1].

SUBTASK 73-21-64-640-001-H01

- (2) Put a light coat of Acheson GP460 compound, D50043 [C02-058] on the threads of the bolts [2] on the T3 sensor [1] (Figure 401).

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SUBTASK 73-21-64-420-002-H01



DO NOT USE FORCE TO INSTALL THE GASKET SEAL FOR THE T3 SENSOR. IF YOU DO, YOU CAN CAUSE DAMAGE TO THE SPRING FINGERS THAT ARE ATTACHED TO THE GASKET SEAL.

- (3) Attach the gasket seal [3] to the T3 sensor [1].

SUBTASK 73-21-64-420-003-H01



DO NOT USE FORCE TO INSTALL THE T3 SENSOR ASSEMBLY ON THE ENGINE. IF YOU DO, YOU CAN CAUSE DAMAGE TO THE T3 SENSOR ASSEMBLY PROBE, ELECTRICAL CONDUIT, OR THE ELECTRICAL BOX.

- (4) Put the T3 sensor [1] in its position on the combustion case and attach with the three bolts [2].
- (a) Tighten the bolts [2] to 109-127 pound-inches (12.3–14.3 Newton-meters).

SUBTASK 73-21-64-420-004-H01

- (5) Install the T3 electrical box [7].
- (a) Put the T3 electrical box [7] in its position on bracket [10].
- (b) Install the bolts [6] that attach the T3 electrical box [7] to the bracket [10].
- 1) Tighten the bolts [6] by hand.

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SUBTASK 73-21-64-420-005-H01

- (6) Install the T3 electrical lead to the support bracket [11] and the support bracket [12] with the bolts [5].
- (a) Loosely tighten the bolts.

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SUBTASK 73-21-64-420-008-H00

- (7) Install the T3 electrical lead to the support bracket [11] and the support bracket [12] with the bolts [5] and the washers [15].
- (a) Loosely tighten the bolt.

SUBTASK 73-21-64-420-009-H00

- (8) Install the T3 electrical lead to the support bracket [14] with the loop clamp [4], the bolt [13], the washer [16] and the nut [17].
- (a) Loosely tighten the bolt.

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SUBTASK 73-21-64-420-010-H00

- (9) Tighten the bolts [6] of the T3 electrical box [7] at 109-127 pound inches (12.3-14.3 Newton-meters).

SUBTASK 73-21-64-420-011-H00

- (10) Tighten the bolts [5] of the support bracket [11] and support bracket [12] at 109-127 pound inches (12.3-14.3 Newton-meters).

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SUBTASK 73-21-64-420-012-H00

- (11) Tighten the bolt [13] of the support bracket [14] at 109-127 pound inches(12.3-14.3 Newton-meters).

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SUBTASK 73-21-64-420-007-H01



CAUTION

MAKE SURE THE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU CONNECT THEM. THE CONTAMINATION OF THE ELECTRICAL CONNECTOR CAN CAUSE DAMAGE TO THE EQUIPMENT.



CAUTION

USE TEFLON-JAWED PLIERS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

- (12) Use teflon-jawed pliers, STD-664 to connect the electrical connector [8] and electrical connector [9] to the T3 electrical box [7] (TASK 70-00-01-400-807-H01).
- (a) Remove the protective covers from the electrical receptacles on the T3 electrical box [7] and the electrical connector [8] and electrical connector [9].
 - (b) Attach the W721 electrical connector [8] (DP72111) to the left side T3 sensor [1] electrical receptacle.
 - (c) Attach the W722 electrical connector [9] (DP72211) to the right side T3 sensor [1] electrical receptacle.

I. Put the Airplane Back to its Usual Condition.

SUBTASK 73-21-64-410-001-H01



WARNING

DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Do these tasks in sequence to safely close the right thrust reverser on the applicable engine:
- (a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-410-816-H00.
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
416AR	Right Thrust Reverser, Left Engine
426AR	Right Thrust Reverser, Right Engine
 - (b) Do this task: Close the Fan Cowl Panel (Selection), TASK 71-11-04-410-814-H00.
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
414AR	Right Fan Cowl Panel, Left Engine
424AR	Right Fan Cowl Panel, Right Engine
 - (c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-805-H00.
 - (d) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

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J. T3 Sensor Assembly Installation Test

SUBTASK 73-21-64-710-001-H01

- (1) Do the tests listed in the Power Plant Test Reference Table (TASK 71-00-00-800-833-H00).

———— **END OF TASK** ————

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FUEL MANIFOLD PRESSURE SENSOR - REMOVAL/INSTALLATION

1. General

A. This procedure contains two tasks:

- (1) A removal of the fuel manifold pressure (FMP) sensor
- (2) An installation of the FMP sensor.

TASK 73-21-67-000-801-H01

2. Fuel Manifold Pressure Sensor Removal

A. General

- (1) This task is the removal procedure for the fuel manifold pressure (FMP) sensor.
- (2) The FMP sensor is installed on the hydromechanical unit (referred to as the HMU).
- (3) You must open the right thrust reverser to get access to remove the FMP sensor.

B. References

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
27-81-00-860-805	Retract the Leading Edge Slats (P/B 201)
70-00-01-400-807-H01	Electrical Connector - Disconnect and Connect (P/B 201)
71-11-04-010-814-H00	Open the Fan Cowl Panel (Selection) (P/B 201)
78-31-00-010-816-H00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-806-H00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)

D. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

E. Access Panels

Number	Name/Location
414AR	Right Fan Cowl Panel, Left Engine
416AR	Right Thrust Reverser, Left Engine
424AR	Right Fan Cowl Panel, Right Engine
426AR	Right Thrust Reverser, Right Engine

F. Prepare for the Fuel Manifold Pressure Sensor Removal

SUBTASK 73-21-67-010-001-H01



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO OPEN THE THRUST REVERSER(S). IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR

- (1) Do these tasks in sequence to safely open the right thrust reverser on the applicable engine:
 - (a) Do this task: Retract the Leading Edge Slats, TASK 27-81-00-860-805.

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- (b) Do this task: Leading Edge Slat - Deactivation, TASK 27-81-00-040-801.
- (c) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-806-H00.
- (d) For the right fan cowl panel, do this task:

Open the Fan Cowl Panel (Selection), TASK 71-11-04-010-814-H00

<u>Number</u>	<u>Name/Location</u>
414AR	Right Fan Cowl Panel, Left Engine
424AR	Right Fan Cowl Panel, Right Engine

- (e) For the right thrust reverser, do this task:

Open the Thrust Reverser (Selection), TASK 78-31-00-010-816-H00

<u>Number</u>	<u>Name/Location</u>
416AR	Right Thrust Reverser, Left Engine
426AR	Right Thrust Reverser, Right Engine

SUBTASK 73-21-67-860-001-H01

- (2) Do these steps to make sure the fuel control valve and the spar valve stay in the closed position:
 - (a) Make sure that the FUEL CONTROL switch is in the CUTOFF position.
 - 1) Install a DO-NOT-OPERATE tag on the FUEL CONTROL switch.
 - (b) Push the STAT switch on the display select panel of the glareshield (P55).
 - 1) Make sure you do not see the applicable ENG FUEL VALVE L(R) or FUEL SPAR VALVE L(R) status messages.
 - (c) For the applicable engines, open these circuit breakers and install safety tags:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C28001	L ENGINE FUEL SPAR VALVE
A	19	C28002	R ENGINE FUEL SPAR VALVE
B	4	C76601	L ENG FUEL VALVE
B	19	C76600	R ENG FUEL VALVE

G. Fuel Manifold Pressure Sensor Removal

SUBTASK 73-21-67-020-001-H01



MAKE SURE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU DISCONNECT THEM. CONTAMINATION OF ELECTRICAL CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.



USE TEFLON-JAWED PLIERS TO LOOSEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

- (1) Use the teflon-jawed pliers, STD-664 to disconnect the electrical connector [4] from the FMP sensor [2](TASK 70-00-01-400-807-H01):
 - (a) Install protective covers on the electrical receptacle on the FMP sensor [2] and the electrical connector [4].
 - (b) Move the electrical harness out of the way.

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SUBTASK 73-21-67-020-002-H01

- (2) Remove the FMP sensor [2] (Figure 401):
- (a) Remove the bolts [3] that connect the sensor to the HMU.
 - (b) Remove the FMP sensor [2].
 - (c) Remove the retainer packings [5] and the preformed packing [1] from the FMP sensor [2].
 - 1) Discard the preformed packing [1].
 - 2) Do a visual check of the retainer packings [5] for damage.
 - a) If the retainer packings [5] are not damaged, then keep them for the subsequent installation.
 - b) If the retainer packings [5] are damaged, then replace them.
 - (d) Install protective covers on the FMP port in the HMU and on the opening in the FMP sensor [2].

————— **END OF TASK** —————

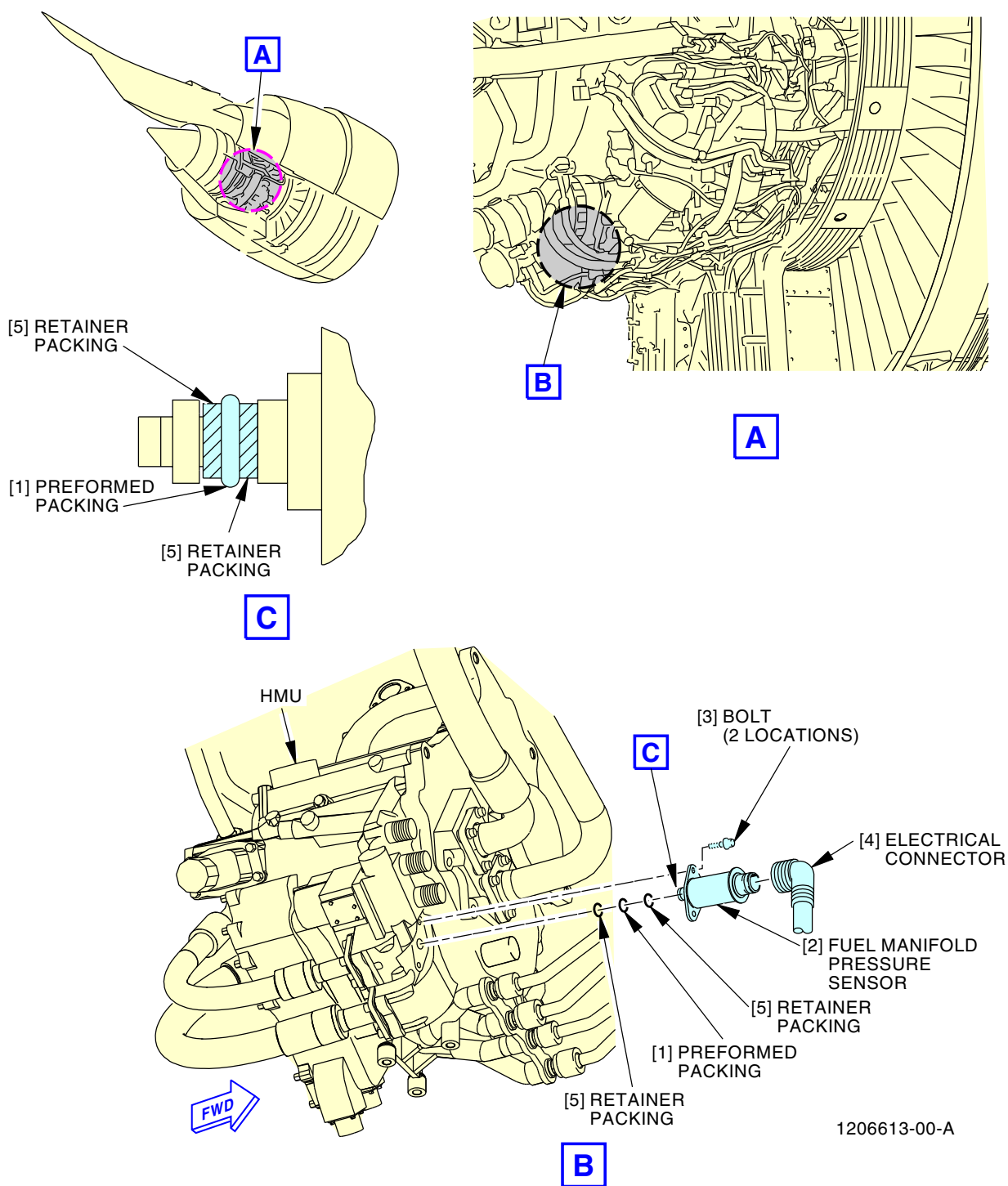
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Fuel Manifold Pressure Sensor Installation
Figure 401/73-21-67-990-801-H01

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TASK 73-21-67-400-801-H01

3. Fuel Manifold Pressure Sensor Installation

A. General

- (1) This task is the installation procedure for the fuel manifold pressure (FMP) sensor.
- (2) You must do the tests that are listed in the power plant test reference table after you replace the FMP sensor.

B. References

Reference	Title
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
70-00-01-400-807-H01	Electrical Connector - Disconnect and Connect (P/B 201)
71-00-00-800-833-H00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-814-H00	Close the Fan Cowl Panel (Selection) (P/B 201)
78-31-00-410-816-H00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-805-H00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)

D. Consumable Materials

Reference	Description	Specification
D00552 [C02-019]	Oil - Engine Lubricating	GE Spec. D50TF1
D50043 [C02-058]	Compound - Antiseize, Acheson GP460 (For Threaded Fasteners 0.250 Inches Diameter Or Larger, C02-079 Is An Alternative)	GE A50TF201 Class A

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Preformed packing	73-21-55-03-030	ARO ALL
2	FMP sensor	73-21-55-03-015	ARO ALL
5	Retainer packing	73-21-55-03-040	ARO ALL

F. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

G. Access Panels

Number	Name/Location
414AR	Right Fan Cowl Panel, Left Engine
416AR	Right Thrust Reverser, Left Engine
424AR	Right Fan Cowl Panel, Right Engine
426AR	Right Thrust Reverser, Right Engine

H. Fuel Manifold Pressure Sensor Installation

SUBTASK 73-21-67-420-001-H01

- (1) Install the FMP sensor [2] (Figure 401):
 - (a) Remove the protective covers from the FMP sensor [2] and the FMP port in the HMU.

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- (b) Lubricate a new preformed packing [1] and the retainer packings [5] with oil, D00552 [C02-019].
- (c) Install the preformed packing [1] and the retainer packings [5] on the FMP sensor [2]:
 - 1) Install the first retainer packing [5] on the sensor.
 - 2) Install the preformed packing [1] on the sensor.
 - 3) Install the second retainer packing [5] on the sensor.
- (d) Lightly lubricate the threads of the bolts [3] with Acheson GP460 compound, D50043 [C02-058].
- (e) Put the FMP sensor [2] in its correct position on the HMU.
- (f) Install the bolts [3] that connect the FMP sensor [2] to the HMU.
 - 1) Tighten the bolts [3] to 110-120 pound-inches (12.4-13.6 Newton-meters).

SUBTASK 73-21-67-420-002-H01



MAKE SURE THE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU CONNECT THEM. THE CONTAMINATION OF THE ELECTRICAL CONNECTOR CAN CAUSE DAMAGE TO THE EQUIPMENT.



USE TEFLON-JAWED PLIERS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

- (2) Use the teflon-jawed pliers, STD-664 to connect the electrical connector [4] (TASK 70-00-01-400-807-H01):
 - (a) Remove the protective covers from the electrical receptacle on the FMP sensor [2] and the electrical connector [4].
 - (b) Connect the electrical connector [4] to the FMP sensor [2].
 - 1) Tighten the electrical connector [4].

I. Put the Airplane Back to its Usual Condition

SUBTASK 73-21-67-410-001-H01



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Do these tasks in sequence to safely close the right thrust reverser on the applicable engine:
 - (a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-410-816-H00.
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
416AR	Right Thrust Reverser, Left Engine
426AR	Right Thrust Reverser, Right Engine
 - (b) Do this task: Close the Fan Cowl Panel (Selection), TASK 71-11-04-410-814-H00.

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- 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
414AR	Right Fan Cowl Panel, Left Engine
424AR	Right Fan Cowl Panel, Right Engine

- (c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-805-H00.
- (d) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

SUBTASK 73-21-67-860-003-H01

- (2) Do these steps to put the fuel control valve and the spar valve to the serviceable condition:
- (a) Make sure that the FUEL CONTROL switch is in the CUTOFF position.
- (b) For the applicable engine, remove the safety tags and close these circuit breakers:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C28001	L ENGINE FUEL SPAR VALVE
A	19	C28002	R ENGINE FUEL SPAR VALVE
B	4	C76601	L ENG FUEL VALVE
B	19	C76600	R ENG FUEL VALVE

J. Fuel Manifold Pressure Sensor Installation Test

SUBTASK 73-21-67-710-001-H01

- (1) Do the tests listed in the Power Plant Test Reference Table (TASK 71-00-00-800-833-H00).

————— **END OF TASK** —————

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ELECTRICAL HARNESSES - MAINTENANCE PRACTICES

1. General

A. This procedure has four tasks:

- (1) Electrical harnesses inspection.
- (2) Electrical harness connectors inspection.
- (3) Electrical harness repair.
- (4) Electrical harness cleaning.

TASK 73-22-00-200-801-H01

2. Electrical Harnesses Inspection

(Figure 201, Figure 202)

A. **General**

- (1) This task is the inspection of the electrical harnesses on the engine.
- (2) This service bulletin is from the engine manufacturer and is referenced in this task:

ARO ALL POST SB 777-GE90-73-0012

- (a) This Service Bulletin installs the new electrical harnesses for engines without anti-ice system.

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B. **References**

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
27-81-00-860-805	Retract the Leading Edge Slats (P/B 201)
54-52-00-910-804-001	Fall Arrest Lifeline Procedure (P/B 201)
71-11-04-010-814-H00	Open the Fan Cowl Panel (Selection) (P/B 201)
71-11-04-410-814-H00	Close the Fan Cowl Panel (Selection) (P/B 201)
78-31-00-010-816-H00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-806-H00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)
78-31-00-410-816-H00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-805-H00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. **Location Zones**

Zone	Area
411	Engine, Left
421	Engine, Right

D. **Access Panels**

Number	Name/Location
412BR	T12 Inlet Temperature Sensor Panel, Left Engine
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine

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(Continued)

Number	Name/Location
422BR	T12 Inlet Temperature Sensor Panel, Right Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

E. Prepare for the Inspection

SUBTASK 73-22-00-010-001-H01



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO OPEN THE THRUST REVERSER(S). IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR

- (1) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:

- (a) Do this task: Retract the Leading Edge Slats, TASK 27-81-00-860-805.
- (b) Do this task: Leading Edge Slat - Deactivation, TASK 27-81-00-040-801.
- (c) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-806-H00.
- (d) For the left and right fan cowl panels, do this task:
Open the Fan Cowl Panel (Selection), TASK 71-11-04-010-814-H00

Number	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine

- (e) For the left and right thrust reversers, do this task:
Open the Thrust Reverser (Selection), TASK 78-31-00-010-816-H00

Number	Name/Location
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

F. Procedure

SUBTASK 73-22-00-212-001-H01

- (1) Do a visual inspection of the electrical harnesses and insulation sheath for the damage that follows:

NOTE: The electrical harnesses with non-metallic outer covering can touch each other.

- (a) Burnt, hardened or cut.
- (b) Short circuit, tearing, crushing or chafing.
- (c) Missing bobbin.

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SUBTASK 73-22-00-210-002-H00

- (2) If you see evidence of damage, repair or replace the electrical harness according to Electrical Harness Repair, TASK 73-22-00-760-801-H01.

SUBTASK 73-22-00-200-001-H01

- (3) Do an inspection of the T12 sensor electrical harness (Figure 201).

**WARNING**

USE THE FALL ARREST LIFELINE PROCEDURE IF YOU DO NOT USE OTHER SAFETY EQUIPMENT. IF YOU USE THE SAFETY EQUIPMENT OR PROCEDURES INCORRECTLY, IT CAN CAUSE INJURY OR KILL YOU.

- (a) If you do not use other safety equipment, do the (strut-mounted) Fall Arrest Lifeline Procedure (Fall Arrest Lifeline Procedure, TASK 54-52-00-910-804-001).
- (b) Remove the screws [2] that attach the T12 access panel [1] to the inlet cowl.
- (c) Remove the applicable access panels,
- | <u>Number</u> | <u>Name/Location</u> |
|---------------|--|
| 412BR | T12 Inlet Temperature Sensor Panel, Left Engine |
| 422BR | T12 Inlet Temperature Sensor Panel, Right Engine |
- (d) Do the electrical harness inspection procedure for the electrical harnesses W717 and W718.

SUBTASK 73-22-00-200-002-H01

- (4) Do an inspection of the fan case electrical harnesses.
- (a) Do the electrical harness inspection procedure for these electrical harnesses (Figure 202, and Figure 203).
- 1) The W701, W702, W703, W704, W707, W708, and W709 electrical harnesses from the FADEC to the fan brackets
 - 2) The W707 electrical harness from the EEC (FADEC) to the W717 electrical harness
 - 3) The W708 electrical harness from the EEC (FADEC) to the W718 electrical harness
 - 4) The W709 electrical harness from the EEC (FADEC) to the DMS signal conditioner
 - 5) The W717 electrical harness to the T12 sensor CH A
 - 6) The W718 electrical harness to the T12 sensor CH B
 - 7) The W719 electrical harness from the DMS signal conditioner to the DMS sensor.

SUBTASK 73-22-00-200-003-H01

- (5) Do an inspection of the electrical harnesses on the right side of the engine.
- (a) Do the electrical harness inspection procedure for these electrical harnesses.
- 1) The W721 electrical harness from the fan bracket to the right VSV actuator CH A
 - 2) The W721 electrical harness from the fan bracket to the T3 sensor CH A
 - 3) The W721 electrical harness from the fan bracket to the LPTACC valve SW
 - 4) The W721 electrical harness from the fan bracket to the LPTACC valve SOL
 - 5) The W722 electrical harness from the fan bracket to the VBV actuator CH B
 - 6) The W722 electrical harness from the fan bracket to the T3 sensor CH B
 - 7) The W722 harness from the fan bracket to the CCC valve SW
 - 8) The W722 electrical harness from the fan bracket to the CCC valve SOL

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- 9) The W737 electrical harness from the fan bracket to the N1 sensor CH A
- 10) The W737 electrical harness from the fan bracket to the configuration box.
- 11) The W737 electrical harness from the configuration box out to the DJ73707 receptacle.

SUBTASK 73-22-00-200-004-H01

- (6) Do an inspection of the electrical harnesses on the left side of the engine.
 - (a) Do the electrical harness inspection procedure for these electrical harnesses.
 - 1) The W721 electrical harness from the fan bracket to the VBV actuator CH A
 - 2) The W721 electrical harness from the fan bracket to the HPTACC valve CH A
 - 3) The W721 electrical harness from the fan bracket to the EGT S1/S2
 - 4) The W721 electrical harness from the fan bracket to the T25 sensor CH A
 - 5) The W721 electrical harness from the fan bracket to the DJ72112 receptacle
 - 6) The W722 electrical harness from the fan bracket to the VSV actuator CH B
 - 7) The W722 electrical harness from the fan bracket to the HPTACC valve CH B
 - 8) The W722 electrical from the fan bracket to the EGT S3/S4
 - 9) The W722 electrical harness from the fan bracket to the T25 sensor CH B
 - 10) The W722 electrical harness from the fan bracket to the DJ72212 receptacle

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- 11) The W721 electrical harness from the fan bracket to the DP72108 connector
- 12) The W722 electrical harness from the fan bracket to the DP72208 connector

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- 13) The W738 electrical harness from the fan bracket to the N1 sensor CH B.

SUBTASK 73-22-00-200-005-H01

- (7) Do an inspection of the AGB electrical harnesses.
 - (a) Do the electrical harness inspection procedure for these electrical harnesses.
 - 1) The W723 electrical harness from the fan bracket to the WFM sensor
 - 2) The W723 electrical harness from the fan bracket to the N2 sensor CH A
 - 3) The W723 electrical harness from the fan bracket to the HMU CH A
 - 4) The W724 electrical harness from the fan bracket to the HMU CH B
 - 5) The W724 electrical harness from the fan bracket to the SAV
 - 6) The W724 electrical harness from the fan bracket to the N2 sensor CH B
 - 7) The W727 electrical harness from the fan bracket to the ALT CH A
 - 8) The W728 electrical harness from the fan bracket to the ALT CH B
 - 9) The W729 electrical harness from the fan bracket to the PEO sensor CH A/B
 - 10) The W729 electrical harness from the fan bracket to the SAPDP sensor CH A/B
 - 11) The W738 electrical harness from the fan bracket to the TIDGIN sensor
 - 12) The W738 electrical harness from the fan bracket to the TVSCFIN sensor
 - 13) The W738 electrical harness from the fan bracket to the TVSCFOUT sensor
 - 14) The W738 electrical harness from the fan bracket to the TIDGOUT sensor

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- 15) The W739 electrical harness from the fan bracket to the MANIFP sensor CH A/B
- 16) The W739 electrical harness from the fan bracket to the OFLTRDP sensor CH A/B
- 17) The W739 electrical harness from the fan bracket to the FFLTRDP sensor CH A/B.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 73-22-00-410-001-H01

**WARNING**

DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Do these tasks in sequence to safely close the left and right thrust reversers on the applicable engine:
 - (a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-410-816-H00.
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine
 - (b) Do this task: Close the Fan Cowl Panel (Selection), TASK 71-11-04-410-814-H00.
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine
 - (c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-805-H00.
 - (d) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

SUBTASK 73-22-00-490-001-H01

**WARNING**

USE THE FALL ARREST LIFELINE PROCEDURE IF YOU DO NOT USE OTHER SAFETY EQUIPMENT. IF YOU USE THE SAFETY EQUIPMENT OR PROCEDURES INCORRECTLY, IT CAN CAUSE INJURY OR KILL YOU.

- (2) If you do not use other safety equipment, do the (strut-mounted) Fall Arrest Lifeline Procedure (TASK 54-52-00-910-804-001).

SUBTASK 73-22-00-430-001-H01

- (3) Install the T12 access panel [1] on the inlet cowl.
 - (a) Install the screws [2] that attach the T12 access panel [1] to the inlet cowl.
 - (b) Close the applicable access panels,

<u>Number</u>	<u>Name/Location</u>
412BR	T12 Inlet Temperature Sensor Panel, Left Engine
422BR	T12 Inlet Temperature Sensor Panel, Right Engine

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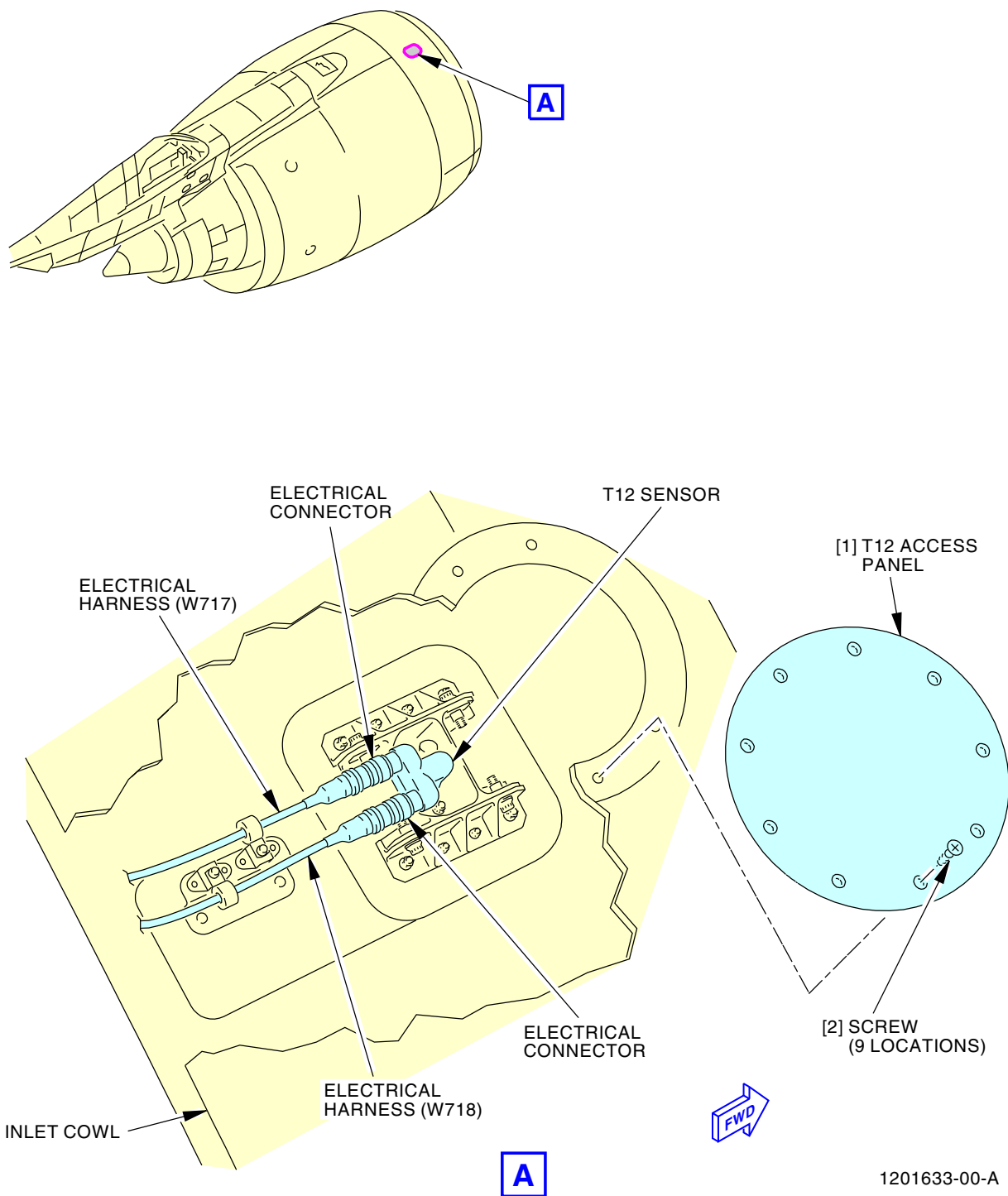
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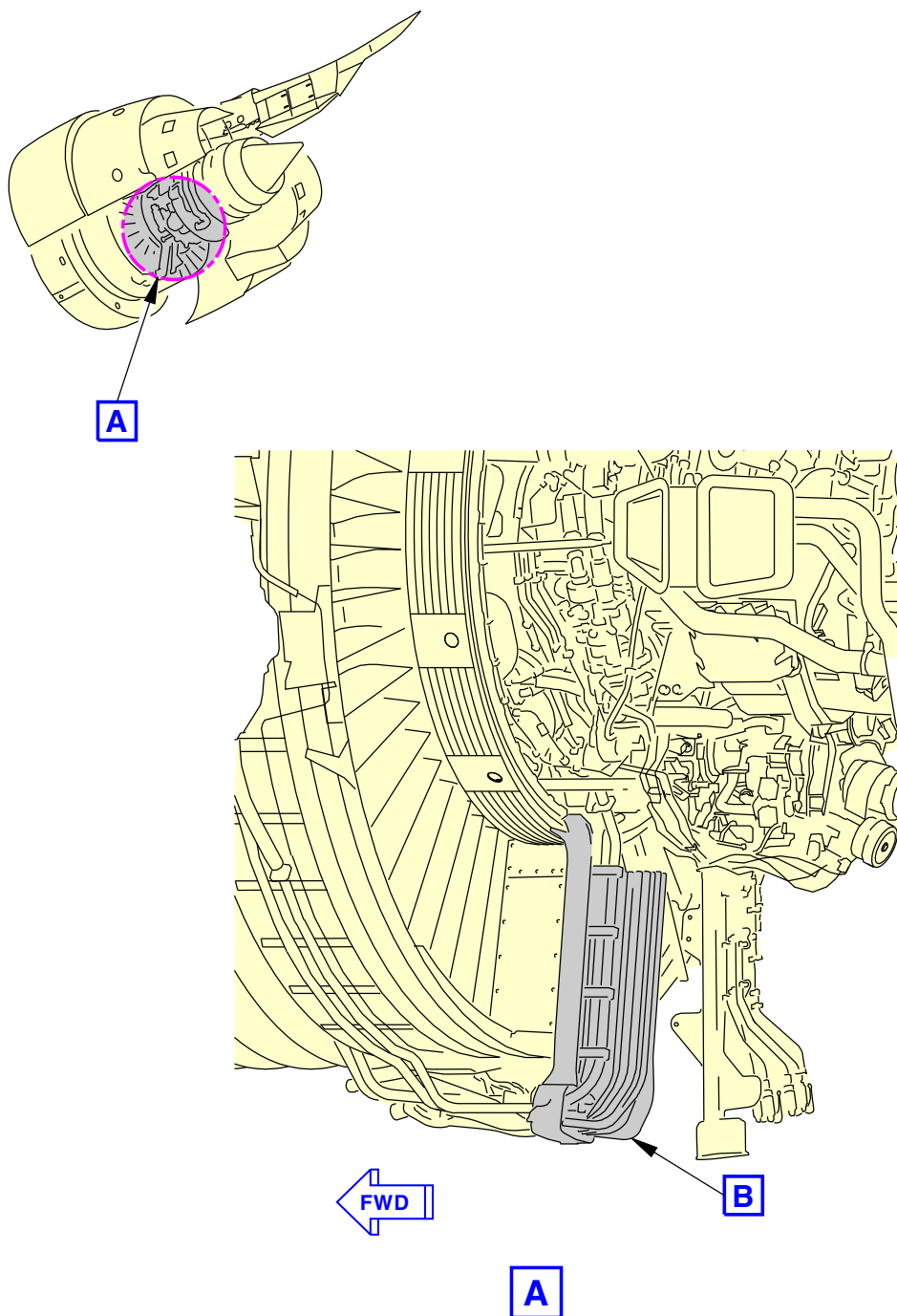
T12 Sensor Inspection
Figure 201/73-22-00-990-801-H01

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Electrical Harness Inspection
Figure 202/73-22-00-990-802-H01 (Sheet 1 of 3)

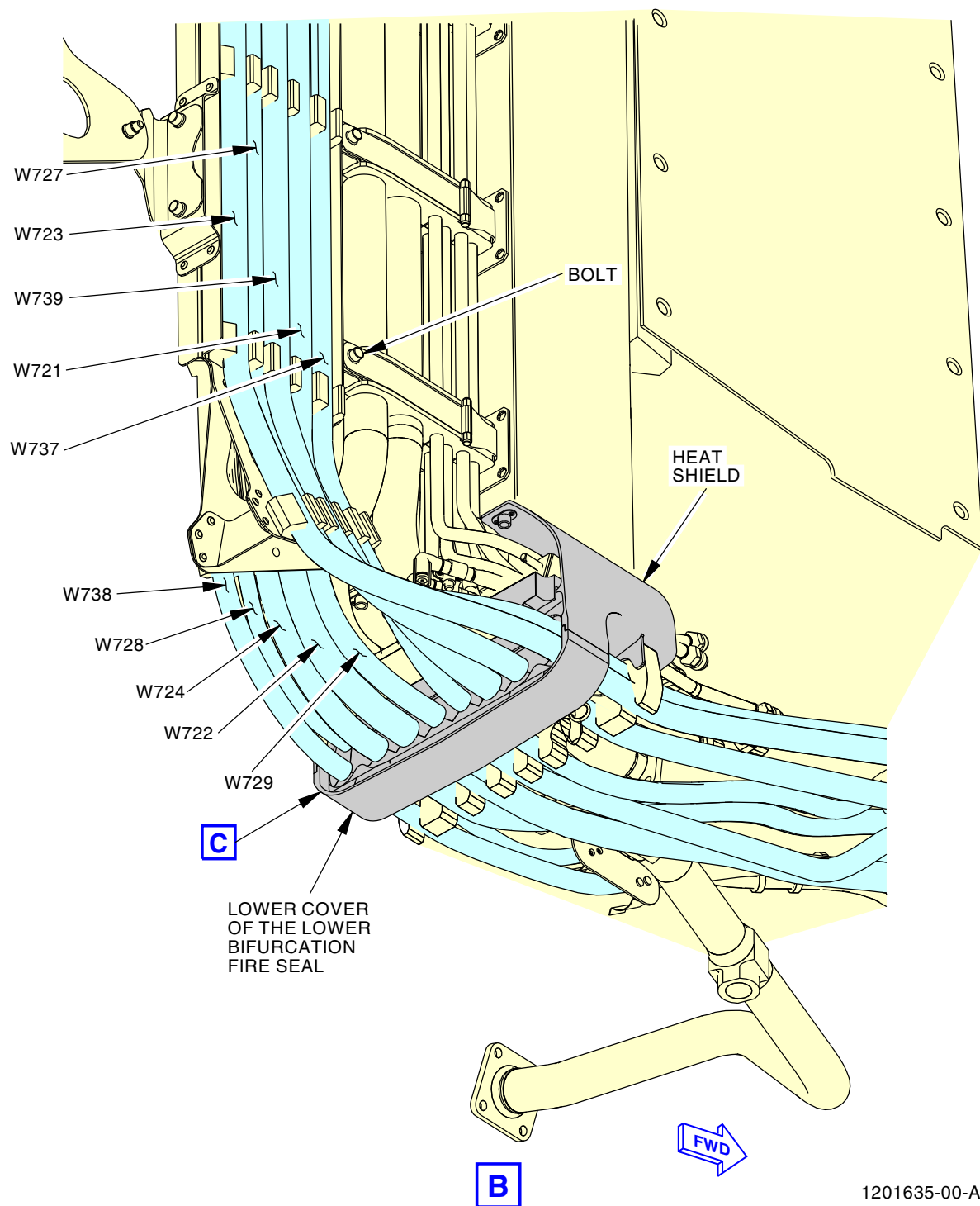
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**Electrical Harness Inspection
Figure 202/73-22-00-990-802-H01 (Sheet 2 of 3)**

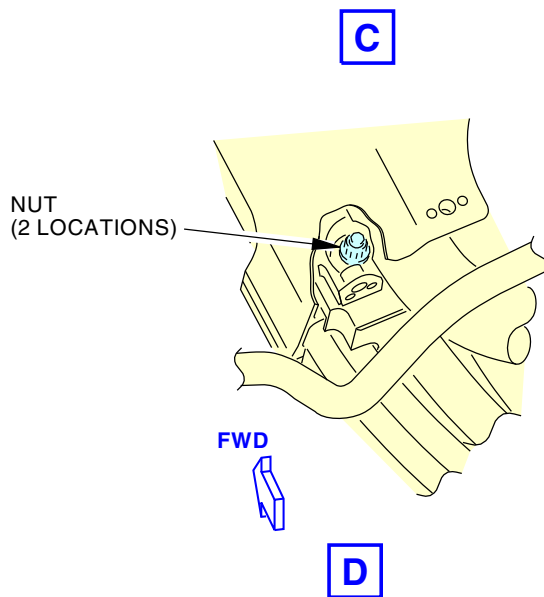
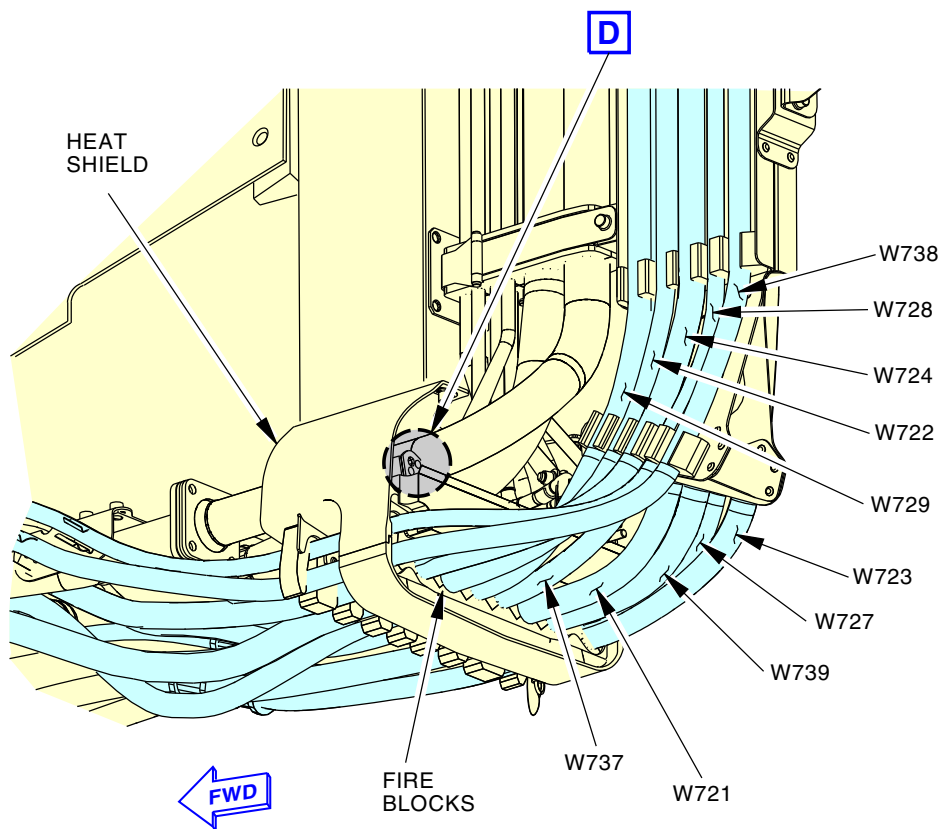
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1210396-00-A
M07020 S0004285991_V2

**Electrical Harness Inspection
Figure 202/73-22-00-990-802-H01 (Sheet 3 of 3)**

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TASK 73-22-00-200-802-H01

3. Electrical Harness Connectors Inspection

A. General

- (1) This task is the inspection of the electrical harness connectors on the engine.
- (2) This service bulletin is from the engine manufacturer and is referenced in this task:

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- (a) This Service Bulletin installs the new electrical harnesses for engines without anti-ice system.

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B. References

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
27-81-00-860-805	Retract the Leading Edge Slats (P/B 201)
54-52-00-910-804-001	Fall Arrest Lifeline Procedure (P/B 201)
70-00-01-400-807-H01	Electrical Connector - Disconnect and Connect (P/B 201)
71-11-04-010-814-H00	Open the Fan Cowl Panel (Selection) (P/B 201)
71-11-04-410-814-H00	Close the Fan Cowl Panel (Selection) (P/B 201)
78-31-00-010-816-H00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-806-H00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)
78-31-00-410-816-H00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-805-H00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

D. Access Panels

Number	Name/Location
412BR	T12 Inlet Temperature Sensor Panel, Left Engine
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
422BR	T12 Inlet Temperature Sensor Panel, Right Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

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E. Prepare for the Inspection

SUBTASK 73-22-00-010-002-H01



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO OPEN THE THRUST REVERSER(S). IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR

- (1) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:

- (a) Do this task: Retract the Leading Edge Slats, TASK 27-81-00-860-805.
- (b) Do this task: Leading Edge Slat - Deactivation, TASK 27-81-00-040-801.
- (c) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-806-H00.
- (d) For the left and right fan cowl panels, do this task:
Open the Fan Cowl Panel (Selection), TASK 71-11-04-010-814-H00

<u>Number</u>	<u>Name/Location</u>
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine

- (e) For the left and right thrust reversers, do this task:
Open the Thrust Reverser (Selection), TASK 78-31-00-010-816-H00

<u>Number</u>	<u>Name/Location</u>
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

SUBTASK 73-22-00-212-002-H01

- (2) Do an inspection of the electrical harness connectors for the damage that follows:
- (a) Short circuit or carbonizing
 - (b) Cracks, free rotation, or crushing
 - (c) Loose backshell.
 - 1) If you see evidence of damage, repair or replace the electrical harness as necessary.

F. Procedure

SUBTASK 73-22-00-200-006-H01

- (1) Examine the T12 sensor electrical harness connectors (Figure 201).



USE THE FALL ARREST LIFELINE PROCEDURE IF YOU DO NOT USE OTHER SAFETY EQUIPMENT. IF YOU USE THE SAFETY EQUIPMENT OR PROCEDURES INCORRECTLY, IT CAN CAUSE INJURY OR KILL YOU.

- (a) If you do not use other safety equipment, do the (strut-mounted) Fall Arrest Lifeline Procedure (Fall Arrest Lifeline Procedure, TASK 54-52-00-910-804-001).

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- (b) Remove the screws [2] that attach the T12 access panel [1] to the inlet cowl.
- (c) Remove the applicable access panels,

<u>Number</u>	<u>Name/Location</u>
412BR	T12 Inlet Temperature Sensor Panel, Left Engine
422BR	T12 Inlet Temperature Sensor Panel, Right Engine
- (d) Do the electrical connector inspection procedure for the T12 sensor electrical connectors.
- (e) If the electrical connectors are loose, tighten the electrical connectors (TASK 70-00-01-400-807-H01).

SUBTASK 73-22-00-200-007-H01

- (2) Examine the FADEC electrical harness connectors (Figure 203).
 - (a) Do the electrical connector inspection procedure for these electrical connectors.
 - 1) The DM73003A connector at J1
 - 2) The DM73003B connector at J2
 - 3) The DM73003C connector at J3
 - 4) The DM73003D connector at J4
 - 5) The DP70305 connector at J5
 - 6) The DP70406 connector at J6
 - 7) The DP70707 connector at J7
 - 8) The DP70808 connector at J8
 - 9) The DP70109 connector at J9
 - 10) The DP70210 connector at J10
 - 11) The DP70912 connector at J12
 - 12) The DP70913 connector at J13
 - 13) The DP11 connector at the P11.
 - (b) If the electrical connectors are loose, tighten the electrical connectors (TASK 70-00-01-400-807-H01).

SUBTASK 73-22-00-200-008-H01

- (3) Examine the fan case electrical harness connectors.
 - (a) Do the electrical connector inspection procedure for these electrical connectors.
 - 1) The DP70905 connector at the DMS signal conditioner
 - 2) The DP71901 connector at the DMS signal conditioner
 - 3) The DP71902 connector at the DMS sensor

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- 4) The DP70103 connector at the interconnection between the W701 and W703 harnesses
- 5) The DP70203 connector at the interconnection between the W702 and W704 harnesses.

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- (b) If the electrical connectors are loose, tighten the electrical connectors (TASK 70-00-01-400-807-H01).

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- (4) Examine the fan bracket electrical harness connectors.
- (a) Do the electrical connector inspection procedure for these electrical connectors.
- 1) The DP72102 connector at the fan bracket
 - 2) The DP72202 connector at the fan bracket
 - 3) The DP72302 connector at the fan bracket
 - 4) The DP72402 connector at the fan bracket
 - 5) The DP72703 connector at the fan bracket
 - 6) The DP73702 connector at the fan bracket
 - 7) The DP73802 connector at the fan bracket
 - 8) The DP72803 connector at the fan bracket
 - 9) The DP72902 connector at the fan bracket
 - 10) The DP73903 connector at the fan bracket.
- (b) If the electrical connectors are loose, tighten the electrical connectors (TASK 70-00-01-400-807-H01).

SUBTASK 73-22-00-200-010-H01

- (5) Examine the electrical harness connectors on the right side of the engine.
- (a) Do the electrical connector inspection procedure for these electrical connectors.
- 1) The DP73704 connector at the N1 sensor CH A
 - 2) The DP73706 connector at the configuration box
 - 3) the DP72104 connector at the VSV actuator CH A
 - 4) The DP72111 connector at the T3 sensor CH A
 - 5) The DP72103 connector at the EGT S1/S2
 - 6) The DP72105 connector at the LPTACC valve SW
 - 7) The DP72106 connector at the LPTACC valve SOL
 - 8) The DP72209 connector at the VBV actuator CH B
 - 9) The DP72211 connector at the T3 sensor CH B
 - 10) The DP72203 connector at the EGT S3/S4
 - 11) The DP72205 connector at the CCC valve SW
 - 12) The DP72206 connector at the CCC valve SOL.
- (b) If the electrical connectors are loose, tighten the electrical connectors (TASK 70-00-01-400-807-H01).

SUBTASK 73-22-00-200-011-H01

- (6) Examine the electrical harness connectors on the left side of the engine.
- (a) Do the electrical connector inspection procedure for these electrical connectors.
- 1) The DP72404 connector at the TEO sensor CH A/B
 - 2) The DP73804 connector at the N1 sensor CH B
 - 3) The DP72109 connector at the VBV actuator CH A
 - 4) The DP72107 connector at the HPTACC valve CH A
 - 5) The DP72110 connector at the T25 sensor CH A

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- 6) The DP72204 connector at the VSV actuator CH B
- 7) The DP72207 connector at the HPTACC valve CH B
- 8) The DP72210 connector at the T25 sensor CH B.
- (b) If the electrical connectors are loose, tighten the electrical connectors (TASK 70-00-01-400-807-H01).

SUBTASK 73-22-00-200-012-H01

- (7) Examine the AGB electrical harness connectors.
 - (a) Do the electrical connector inspection procedure for these electrical connectors.
 - 1) The DP72304 connector at the WFM sensor
 - 2) The DP72303 connector at the N2 sensor CH A
 - 3) The DP72305 connector at the HMU CH A
 - 4) The DP72405 connector at the HMU CH B
 - 5) The DP72406 connector at the SAV
 - 6) The DP72403 connector at the N2 sensor CH B
 - 7) The DP72702 connector at the ALT CH A
 - 8) The DP73807 connector on the W738 harness at the W737 harness receptacle DJ73707.
 - 9) The DP73806 connector at the TIDGIN sensor
 - 10) The DP73808 connector at the TVSCFIN sensor
 - 11) The DP73803 connector at the TVSCFOUT sensor
 - 12) The DP73805 connector at the TIDGOUT sensor
 - 13) The DP72802 connector at the ALT CH B
 - 14) The DP72903 connector at the PEO sensor CH A/B
 - 15) The DP72904 connector at the SAP sensor CH A/B
 - 16) The DP73904 connector at the MANIFP sensor CH A/B
 - 17) The DP73905 connector at the OFLTRDP sensor CH A/B
 - 18) The DP73902 connector at the FFLTRDP sensor CH A/B.
 - (b) If the electrical connectors are loose, tighten the electrical connectors (TASK 70-00-01-400-807-H01).

G. Put the Airplane Back to Its Usual Condition

SUBTASK 73-22-00-410-002-H01



WARNING

DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Do these tasks in sequence to safely close the left and right thrust reversers on the applicable engine:
 - (a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-410-816-H00.

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- 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

- (b) Do this task: Close the Fan Cowl Panel (Selection), TASK 71-11-04-410-814-H00.

- 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine

- (c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-805-H00.

- (d) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

SUBTASK 73-22-00-090-001-H01



USE THE FALL ARREST LIFELINE PROCEDURE IF YOU DO NOT USE OTHER SAFETY EQUIPMENT. IF YOU USE THE SAFETY EQUIPMENT OR PROCEDURES INCORRECTLY, IT CAN CAUSE INJURY OR KILL YOU.

- (2) If you do not use other safety equipment, do the (strut-mounted) Fall Arrest Lifeline Procedure (TASK 54-52-00-910-804-001).

SUBTASK 73-22-00-430-002-H01

- (3) Install the T12 access panel [1] on the inlet cowl.

- (a) Install the screws [2] that attach the T12 access panel [1] to the inlet cowl.
 (b) Close the applicable access panels,

<u>Number</u>	<u>Name/Location</u>
412BR	T12 Inlet Temperature Sensor Panel, Left Engine
422BR	T12 Inlet Temperature Sensor Panel, Right Engine

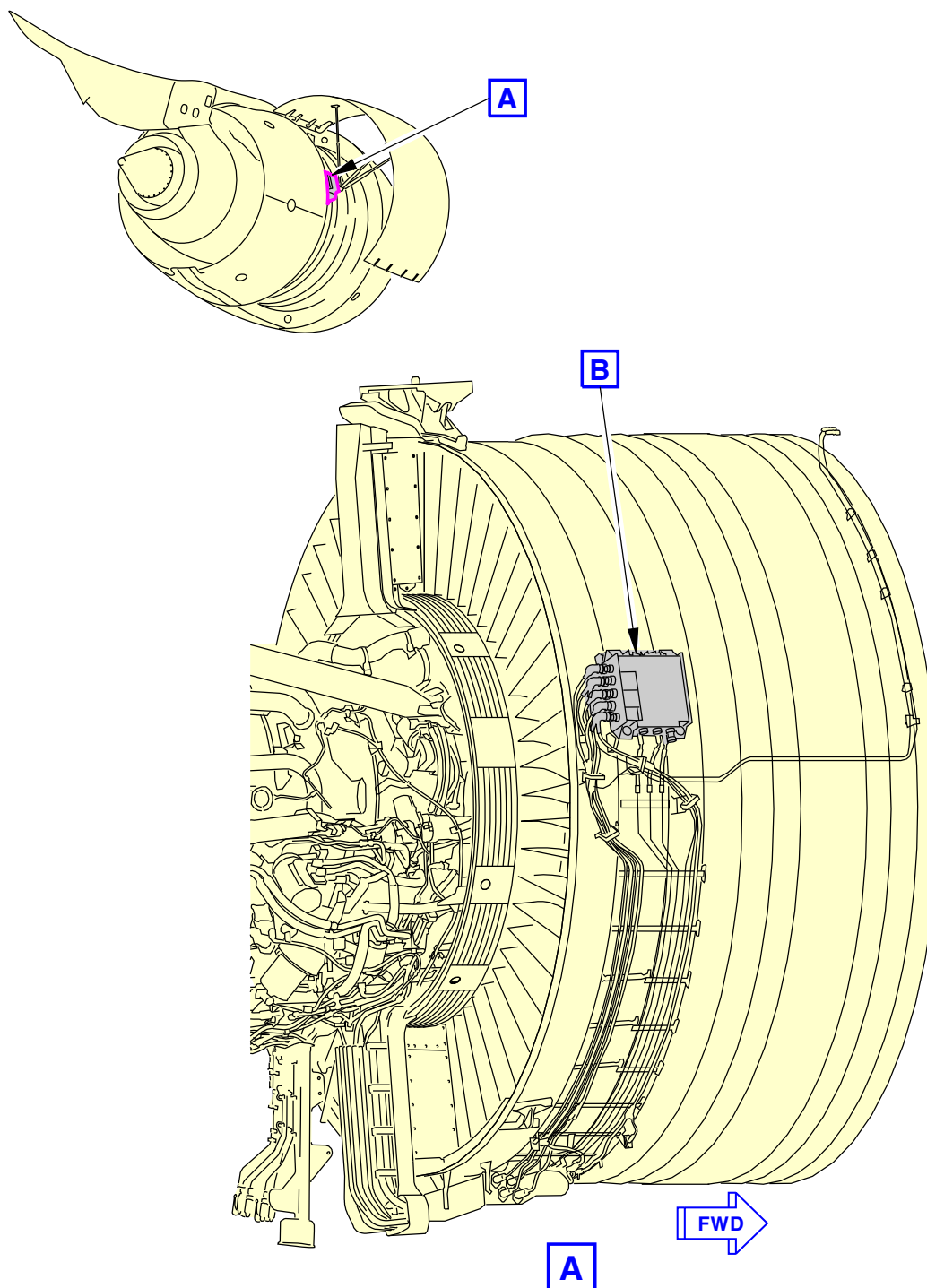
————— **END OF TASK** —————

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1201627-00-A

M07021 S0004285992_V2

Electrical Harness and Connectors Inspection
Figure 203/73-22-00-990-803-H01 (Sheet 1 of 14)

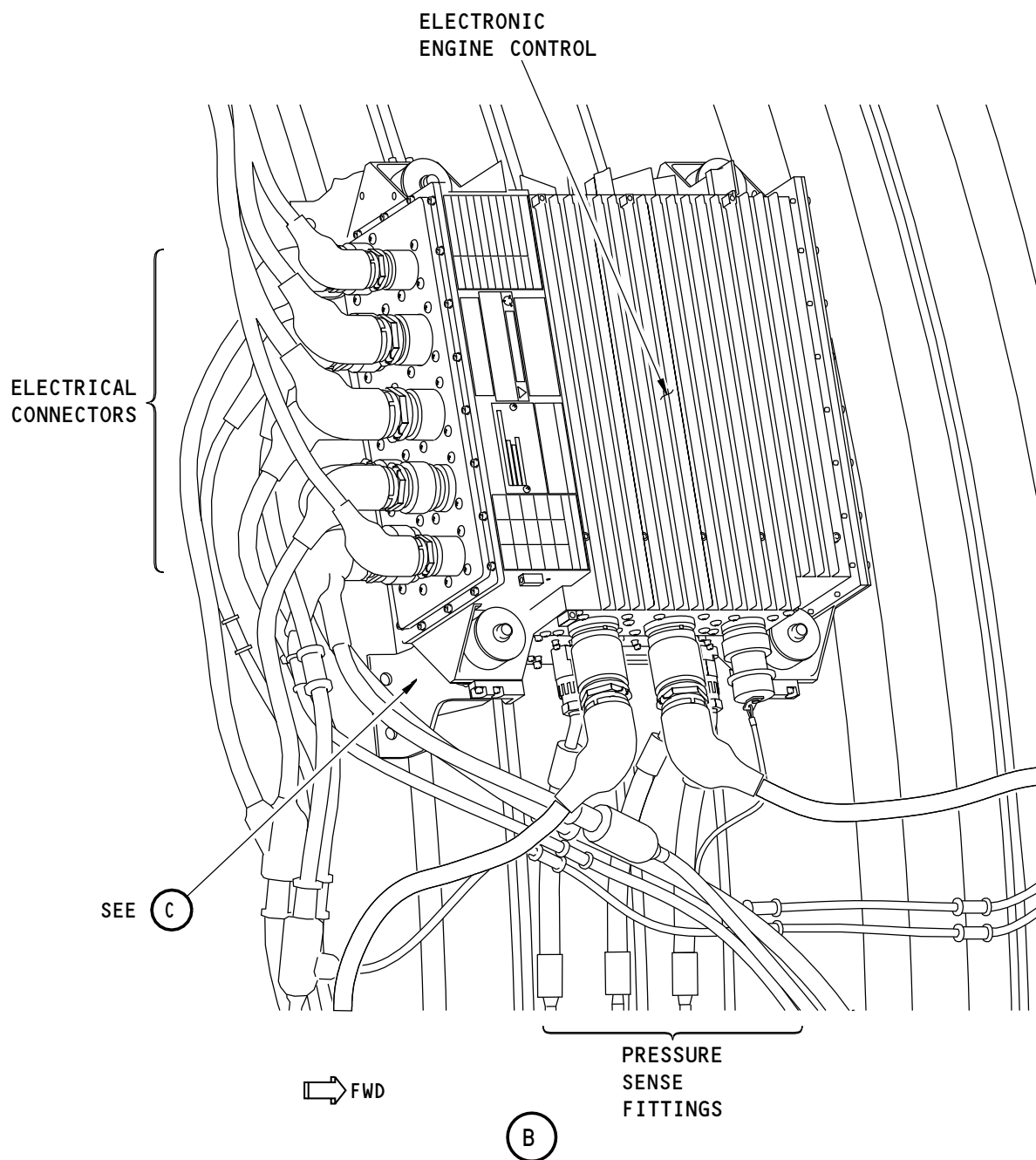
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1201628-00-A
M07022 S0004285993_V1

Electrical Harness and Connectors Inspection
Figure 203/73-22-00-990-803-H01 (Sheet 2 of 14)

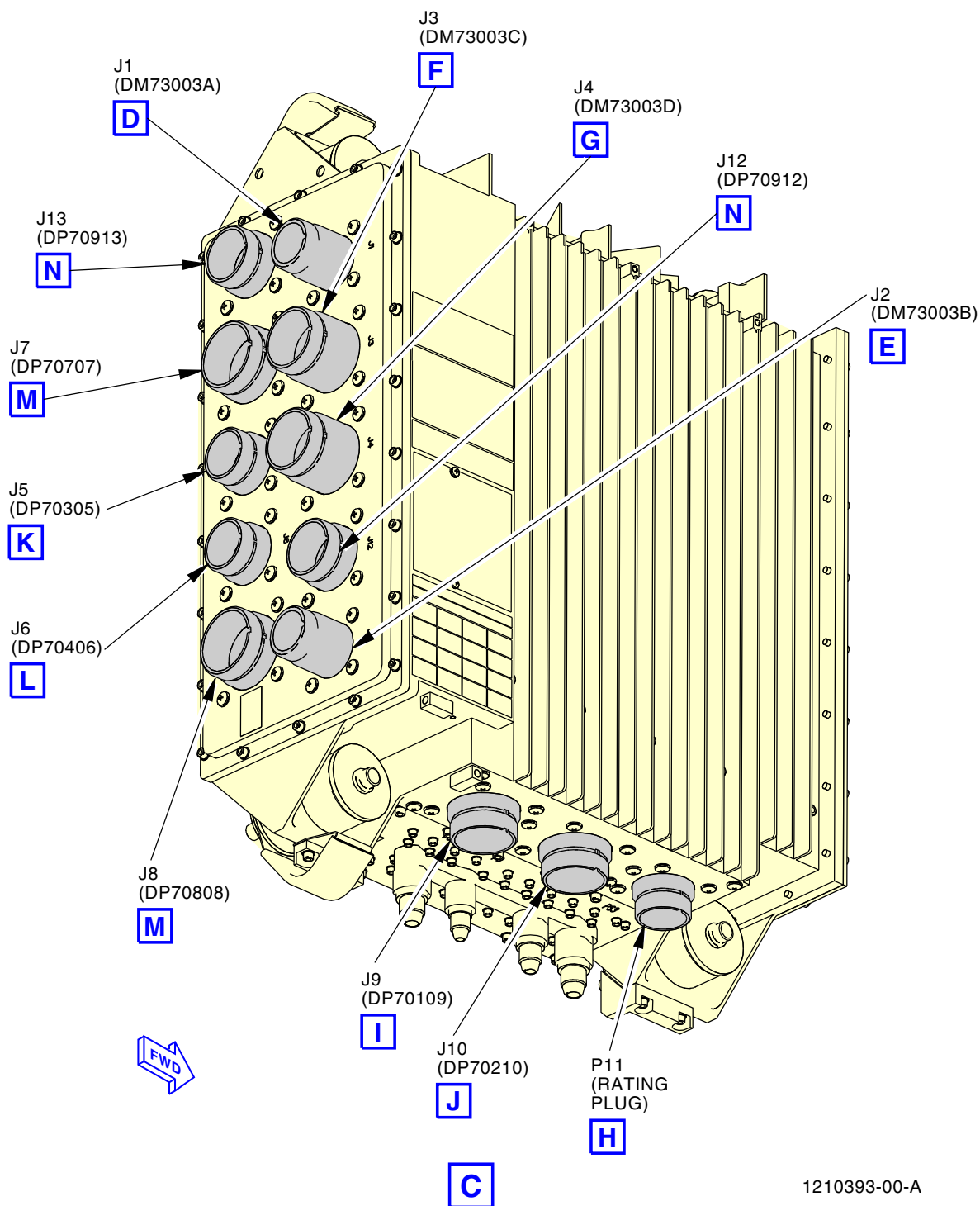
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1210393-00-A

M07023 S0004285994_V3

Electrical Harness and Connectors Inspection
Figure 203/73-22-00-990-803-H01 (Sheet 3 of 14)

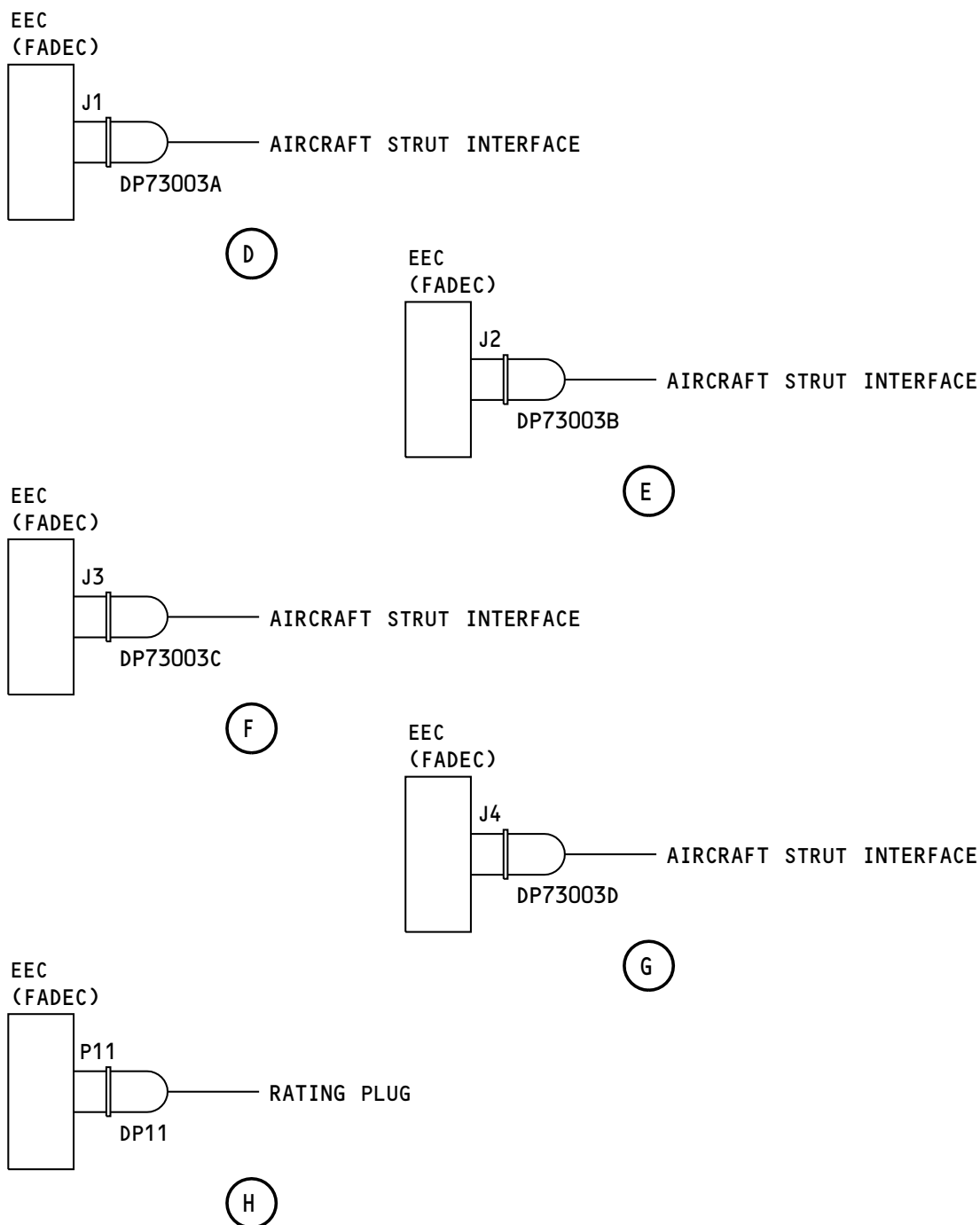
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1210397-00-A
M07024 S0004285995_V1

Electrical Harness and Connectors Inspection
Figure 203/73-22-00-990-803-H01 (Sheet 4 of 14)

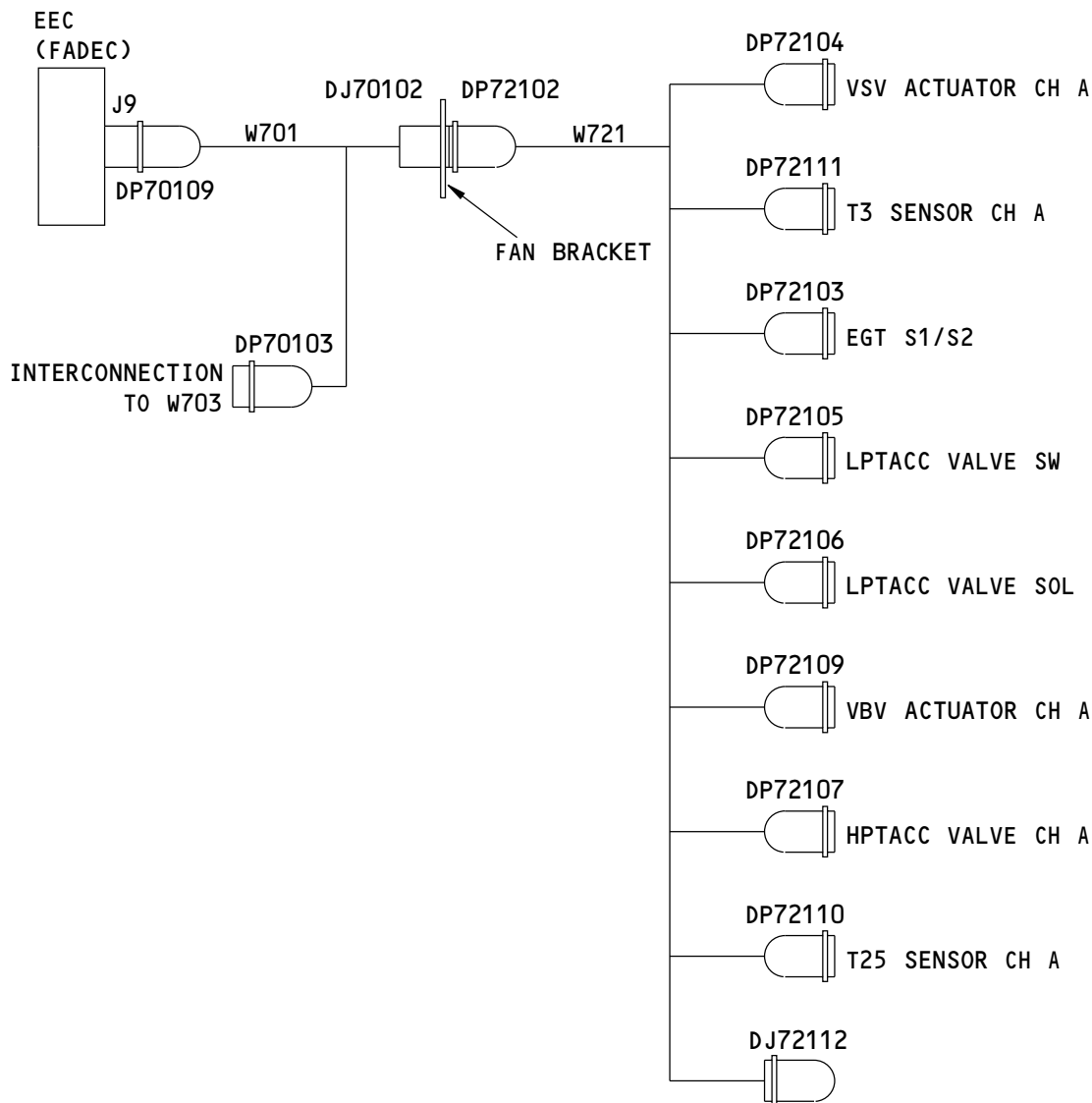
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1210398-01-A

M07025 S0004285996_V3

**Electrical Harness and Connectors Inspection
Figure 203/73-22-00-990-803-H01 (Sheet 5 of 14)**

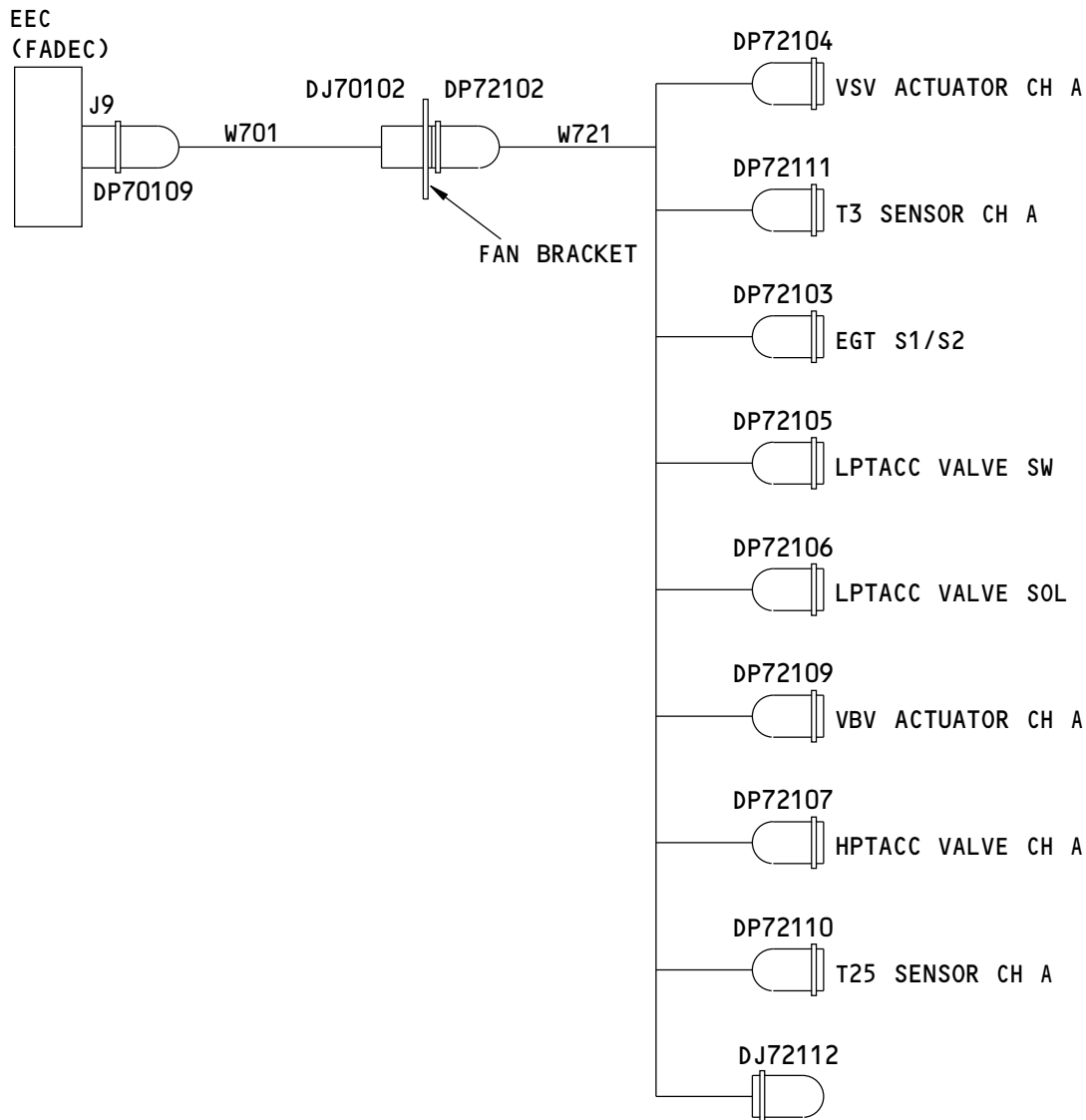
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1255095-00-A

1350525 S0000241069_V2

Electrical Harness and Connectors Inspection
Figure 203/73-22-00-990-803-H01 (Sheet 6 of 14)

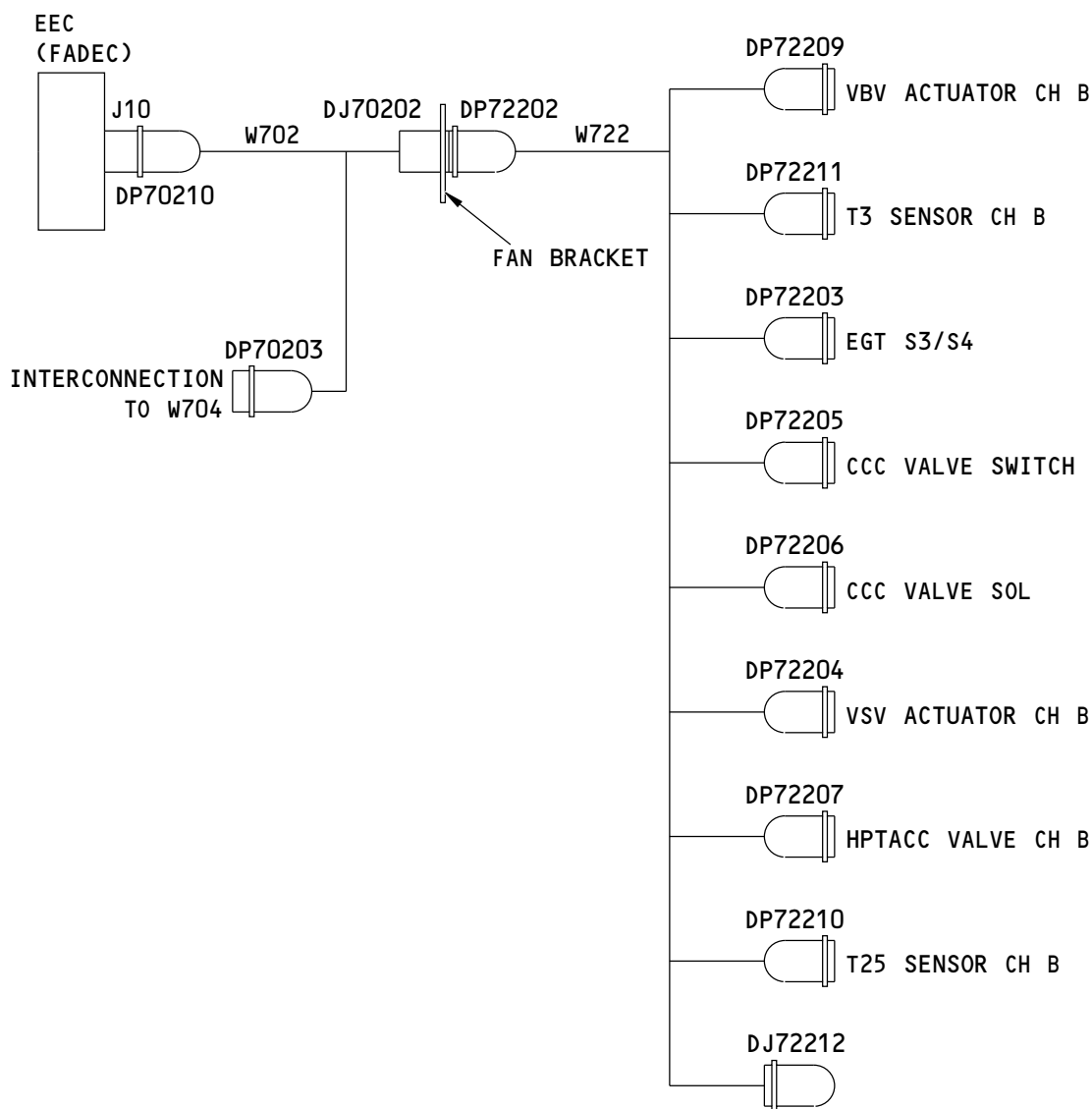
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1210399-01-A

M07026 S0004285997_V3

Electrical Harness and Connectors Inspection
Figure 203/73-22-00-990-803-H01 (Sheet 7 of 14)

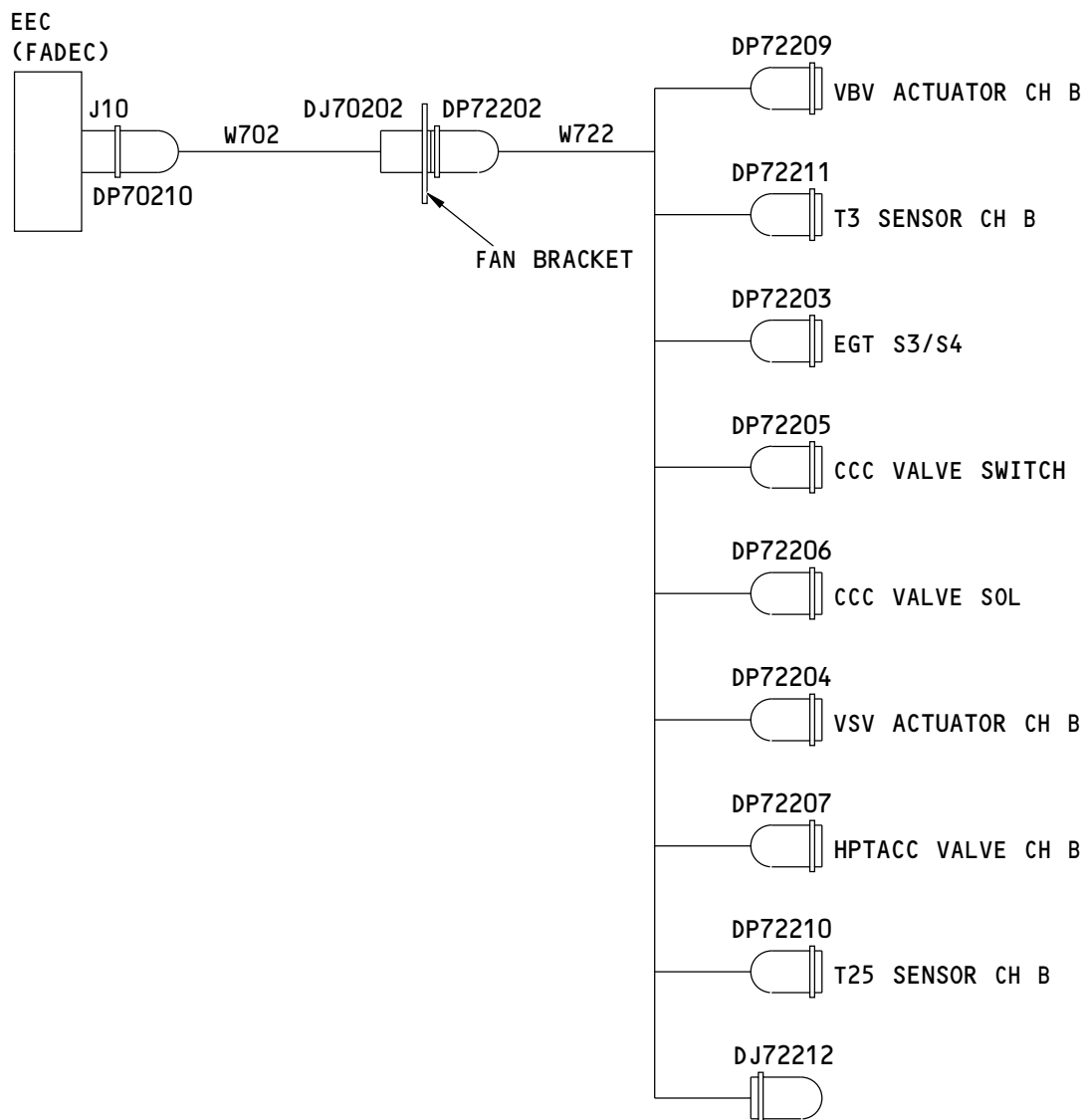
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1255104-00-A

1350608 S0000241052_V2

Electrical Harness and Connectors Inspection
Figure 203/73-22-00-990-803-H01 (Sheet 8 of 14)

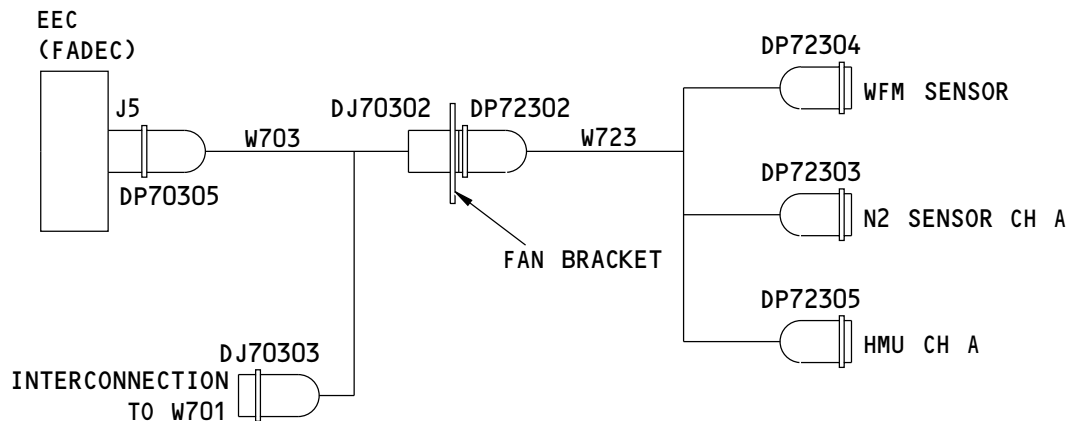
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1210400-01-A
M07027 S0004285998_V2

**Electrical Harness and Connectors Inspection
Figure 203/73-22-00-990-803-H01 (Sheet 9 of 14)**

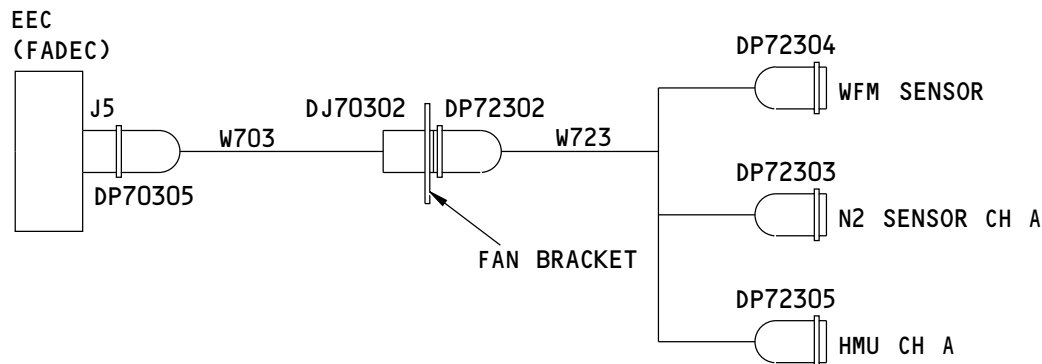
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1255107-00-A
1350620 S0000241057_V1

**Electrical Harness and Connectors Inspection
Figure 203/73-22-00-990-803-H01 (Sheet 10 of 14)**

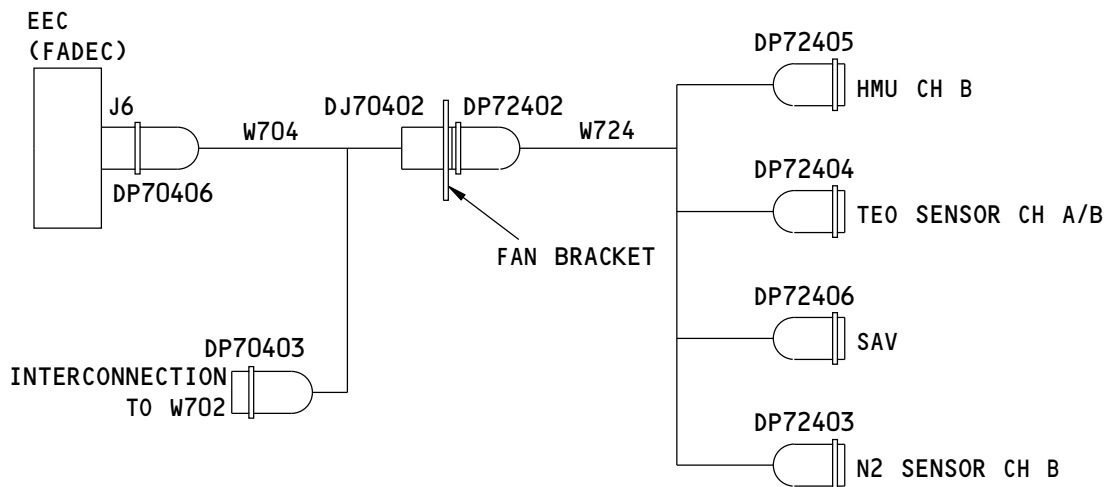
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1210401-01-A
M07028 S0004285999_V2

**Electrical Harness and Connectors Inspection
Figure 203/73-22-00-990-803-H01 (Sheet 11 of 14)**

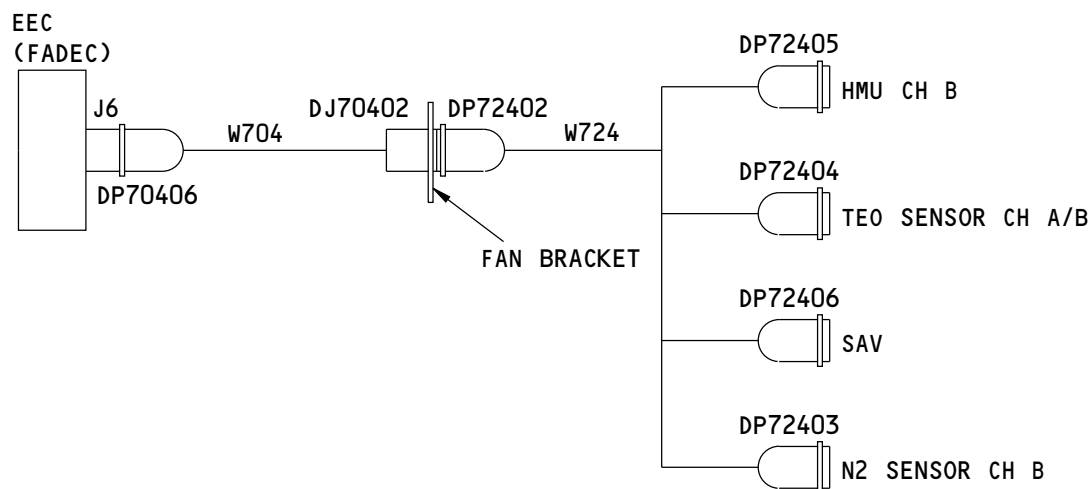
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1255108-00-A
1350630 S0000241059_V1

**Electrical Harness and Connectors Inspection
Figure 203/73-22-00-990-803-H01 (Sheet 12 of 14)**

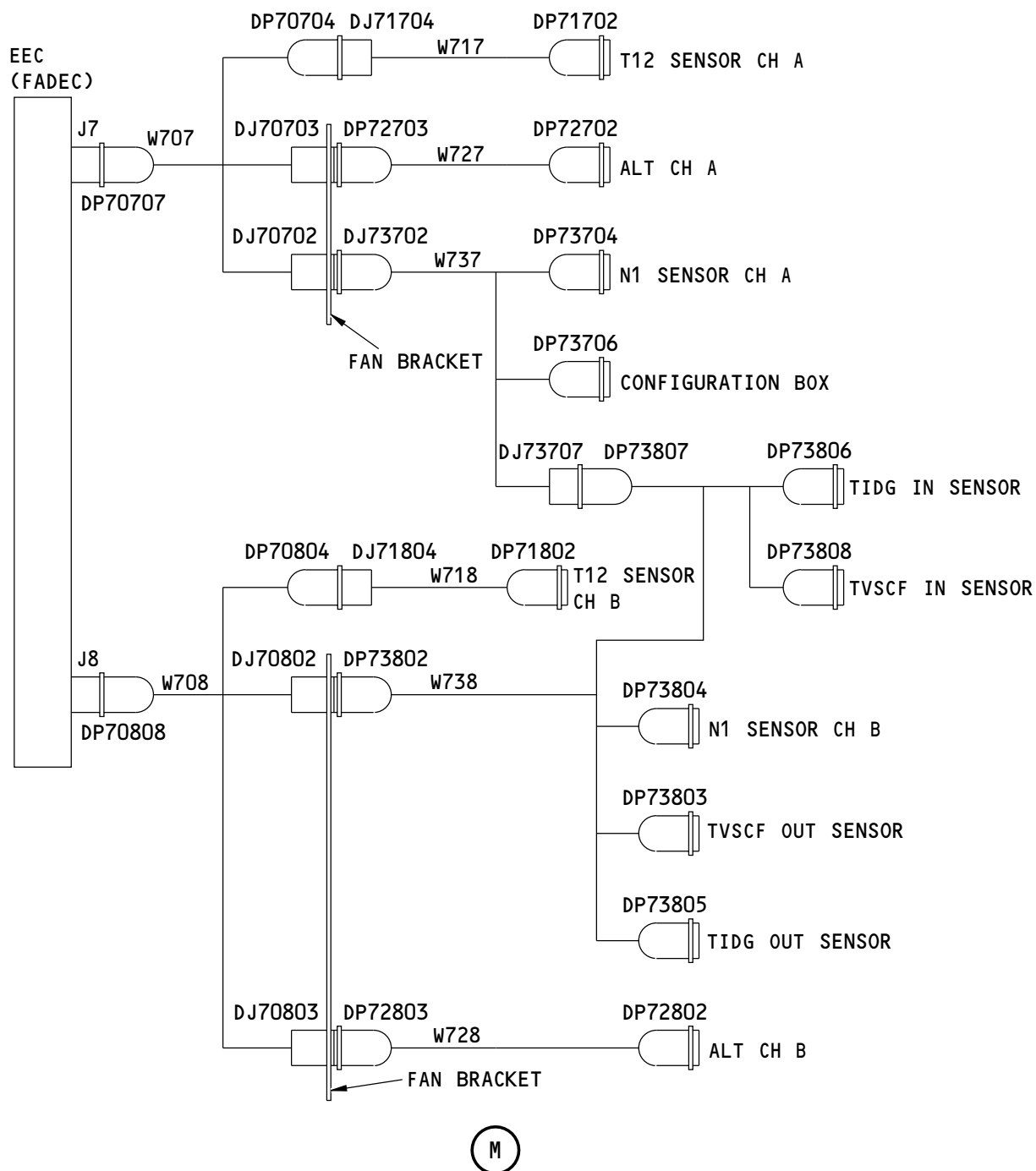
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1210402-01-A
M07029 S0004286000_V2

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Figure 203/73-22-00-990-803-H01 (Sheet 13 of 14)

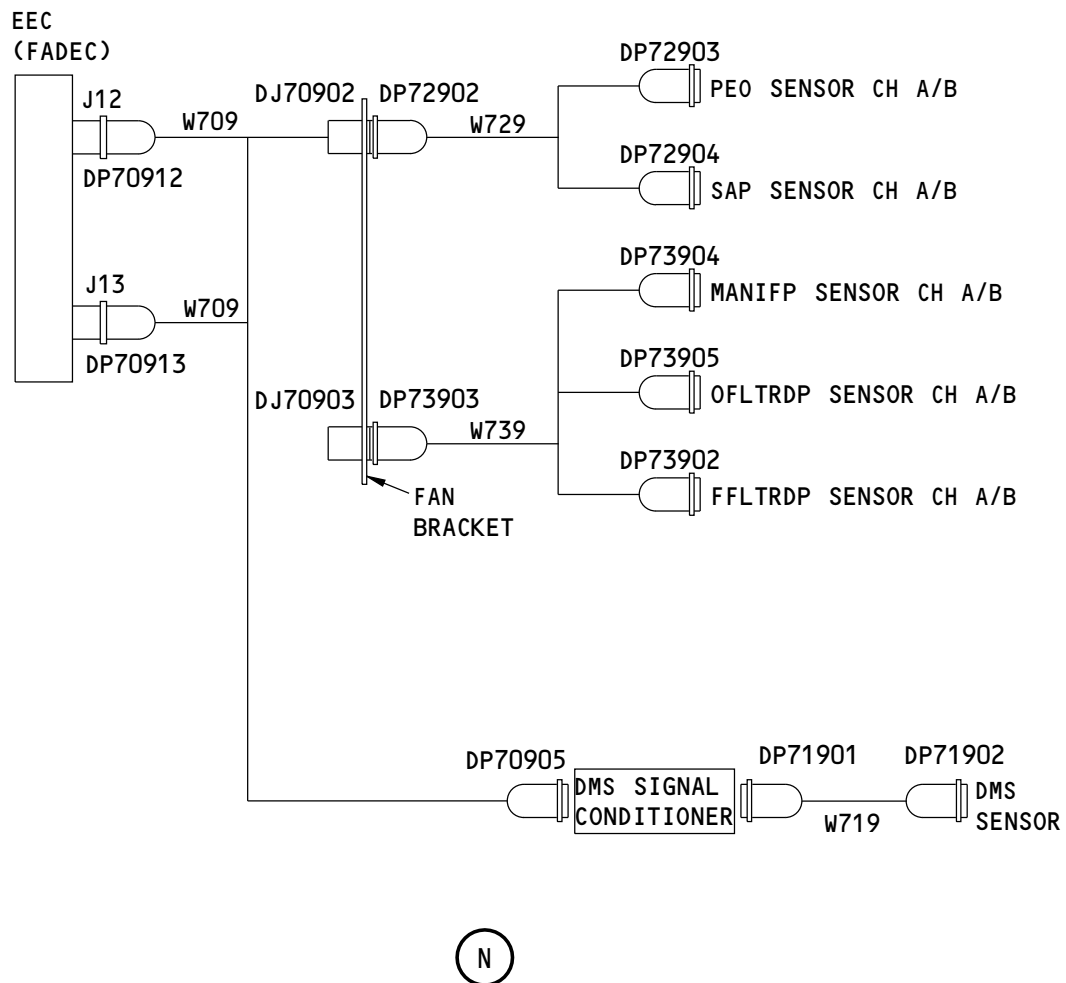
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1239216-00-A
M07030 S0004286001_V3

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TASK 73-22-00-760-801-H01

4. Electrical Harness Repair

A. General

- (1) This procedure gives the instructions to repair of the electrical harnesses. For the chafed of the electrical harnesses, refer to Electrical Harness (Cable) - Repair, TASK 70-00-01-400-808-H01 or for the missing bobbin refer to Electrical Harness (Cable without Bobbin) Repair, TASK 70-00-01-300-801-H00.
- (2) You can repair the electrical harnesses installed on the engine.

B. References

Reference	Title
70-00-01-300-801-H00	Electrical Harness (Cable without Bobbin) Repair (P/B 201)
70-00-01-400-808-H01	Electrical Harness (Cable) - Repair (P/B 201)

————— END OF TASK —————

TASK 73-22-00-100-801-H00

5. Electrical Harness Cleaning

A. General

- (1) This procedure gives the instructions to clean the electrical harnesses.
- (2) You can clean the electrical harnesses in the shop or on the wing.
- (3) When you do the cleaning on an installed electrical harness, you must open the fan cowl or the thrust reversers to get access to the electrical harness.

B. References

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
27-81-00-860-805	Retract the Leading Edge Slats (P/B 201)
71-11-04-010-814-H00	Open the Fan Cowl Panel (Selection) (P/B 201)
71-11-04-410-814-H00	Close the Fan Cowl Panel (Selection) (P/B 201)
78-31-00-010-816-H00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-806-H00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)
78-31-00-410-816-H00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-805-H00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-124	Brush - Stiff Bristle, Non-Metallic
STD-6935	Air Source - Regulated, Dry Filtered, Compressed 30 PSIG Maximum Pressure

D. Consumable Materials

Reference	Description	Specification
B00722	Solvent - Stoddard	MIL-PRF-680 Type I or II (Supersedes P-D-680 Type I or II)
B50073	Alcohol - Isopropyl	ASTM D 770

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Reference	Description	Specification
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A

E. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

F. Access Panels

Number	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

G. Prepare for the Cleaning

SUBTASK 73-22-00-010-005-H00



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO OPEN THE THRUST REVERSER(S). IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR

- (1) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:

- (a) Do this task: Retract the Leading Edge Slats, TASK 27-81-00-860-805.
- (b) Do this task: Leading Edge Slat - Deactivation, TASK 27-81-00-040-801.
- (c) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-806-H00.
- (d) For the left and right fan cowl panels, do this task:

Open the Fan Cowl Panel (Selection), TASK 71-11-04-010-814-H00

<u>Number</u>	<u>Name/Location</u>
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine

- (e) For the left and right thrust reversers, do this task:

Open the Thrust Reverser (Selection), TASK 78-31-00-010-816-H00

<u>Number</u>	<u>Name/Location</u>
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine

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<u>Number</u>	<u>Name/Location</u>
426AR	Right Thrust Reverser, Right Engine

H. Electrical Harness Cleaning

**WARNING**

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.

**WARNING**

ISOPROPYL ALCOHOL IS FLAMMABLE. AVOID PROLONGED BREATHING OF VAPOR AND PROLONGED OR REPEATED CONTACT WITH SKIN. AVOID CONTACT WITH EYES. CLEAN PARTS IN WELL-VENTILATED AREA AND USE APPROVED SAFETY EQUIPMENT.

SUBTASK 73-22-00-100-001-H00

- (1) Use clean, lint-free cotton wiper, G00034 soaked with isopropyl alcohol, B50073 or Stoddard solvent, B00722 to clean the exterior surfaces of the electrical harnesses.

NOTE: Do not put the whole harness or the connectors fully into the cleaning agent.

- (a) If contaminants are not removed by cleaning with cotton wipers, use a stiff bristle non-metallic brush, STD-124 with isopropyl alcohol, B50073 or Stoddard solvent, B00722 to clean the exterior surfaces of the electrical harnesses.

SUBTASK 73-22-00-100-002-H00

- (2) Use a stiff bristle non-metallic brush, STD-124 with isopropyl alcohol, B50073 or Stoddard solvent, B00722 to clean the electrical connectors and contacts.

SUBTASK 73-22-00-100-003-H00

**WARNING**

DO NOT SUPPLY AIR AT MORE THAN THE SPECIFIED PRESSURE. AN AIR PRESSURE THAT IS MORE THAN SPECIFIED CAN CAUSE DAMAGE TO THE EQUIPMENT AND INJURY TO PERSONNEL.

- (3) Use a filtered, dry, regulated air source, STD-6935 at 30 psi (207 kPa) or less to dry the parts or let air dry fully before engine operation.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 73-22-00-410-004-H00

**WARNING**

DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Do these tasks in sequence to safely close the left and right thrust reversers on the applicable engine:
 - (a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-410-816-H00.
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine

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<u>Number</u>	<u>Name/Location</u>
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

(b) Do this task: Close the Fan Cowl Panel (Selection), TASK 71-11-04-410-814-H00.

1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine

(c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-805-H00.

(d) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

———— **END OF TASK** ————

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EEC (FADEC) ELECTRICAL HARNESSSES - REMOVAL/INSTALLATION

1. General

A. This procedure has six tasks:

- (1) Two tasks are used to help search for digital data:
 - (a) One task is a collection of the removal task references.
 - (b) One task is a collection of the installation task references.
- (2) These are the other tasks:
 - (a) A removal of the EEC (FADEC) electrical harnesses that are on the engine fan case
 - (b) An installation of the EEC (FADEC) electrical harnesses that are on the engine fan case
 - (c) A removal of the EEC (FADEC) electrical harnesses that are on the engine core
 - (d) An installation of the EEC (FADEC) electrical harnesses that are on the engine core.

TASK 73-22-01-000-801-H01

2. EEC (FADEC) Electrical Harness Removal

A. Procedure

SUBTASK 73-22-01-020-001-H01

- (1) There are two tasks to remove the EEC (FADEC) electrical harness:
 - (a) EEC (FADEC) Electrical Harnesses (W701-W704, W707-W709, and W717-W719) Removal, TASK 73-22-01-000-802-H01
 - (b) EEC (FADEC) Electrical Harnesses (W721-W724, W727-W729, and W737-W739) Removal, TASK 73-22-01-000-803-H01.

————— END OF TASK —————

TASK 73-22-01-400-801-H01

3. EEC (FADEC) Electrical Harness Installation

A. Procedure

SUBTASK 73-22-01-420-001-H01

- (1) There are two tasks to install the EEC (FADEC) electrical harness:
 - (a) EEC (FADEC) Electrical Harnesses (W701-W704, W707-W709, and W717-W719) Installation, TASK 73-22-01-400-802-H01
 - (b) EEC (FADEC) Electrical Harnesses (W721-W724, W727-W729, and W737-W739) Installation, TASK 73-22-01-400-803-H01

————— END OF TASK —————

TASK 73-22-01-000-802-H01

4. EEC (FADEC) Electrical Harnesses (W701-W704, W707-W709, and W717-W719) Removal

A. General

- (1) This procedure is the removal task for the EEC (FADEC) electrical harnesses that are on the engine fan case.
- (2) You must open the fan cowl panels to get access to the EEC (FADEC) electrical harnesses that are on the engine fan case.

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(3) This service bulletin is from the engine manufacturer and is referenced in this task:

- (a) This Service Bulletin installs the new electrical harnesses for engines without anti-ice system.

ARO ALL**B. References**

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
27-81-00-860-805	Retract the Leading Edge Slats (P/B 201)
70-00-01-400-807-H01	Electrical Connector - Disconnect and Connect (P/B 201)
71-11-04-010-814-H00	Open the Fan Cowl Panel (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)

D. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

E. Access Panels

Number	Name/Location
412BR	T12 Inlet Temperature Sensor Panel, Left Engine
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
422BR	T12 Inlet Temperature Sensor Panel, Right Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine

F. Prepare for the Removal

SUBTASK 73-22-01-860-001-H01



RETRACT THE LEADING EDGE SLATS AND DO THE DEACTIVATION PROCEDURE BEFORE YOU OPEN THE FAN COWL PANELS. IF THE LEADING EDGE SLATS ARE NOT RETRACTED, THE FAN COWL PANELS WILL HIT THEM AND CAUSE DAMAGE.

- (1) Do this task: Retract the Leading Edge Slats, TASK 27-81-00-860-805.

SUBTASK 73-22-01-040-001-H01

- (2) Do this task: Leading Edge Slat - Deactivation, TASK 27-81-00-040-801.

SUBTASK 73-22-01-010-001-H01

- (3) For the left and right fan cowl panels on the applicable engine, do this task:

Open the Fan Cowl Panel (Selection), TASK 71-11-04-010-814-H00

Number	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine

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<u>Number</u>	<u>Name/Location</u>
424AR	Right Fan Cowl Panel, Right Engine

G. Procedure

SUBTASK 73-22-01-020-002-H01



USE PLIERS THAT HAVE TEFLON JAWS TO LOOSEN THE ELECTRICAL CONNECTOR. DO NOT USE PLIERS THAT HAVE METAL JAWS. DAMAGE TO THE ELECTRICAL CONNECTOR CAN OCCUR.



MAKE SURE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU DISCONNECT THEM. CONTAMINATION OF ELECTRICAL CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.

- (1) Use teflon-jawed pliers, STD-664 to remove the W701 EEC (FADEC) electrical harness (Figure 401, Figure 402, and Figure 408)(Electrical Connector - Disconnect and Connect, TASK 70-00-01-400-807-H01):
 - (a) Disconnect the W701 harness connector (DP70109) from the EEC (FADEC) J9 receptacle.
 - (b) Disconnect the W721 harness connector (DP72102) from the W701 harness receptacle (DJ70102) at the fan bracket.

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- (c) Disconnect the W701 harness connector (interconnection to W703) (DP70103) from the W703 harness receptacle (interconnection to W701) (DJ70303).

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- (d) Remove the bolts that attach the W701 harness receptacle (DJ70102) to the fan bracket.
- (e) Remove the W701 harness from the fan bracket.
- (f) Remove the bolts from the hinge clamps that attach the W701 harness to the fan case.
- (g) Remove the W701 harness from the hinge clamp cushions.
- (h) Remove the W701 harness from the spring clips.
- (i) Put protective covers on the harness connectors and receptacles.

SUBTASK 73-22-01-020-003-H01



USE PLIERS THAT HAVE TEFLON JAWS TO LOOSEN THE ELECTRICAL CONNECTOR. DO NOT USE PLIERS THAT HAVE METAL JAWS. DAMAGE TO THE ELECTRICAL CONNECTOR CAN OCCUR.



MAKE SURE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU DISCONNECT THEM. CONTAMINATION OF ELECTRICAL CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.

- (2) Use teflon-jawed pliers, STD-664 to remove the W702 EEC (FADEC) electrical harness (Figure 401, Figure 403, and Figure 409)(Electrical Connector - Disconnect and Connect, TASK 70-00-01-400-807-H01):

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- (a) Disconnect the W702 harness connector (DP70210) from the EEC (FADEC) J10 receptacle.
- (b) Disconnect the W722 harness connector (DP72202) from the W702 harness receptacle (DJ70202) at the fan bracket.

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- (c) Disconnect the W702 harness connector (interconnection to W704) (DP70203) from the W704 harness receptacle (Interconnection to W702) (DJ70403).

ARO ALL

- (d) Remove the bolts that attach the W702 harness receptacle (DJ70202) to the fan bracket.
- (e) Remove the W702 harness from the fan bracket.
- (f) Remove the bolts from the hinge clamps that attach the W702 harness to the fan case.
- (g) Remove the W702 harness from the hinge clamp cushions.
- (h) Remove the W702 harness from the spring clips.
- (i) Put protective covers on the harness connectors and receptacles.

SUBTASK 73-22-01-020-004-H01



USE PLIERS THAT HAVE TEFLON JAWS TO LOOSEN THE ELECTRICAL CONNECTOR. DO NOT USE PLIERS THAT HAVE METAL JAWS. DAMAGE TO THE ELECTRICAL CONNECTOR CAN OCCUR.



MAKE SURE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU DISCONNECT THEM. CONTAMINATION OF ELECTRICAL CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.

- (3) Use teflon-jawed pliers, STD-664 to remove the W703 EEC (FADEC) electrical harness (Figure 401, Figure 404, and Figure 410)(Electrical Connector - Disconnect and Connect, TASK 70-00-01-400-807-H01):
 - (a) Disconnect the W703 harness connector (DP70305) from the EEC (FADEC) J5 receptacle.
 - (b) Disconnect the W723 harness connector (DP72302) from the W703 harness receptacle (DJ70302) at the fan bracket.

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- (c) Disconnect the W703 harness receptacle (interconnection to W701) (DJ70303) from the W701 harness connector (interconnection to W703) (DP70103).

ARO ALL

- (d) Remove the bolts that attach the W703 harness receptacle (DJ70302) to the fan bracket.
- (e) Remove the W703 harness from the fan bracket.
- (f) Remove the bolts from the hinge clamps that attach the W703 harness to the fan case.
- (g) Remove the W703 harness from the hinge clamp cushions.
- (h) Remove the W703 harness from the spring clips.
- (i) Put protective covers on the harness connectors and receptacles.

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SUBTASK 73-22-01-020-005-H01

**CAUTION**

USE PLIERS THAT HAVE TEFLON JAWS TO LOOSEN THE ELECTRICAL CONNECTOR. DO NOT USE PLIERS THAT HAVE METAL JAWS. DAMAGE TO THE ELECTRICAL CONNECTOR CAN OCCUR.

**CAUTION**

MAKE SURE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU DISCONNECT THEM. CONTAMINATION OF ELECTRICAL CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.

- (4) Use teflon-jawed pliers, STD-664 to remove the W704 EEC (FADEC) electrical harness (Figure 401, Figure 405, and Figure 411)(Electrical Connector - Disconnect and Connect, TASK 70-00-01-400-807-H01):
- (a) Disconnect the W704 harness connector (DP70406) from the EEC (FADEC) J6 receptacle.
 - (b) Disconnect the W724 harness connector (DP72402) from the W704 harness receptacle (DJ70402) at the fan bracket.

ARO ALL PRE SB 777-GE90-73-0012

- (c) Disconnect the W704 harness receptacle (interconnection to W702) (DJ70403) from the W702 harness connector (interconnection to W704) (DP70203).

ARO ALL

- (d) Remove the bolts that attach the W704 harness receptacle (DJ70402) to the fan bracket).
- (e) Remove the W704 harness from the fan bracket.
- (f) Remove the bolts from the hinge clamps that attach the W704 harness to the fan case.
- (g) Remove the W704 harness from the hinge clamp cushions.
- (h) Remove the W704 harness from the spring clips.
- (i) Put protective covers on the harness connectors and receptacles and the component receptacles.

SUBTASK 73-22-01-020-006-H01

**CAUTION**

USE PLIERS THAT HAVE TEFLON JAWS TO LOOSEN THE ELECTRICAL CONNECTOR. DO NOT USE PLIERS THAT HAVE METAL JAWS. DAMAGE TO THE ELECTRICAL CONNECTOR CAN OCCUR.

**CAUTION**

MAKE SURE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU DISCONNECT THEM. CONTAMINATION OF ELECTRICAL CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.

- (5) Use teflon-jawed pliers, STD-664 to remove the W707 EEC (FADEC) electrical harness (Figure 401, Figure 406, and Figure 412)(Electrical Connector - Disconnect and Connect, TASK 70-00-01-400-807-H01):
- (a) Disconnect the W707 harness connector (DP70707) from the EEC (FADEC) J7 receptacle.
 - (b) Disconnect the W727 harness connector (DP72703) from the W707 harness receptacle (DJ70703) at the fan bracket.

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- (c) Disconnect the W737 harness connector (DP73702) from the W707 harness receptacle (DJ70702) at the fan bracket.
- (d) Disconnect the W717 harness receptacle (DJ71704) from the W707 connector (DP70704).
- (e) Remove the bolts that attach the W707 harness receptacles (DJ70703) and (DJ70702) to the fan bracket.
- (f) Remove the W707 harness from the fan bracket.
- (g) Remove the bolts from the hinge clamps that attach the W707 harness to the fan case.
- (h) Remove the W707 harness from the hinge clamp cushions.
- (i) Remove the W707 harness from the spring clips.
- (j) Put protective covers on the harness connectors and receptacles and the component receptacles.

SUBTASK 73-22-01-020-007-H01



USE PLIERS THAT HAVE TEFLON JAWS TO LOOSEN THE ELECTRICAL CONNECTOR. DO NOT USE PLIERS THAT HAVE METAL JAWS. DAMAGE TO THE ELECTRICAL CONNECTOR CAN OCCUR.



MAKE SURE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU DISCONNECT THEM. CONTAMINATION OF ELECTRICAL CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.

- (6) Use teflon-jawed pliers, STD-664 to remove the W708 EEC (FADEC) electrical harness (Figure 401, Figure 406, and Figure 413)(Electrical Connector - Disconnect and Connect, TASK 70-00-01-400-807-H01):
 - (a) Disconnect the W708 EEC (FADEC) electrical harness (DP70808) from the EEC (FADEC) J8 receptacle.
 - (b) Disconnect the W738 harness connector (DP73802) from the W708 harness receptacle (DJ70802) at the fan bracket.
 - (c) Disconnect the W728 harness connector (DP72803) from the W708 harness receptacle (DJ70803) at the fan bracket.
 - (d) Disconnect the W718 harness receptacle (DJ71804) from the W708 connector (DP70804).
 - (e) Remove the bolts that attach the W708 harness receptacles (DJ70802) and (DJ70803) to the fan bracket.
 - (f) Remove the W708 harness from the fan bracket.
 - (g) Remove the bolts from the hinge clamps that attach the W708 harness to the fan case.
 - (h) Remove the W708 harness from the hinge clamp cushions.
 - (i) Remove the W708 harness from the spring clips.
 - (j) Put protective covers on the harness connectors and receptacles and the component receptacles.

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SUBTASK 73-22-01-020-008-H01

**CAUTION**

USE PLIERS THAT HAVE TEFLON JAWS TO LOOSEN THE ELECTRICAL CONNECTOR. DO NOT USE PLIERS THAT HAVE METAL JAWS. DAMAGE TO THE ELECTRICAL CONNECTOR CAN OCCUR.

**CAUTION**

MAKE SURE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU DISCONNECT THEM. CONTAMINATION OF ELECTRICAL CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.

- (7) Use teflon-jawed pliers, STD-664 to remove the W709 EEC (FADEC) electrical harness (Figure 401, Figure 407, and Figure 414)(Electrical Connector - Disconnect and Connect, TASK 70-00-01-400-807-H01):
- (a) Disconnect the W709 harness connector (DP70912) from the EEC (FADEC) J12 receptacle.
 - (b) Disconnect the W709 harness connector (DP70913) from the EEC (FADEC) J13 receptacle.
 - (c) Disconnect the W729 harness connector (DP72902) from the W709 receptacle (DJ70902) at the fan bracket.
 - (d) Disconnect the W739 harness connector (DP73903) from the W709 harness receptacle (DJ70903) at the fan bracket.
 - (e) Disconnect the W709 harness connector (DP70905) from the DMS signal conditioner.
 - (f) Remove the bolts that attach the W709 harness receptacle (DJ70902) and (DJ70903) to the fan bracket.
 - (g) Remove the W709 harness from the fan bracket.
 - (h) Remove the bolts from the hinge clamps that attach the W709 harness to the fan case.
 - (i) Remove the W709 harness from the hinge clamp cushions.
 - (j) Remove the W709 harness from the spring clips.
 - (k) Put protective covers on the harness connectors and receptacles and the component receptacles.

SUBTASK 73-22-01-010-003-H01

**CAUTION**

USE PLIERS THAT HAVE TEFLON JAWS TO LOOSEN THE ELECTRICAL CONNECTOR. DO NOT USE PLIERS THAT HAVE METAL JAWS. DAMAGE TO THE ELECTRICAL CONNECTOR CAN OCCUR.

**CAUTION**

MAKE SURE THAT THE ELECTRICAL CONNECTOR AND RECEPTACLE ARE CLEAN WHEN YOU CONNECT THEM. DIRTY CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.

- (8) Use teflon-jawed pliers, STD-664 to remove the W717 EEC (FADEC) electrical harness (Figure 406, and Figure 415)(Electrical Connector - Disconnect and Connect, TASK 70-00-01-400-807-H01):
- (a) Remove the screws that attach the T12 access panel to the inlet cowl.

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- (b) Remove the T12 Inlet Temperature Sensor Panels,
- | <u>Number</u> | <u>Name/Location</u> |
|---------------|--|
| 412BR | T12 Inlet Temperature Sensor Panel, Left Engine |
| 422BR | T12 Inlet Temperature Sensor Panel, Right Engine |
- (c) Disconnect the W707 harness connector (DP70704) from the W717 harness receptacle (DJ71704).
- (d) Disconnect the W717 harness connector (DP71702) from the T12 sensor CH A receptacle.
- (e) Disconnect the hinge clamp (quarter-turn screw) which attaches the W717 harness to the inlet cowl.
- (f) Remove the W717 harness from the hinge clamp.
- (g) Put the protective covers on the harness connectors and receptacles and the component receptacles.

SUBTASK 73-22-01-010-004-H01



USE PLIERS THAT HAVE TEFLON JAWS TO LOOSEN THE ELECTRICAL CONNECTOR. DO NOT USE PLIERS THAT HAVE METAL JAWS. DAMAGE TO THE ELECTRICAL CONNECTOR CAN OCCUR.



MAKE SURE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU DISCONNECT THEM. CONTAMINATION OF ELECTRICAL CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.

- (9) Use teflon-jawed pliers, STD-664 to remove the W718 EEC (FADEC) electrical harness (Figure 406, and Figure 416)(Electrical Connector - Disconnect and Connect, TASK 70-00-01-400-807-H01):
- (a) Disconnect the W708 harness connector (DP70804) from the W718 harness receptacle (DJ71804).
- (b) Disconnect the W718 harness connector (DP71802) from the T12 sensor CH B receptacle.
- (c) Disconnect the hinge clamp (quarter-turn) which attaches the W718 harness to the inlet cowl.
- (d) Remove the W718 harness from the hinge clamp.
- (e) Put protective covers on the harness connectors and receptacles and the component receptacles.

SUBTASK 73-22-01-010-005-H01



USE PLIERS THAT HAVE TEFLON JAWS TO LOOSEN THE ELECTRICAL CONNECTOR. DO NOT USE PLIERS THAT HAVE METAL JAWS. DAMAGE TO THE ELECTRICAL CONNECTOR CAN OCCUR.

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AIRCRAFT MAINTENANCE MANUAL****(CAUTION PRECEDES)****CAUTION**

MAKE SURE THAT THE ELECTRICAL CONNECTOR AND RECEPTACLE ARE CLEAN WHEN YOU CONNECT THEM. DIRTY CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.

- (10) Use teflon-jawed pliers, STD-664 to remove the W719 EEC (FADEC) electrical harness (Figure 407, and Figure 417)(Electrical Connector - Disconnect and Connect, TASK 70-00-01-400-807-H01):
- (a) Disconnect the W719 harness connector (DP71901) from the DMS signal conditioner.
 - (b) Disconnect the W719 harness connector (DP17902) from the DMS sensor.
 - (c) Remove the W719 harness from the spring clip.
 - (d) Put protective covers on the harness connectors and the component receptacles.

———— **END OF TASK** ————

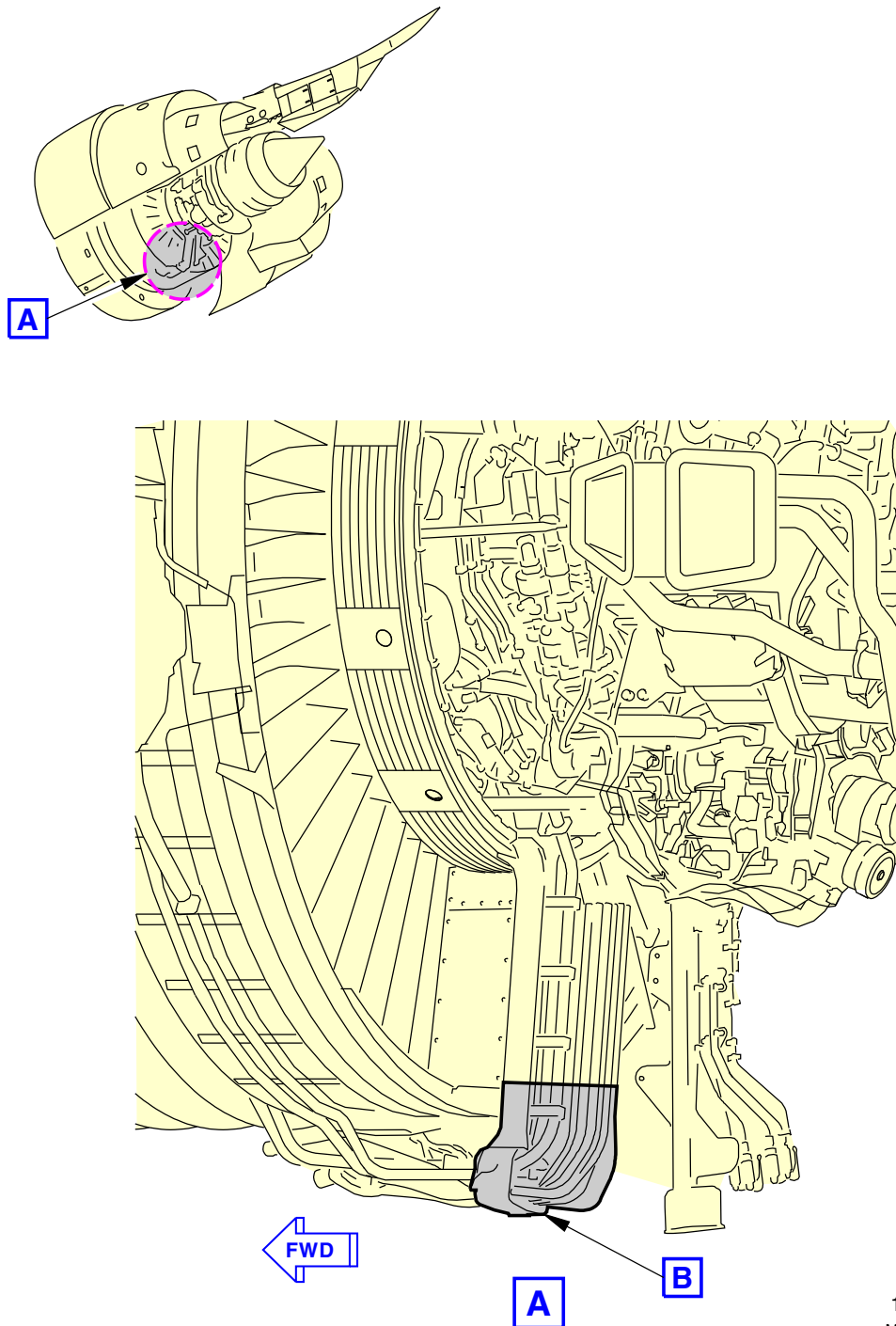
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1201634-00-A
M07034 S0004286005_V2

EEC (FADEC) Electrical Harness Installation
Figure 401/73-22-01-990-801-H01 (Sheet 1 of 5)

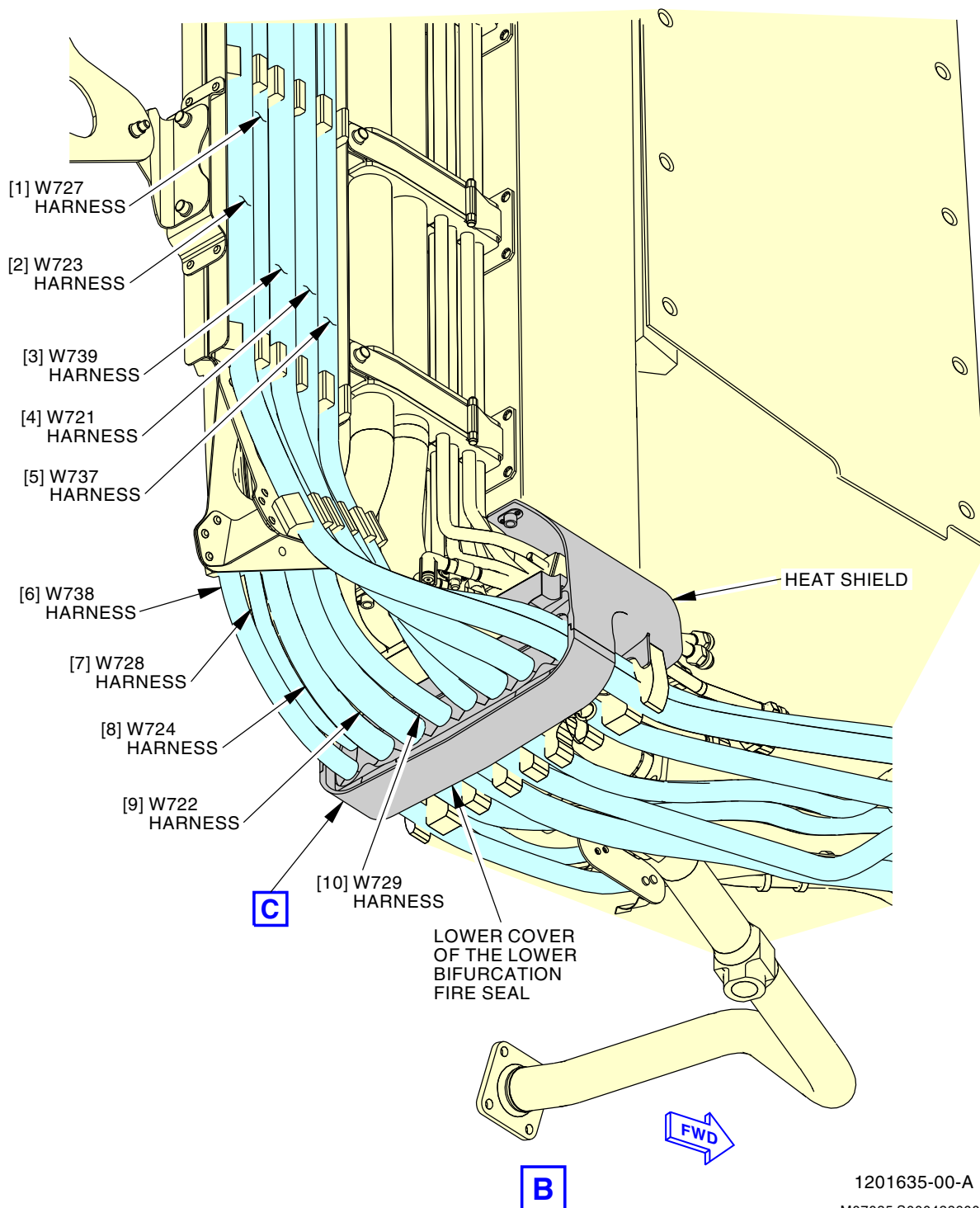
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M07035 S0004286006_V3

EEC (FADEC) Electrical Harness Installation
Figure 401/73-22-01-990-801-H01 (Sheet 2 of 5)

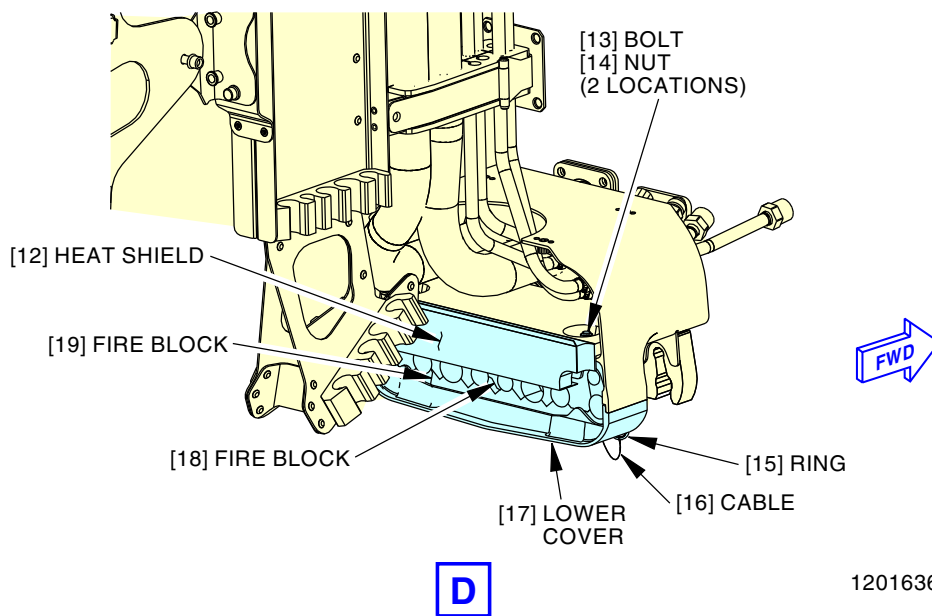
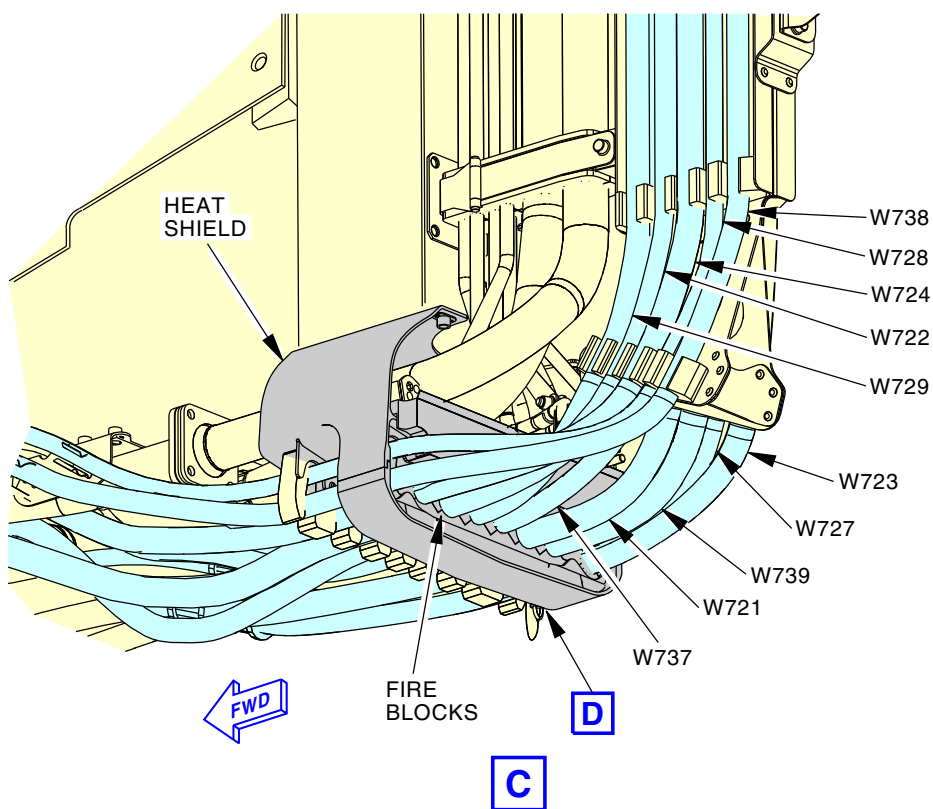
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1201636-00-A

M07036 S0004286007_V2

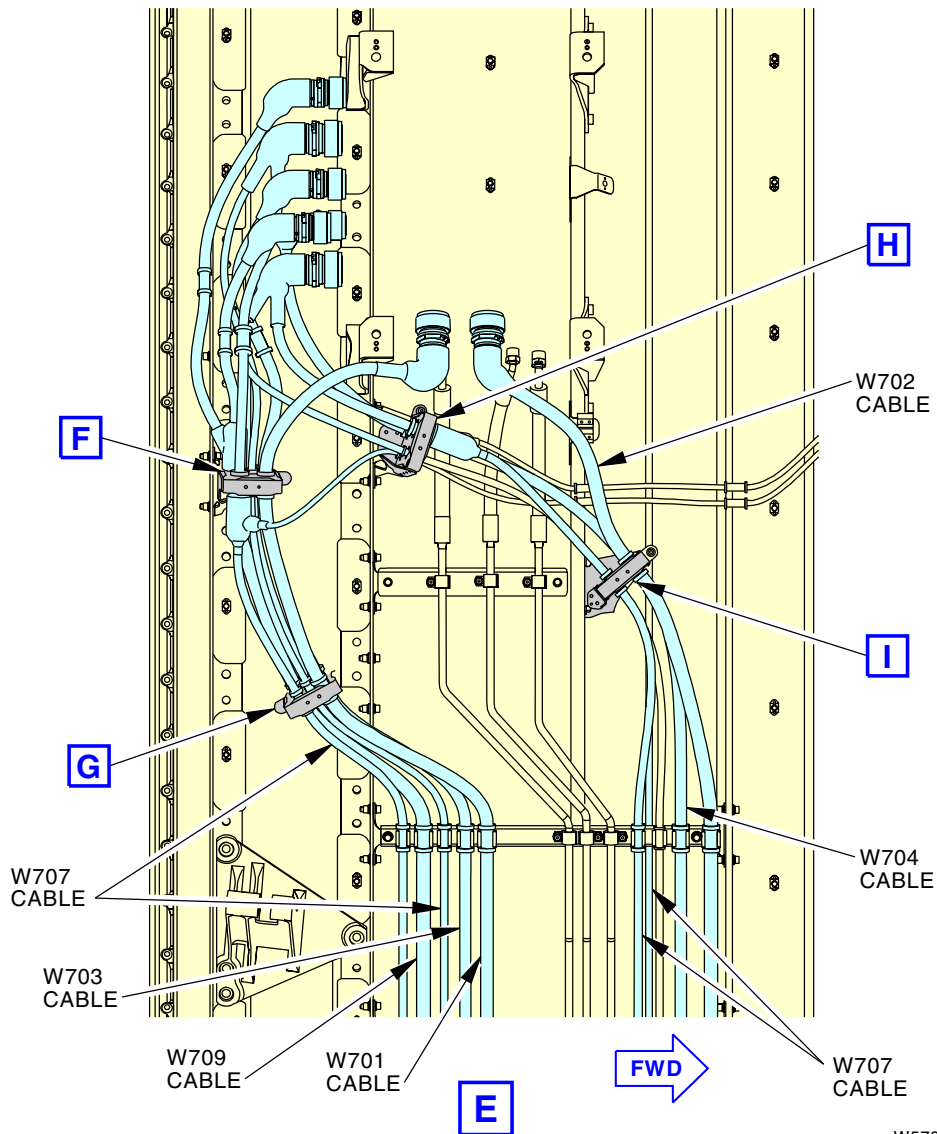
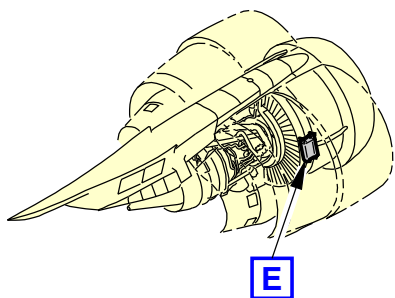
EEC (FADEC) Electrical Harness Installation
Figure 401/73-22-01-990-801-H01 (Sheet 3 of 5)

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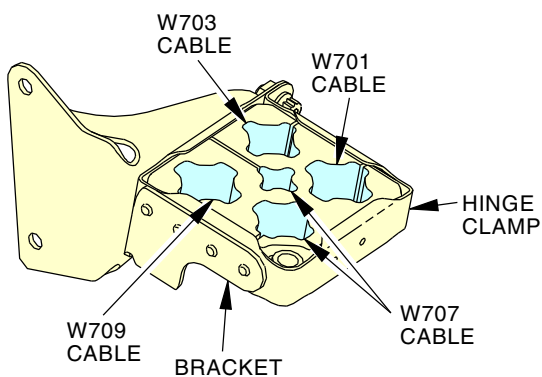
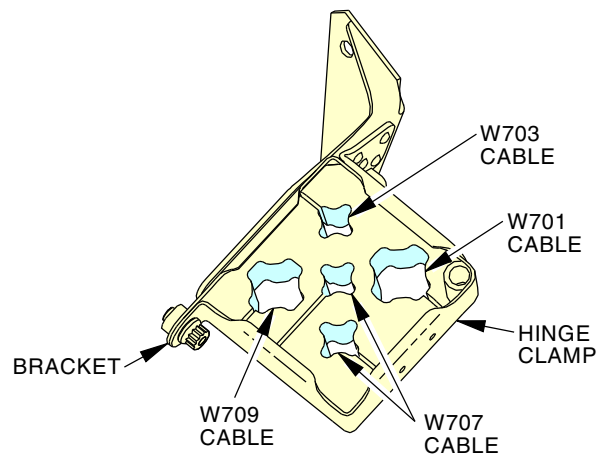
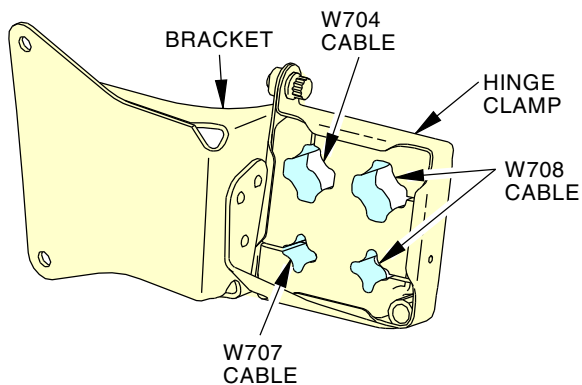
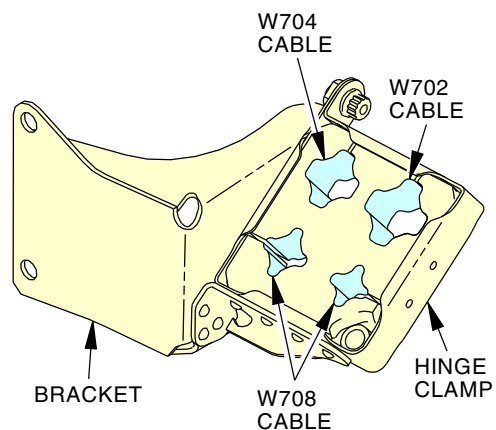
EEC (FADEC) Electrical Harness Installation
Figure 401/73-22-01-990-801-H01 (Sheet 4 of 5)

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W60032 S0000126523_V3

EEC (FADEC) Electrical Harness Installation
Figure 401/73-22-01-990-801-H01 (Sheet 5 of 5)

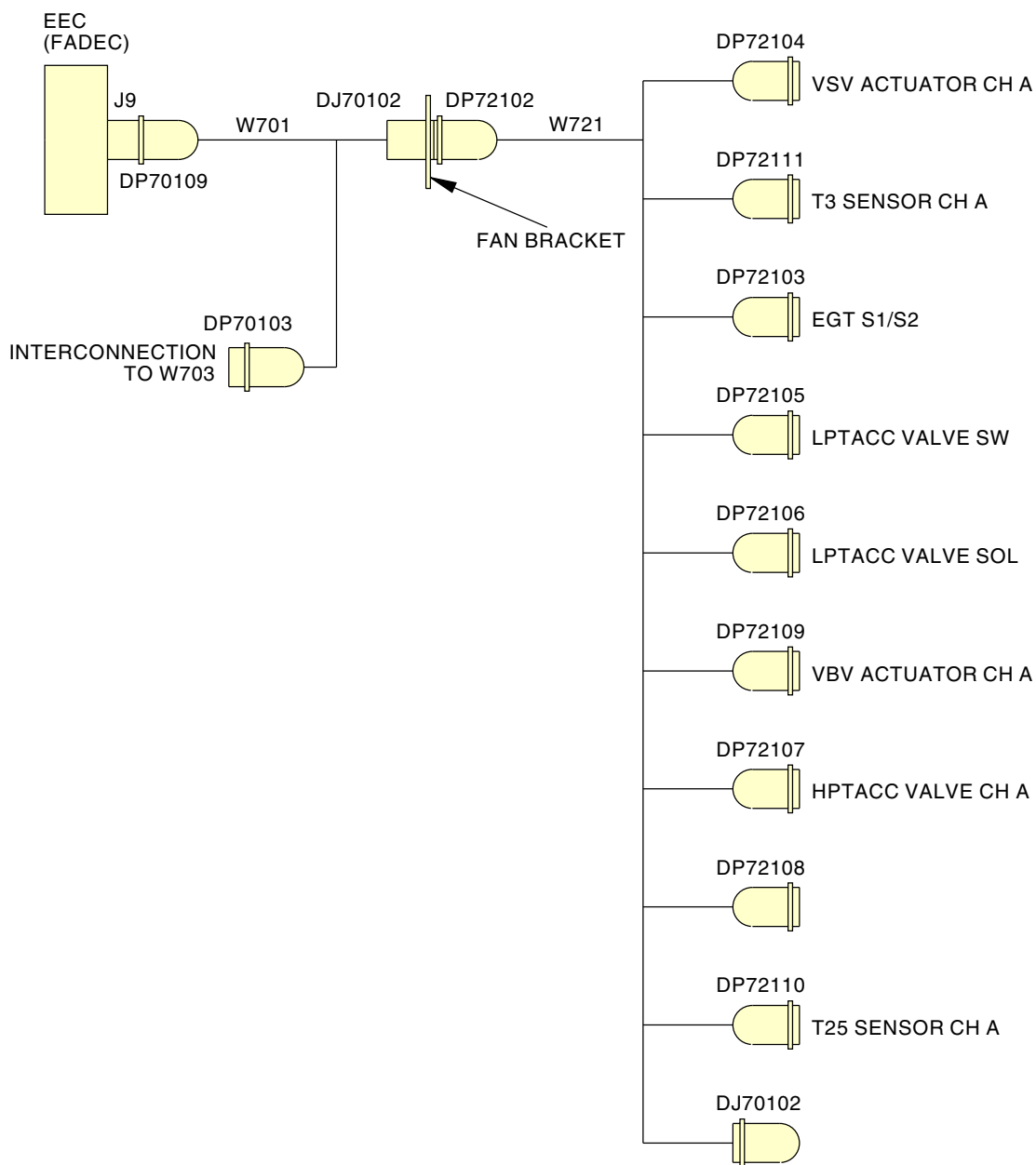
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1205827-02-A

M07037 S0004286008_V5

EEC (FADEC) Electrical Harness (W701, W721) Installation
Figure 402/73-22-01-990-802-H01 (Sheet 1 of 2)

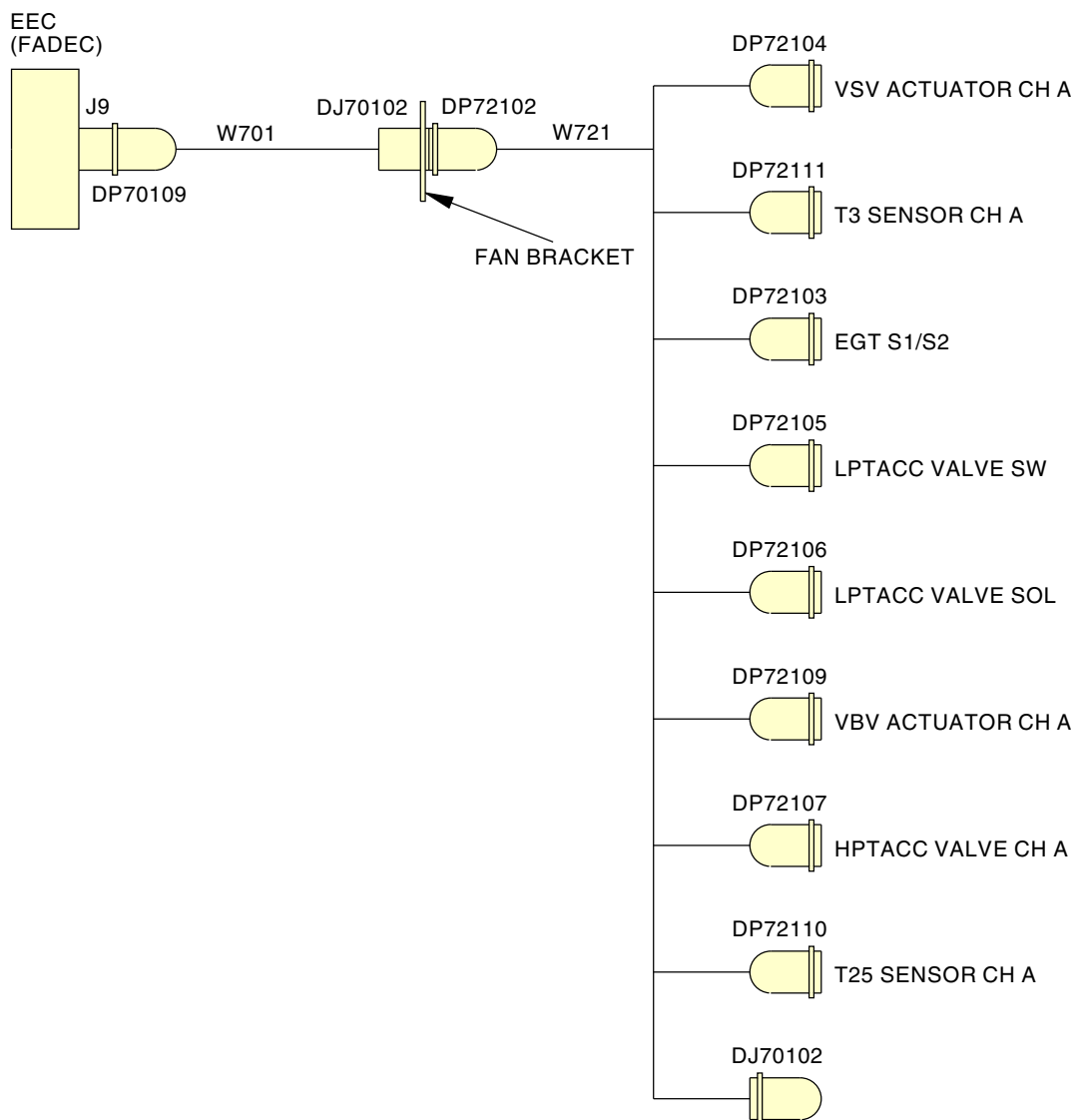
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1205827-02-A

2150844 S0000468098_V2

**EEC (FADEC) Electrical Harness (W701, W721) Installation
Figure 402/73-22-01-990-802-H01 (Sheet 2 of 2)**

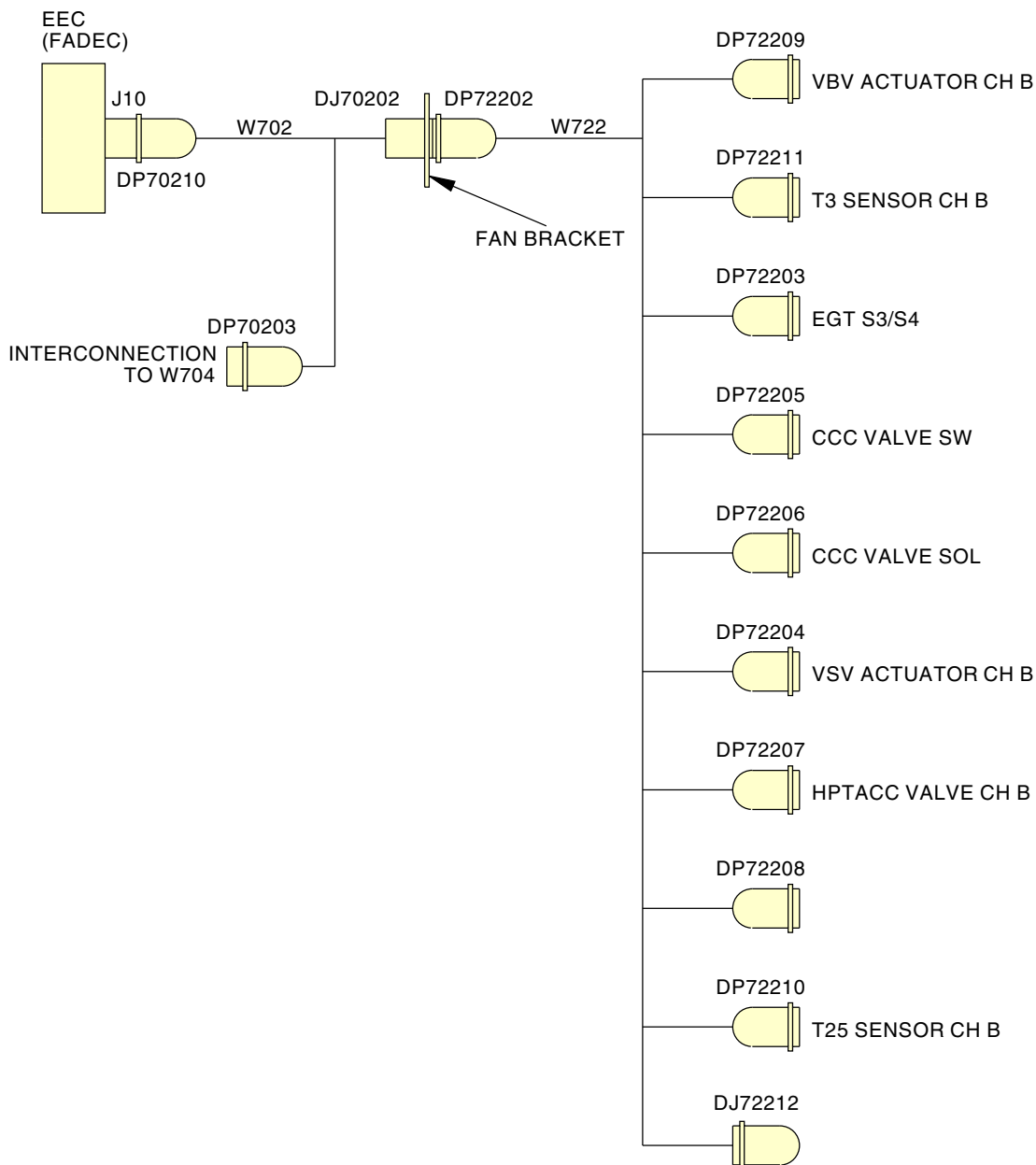
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M07038 S0004286009_V4

EEC (FADEC) Electrical Harness (W702, W722) Installation
Figure 403/73-22-01-990-803-H01 (Sheet 1 of 2)

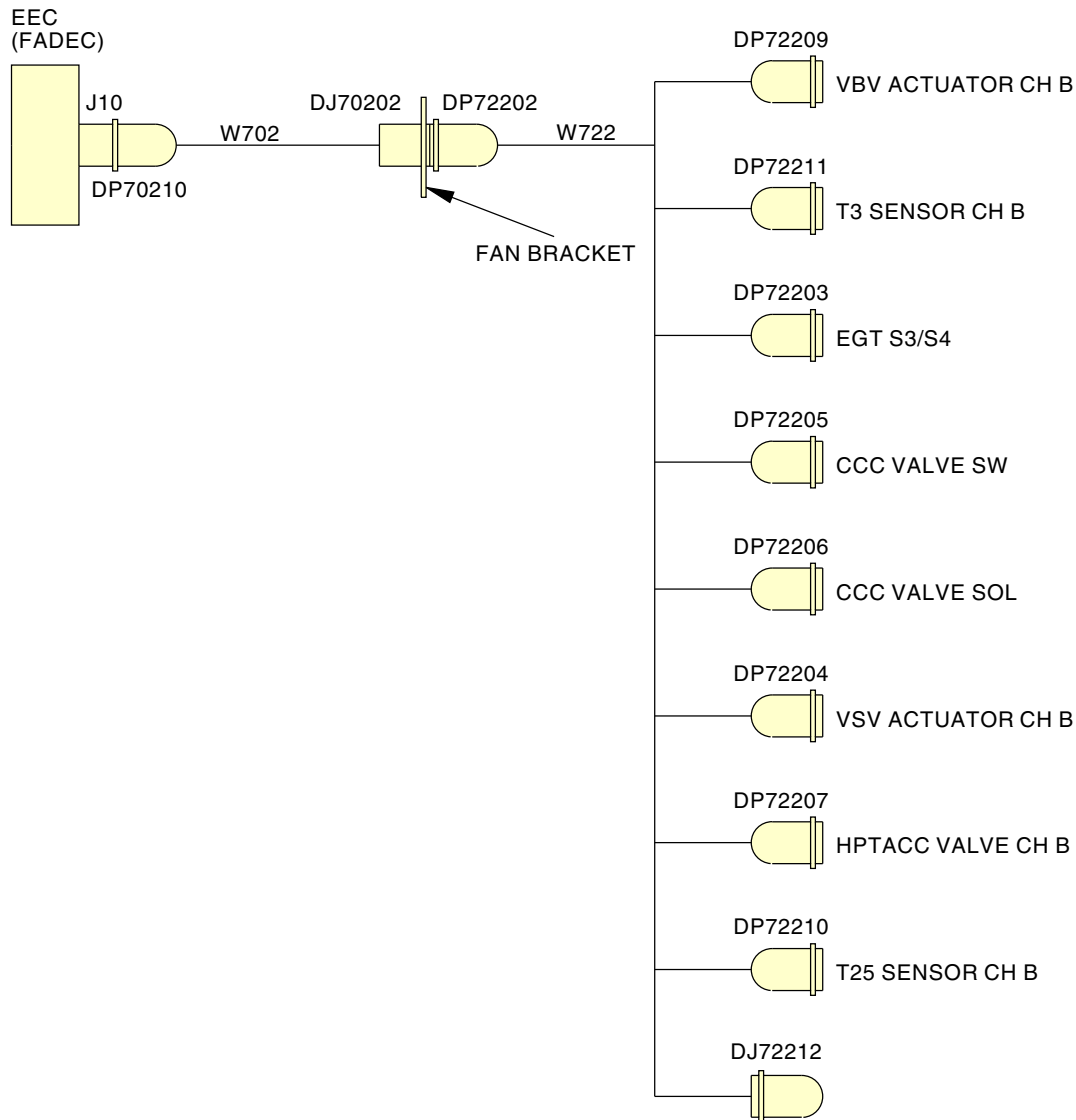
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2150848 S0000468099_V2

EEC (FADEC) Electrical Harness (W702, W722) Installation
Figure 403/73-22-01-990-803-H01 (Sheet 2 of 2)

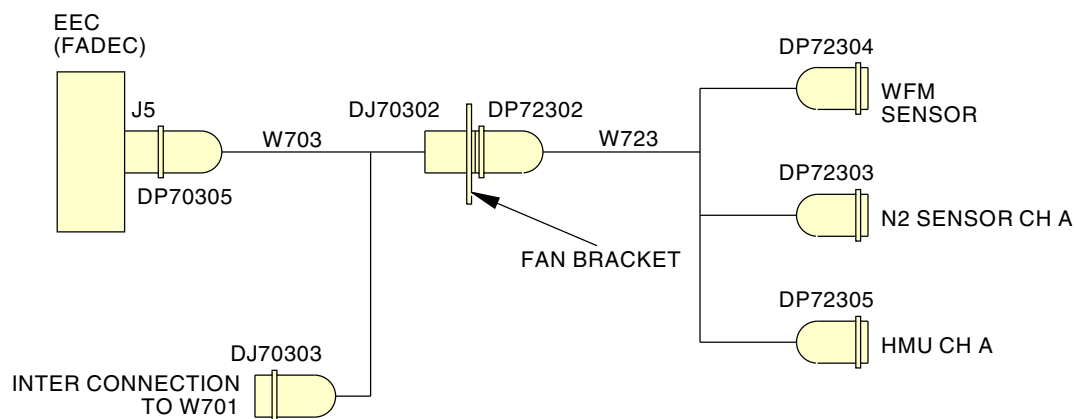
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M07039 S0004286010_V3

**EEC (FADEC) Electrical Harness (W703, W723) Installation
Figure 404/73-22-01-990-804-H01 (Sheet 1 of 2)**

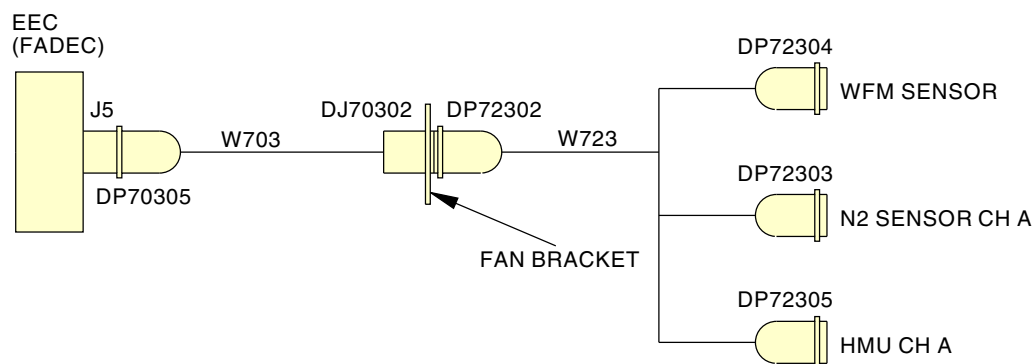
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1205829-01-A

2150851 S0000468100_V2

EEC (FADEC) Electrical Harness (W703, W723) Installation
Figure 404/73-22-01-990-804-H01 (Sheet 2 of 2)

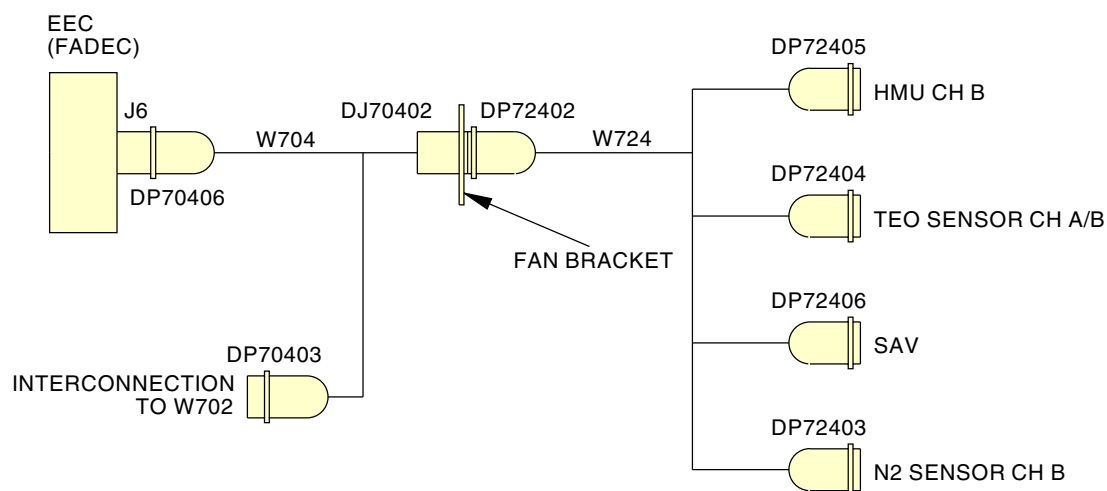
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1205830-01-A

M07041 S0004286012_V3

**EEC (FADEC) Electrical Harness (W704, W724) Installation
Figure 405/73-22-01-990-805-H01 (Sheet 1 of 2)**

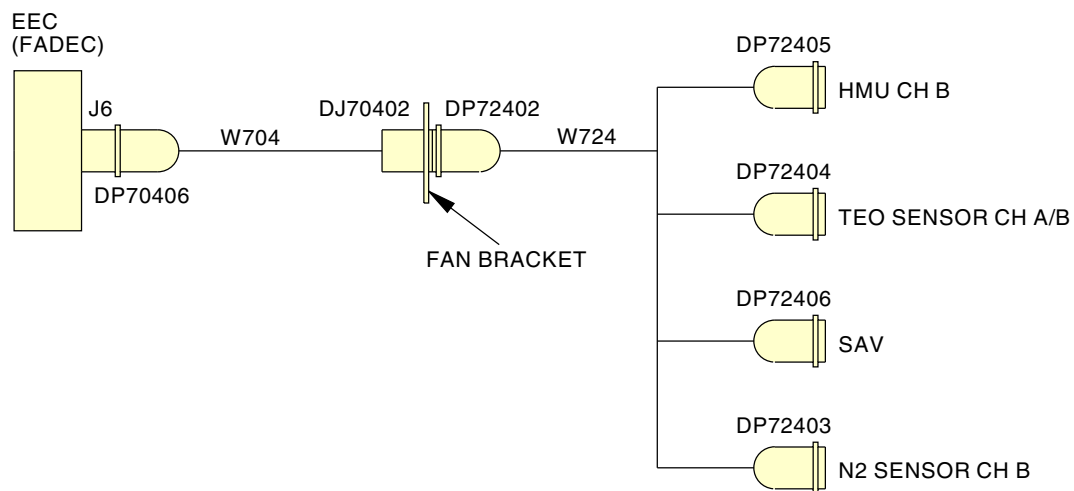
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2150856 S0000468101_V2

**EEC (FADEC) Electrical Harness (W704, W724) Installation
Figure 405/73-22-01-990-805-H01 (Sheet 2 of 2)**

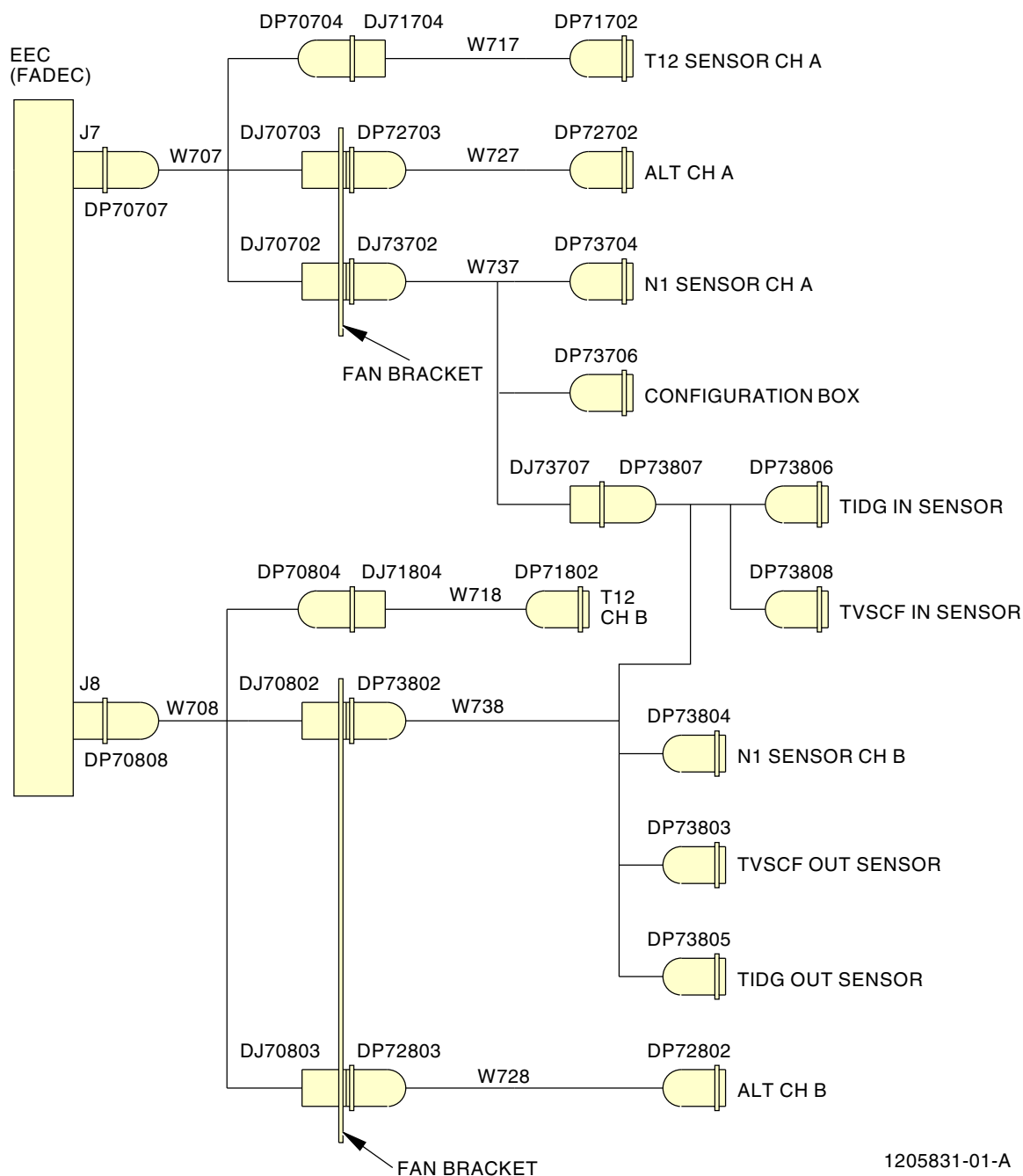
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M07042 S0004286013_V3

EEC (FADEC) Electrical Harness (W707, W717, W727, W737, W708, W718, W728, W738) Installation
Figure 406/73-22-01-990-806-H01

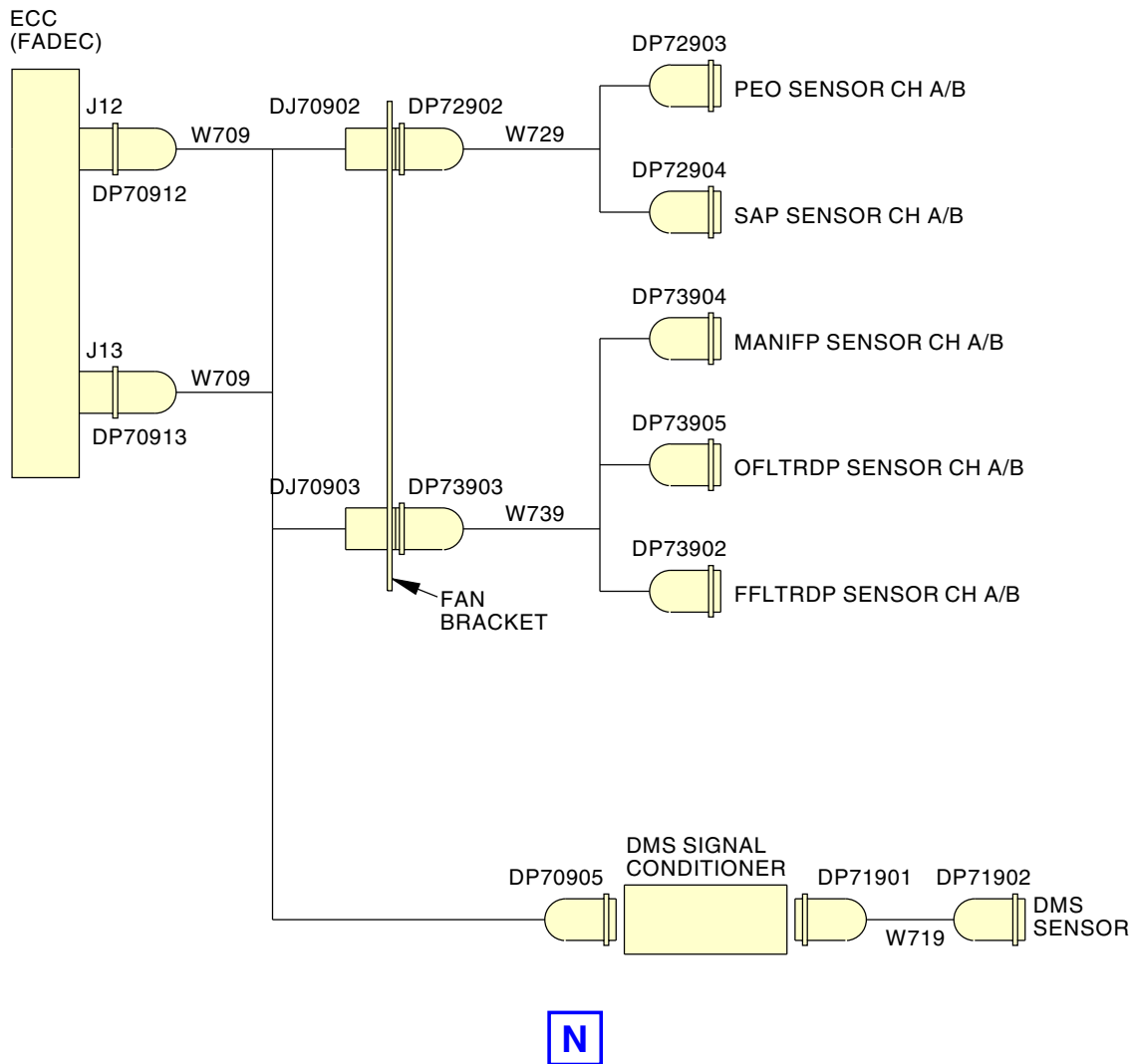
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M07044 S0004286014_V4

EEC (FADEC) Electrical Harness (W709, W719, W729, W739) Installation
Figure 407/73-22-01-990-807-H01

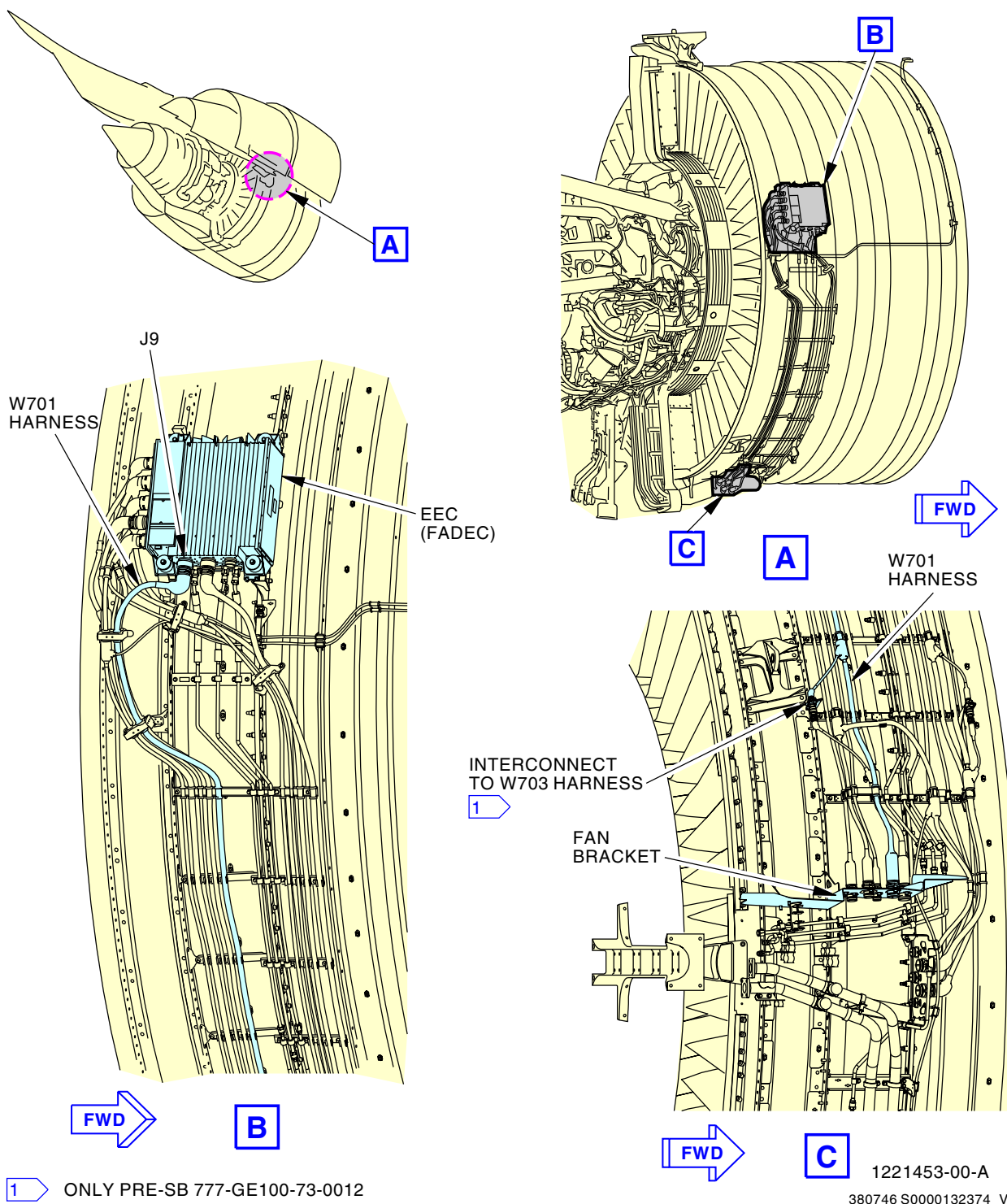
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W701 Electrical Harness Routing
Figure 408/73-22-01-990-829-H01

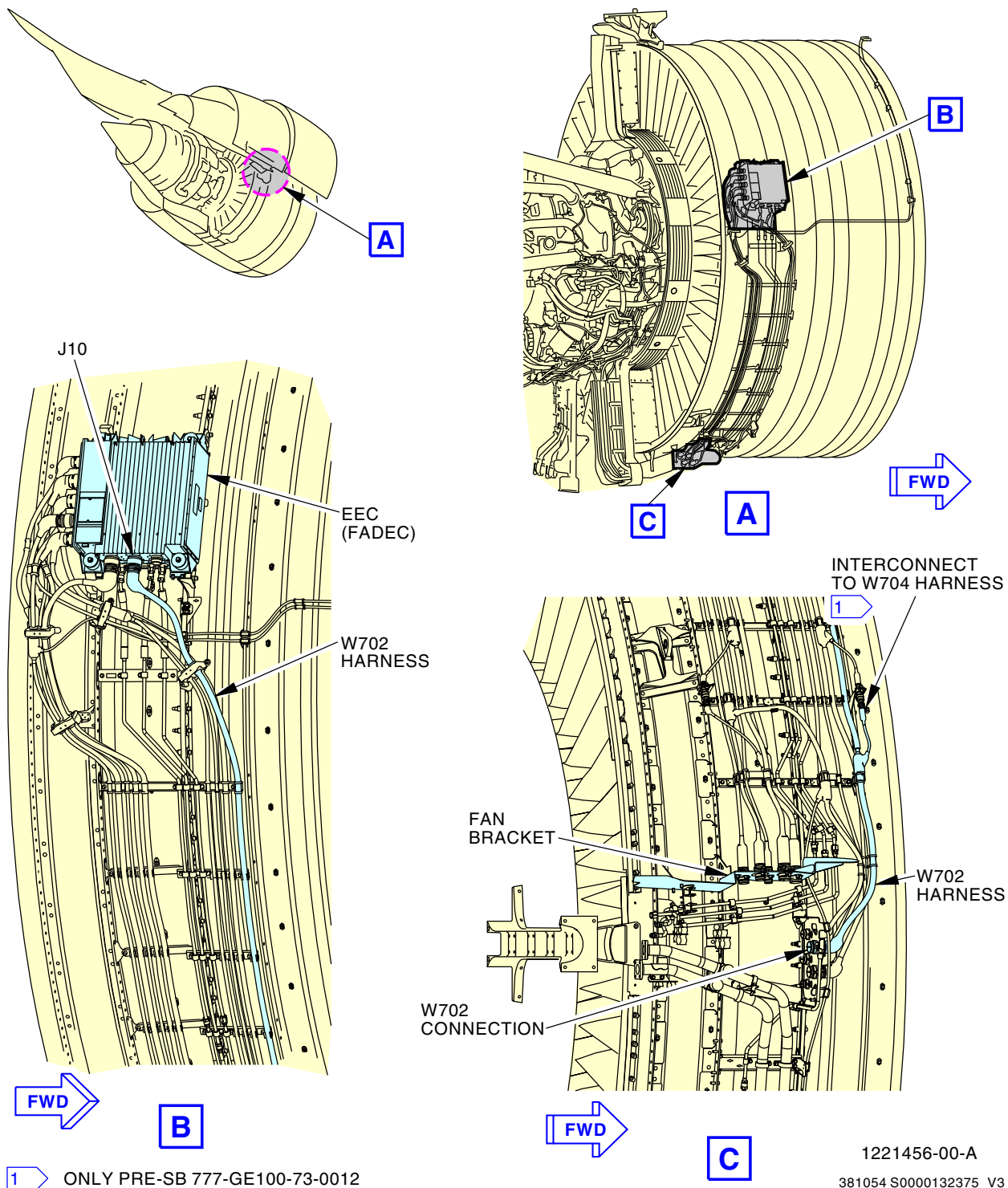
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W702 Electrical Harness Routing
Figure 409/73-22-01-990-828-H01

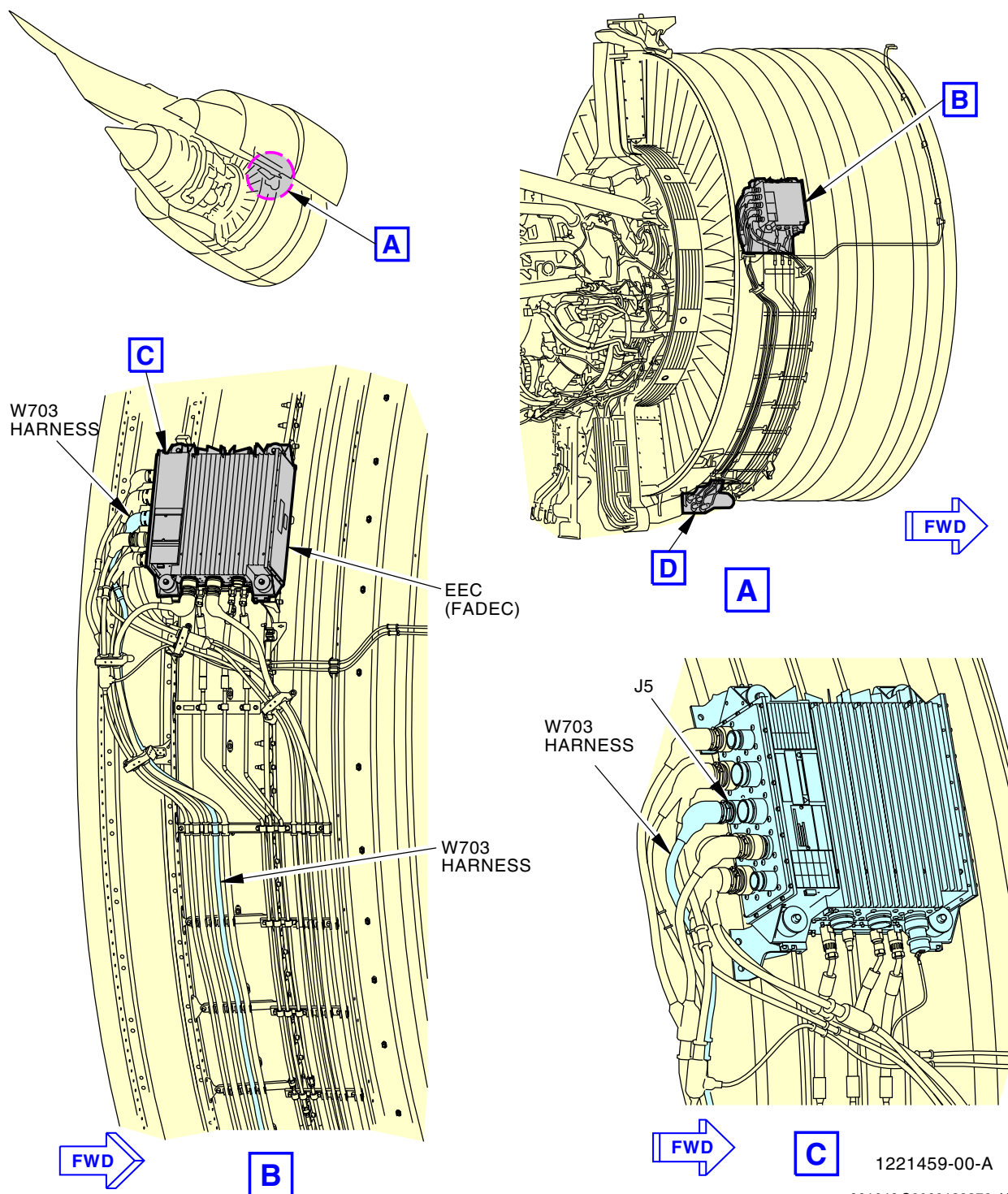
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381643 S0000132376_V3

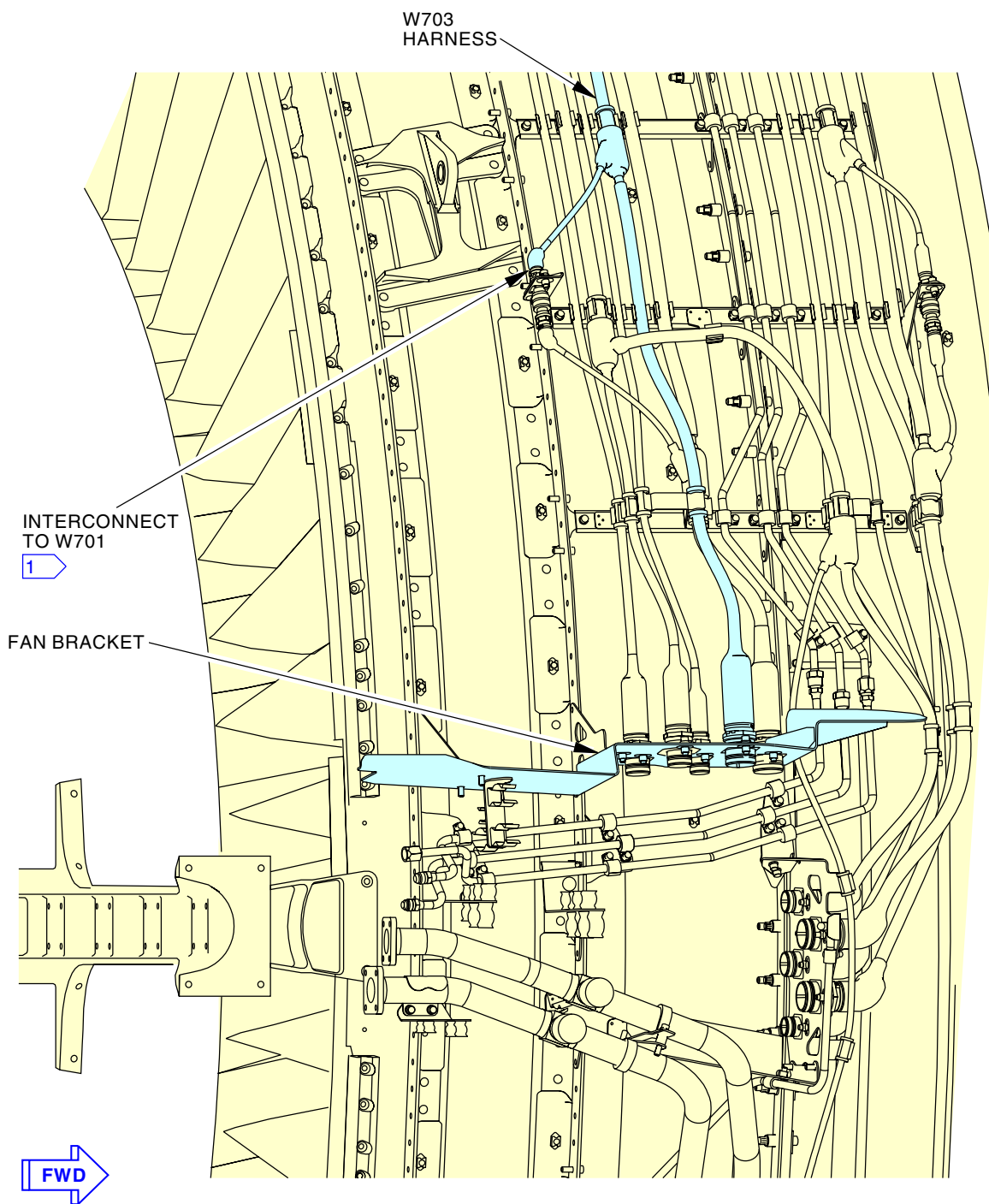
W703 Electrical Harness Routing
Figure 410/73-22-01-990-827-H01 (Sheet 1 of 2)

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1222864-00-A
381728 S0000132378_V3

W703 Electrical Harness Routing
Figure 410/73-22-01-990-827-H01 (Sheet 2 of 2)

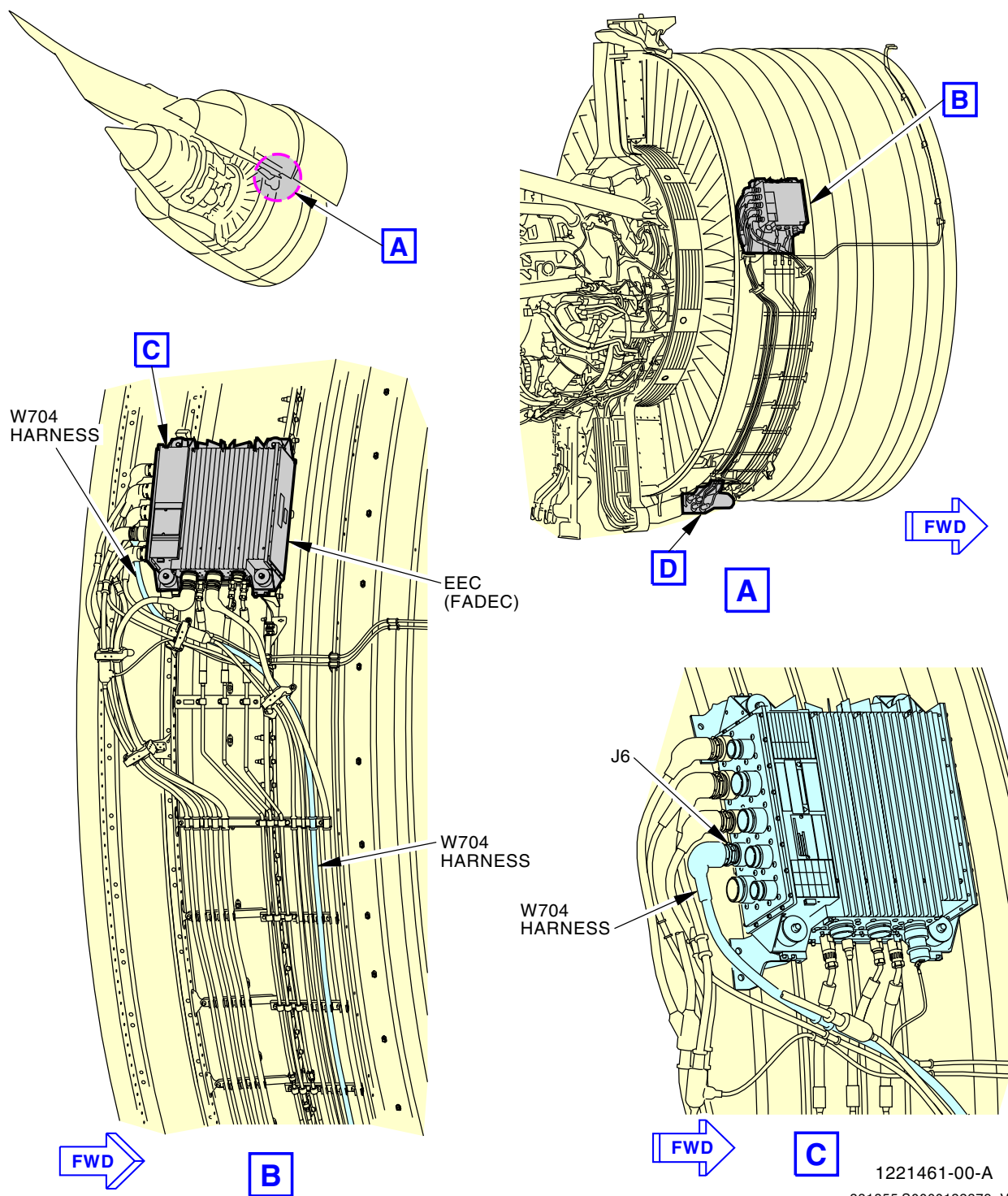
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1221461-00-A
381855 S0000132379_V2

W704 Electrical Harness Routing
Figure 411/73-22-01-990-826-H01 (Sheet 1 of 2)

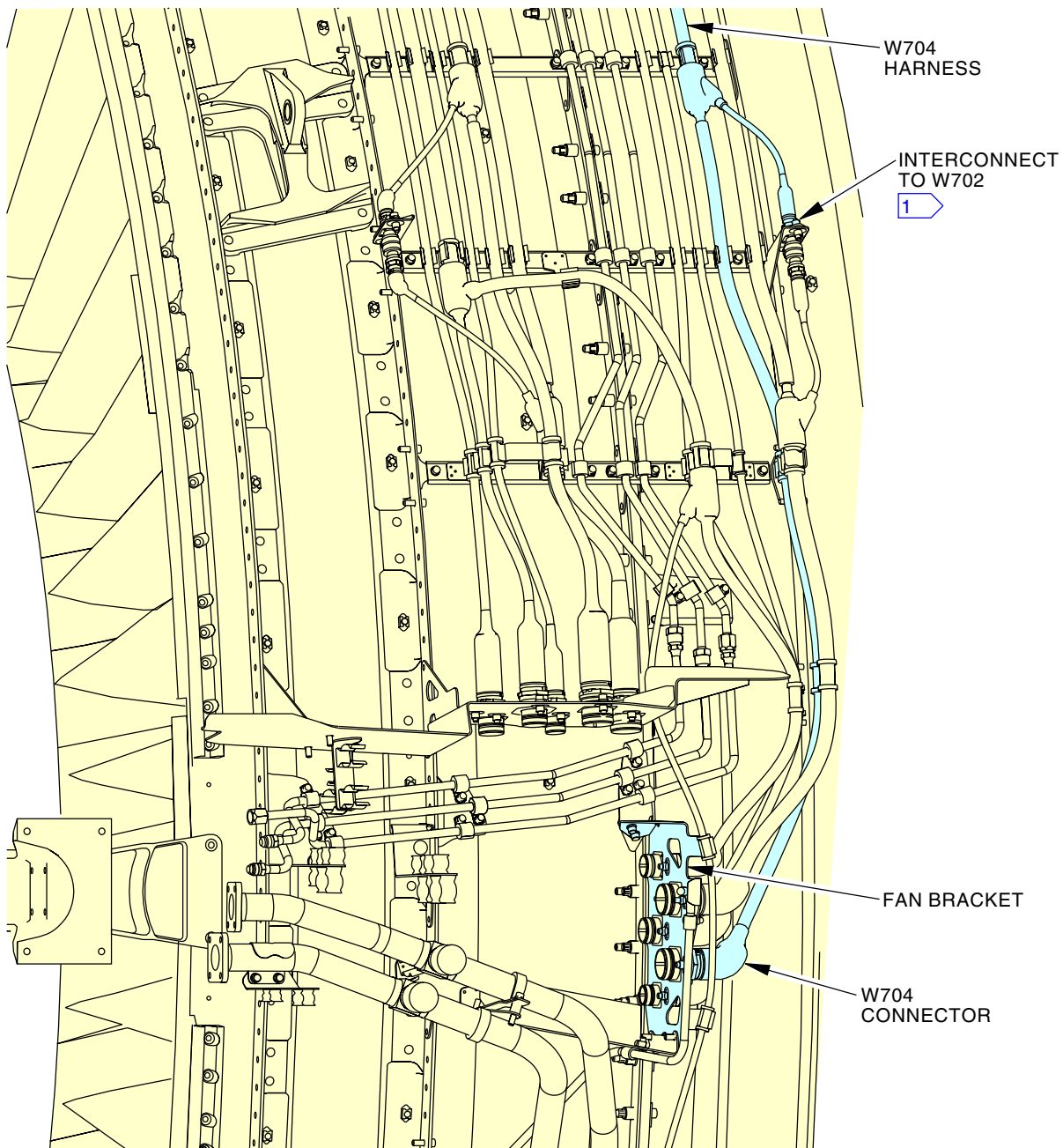
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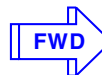
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1222863-00-A

382066 S0000132380_V3

W704 Electrical Harness Routing
Figure 411/73-22-01-990-826-H01 (Sheet 2 of 2)

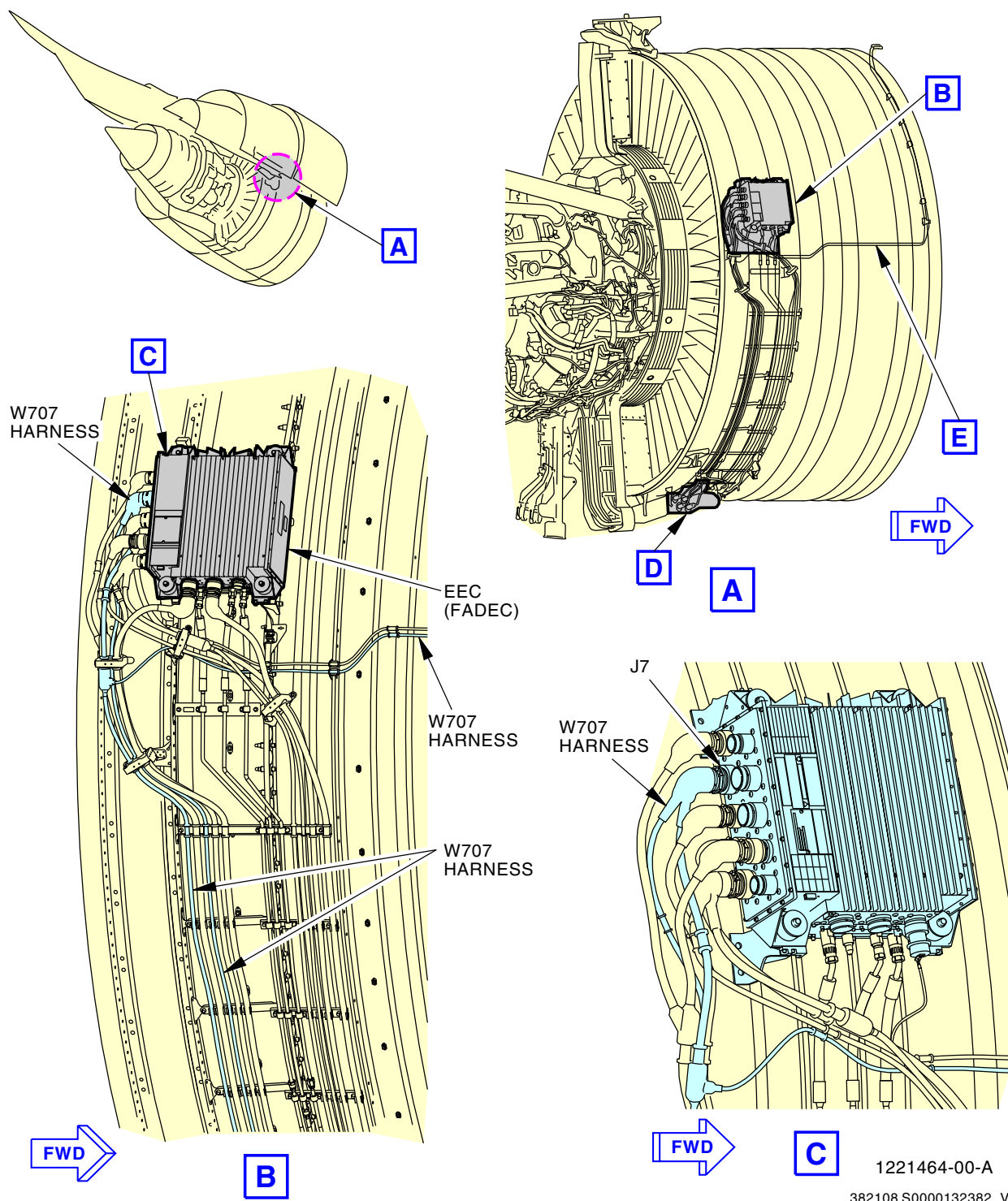
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W707 Electrical Harness Routing
Figure 412/73-22-01-990-825-H01 (Sheet 1 of 3)

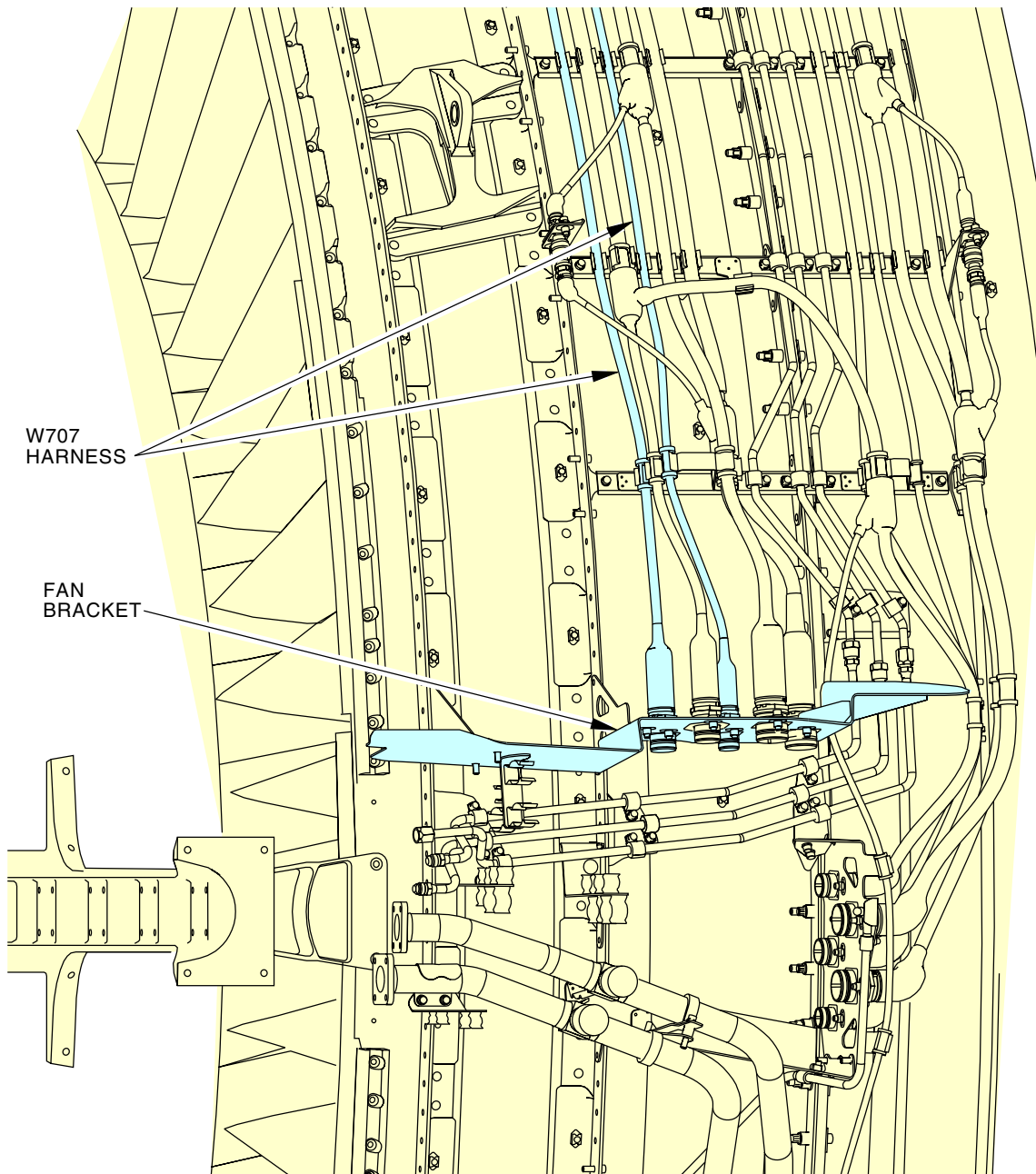
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1222859-00-A

382473 S0000132383_V2

W707 Electrical Harness Routing
Figure 412/73-22-01-990-825-H01 (Sheet 2 of 3)

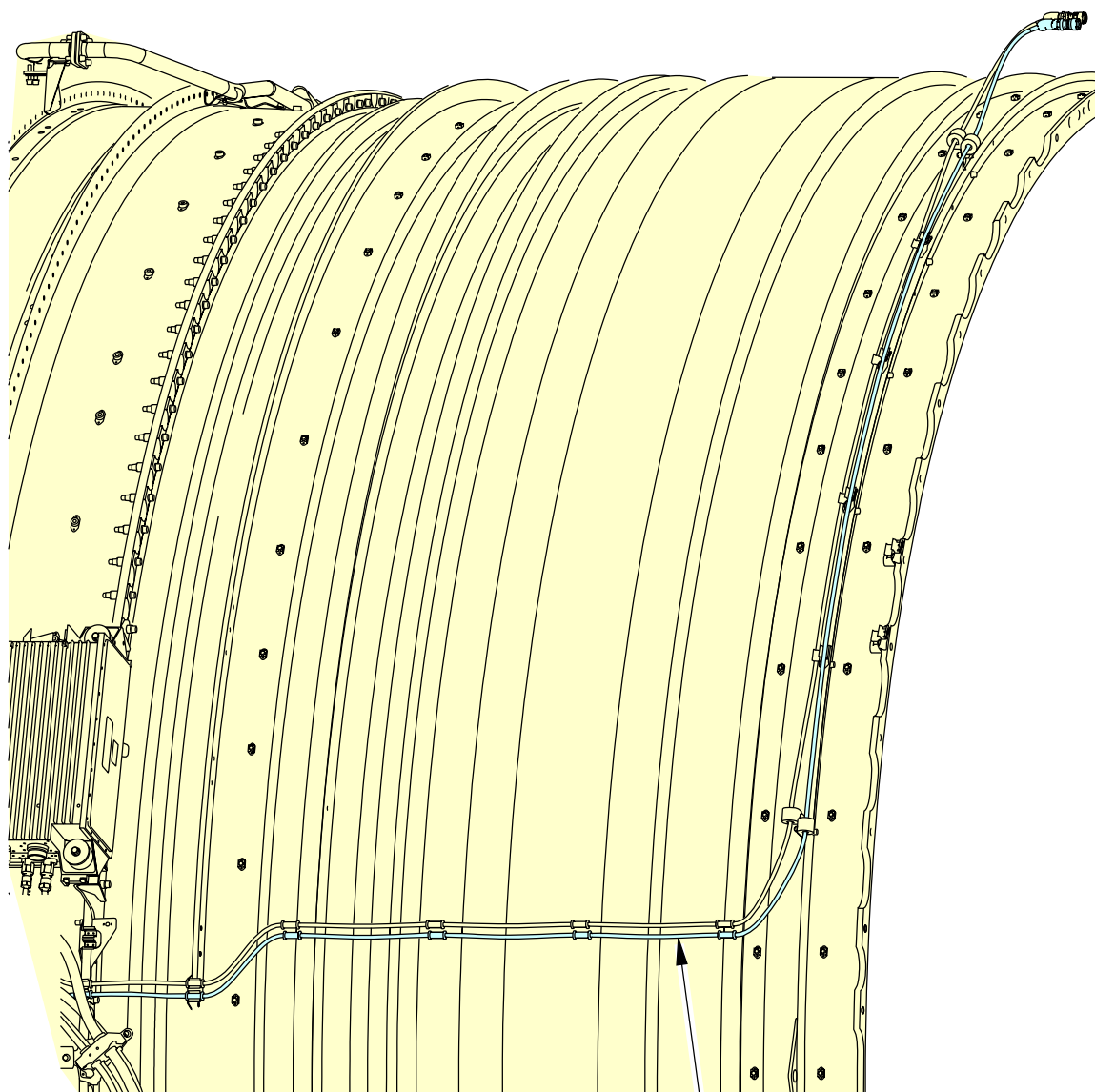
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W707
HARNESS

1222860-00-A

382505 S0000132384_V2

W707 Electrical Harness Routing
Figure 412/73-22-01-990-825-H01 (Sheet 3 of 3)

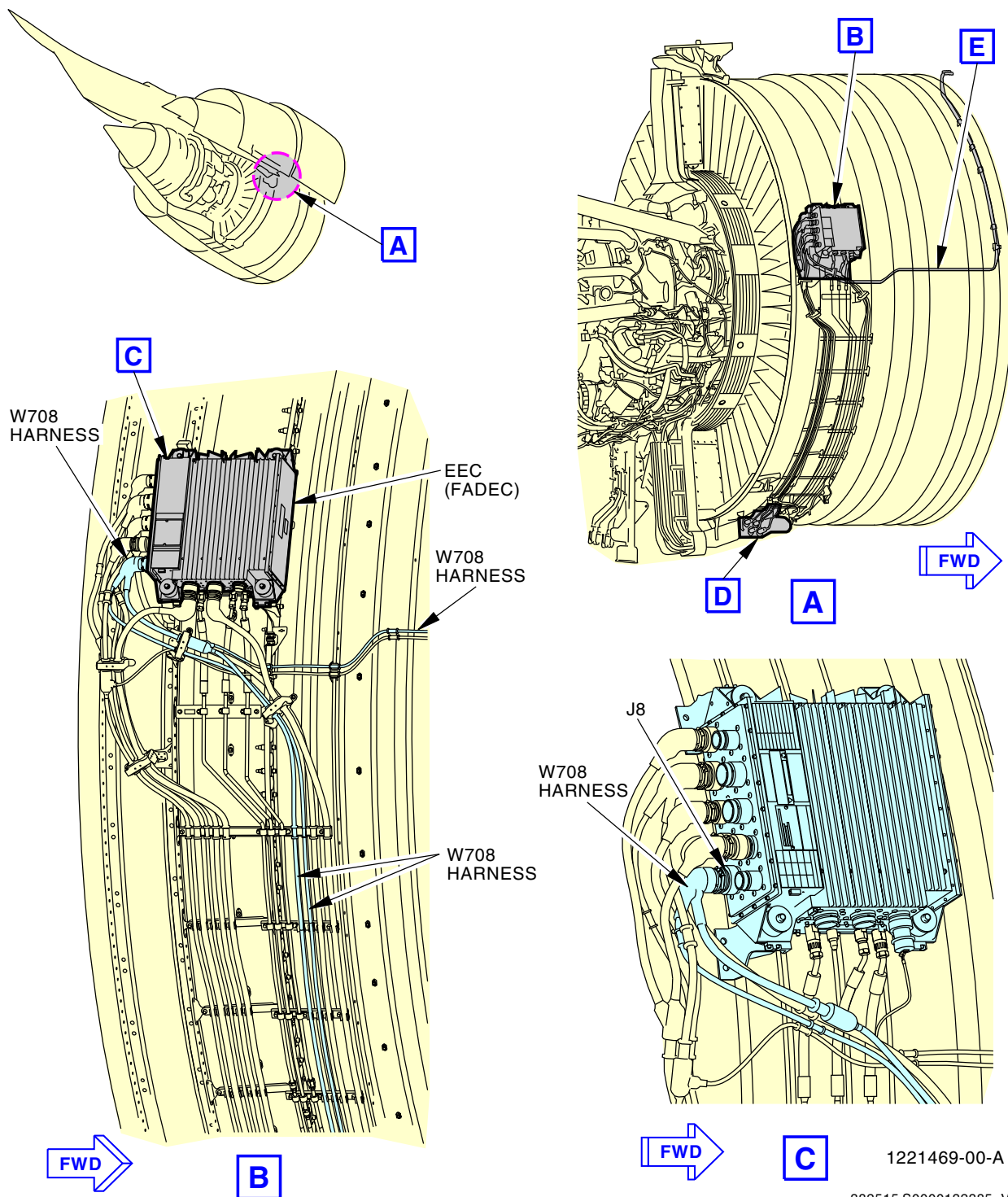
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1221469-00-A

382515 S0000132385_V2

W708 Electrical Harness Routing
Figure 413/73-22-01-990-824-H01 (Sheet 1 of 3)

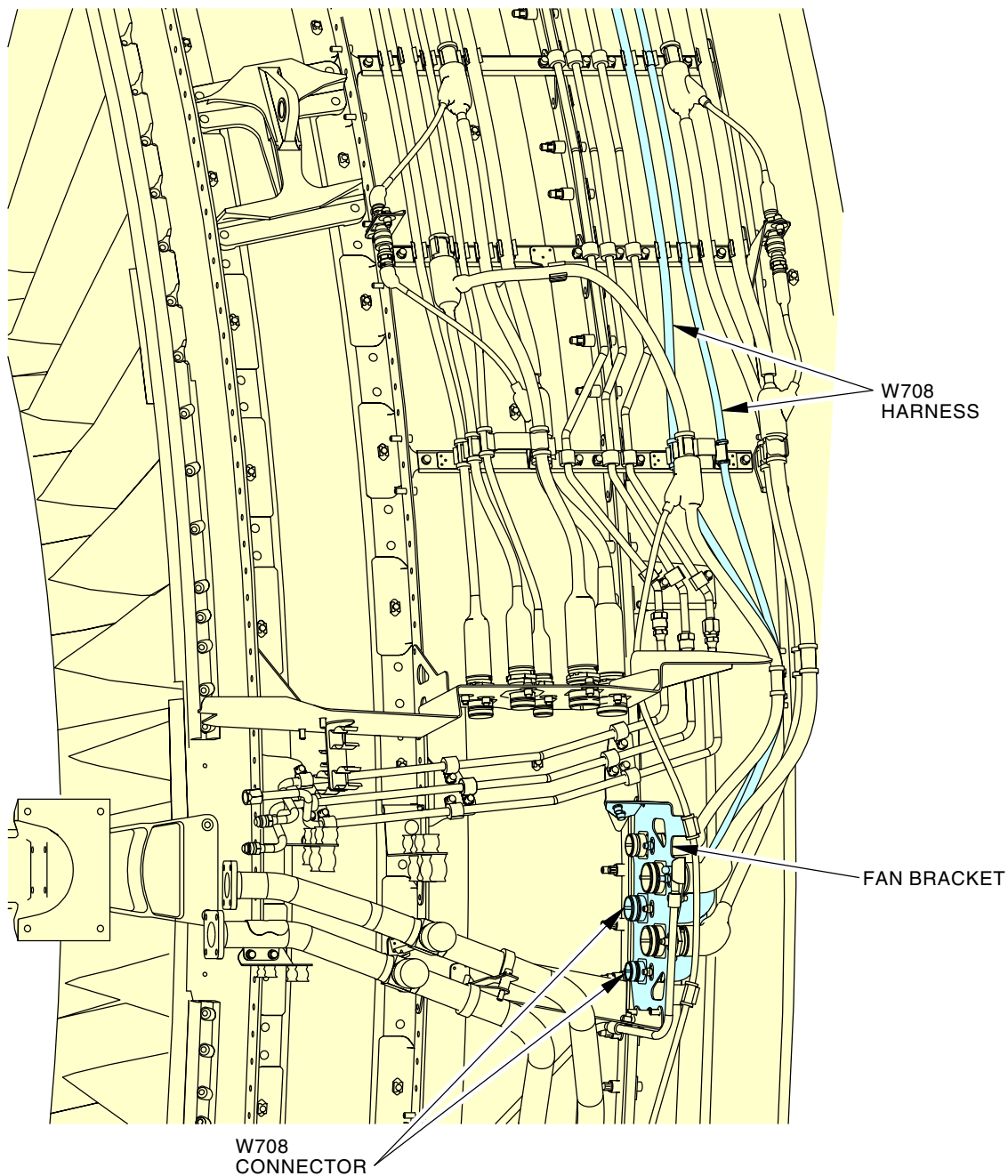
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1222851-00-A

382634 S0000132386_V2

W708 Electrical Harness Routing
Figure 413/73-22-01-990-824-H01 (Sheet 2 of 3)

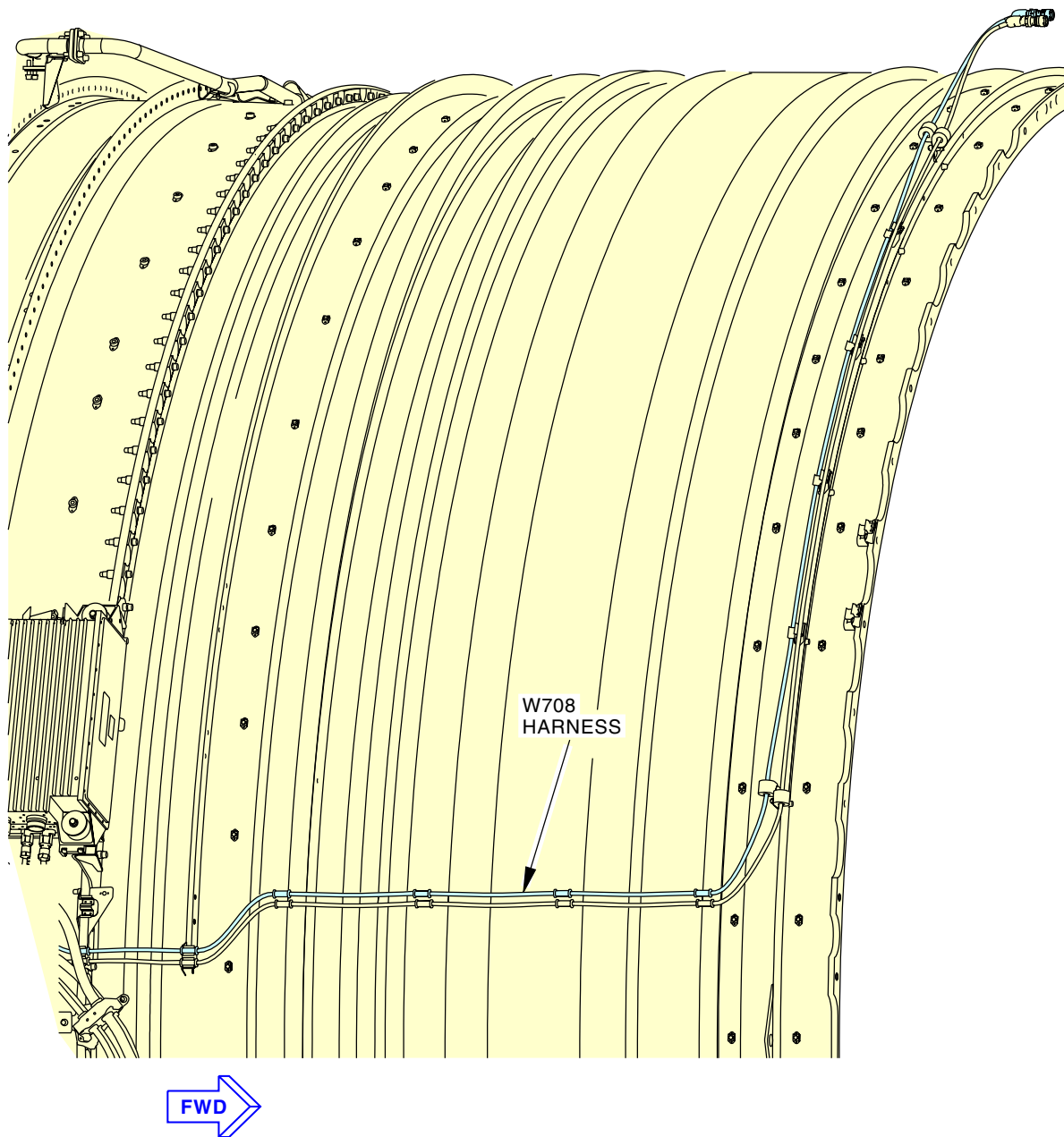
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1222852-00-A

382638 S0000132387_V2

W708 Electrical Harness Routing
Figure 413/73-22-01-990-824-H01 (Sheet 3 of 3)

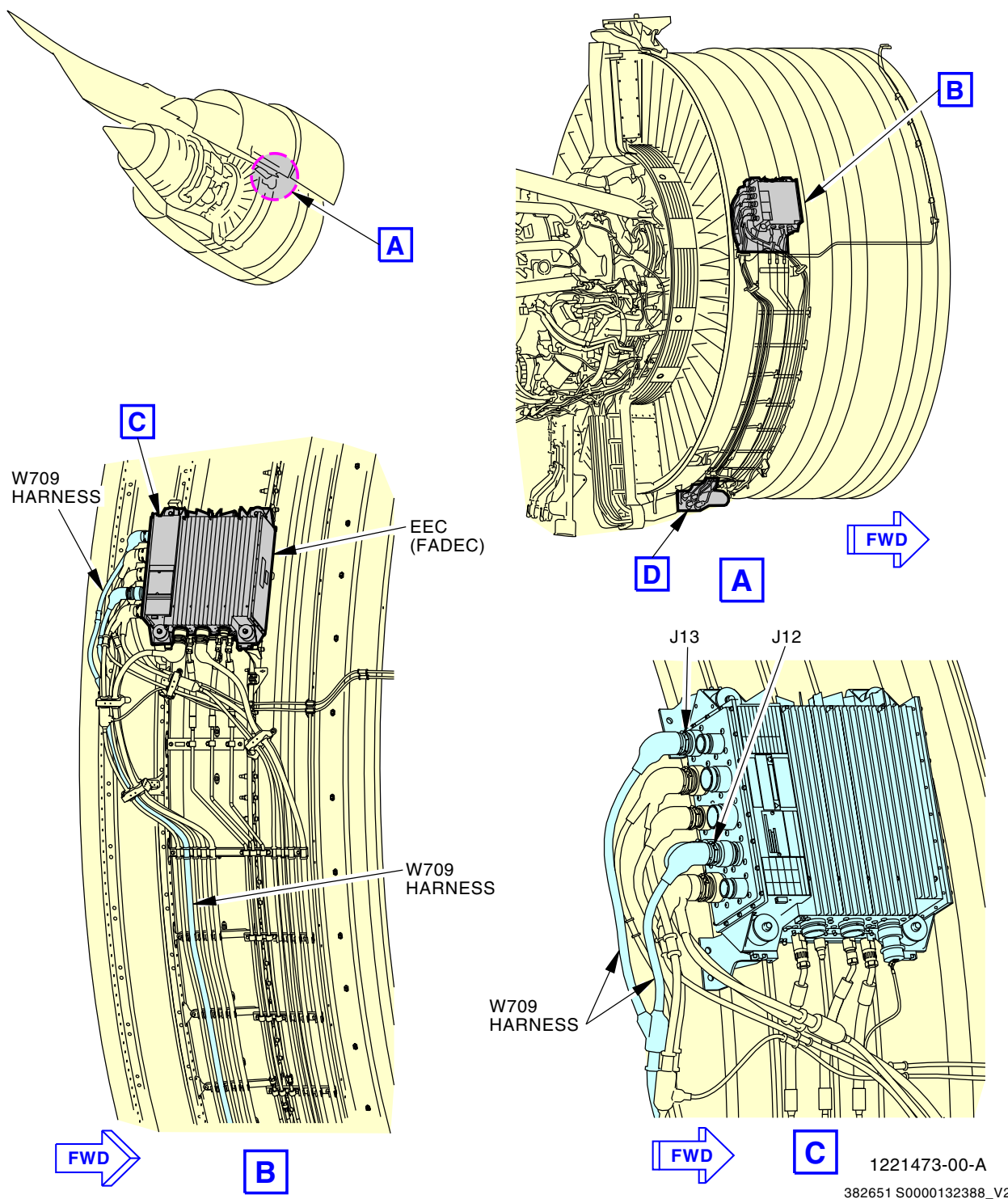
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W709 Electrical Harness Routing
Figure 414/73-22-01-990-823-H01 (Sheet 1 of 3)

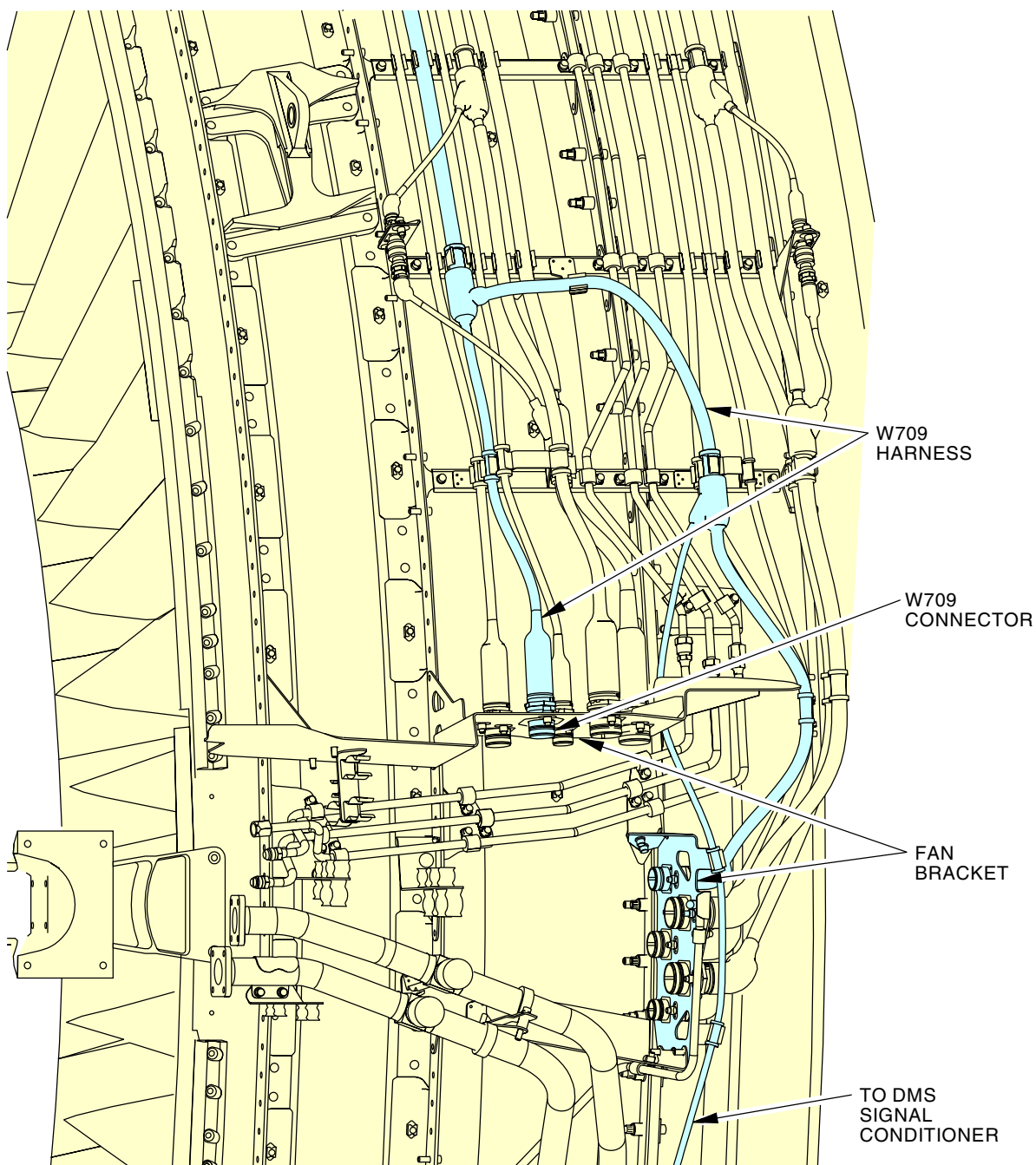
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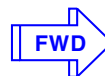
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1222865-00-A
382803 S0000132389_V2

W709 Electrical Harness Routing
Figure 414/73-22-01-990-823-H01 (Sheet 2 of 3)

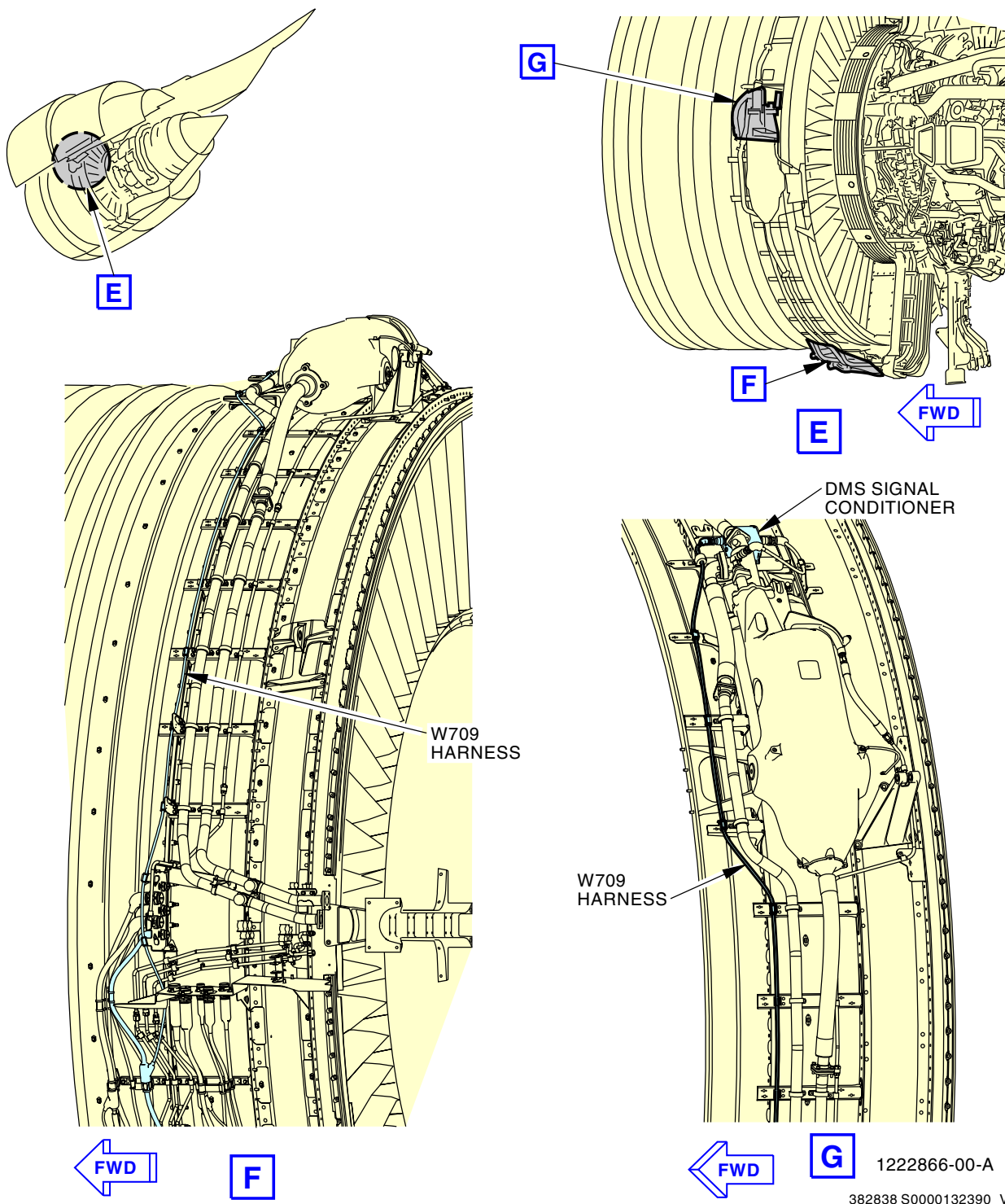
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W709 Electrical Harness Routing
Figure 414/73-22-01-990-823-H01 (Sheet 3 of 3)

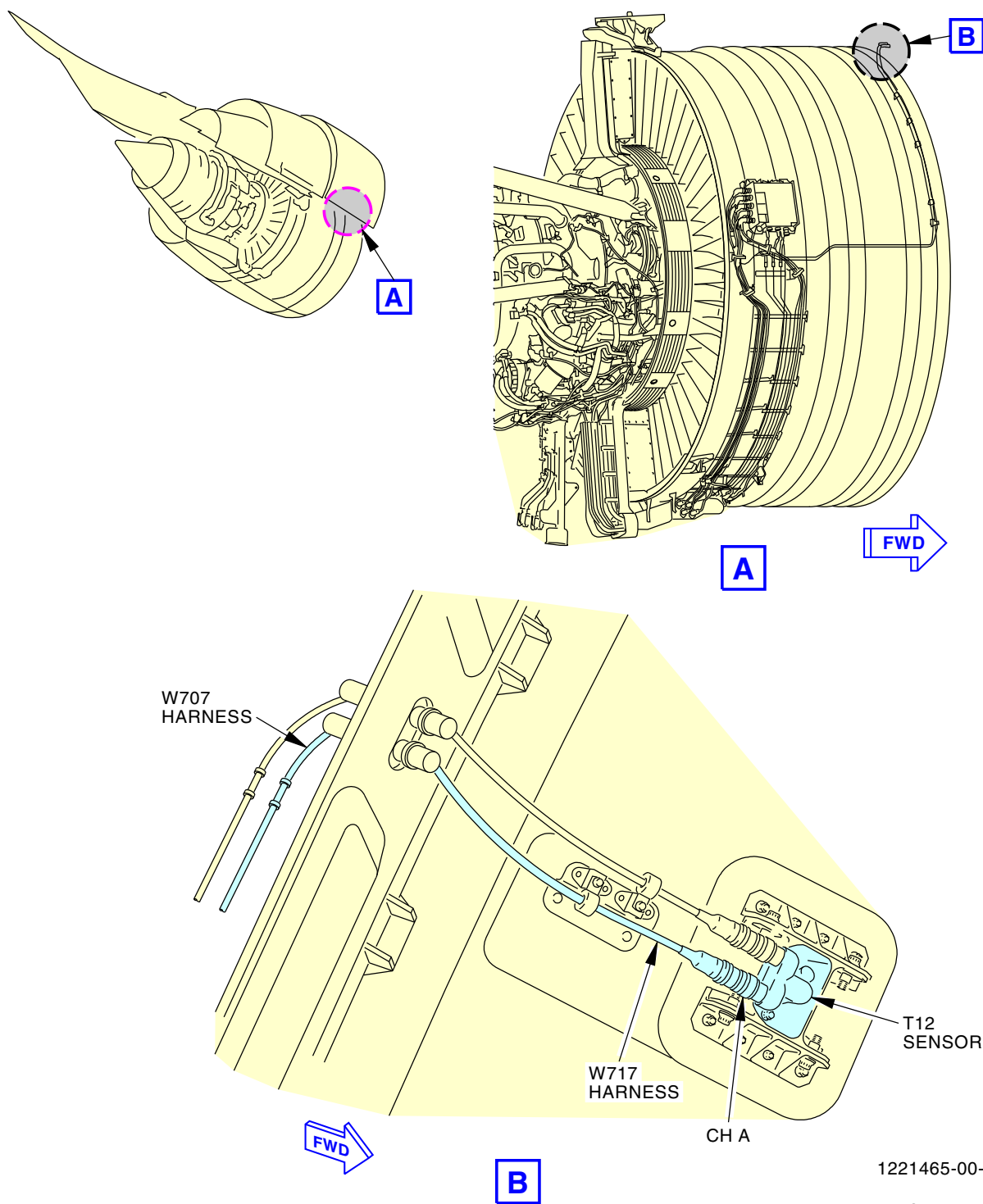
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1221465-00-A

382867 S0000132525_V2

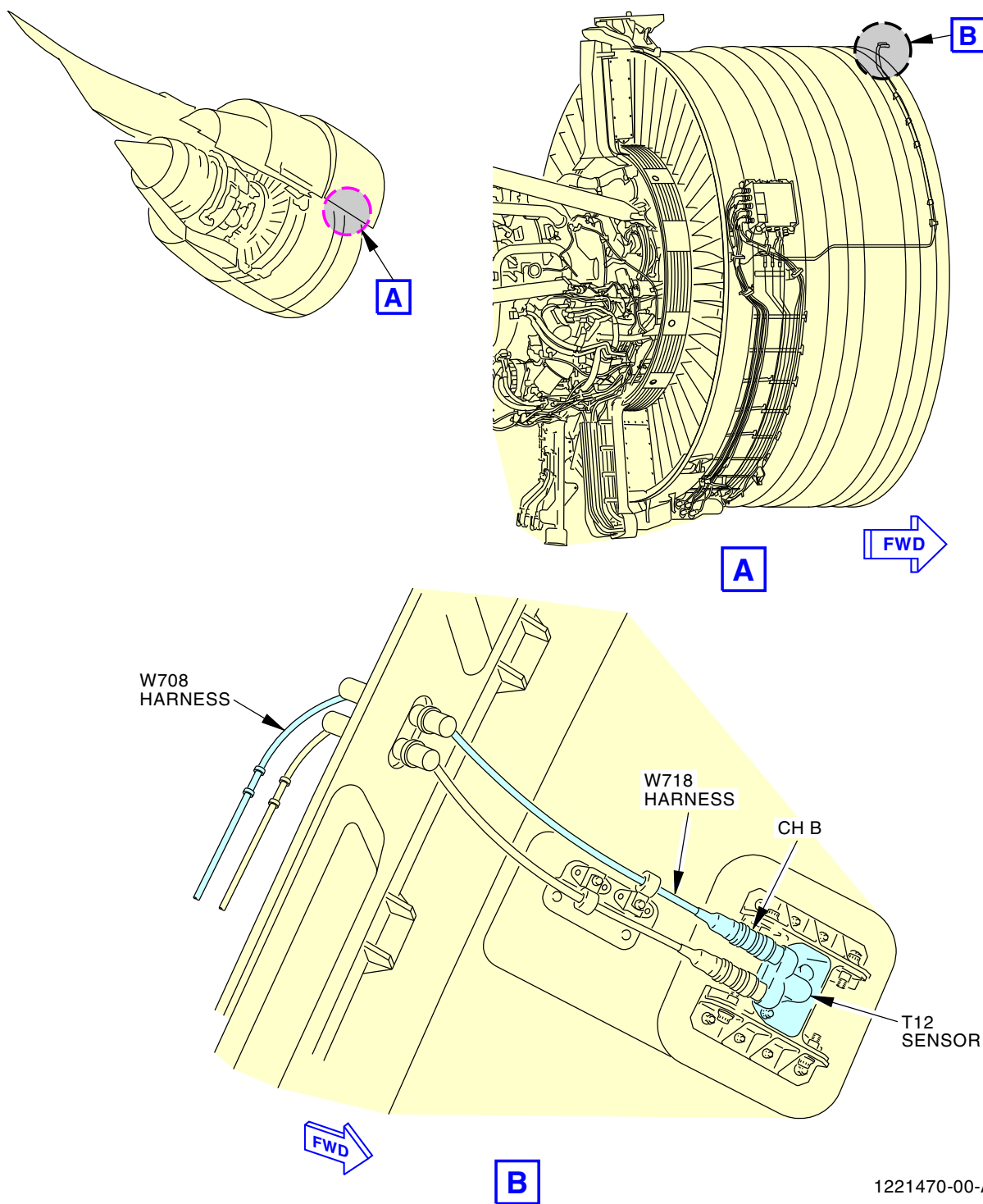
W717 Electrical Harness Routing
Figure 415/73-22-01-990-822-H01

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1221470-00-A
382878 S0000132526_V2

W718 Electrical Harness Routing
Figure 416/73-22-01-990-821-H01

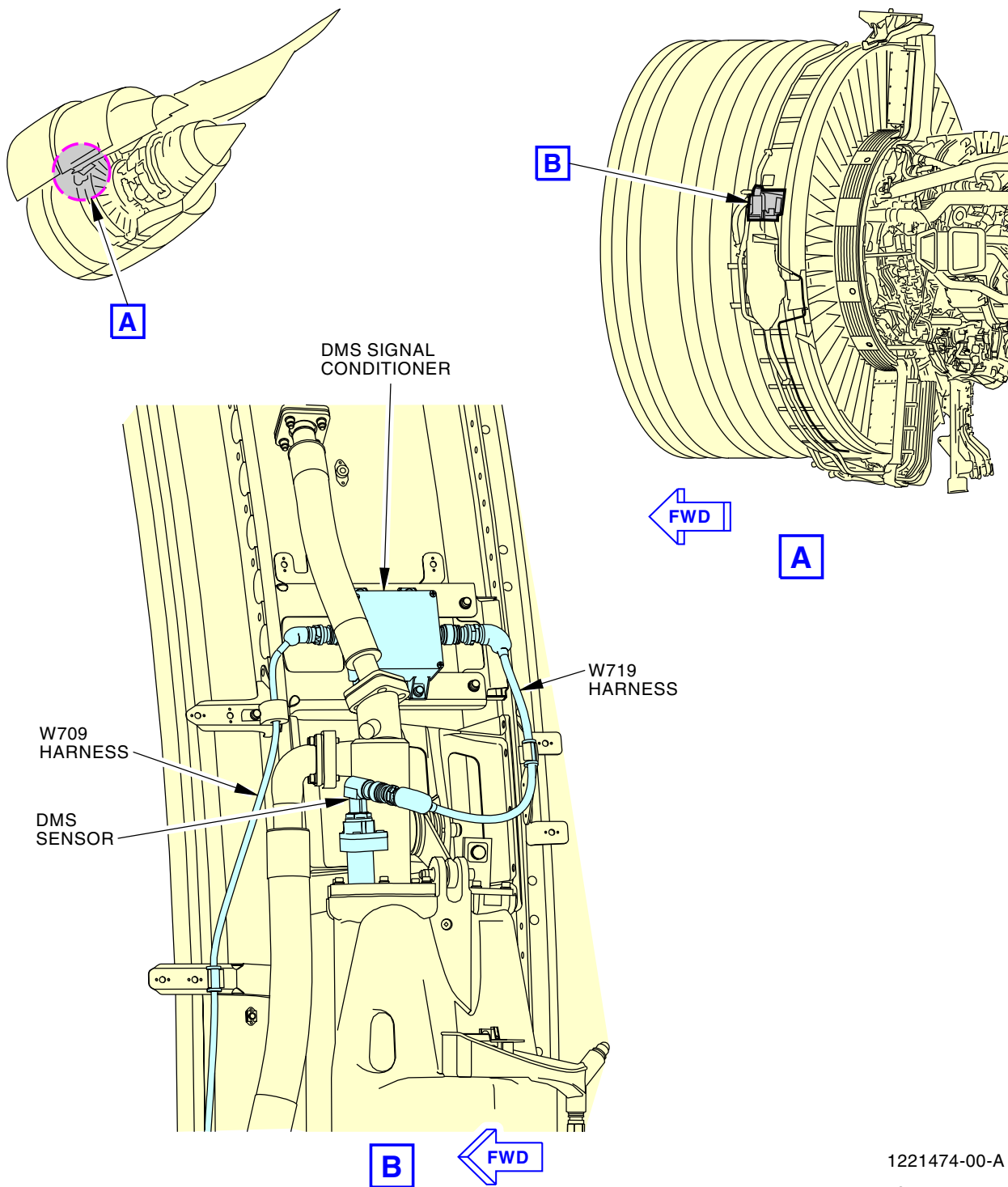
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1221474-00-A

382982 S0000132528_V2

W719 Electrical Harness Routing
Figure 417/73-22-01-990-820-H01

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TASK 73-22-01-400-802-H01

5. EEC (FADEC) Electrical Harnesses (W701-W704, W707-W709, and W717-W719) Installation**A. General**

- (1) This task is the installation procedure for the EEC (FADEC) electrical harnesses that are on the engine fan case.
- (2) You must do an operational check after you install the EEC (FADEC) electrical harnesses that are on the engine fan case.

B. References

Reference	Title
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
70-00-01-400-807-H01	Electrical Connector - Disconnect and Connect (P/B 201)
71-00-00-800-833-H00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-814-H00	Close the Fan Cowl Panel (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)

D. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

E. Access Panels

Number	Name/Location
412BR	T12 Inlet Temperature Sensor Panel, Left Engine
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
422BR	T12 Inlet Temperature Sensor Panel, Right Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine

F. Procedure

SUBTASK 73-22-01-420-002-H01



USE TEFLON-JAWED PLIERS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.



MAKE SURE THE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU CONNECT THEM. THE CONTAMINATION OF THE ELECTRICAL CONNECTOR CAN CAUSE DAMAGE TO THE EQUIPMENT.

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MAKE SURE THAT THERE IS NO TENSION IN THE ELECTRICAL HARNESSES WHEN YOU CONNECT THE ELECTRICAL CONNECTORS. IF THERE IS TENSION, ADJUST THE HARNESS IN THE SPRING CLIPS AND HINGE CLAMPS. TENSION CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS AND THE HARNESSES.

- (1) Use teflon-jawed pliers, STD-664 to install the W701 EEC (FADEC) electrical harness (Figure 401, Figure 402, and Figure 408)(Electrical Connector - Disconnect and Connect, TASK 70-00-01-400-807-H01):
 - (a) Remove the protective covers from the harness connectors and receptacle and the component receptacles.
 - (b) Put the W701 harness in its position in the spring clips.
 - (c) Put the W701 harness loosely in its position in the hinge clamps on the fan case.
 - 1) Make sure you position the removable part of the hinge clamps correctly (Figure 401 View G and H).
 - (d) Loosely connect the W701 harness connector (DP70109) to the EEC (FADEC) J9 receptacle.
 - (e) Loosely connect the W701 harness receptacle (DJ70102) to the fan case bracket with bolts.
 - (f) Tighten the bolts to 110-120 pound-inches (12.4-13.6 Newton-meters).
 - (g) Loosely connect the W721 harness connector (DP72102) to the W701 receptacle (DJ70102) at the fan case.

ARO ALL PRE SB 777-GE90-73-0012

- (h) Loosely connect the W701 harness connector (Interconnection to W703 (DP70103) to the W703 harness receptacle (interconnection to W701) (DJ70303).

ARO ALL

- (i) Tighten the harness connectors.
- (j) Close the hinge clamps and install the bolts.
- (k) Tighten the bolts to 55-70 pound-inches (6.2-7.9 Newton-meters).

SUBTASK 73-22-01-420-003-H01



USE TEFLON-JAWED PLIERS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.



MAKE SURE THE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU CONNECT THEM. THE CONTAMINATION OF THE ELECTRICAL CONNECTOR CAN CAUSE DAMAGE TO THE EQUIPMENT.

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MAKE SURE THAT THERE IS NO TENSION IN THE ELECTRICAL HARNESSES WHEN YOU CONNECT THE ELECTRICAL CONNECTORS. IF THERE IS TENSION, ADJUST THE HARNESS IN THE SPRING CLIPS AND HINGE CLAMPS. TENSION CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS AND THE HARNESSES.

- (2) Use teflon-jawed pliers, STD-664 to Install the W702 EEC (FADEC) electrical harness (Figure 401, Figure 403, and Figure 409)(Electrical Connector - Disconnect and Connect, TASK 70-00-01-400-807-H01):
- (a) Remove the protective covers from the harness connectors and receptacles and the component receptacles.
 - (b) Put the W702 harness in its position in the spring clips.
 - (c) Put the W702 harness in its position in the hinge clamp cushions.
 - 1) Make sure you position the removable part of the hinge clamp correctly (Figure 401 View I).
 - (d) Loosely connect the W702 harness connector (DP70210) to the EEC (FADEC) J10 receptacle.
 - (e) Loosely connect the W702 harness receptacle (DJ70202) to the fan case bracket with bolts.
 - (f) Tighten the bolts to 110-120 pound-inches (12.4-13.6 Newton-meters).
 - (g) Loosely connect the W722 harness connector (DP72202) to the W702 receptacle (DJ70202) at the fan case.

ARO ALL PRE SB 777-GE90-73-0012

- (h) Loosely connect the W702 harness connector (interconnection to W704) (DP70203) to the W704 harness receptacle (interconnection to W702) (DJ70403).

ARO ALL

- (i) Tighten the harness connectors.
- (j) Close the hinge clamps and install the bolts.
- (k) Tighten the bolts to 55-70 pound-inches (6.2-7.9 Newton-meters).

SUBTASK 73-22-01-420-004-H01



USE TEFLON-JAWED PLIERS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.



MAKE SURE THE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU CONNECT THEM. THE CONTAMINATION OF THE ELECTRICAL CONNECTOR CAN CAUSE DAMAGE TO THE EQUIPMENT.

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MAKE SURE THAT THERE IS NO TENSION IN THE ELECTRICAL HARNESSES WHEN YOU CONNECT THE ELECTRICAL CONNECTORS. IF THERE IS TENSION, ADJUST THE HARNESS IN THE SPRING CLIPS AND HINGE CLAMPS. TENSION CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS AND THE HARNESSES.

- (3) Use teflon-jawed pliers, STD-664 to install the W703 EEC (FADEC) electrical harness (Figure 401, Figure 404, and Figure 410)(Electrical Connector - Disconnect and Connect, TASK 70-00-01-400-807-H01):
- (a) Remove the protective covers from the harness connectors and receptacles and the component receptacles.
 - (b) Put the W703 harness in its position in the spring clips.
 - (c) Put the W703 harness in its position in the hinge clamp cushions.
 - 1) Make sure you position the removable part of the hinge clamps correctly (Figure 401 View G and H).
 - (d) Loosely connect the W703 harness connector (DP70305) to the EEC (FADEC) J5 receptacle.
 - (e) Loosely connect the W703 harness receptacle (DJ70302) to the fan case bracket with bolts.
 - (f) Tighten the bolts to 110-120 pound-inches (12.4-13.6 Newton meters).
 - (g) Loosely connect the W723 harness connector (DP72302) to the W723 receptacle (DJ70302) at the fan case.

ARO ALL PRE SB 777-GE90-73-0012

- (h) Loosely connect the W703 harness receptacle (interconnection to W701) (DJ70303) to the W701 harness connector (interconnection to W703) (DP70103).

ARO ALL

- (i) Tighten the harness connectors.
- (j) Close the hinge clamps and install the bolts.
- (k) Tighten the bolts to 55-70 pound-inches (6.2-7.9 Newton-meters).

SUBTASK 73-22-01-420-005-H01



USE TEFLON-JAWED PLIERS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.



MAKE SURE THE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU CONNECT THEM. THE CONTAMINATION OF THE ELECTRICAL CONNECTOR CAN CAUSE DAMAGE TO THE EQUIPMENT.

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MAKE SURE THAT THERE IS NO TENSION IN THE ELECTRICAL HARNESSSES WHEN YOU CONNECT THE ELECTRICAL CONNECTORS. IF THERE IS TENSION, ADJUST THE HARNESS IN THE SPRING CLIPS AND HINGE CLAMPS. TENSION CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS AND THE HARNESSSES.

- (4) Use teflon-jawed pliers, STD-664 to install the W704 EEC (FADEC) electrical harness (Figure 401, Figure 405, and Figure 411)(Electrical Connector - Disconnect and Connect, TASK 70-00-01-400-807-H01):
- (a) Remove the protective covers from the harness connectors and receptacle and the component receptacle.
 - (b) Put the W704 harness in its position in the spring clips.
 - (c) Put the W704 harness in its position in the hinge clamp cushions.
 - 1) Make sure you position the removable part of the hinge clamps correctly (Figure 401View F and I).
 - (d) Loosely connect the W704 harness connector (DP70406) to the EEC (FADEC) J6 receptacle.
 - (e) Loosely connect the W704 harness receptacle (DJ70402) to the fan case bracket with bolts.
 - (f) Tighten the bolts to 110-120 pound-inches (12.4-13.6 Newton-meters).
 - (g) Loosely connect the W724 harness connector (DP72402) to the W704 receptacle (DJ70402) at the fan case.

ARO ALL PRE SB 777-GE90-73-0012

- (h) Loosely connect the W704 harness receptacle (interconnection to W702 (DJ70403)) to the W702 harness connector (interconnection to W704) (DP70203).

ARO ALL

- (i) Tighten the harness connectors.
- (j) Close the hinge clamps and install the bolts.
- (k) Tighten the bolts to 55-70 pound-inches (6.2-7.9 Newton-meters).

SUBTASK 73-22-01-420-006-H01



USE TEFLON-JAWED PLIERS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.



MAKE SURE THE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU CONNECT THEM. THE CONTAMINATION OF THE ELECTRICAL CONNECTOR CAN CAUSE DAMAGE TO THE EQUIPMENT.

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MAKE SURE THAT THERE IS NO TENSION IN THE ELECTRICAL HARNESSES WHEN YOU CONNECT THE ELECTRICAL CONNECTORS. IF THERE IS TENSION, ADJUST THE HARNESS IN THE SPRING CLIPS AND HINGE CLAMPS. TENSION CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS AND THE HARNESSES.

- (5) Use teflon-jawed pliers, STD-664 to install the W707 EEC (FADEC) electrical harness (Figure 401, Figure 406, and Figure 412) (Electrical Connector - Disconnect and Connect, TASK 70-00-01-400-807-H01):
- (a) Remove the protective covers from the harness connectors and receptacle and the component receptacles.
 - (b) Put the W707 harness in its position in the spring clips.
 - (c) Put the W707 harness loosely in its position in the hinge clamps.
 - 1) Make sure you position the removable part of the hinge clamps correctly (Figure 401 View F, G, H and I).
 - (d) Loosely connect the W707 harness connector (DP70707) to the EEC (FADEC) J7 receptacle.
 - (e) Loosely connect the W707 harness receptacle (DJ70703) to the fan case bracket with bolts.
 - (f) Tighten the bolts to 110-120 pound-inches (12.4-13.6 Newton-meters).
 - (g) Loosely connect the W727 harness [1] connector (DP72703) to the W707 receptacle (DJ70703) at the fan case.
 - (h) Loosely connect the W707 harness receptacle (DJ70702) to the fan case bracket with bolts.
 - (i) Tighten the bolts to 110-120 pound-inches (12.4-13.6 Newton-meters) at the fan case.
 - (j) Loosely connect the W737 harness connector (DP73702) to the W707 receptacle (DJ70702).
 - (k) Loosely connect the W717 harness receptacle (DJ71704) to the W707 connector (DP70704).
 - (l) Tighten the harness connectors.
 - (m) Close the hinge clamps and install the bolts.
 - (n) Tighten the bolts to 110-120 pound-inches (12.4-13.6 Newton-meters).

SUBTASK 73-22-01-420-007-H01



USE TEFLON-JAWED PLIERS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.



MAKE SURE THE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU CONNECT THEM. THE CONTAMINATION OF THE ELECTRICAL CONNECTOR CAN CAUSE DAMAGE TO THE EQUIPMENT.

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MAKE SURE THAT THERE IS NO TENSION IN THE ELECTRICAL HARNESSSES WHEN YOU CONNECT THE ELECTRICAL CONNECTORS. IF THERE IS TENSION, ADJUST THE HARNESS IN THE SPRING CLIPS AND HINGE CLAMPS. TENSION CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS AND THE HARNESSSES.

- (6) Use teflon-jawed pliers, STD-664 to install the W708 EEC (FADEC) electrical harness (Figure 401, Figure 406, and Figure 413)(Electrical Connector - Disconnect and Connect, TASK 70-00-01-400-807-H01):
- (a) Remove the protective covers from the harness connectors and receptacles and the component receptacles.
 - (b) Put the W708 harness in its position in the spring clips.
 - (c) Put the W708 harness in its position in the hinge clamp cushions.
 - 1) Make sure you position the removable part of the hinge clamps correctly (Figure 401View F,G, H and I).
 - (d) Loosely connect the W708 harness connector (DP70808) to the EEC (FADEC) J8 receptacle.
 - (e) Loosely connect the W708 harness receptacle (DJ70802) to the fan case bracket with bolts.
 - (f) Tighten the bolts to 110-120 pound-inches (12.4-13.6 Newton-meters).
 - (g) Loosely connect the W738 harness connector (DP73802) to the W708 receptacle (DJ70802) at the fan case.
 - (h) Loosely connect the W708 harness receptacle (DJ70803) to the fan case bracket with bolts.
 - (i) Tighten the bolts to 110-120 pound-inches (12.4-13.6 Newton-meters).
 - (j) Loosely connect the W728 harness connector (DP72803) to the W708 receptacle (DJ70803) at the fan case.
 - (k) Loosely connect the W718 harness receptacle (DJ71804) to the W708 connector (DP70804).
 - (l) Tighten the harness connectors.
 - (m) Close the hinge clamps and install the bolts.
 - (n) Tighten the bolts to 55-70 pound-inches (6.2-7.9 Newton-meters).

SUBTASK 73-22-01-420-008-H01



USE TEFLON-JAWED PLIERS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.



MAKE SURE THE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU CONNECT THEM. THE CONTAMINATION OF THE ELECTRICAL CONNECTOR CAN CAUSE DAMAGE TO THE EQUIPMENT.

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(CAUTION PRECEDES)



MAKE SURE THAT THERE IS NO TENSION IN THE ELECTRICAL HARNESSES WHEN YOU CONNECT THE ELECTRICAL CONNECTORS. IF THERE IS TENSION, ADJUST THE HARNESS IN THE SPRING CLIPS AND HINGE CLAMPS. TENSION CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS AND THE HARNESSSES.

- (7) Use teflon-jawed pliers, STD-664 to install the W709 EEC (FADEC) electrical harness (Figure 401, Figure 407, and Figure 414)(Electrical Connector - Disconnect and Connect, TASK 70-00-01-400-807-H01):
- (a) Remove the protective covers from the harness connectors and receptacles and the component receptacles.
 - (b) Put the W709 harness in its position in the spring clips.
 - (c) Put the W709 harness in its position in the hinge clamp cushions.
 - 1) Make sure you position the removable part of the hinge clamps correctly (Figure 401View G and H).
 - (d) Loosely connect the W709 harness connector (DP70912) to the EEC (FADEC) J12 receptacle.
 - (e) Loosely connect the W709 harness connector (DP70913) to the EEC (FADEC) J13 receptacle.
 - (f) Loosely connect the W709 harness receptacle (DJ70902) to the fan case bracket with bolts.
 - (g) Tighten the bolts to 110-120 pound-inches (12.4-13.6 Newton-meters).
 - (h) Loosely connect the W729 harness connector (DP72902) to the W709 receptacle (DJ70902) at the fan case.
 - (i) Loosely connect the W709 harness receptacle (DJ70903) to the fan case bracket with bolts.
 - (j) Tighten the bolts to 110-120 pound-inches (12.4-13.6 Newton-meters).
 - (k) Loosely connect the W739 harness connector (DP73903) to the W709 receptacle (DJ70903) at the fan case.
 - (l) Loosely connect the W709 harness connector (DJ70905) to the DMS signal conditioner.
 - (m) Tighten the harness connectors.
 - (n) Close the hinge clamps and install the bolts.
 - (o) Tighten the bolts to 55-70 pound-inches (6.2-7.9 Newton-meters).

SUBTASK 73-22-01-420-025-H01



USE TEFLON-JAWED PLIERS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.



MAKE SURE THAT THE ELECTRICAL CONNECTOR AND RECEPTACLE ARE CLEAN WHEN YOU CONNECT THEM. DIRTY CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.

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(CAUTION PRECEDES)



MAKE SURE THAT THERE IS NO TENSION IN THE ELECTRICAL HARNESSSES WHEN YOU CONNECT THE ELECTRICAL CONNECTORS. IF THERE IS TENSION, ADJUST THE HARNESS IN THE SPRING CLIPS AND HINGE CLAMPS. TENSION CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS AND THE HARNESSSES.

- (8) Use teflon-jawed pliers, STD-664 to install the W717 EEC (FADEC) electrical harness (Figure 406 and Figure 415)(Electrical Connector - Disconnect and Connect, TASK 70-00-01-400-807-H01):
- (a) Remove the protective covers from the harness connectors and receptacle and the component receptacle.
 - (b) Put the W717 harness in its position in the hinge clamp.
 - (c) Loosely connect the W707 harness connector (DP70704) to the W717 harness receptacle (DJ71704).
 - (d) Loosely connect the W717 harness connector (DP71202) to the T12 sensor CH A receptacle.
 - (e) Tighten the harness connectors.
 - (f) Close and connect the hinge clamp with the attached quarter-turn screw:
 - (g) Put the applicable T12 access panel in its position on the inlet cowl.
 - (h) Install the T12 Inlet Temperature Sensor Panels,

<u>Number</u>	<u>Name/Location</u>
412BR	T12 Inlet Temperature Sensor Panel, Left Engine
422BR	T12 Inlet Temperature Sensor Panel, Right Engine
 - (i) Install the screws that attach the access panel to the inlet cowl.
 - (j) Tighten the screws.

SUBTASK 73-22-01-410-004-H01



USE TEFLON-JAWED PLIERS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.



MAKE SURE THE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU CONNECT THEM. THE CONTAMINATION OF THE ELECTRICAL CONNECTOR CAN CAUSE DAMAGE TO THE EQUIPMENT.



MAKE SURE THAT THERE IS NO TENSION IN THE ELECTRICAL HARNESSSES WHEN YOU CONNECT THE ELECTRICAL CONNECTORS. IF THERE IS TENSION, ADJUST THE HARNESS IN THE SPRING CLIPS AND HINGE CLAMPS. TENSION CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS AND THE HARNESSSES.

- (9) Use teflon-jawed pliers, STD-664 to install the W718 EEC (FADEC) electrical harness (Figure 406 and Figure 416)(Electrical Connector - Disconnect and Connect, TASK 70-00-01-400-807-H01):

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- (a) Remove the protective covers from the harness connectors and receptacle and the component receptacle.
- (b) Put the W718 harness in its position in the hinge clamp.
- (c) Loosely connect the W708 harness connector (DP70804) to the W718 harness receptacle (DJ71804).
- (d) Loosely connect the W718 harness connector (DP71802) to the T12 sensor CH B receptacle.
- (e) Tighten the harness connectors.
- (f) Connect the hinge clamp with the attached quarter-turn screw.

SUBTASK 73-22-01-410-005-H01



USE PLIERS THAT HAVE TEFLON JAWS TO LOOSEN THE ELECTRICAL CONNECTOR. DO NOT USE PLIERS THAT HAVE METAL JAWS. DAMAGE TO THE ELECTRICAL CONNECTOR CAN OCCUR.



MAKE SURE THAT THE ELECTRICAL CONNECTOR AND RECEPTACLE ARE CLEAN WHEN YOU CONNECT THEM. DIRTY CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.



MAKE SURE THAT THERE IS NO TENSION IN THE ELECTRICAL HARNESSSES WHEN YOU CONNECT THE ELECTRICAL CONNECTORS. IF THERE IS TENSION, ADJUST THE HARNESS IN THE SPRING CLIPS AND HINGE CLAMPS. TENSION CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS AND THE HARNESSSES.

- (10) Use teflon-jawed pliers, STD-664 install the W719 EEC (FADEC) harness (Figure 407 and Figure 417) (Electrical Connector - Disconnect and Connect, TASK 70-00-01-400-807-H01):
 - (a) Remove the protective covers from the harness connectors and component receptacles.
 - (b) Put the harness in its position in the spring clip.
 - (c) Loosely connect the W719 harness connector (DP71901) to the DMS signal conditioner receptacle.
 - (d) Loosely connect the W719 harness connector (DP71902) to the DMS sensor receptacle.
 - (e) Tighten the harness connectors.

G. Put the Airplane Back to its Usual Condition

SUBTASK 73-22-01-410-001-H01

- (1) Do this task: Close the Fan Cowl Panel (Selection), TASK 71-11-04-410-814-H00.
 - (a) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine

SUBTASK 73-22-01-440-001-H01

- (2) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

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H. EEC (FADEC) Electrical Harness Installation Test

SUBTASK 73-22-01-710-001-H01

- (1) Do the tests listed in the Power Plant Test Reference Table (TASK 71-00-00-800-833-H00).

————— END OF TASK —————

TASK 73-22-01-000-803-H01

6. EEC (FADEC) Electrical Harnesses (W721-W724, W727-W729, and W737-W739) Removal

A. General

- (1) This task is the procedure to remove the EEC (FADEC) electrical harnesses that are on the engine core.
- (2) You must open the thrust reversers to get access to the EEC (FADEC) electrical harnesses that are on the engine core.

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- (3) This service bulletin is from the engine manufacturer and is referenced in this task:
- (a) This Service Bulletin installs the new electrical harnesses for engines without anti-ice system.

ARO ALL

B. References

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
27-81-00-860-805	Retract the Leading Edge Slats (P/B 201)
70-00-01-400-807-H01	Electrical Connector - Disconnect and Connect (P/B 201)
71-11-04-010-814-H00	Open the Fan Cowl Panel (Selection) (P/B 201)
78-31-00-010-816-H00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-806-H00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)

D. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

E. Access Panels

Number	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

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F. Prepare for the Removal

SUBTASK 73-22-01-010-002-H01



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO OPEN THE THRUST REVERSER(S). IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR

- (1) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:
- (a) Do this task: Retract the Leading Edge Slats, TASK 27-81-00-860-805.
 - (b) Do this task: Leading Edge Slat - Deactivation, TASK 27-81-00-040-801.
 - (c) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-806-H00.
 - (d) For the left and right fan cowl panels, do this task:
Open the Fan Cowl Panel (Selection), TASK 71-11-04-010-814-H00

<u>Number</u>	<u>Name/Location</u>
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine

- (e) For the left and right thrust reversers, do this task:
Open the Thrust Reverser (Selection), TASK 78-31-00-010-816-H00

<u>Number</u>	<u>Name/Location</u>
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

G. Procedure

SUBTASK 73-22-01-020-014-H01



USE TEFLON-JAWED PLIERS TO LOOSEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.



MAKE SURE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU DISCONNECT THEM. CONTAMINATION OF ELECTRICAL CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.

- (1) Use teflon-jawed pliers, STD-664 to remove the W721 EEC (FADEC) electrical harness (Figure 418, Figure 419, and Figure 425) (Electrical Connector - Disconnect and Connect, TASK 70-00-01-400-807-H01):
- (a) Open the lower cover of the bifurcation heat shield:
 - 1) Remove the nuts [14] from the bolts [13] (2 locations) which hold the lower cover [17] to the heat shield [12].
 - 2) Remove the two rings [15] and cable [16] from the lower cover [17] and heat shield [12].

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- 3) Remove the lower cover [17], fire block [18] and fire block [19] from the heat shield [12].
- 4) Remove the harness from the fire block [18] and fire block [19].
- (b) Disconnect the W721 harness connector (DP72102) from the W701 harness receptacle (DJ70102) on the fan bracket.
- (c) Disconnect the W721 harness connector (DP72111) from the T3 sensor CH A receptacle.
- (d) Disconnect the W721 harness connector (DP72104) from the right VSV actuator CH A receptacle.
- (e) Disconnect the W721 harness connector (DP72103) from the EGT S1/S2 receptacle.
- (f) Disconnect the W721 harness connector (DP72105) from the LPTACC valve SW receptacle.
- (g) Disconnect the W721 harness connector (DP72106) from the LPTACC valve SOL receptacle.
- (h) Disconnect the W721 harness connector (DP72109) from the left VBV actuator CH A receptacle.
- (i) Disconnect the W721 harness connector (DP72107) from the HPTACC valve CH A receptacle.
- (j) Disconnect the W721 harness connector (DP72110) from the T25 sensor CH A receptacle.
- (k) Remove the bolts from the loop clamps that attach the DJ72112 to the support bracket.
- (l) Remove the bolts from the loop clamps that attach the W721 harness to the engine.
- (m) Remove the W721 harness from the loop clamps.
- (n) Remove the W721 harness from the spring clips.
- (o) Put protective covers on the harness connectors and receptacles and the component receptacles.

SUBTASK 73-22-01-020-015-H01



USE TEFLON-JAWED PLIERS TO LOOSEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.



MAKE SURE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU DISCONNECT THEM. CONTAMINATION OF ELECTRICAL CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.

- (2) Use teflon-jawed pliers, STD-664 to remove the W722 EEC (FADEC) electrical harness (Figure 418, Figure 420, and Figure 426) (Electrical Connector - Disconnect and Connect, TASK 70-00-01-400-807-H01):
 - (a) Open the lower cover of the bifurcation heat shield:
 - 1) Remove the nuts [14] from the bolts [13] (2 locations) which hold the lower cover [17] to the heat shield [12].
 - 2) Remove the two rings [15] and cable [16] from the lower cover [17] and heat shield [12].
 - 3) Remove the lower cover [17], fire block [18] and fire block [19] from the heat shield [12].

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- 4) Remove the harness from the fire block [18] and fire block [19].
- (b) Disconnect the W722 harness connector (DP72202) from the W702 harness receptacle (DJ70202) on the fan bracket.
- (c) Disconnect the W722 harness connector (DP72209) from the right VBV actuator CH B receptacle.
- (d) Disconnect the W722 harness connector (DP72211) from the T3 sensor CH B receptacle.
- (e) Disconnect the W722 harness connector (DP72203) from the EGT S3/S4 harness receptacle.
- (f) Disconnect the W722 harness connector (DP72205) from the CCC valve SW receptacle.
- (g) Disconnect the W722 harness connector (DP72206) from the CCC valve SOL receptacle.
- (h) Disconnect the W722 harness connector (DP72204) from the VSV actuator CH B receptacle.
- (i) Disconnect the W722 harness connector (DP72207) from the HPTACC valve CH B receptacle.
- (j) Disconnect the W722 harness connector (DP72210) from the T25 sensor CH B receptacle.
- (k) Remove the bolts and nuts which attach DJ72112 to the support bracket.
- (l) Remove the bolts from the loop clamps that attach the W722 harness to the engine.
- (m) Remove the W722 harness from the loop clamps.
- (n) Remove the W722 harness from the spring clips.
- (o) Put protective covers on the harness connectors and receptacles and the component receptacles.

SUBTASK 73-22-01-020-016-H01



USE TEFLON-JAWED PLIERS TO LOOSEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.



MAKE SURE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU DISCONNECT THEM. CONTAMINATION OF ELECTRICAL CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.

- (3) Use teflon-jawed pliers, STD-664 to remove the W723 EEC (FADEC) electrical harness (Figure 418, Figure 421, and Figure 427) (Electrical Connector - Disconnect and Connect, TASK 70-00-01-400-807-H01):
 - (a) Open the lower cover of the bifurcation heat shield:
 - 1) Remove the nuts [14] from the bolts [13] (2 locations) which hold the lower cover [17] to the heat shield [12].
 - 2) Remove the two rings [15] and cable [16] from the lower cover [17] and heat shield [12].
 - 3) Remove the lower cover [17], fire block [18] and fire block [19] from the heat shield [12].
 - 4) Remove the harness from the fire block [18] and fire block [19].

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- (b) Disconnect the W723 harness connector (DP72302) from the W703 harness receptacle (DJ70302) on the fan bracket.
- (c) Disconnect the W723 harness connector (DP72304) from the WFM sensor receptacle.
- (d) Disconnect the W723 harness connector (DP72303) from the N2 sensor CH A receptacle.
- (e) Disconnect the W723 harness connector (DP72305) from the HMU CH A receptacle.
- (f) Remove the bolts from the loop clamps that attach the W723 harness to the engine.
- (g) Remove the W723 harness from the loop clamps.
- (h) Remove the W723 harness from the spring clips.
- (i) Put protective covers on the harness connectors and receptacles and the component receptacles.

SUBTASK 73-22-01-020-017-H01



USE TEFLON-JAWED PLIERS TO LOOSEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.



MAKE SURE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU DISCONNECT THEM. CONTAMINATION OF ELECTRICAL CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.

- (4) Use teflon-jawed pliers, STD-664 to remove the W724 EEC (FADEC) electrical harness (Figure 418, Figure 422, and Figure 428) (Electrical Connector - Disconnect and Connect, TASK 70-00-01-400-807-H01):
 - (a) Open the lower bifurcation heat shield:
 - 1) Remove the nuts [14] from the bolts [13] (2 locations) which hold the lower cover [17] and heat shield [12].
 - 2) Remove the two rings [15] and cable [16] from the lower cover [17] and heat shield [12].
 - 3) Remove the lower cover [17], fire block [18] and fire block [19] from the heat shield [12].
 - 4) Remove the harness from the fire block [18] and fire block [19].
 - (b) Disconnect the W724 harness connector (DP72402) from the W704 harness receptacle (DJ70402) on the fan bracket.
 - (c) Disconnect the W724 harness connector (DP72405) from the HMU CH B receptacle.
 - (d) Disconnect the W724 harness connector (DP72404) from the TEO sensor CH A/B receptacle.
 - (e) Disconnect the W724 harness connector (DP72406) from the SAV receptacle.
 - (f) Disconnect the W724 harness connector (DP72403) from the N2 sensor CH B receptacle.
 - (g) Remove the bolts from the loop clamps that attach the W723 harness to the engine.
 - (h) Remove the W724 harness from the loop clamps.
 - (i) Remove the W724 harness from the spring clips.

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- (j) Put protective covers on the harness connectors and receptacles and the component receptacles.

SUBTASK 73-22-01-020-018-H01



USE TEFLON-JAWED PLIERS TO LOOSEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.



MAKE SURE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU DISCONNECT THEM. CONTAMINATION OF ELECTRICAL CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.

- (5) Use teflon-jawed pliers, STD-664 to remove the W727 EEC (FADEC) electrical harness (Figure 418, Figure 423, and Figure 429) (Electrical Connector - Disconnect and Connect, TASK 70-00-01-400-807-H01):
- (a) Open the lower bifurcation heat shield:
 - 1) Remove the nuts [14] from the bolts [13] (2 locations) which hold the lower cover [17] and heat shield [12].
 - 2) Remove the two rings [15] and cable [16] from the lower cover [17] and heat shield [12].
 - 3) Remove the lower cover [17], fire block [18] and fire block [19] from the heat shield [12].
 - 4) Remove the harness from the fire block [18] and fire block [19].
 - (b) Disconnect the W727 harness connector (DP72703) from the W707 harness receptacle (DJ70703) on the fan bracket.
 - (c) Disconnect the W727 harness connector (DP72702) from the ALT CH A receptacle.
 - (d) Remove the bolts from the loop clamps that attach the W727 harness to the engine.
 - (e) Remove the W727 harness from the loop clamps.
 - (f) Remove the W727 harness from the spring clips.
 - (g) Put protective covers on the harness connectors and receptacle and the component receptacles.

SUBTASK 73-22-01-020-019-H01



USE TEFLON-JAWED PLIERS TO LOOSEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.



MAKE SURE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU DISCONNECT THEM. CONTAMINATION OF ELECTRICAL CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.

- (6) Use teflon-jawed pliers, STD-664 to remove the W728 EEC (FADEC) electrical harness (Figure 418, Figure 406, and Figure 430)(Electrical Connector - Disconnect and Connect, TASK 70-00-01-400-807-H01):
- (a) Open the lower bifurcation heat shield:

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- 1) Remove the nuts [14] from the bolts [13] (2 locations) which hold the lower cover [17] and heat shield [12].
 - 2) Remove the two rings [15] and cable [16] from the lower cover [17] and heat shield [12].
 - 3) Remove the lower cover [17], fire block [18] and fire block [19] from the heat shield [12].
 - 4) Remove the harness from the fire block [18] and fire block [19].
- (b) Disconnect the W728 harness connector (DP72803) from the W708 harness receptacle (DJ70803) on the fan bracket.
 - (c) Disconnect the W728 harness connector (DP72802) from the ALT CH B receptacle.
 - (d) Remove the bolts from the loop clamps that attach the W728 harness to the engine.
 - (e) Remove the W728 harness from the loop clamps
 - (f) Remove the W728 harness from the spring clips.
 - (g) Put protective covers on the harness connectors and receptacle and the component receptacles.

SUBTASK 73-22-01-020-026-H00

- (7) Remove bracket from the lower bifurcation assembly as follows (Figure 431):
- (a) Disconnect all the electrical harnesses and tubing installed on the bracket [23].
 - (b) Remove the two bolts [22] that attach bracket [21] and bracket [23] to bracket [20].
 - (c) Remove bracket [21].
 - (d) Remove two bolts [22] that attach bracket [23] to bracket [20].
 - (e) Remove bracket [23].

SUBTASK 73-22-01-020-020-H01

USE TEFLON-JAWED PLIERS TO LOOSEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.



MAKE SURE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU DISCONNECT THEM. CONTAMINATION OF ELECTRICAL CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.

- (8) Use teflon-jawed pliers, STD-664 to remove the W729 EEC (FADEC) electrical harness (Figure 418, Figure 424, and Figure 432)(Electrical Connector - Disconnect and Connect, TASK 70-00-01-400-807-H01):
- (a) Open the lower bifurcation heat shield:
 - 1) Remove the nuts [14] from the bolts [13] (2 locations) which hold the lower cover [17] and heat shield [12].
 - 2) Remove the two rings [15] and cable [16] from the lower cover [17] and heat shield [12].
 - 3) Remove the lower cover [17], fire block [18] and fire block [19] from the heat shield [12].
 - 4) Remove the harness from the fire block [18] and fire block [19].

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- (b) Disconnect the W729 harness connector (DP72902) from the W709 harness receptacle (DJ70902) on the fan bracket.
- (c) Disconnect the W729 harness connector (DP72903) from the PEO sensor CH A/B receptacle.
- (d) Disconnect the W729 harness connector (DP72904) from the SAP sensor CH A/B receptacle.
- (e) Remove the bolts from the loop clamps that attach the W729 harness to the engine.
- (f) Remove the W729 harness from the loop clamps.
- (g) Remove the W729 harness from the spring clips.
- (h) Put protective covers on the harness connectors and receptacles and the component receptacles.

SUBTASK 73-22-01-020-023-H01



USE TEFLON-JAWED PLIERS TO LOOSEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.



MAKE SURE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU DISCONNECT THEM. CONTAMINATION OF ELECTRICAL CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.

- (9) Use teflon-jawed pliers, STD-664 to remove the W737 EEC (FADEC) electrical harness (Figure 418, Figure 423, and Figure 433) (Electrical Connector - Disconnect and Connect, TASK 70-00-01-400-807-H01):
 - (a) Open the lower bifurcation heat shield.
 - 1) Remove the nuts [14] from the bolts [13] (2 locations) which hold the lower cover [17] and heat shield [12].
 - 2) Remove the two rings [15] and cable [16] from the lower cover [17] and heat shield [12].
 - 3) Remove the lower cover [17], fire block [18] and fire block [19] from the heat shield [12].
 - 4) Remove the harness from the fire block [18] and fire block [19].
 - (b) Disconnect the W737 harness connector (DP73702) the W707 harness receptacle (DJ70702) on the fan bracket.
 - (c) Disconnect the W737 harness connector (DP73704) from the N1 sensor CH A receptacle.
 - (d) Disconnect the W737 harness connector (DP73706) from the configuration box receptacle.
 - (e) Disconnect the W737 harness receptacle (DJ73707) from the W738 harness receptacle (DP73807).
 - (f) Remove the bolts from the loop clamps that attach the W737 harness to the engine.
 - (g) Remove the W737 harness from the loop clamps.
 - (h) Remove the W737 harness from the spring clips.
 - (i) Put protective covers on the harness connectors and receptacles and the component receptacle.

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SUBTASK 73-22-01-020-024-H01

**CAUTION**

USE TEFLON-JAWED PLIERS TO LOOSEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

**CAUTION**

MAKE SURE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU DISCONNECT THEM. CONTAMINATION OF ELECTRICAL CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.

- (10) Use teflon-jawed pliers, STD-664 to remove the W738 EEC (FADEC) electrical harness (Figure 418, Figure 423, and Figure 434)(Electrical Connector - Disconnect and Connect, TASK 70-00-01-400-807-H01):
- (a) Open the lower bifurcation heat shield:
 - 1) Remove the nuts [14] from the bolts [13] (2 locations) which hold the lower cover [17] and heat shield [12].
 - 2) Remove the two rings [15] and cable [16] from the lower cover [17] and heat shield [12].
 - 3) Remove the lower cover [17], fire block [18] and fire block [19] from the heat shield [12].
 - 4) Remove the harness from the fire block [18] and fire block [19].
 - (b) Disconnect the W738 harness connector (DP73802) from the W708 harness receptacle (DJ70802) on the fan bracket.
 - (c) Disconnect the W738 harness connector (DP73804) from the N1 sensor CH B receptacle.
 - (d) Disconnect the W738 harness connector (DP73803) from the TVSCF OUT sensor receptacle.
 - (e) Disconnect the W738 harness connector (DP73805) from the TIDG OUT sensor receptacle.
 - (f) Disconnect the W738 harness connector (DP73807) from the W737 harness receptacle (DJ73707).
 - (g) Disconnect the W738 harness connector (DP73806) from the TIDG IN sensor receptacle.
 - (h) Disconnect the W738 harness connector (DP73808) from the TVSCF IN sensor receptacle.
 - (i) Remove the bolts from the loop clamps that attach the W738 harness to the engine.
 - (j) Remove the electrical W738 harness from the loop clamps.
 - (k) Remove the W738 harness from the spring clips.
 - (l) Put protective covers on the harness connectors and receptacle and the component receptacles.

SUBTASK 73-22-01-020-025-H01

**CAUTION**

USE PLIERS THAT HAVE TEFLON JAWS TO LOOSEN THE ELECTRICAL CONNECTOR. DO NOT USE PLIERS THAT HAVE METAL JAWS. DAMAGE TO THE ELECTRICAL CONNECTOR CAN OCCUR.

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**777-200/300
AIRCRAFT MAINTENANCE MANUAL****(CAUTION PRECEDES)****CAUTION**

MAKE SURE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU DISCONNECT THEM. CONTAMINATION OF ELECTRICAL CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.

- (11) Use teflon-jawed pliers, STD-664 to remove the W739 EEC (FADEC) electrical harness (Figure 418, Figure 424, and Figure 435)(Electrical Connector - Disconnect and Connect, TASK 70-00-01-400-807-H01):
- (a) Open the lower bifurcation heat shield:
 - 1) Remove the nuts [14] from the bolts [13] (2 locations) which hold the lower cover [17] and heat shield [12].
 - 2) Remove the two rings [15] and cable [16] from the lower cover [17] and heat shield [12].
 - 3) Remove the lower cover [17], fire block [18] and fire block [19] from the heat shield [12].
 - 4) Remove the harness from the fire block [18] and fire block [19].
 - (b) Disconnect the W739 harness connector (DP73903) from the W709 harness receptacle (DJ70903) on the fan bracket.
 - (c) Disconnect the W739 harness connector (DP73904) from the MANIFP sensor CH A/B.
 - (d) Disconnect the W739 harness connector (DP73905) from the OFLTRDP sensor CH A/B receptacle.
 - (e) Disconnect the W739 harness connector (DP73902) from the FFLTRDP sensor CH A/B receptacle.
 - (f) Remove the bolts from the loop clamps that attach the W739 harness to the engine.
 - (g) Remove the W739 harness from the loop clamps.
 - (h) Remove the W739 harness from the spring clips.
 - (i) Put protective covers on the harness connectors and receptacles and the component receptacles.

———— **END OF TASK** ————

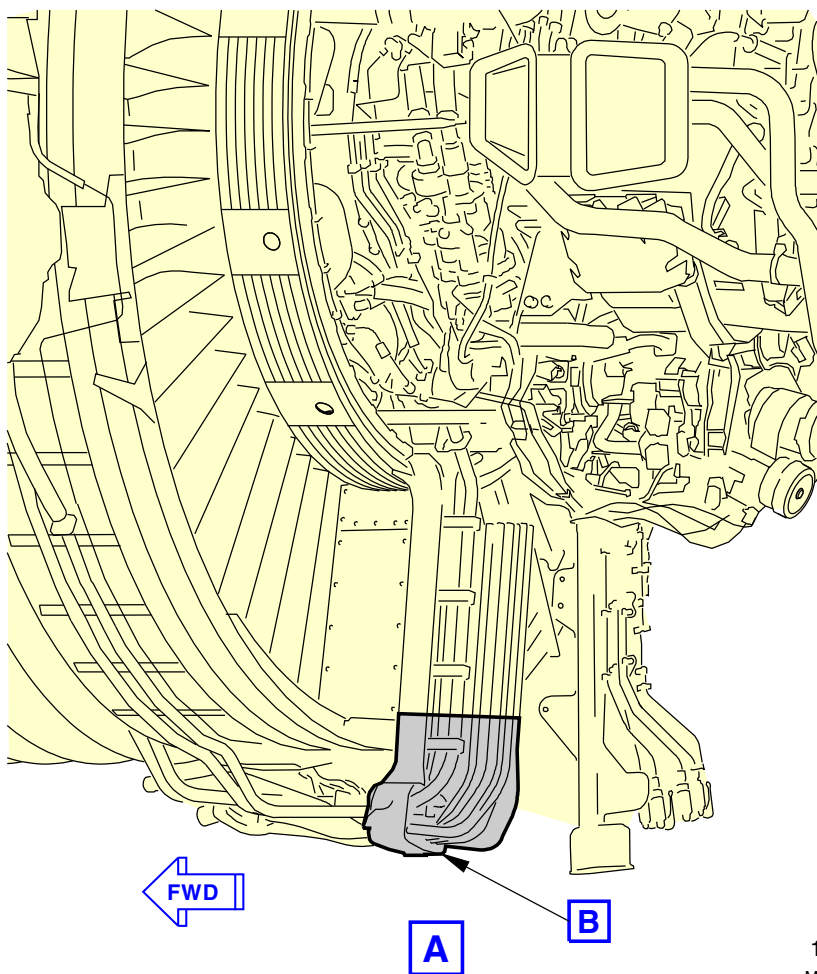
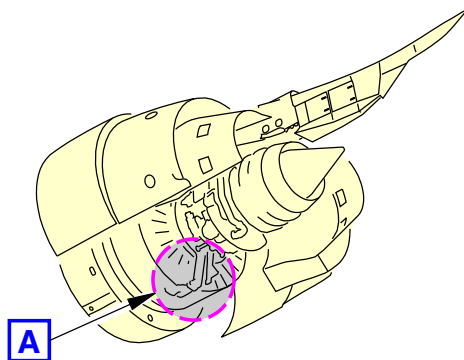
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1201634-00-A
M07034 S0004286005_V2

EEC (FADEC) Electrical Harness Installation
Figure 418/73-22-01-990-830-H01 (Sheet 1 of 3)

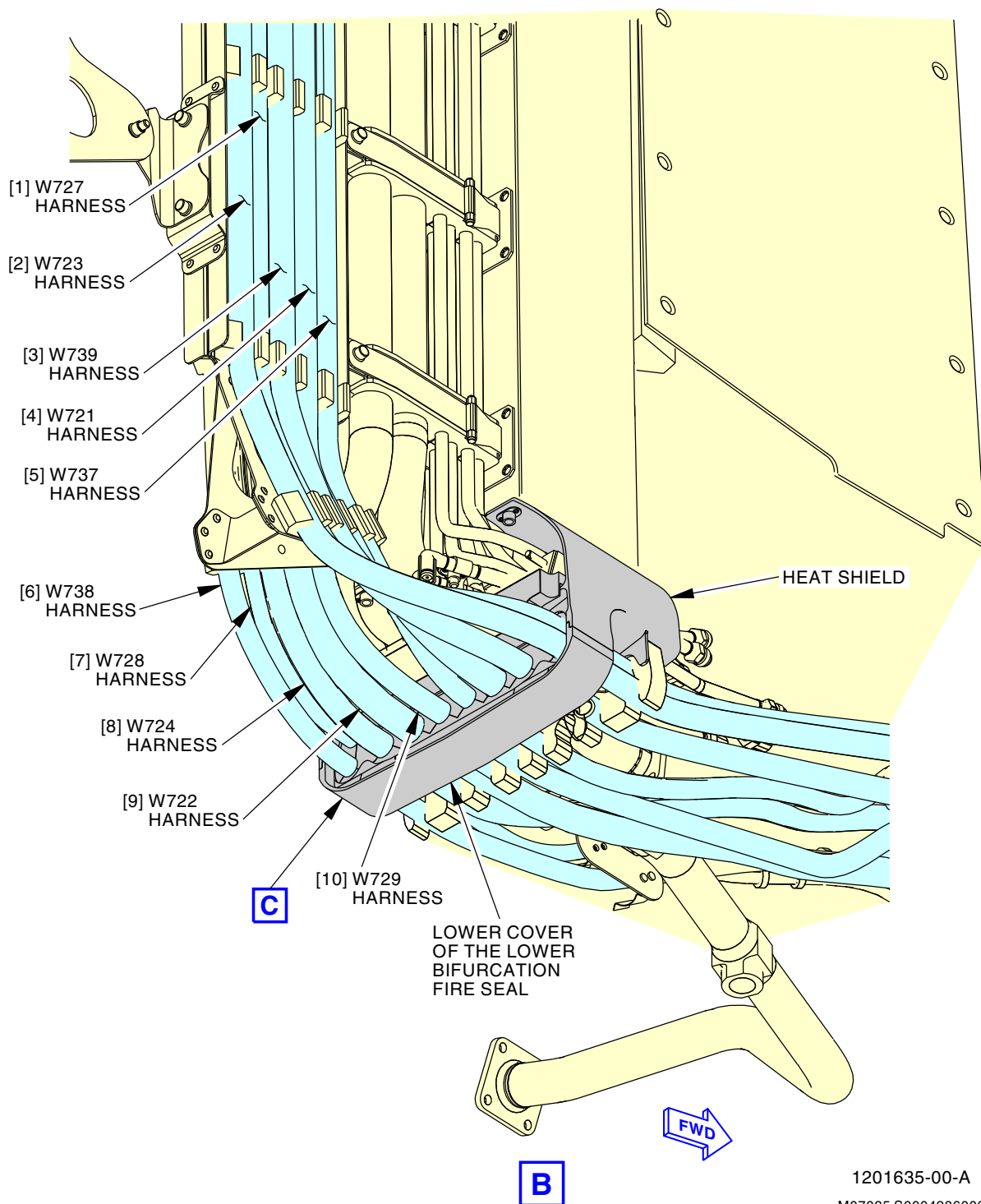
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1201635-00-A
M07035 S0004286006_V3

EEC (FADEC) Electrical Harness Installation
Figure 418/73-22-01-990-830-H01 (Sheet 2 of 3)

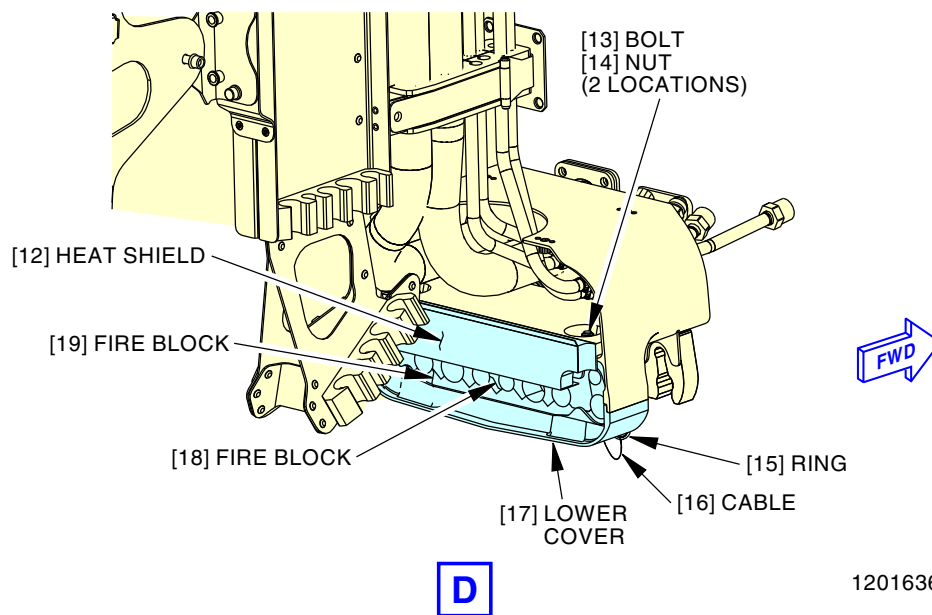
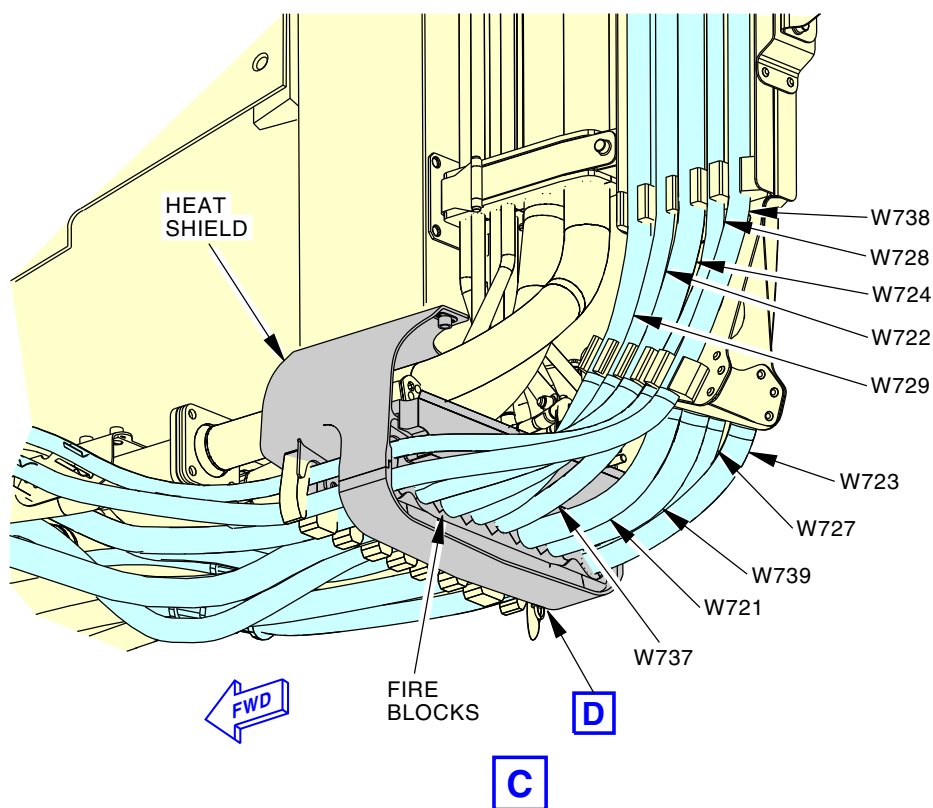
EFFECTIVITY
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1201636-00-A

M07036 S0004286007_V2

EEC (FADEC) Electrical Harness Installation
Figure 418/73-22-01-990-830-H01 (Sheet 3 of 3)

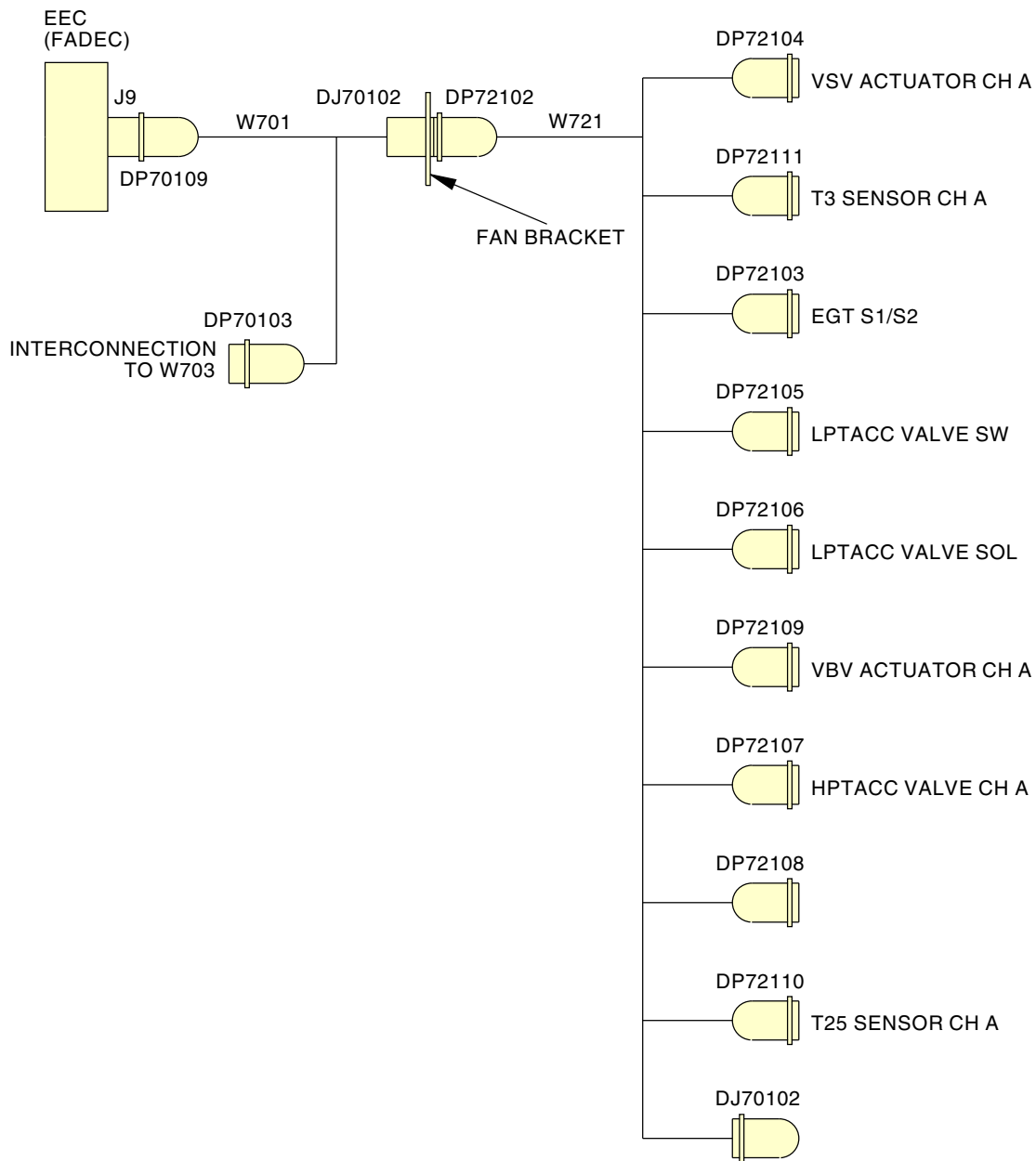
EFFECTIVITY
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1205827-02-A

M07037 S0004286008_V5

EEC (FADEC) Electrical Harness (W701, W721) Installation
Figure 419/73-22-01-990-831-H01 (Sheet 1 of 2)

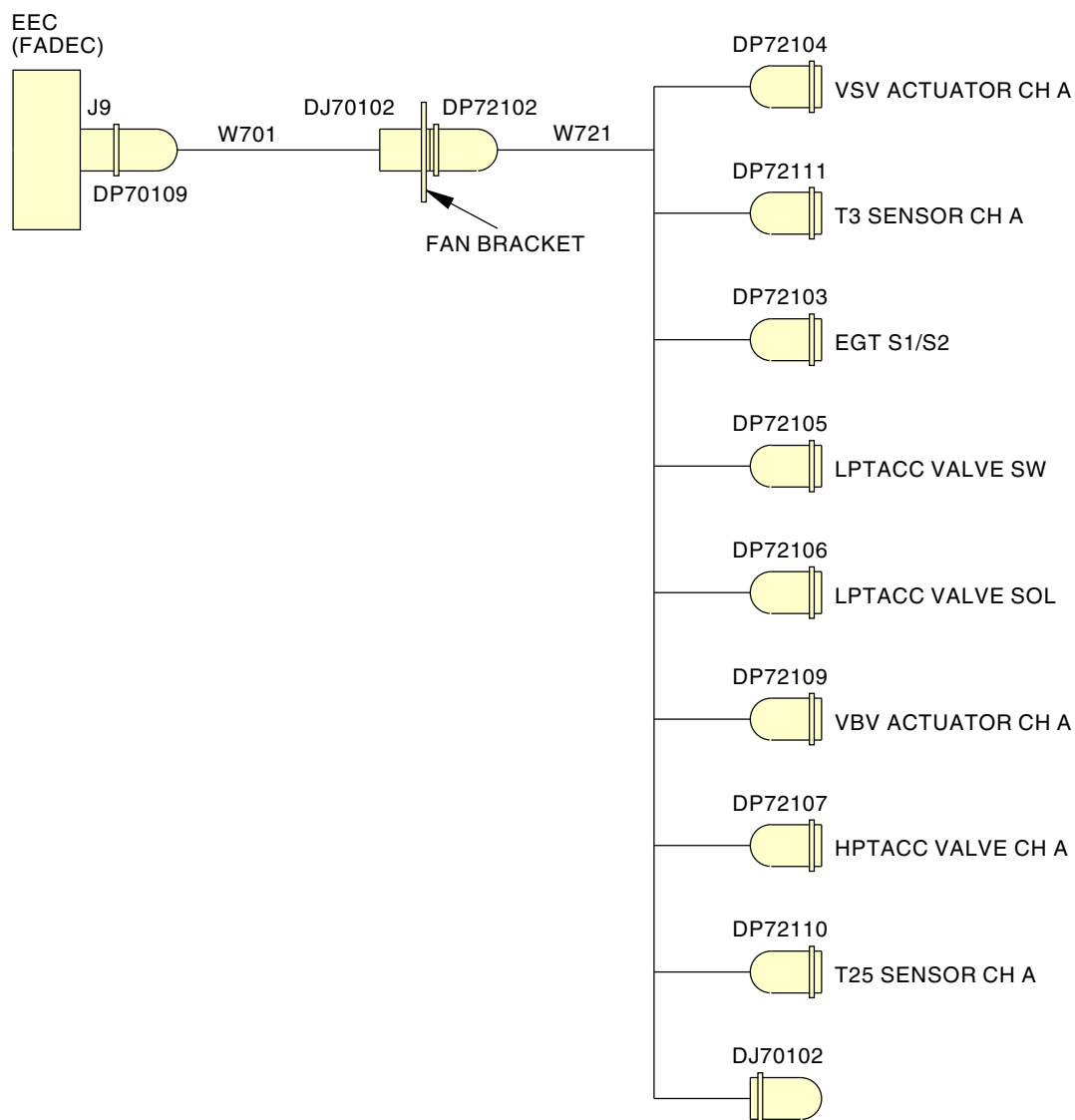
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1239214-02-A

J65672 S0000173881_V4

EEC (FADEC) Electrical Harness (W701, W721) Installation
Figure 419/73-22-01-990-831-H01 (Sheet 2 of 2)

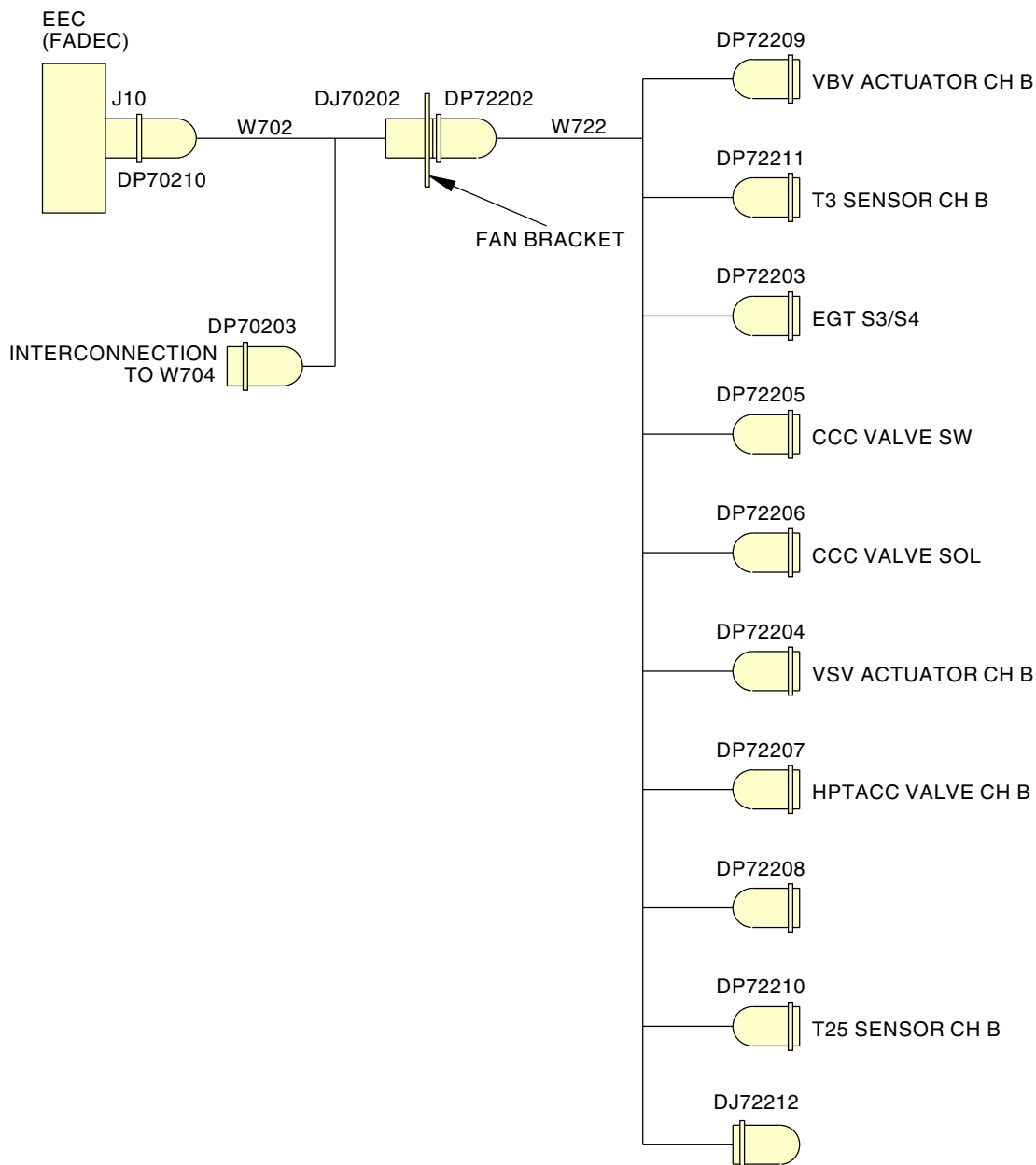
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1205828-01-A

M07038 S0004286009_V4

EEC (FADEC) Electrical Harness (W702, W722) Installation
Figure 420/73-22-01-990-832-H01 (Sheet 1 of 2)

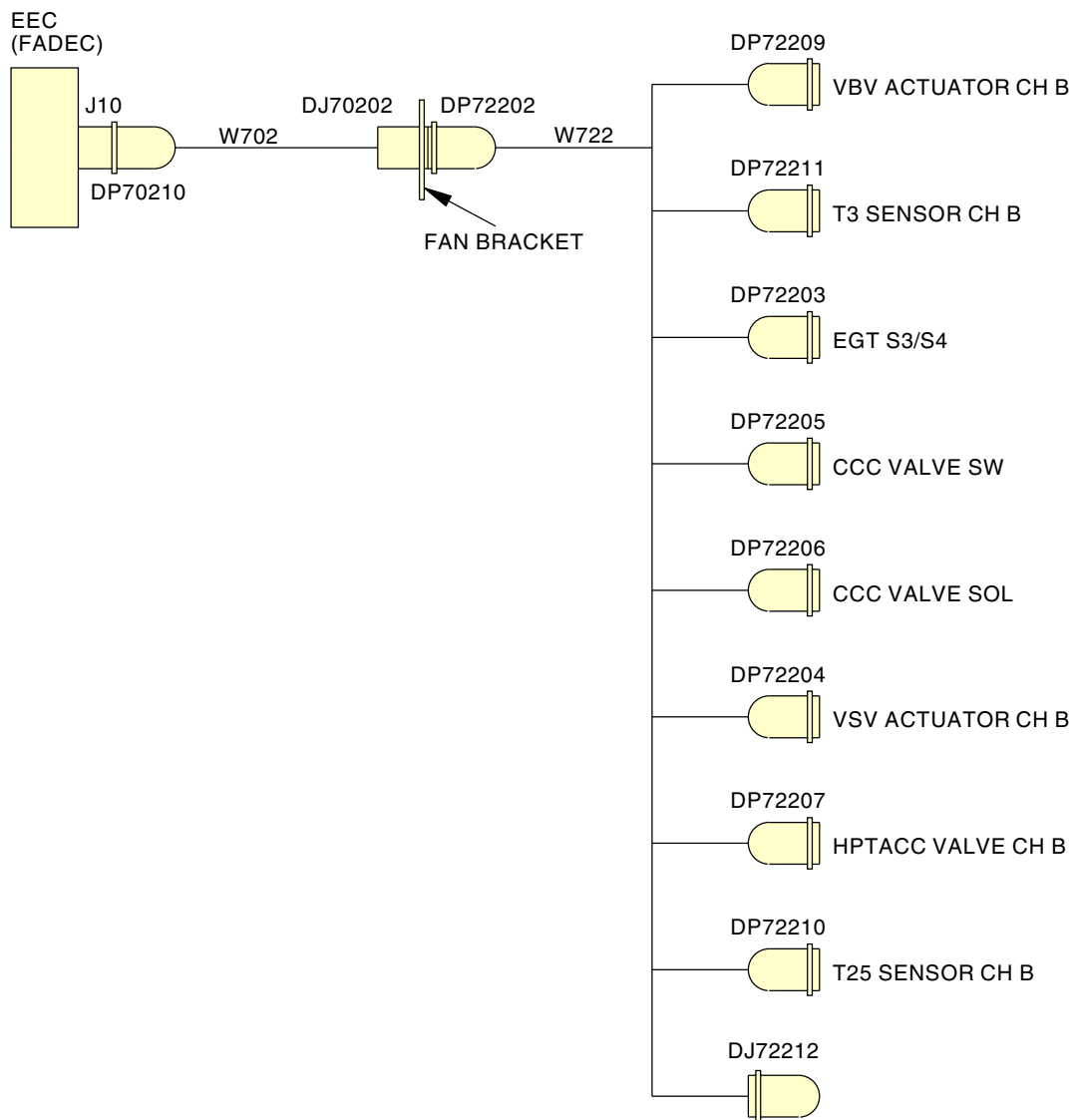
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1239215-01-A

J65678 S0000173883_V4

**EEC (FADEC) Electrical Harness (W702, W722) Installation
Figure 420/73-22-01-990-832-H01 (Sheet 2 of 2)**

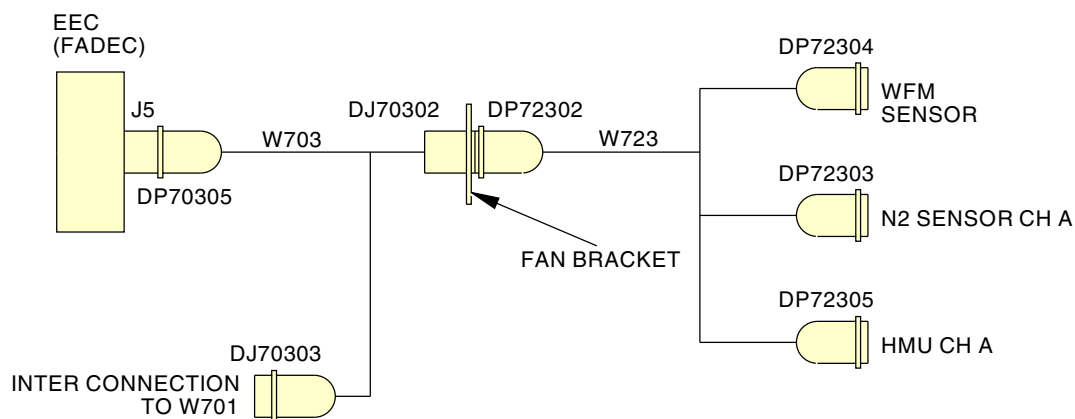
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1205829-01-A

M07039 S0004286010_V3

EEC (FADEC) Electrical Harness (W703, W723) Installation
Figure 421/73-22-01-990-833-H01 (Sheet 1 of 2)

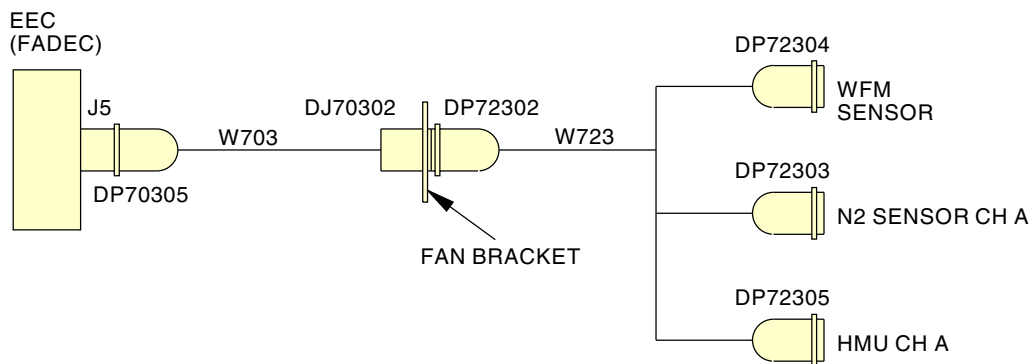
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1205829-01-A

2150903 S0000468102_V2

**EEC (FADEC) Electrical Harness (W703, W723) Installation
Figure 421/73-22-01-990-833-H01 (Sheet 2 of 2)**

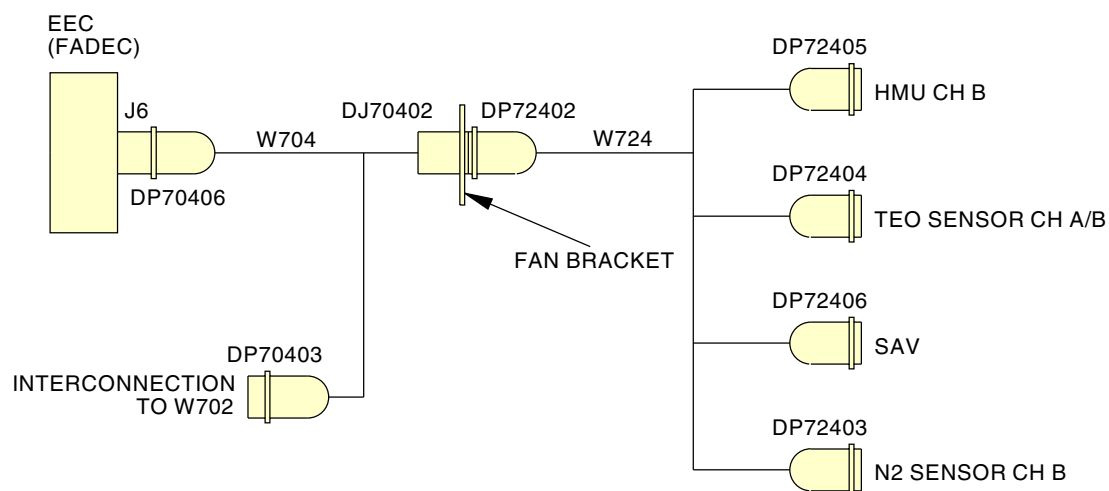
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1205830-01-A

M07041 S0004286012_V3

**EEC (FADEC) Electrical Harness (W704, W724) Installation
Figure 422/73-22-01-990-834-H01 (Sheet 1 of 2)**

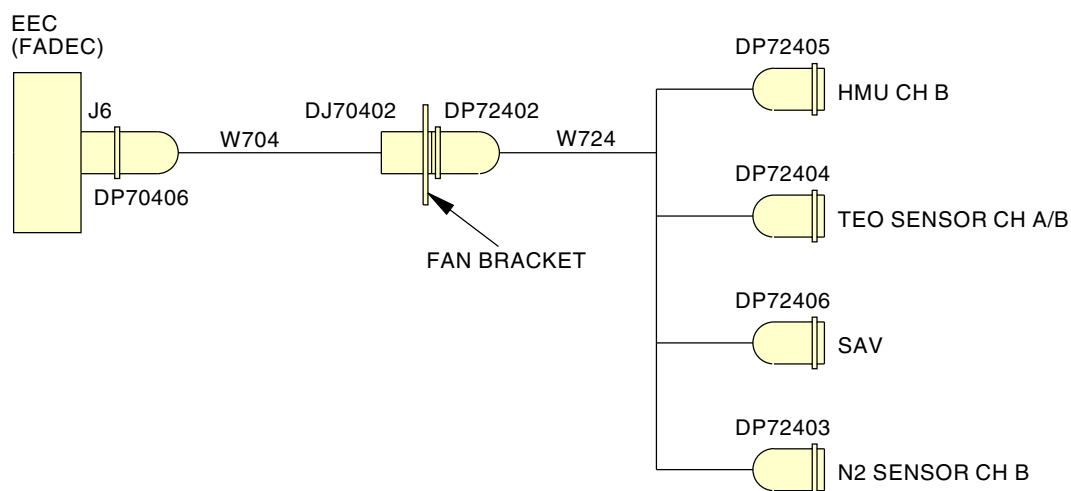
EFFECTIVITY
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1205830-01-A

2150906 S0000468106_V2

**EEC (FADEC) Electrical Harness (W704, W724) Installation
Figure 422/73-22-01-990-834-H01 (Sheet 2 of 2)**

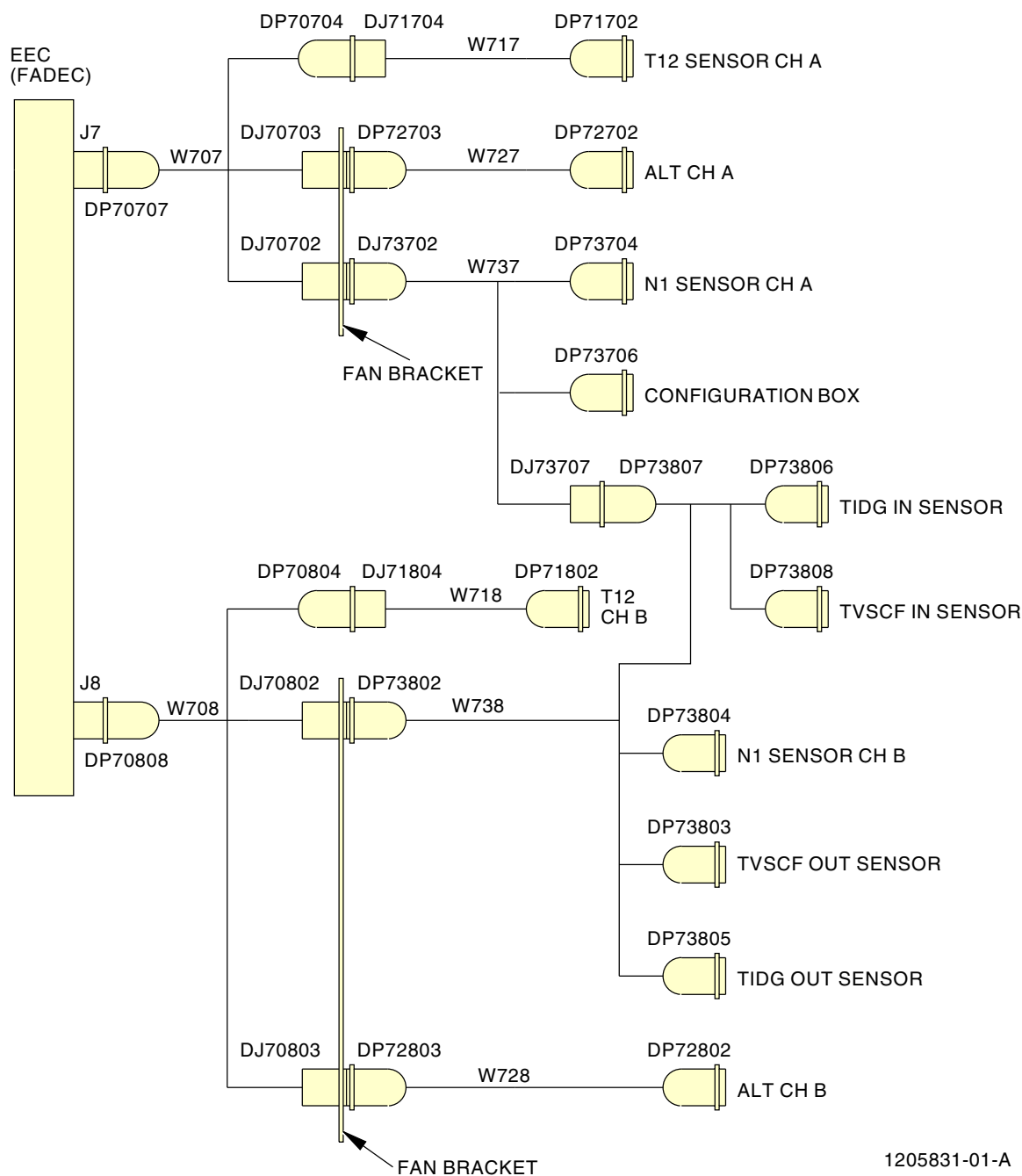
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1205831-01-A

M07042 S0004286013_V3

EEC (FADEC) Electrical Harness (W707, W717, W727, W737, W708, W718, W728, W738) Installation
Figure 423/73-22-01-990-835-H01

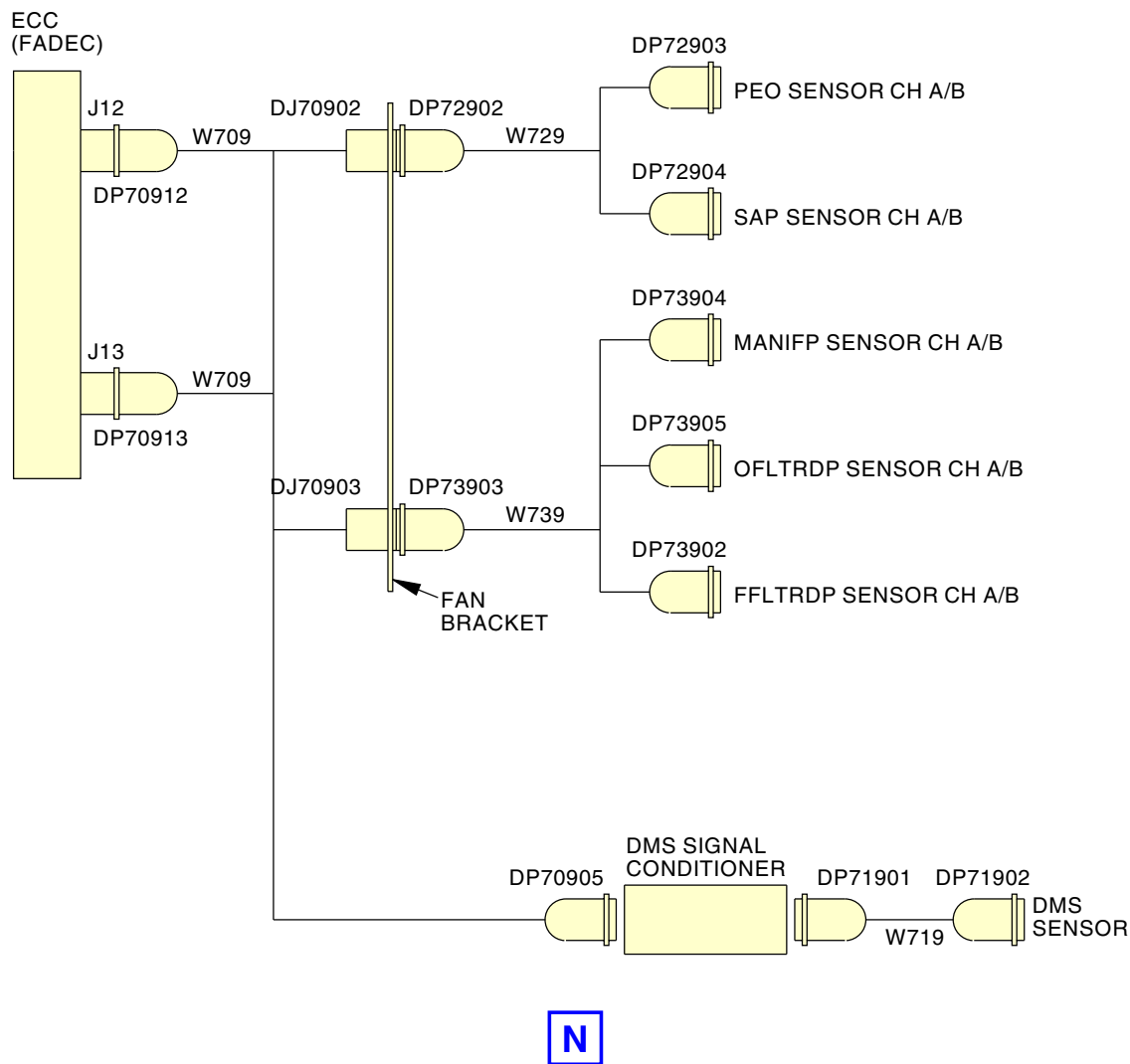
EFFECTIVITY
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1239216-00-A

M07044 S0004286014_V4

EEC (FADEC) Electrical Harness (W709, W719, W729, W739) Installation
Figure 424/73-22-01-990-836-H01

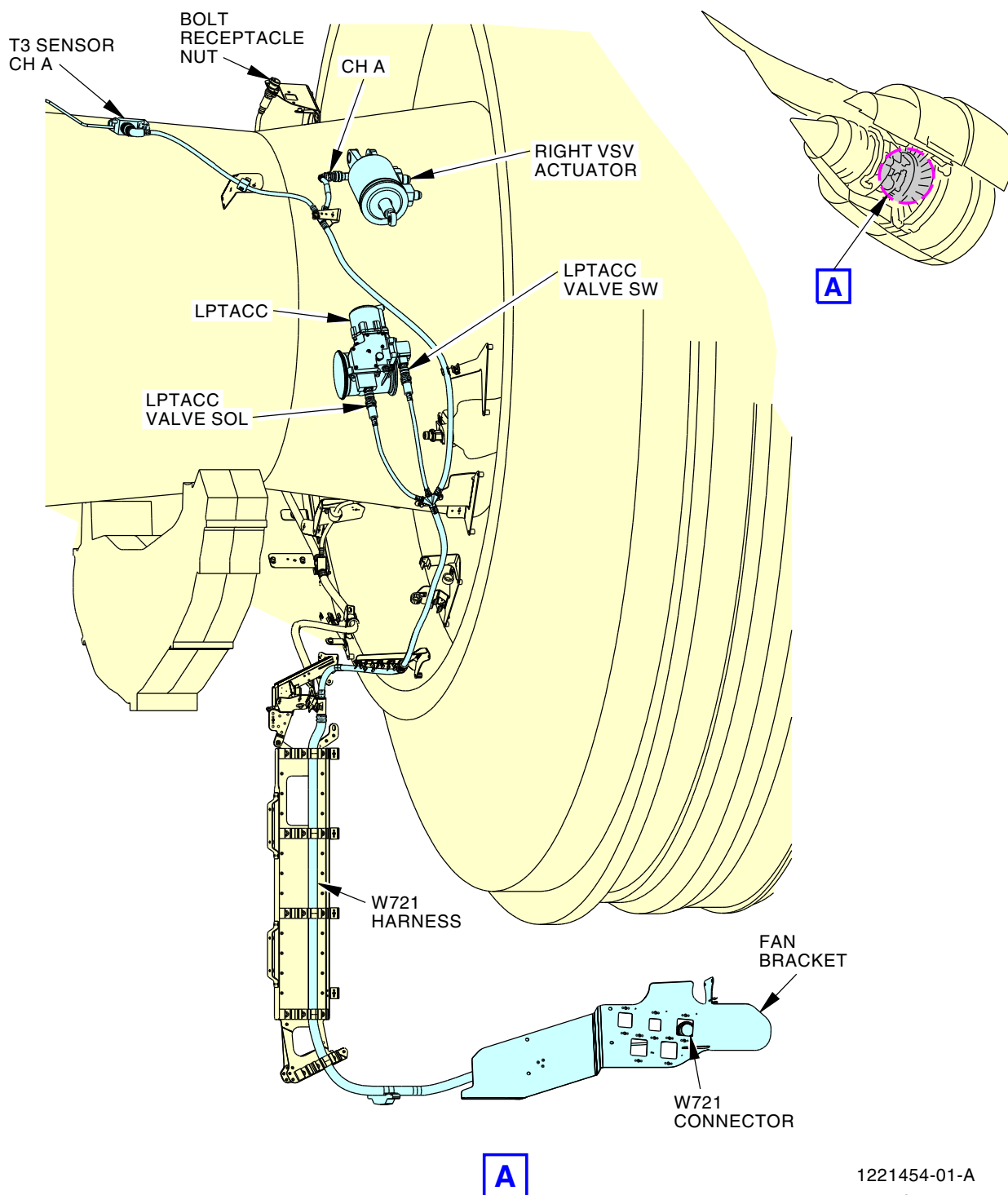
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1221454-01-A
372295 S0000132529_V4

W721 Electrical Harness Routing
Figure 425/73-22-01-990-837-H01 (Sheet 1 of 2)

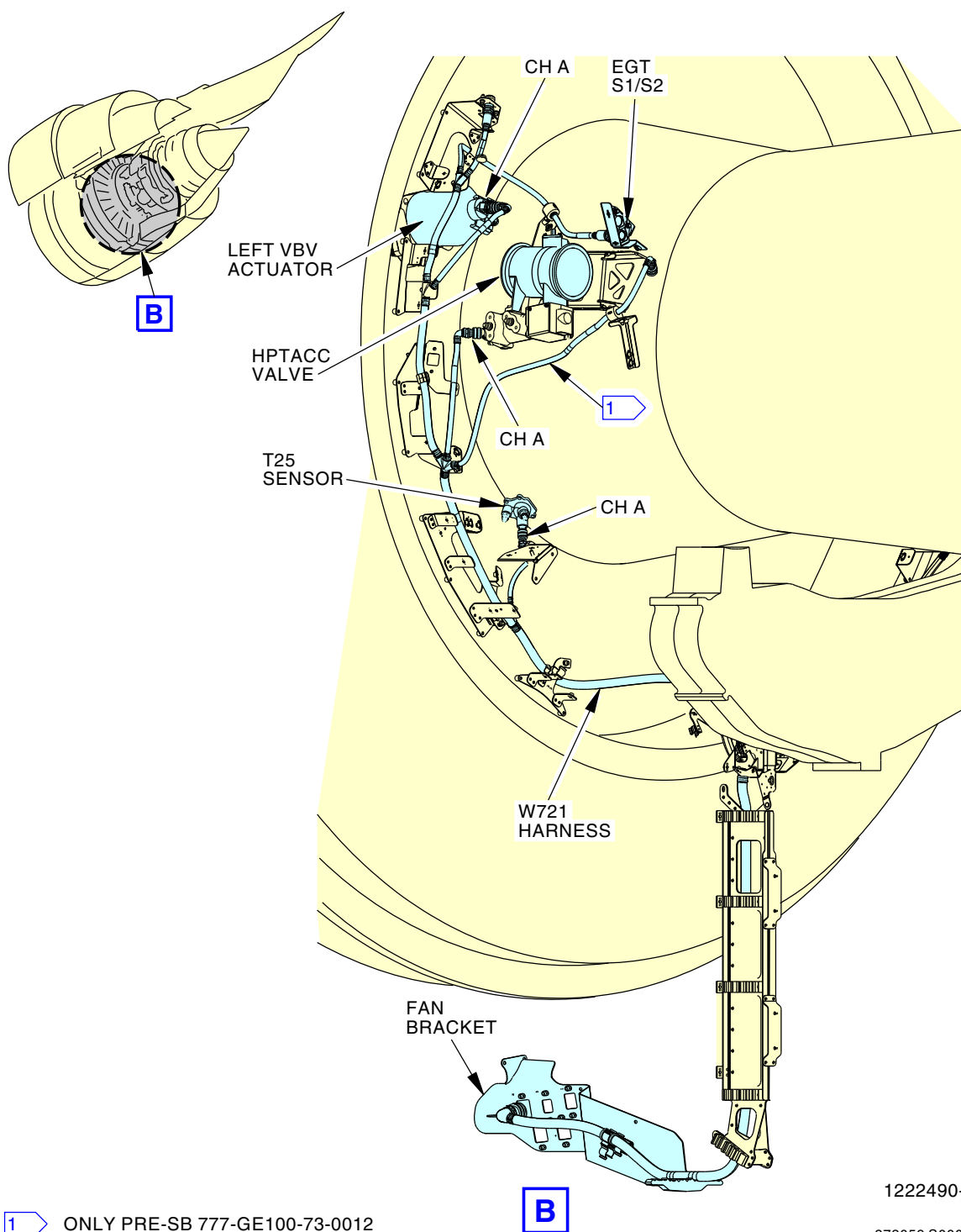
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1222490-00-A

373059 S0000132531_V3

**W721 Electrical Harness Routing
Figure 425/73-22-01-990-837-H01 (Sheet 2 of 2)**

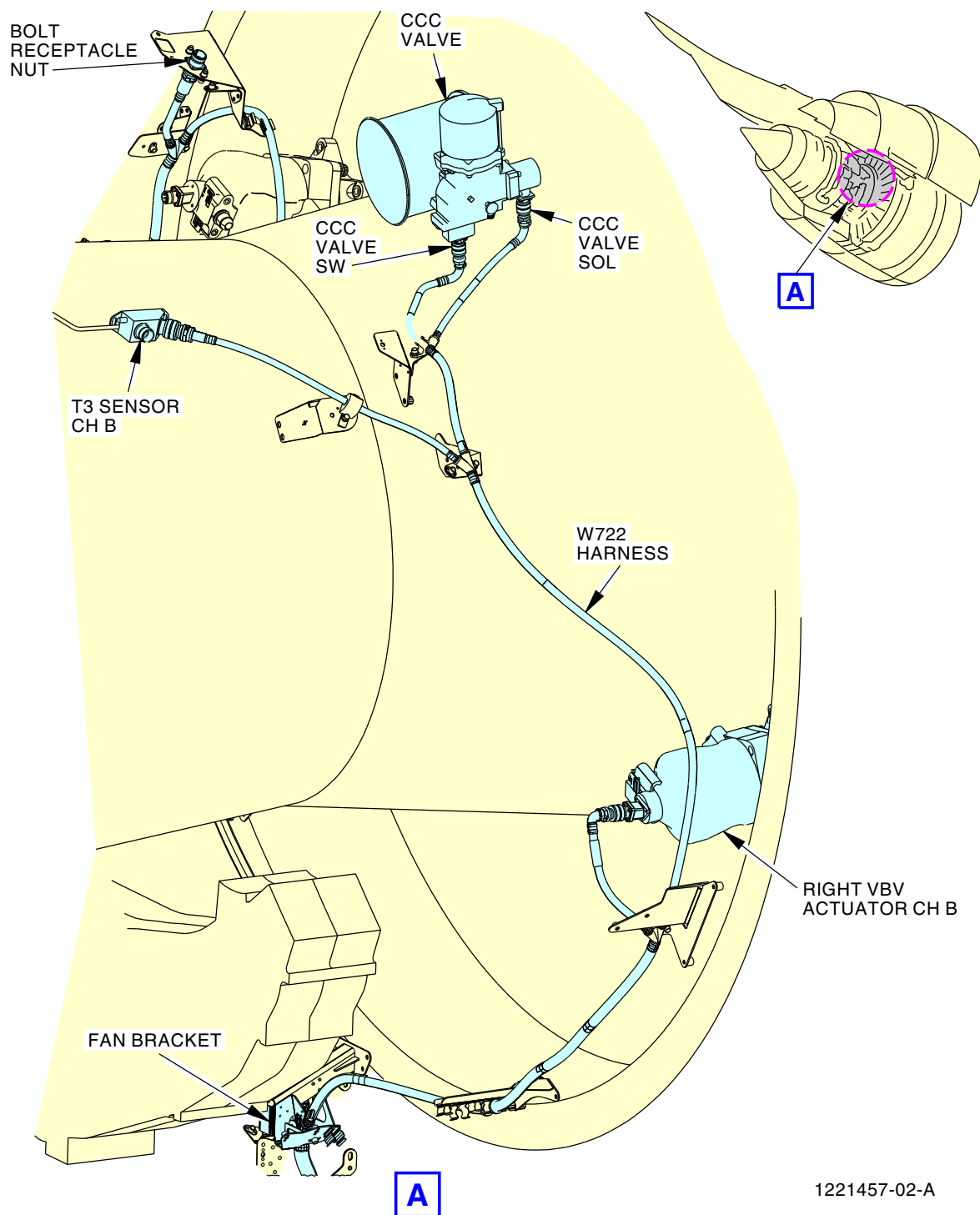
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1221457-02-A

376466 S0000132532_V4

W722 Electrical Harness Routing
Figure 426/73-22-01-990-838-H01 (Sheet 1 of 2)

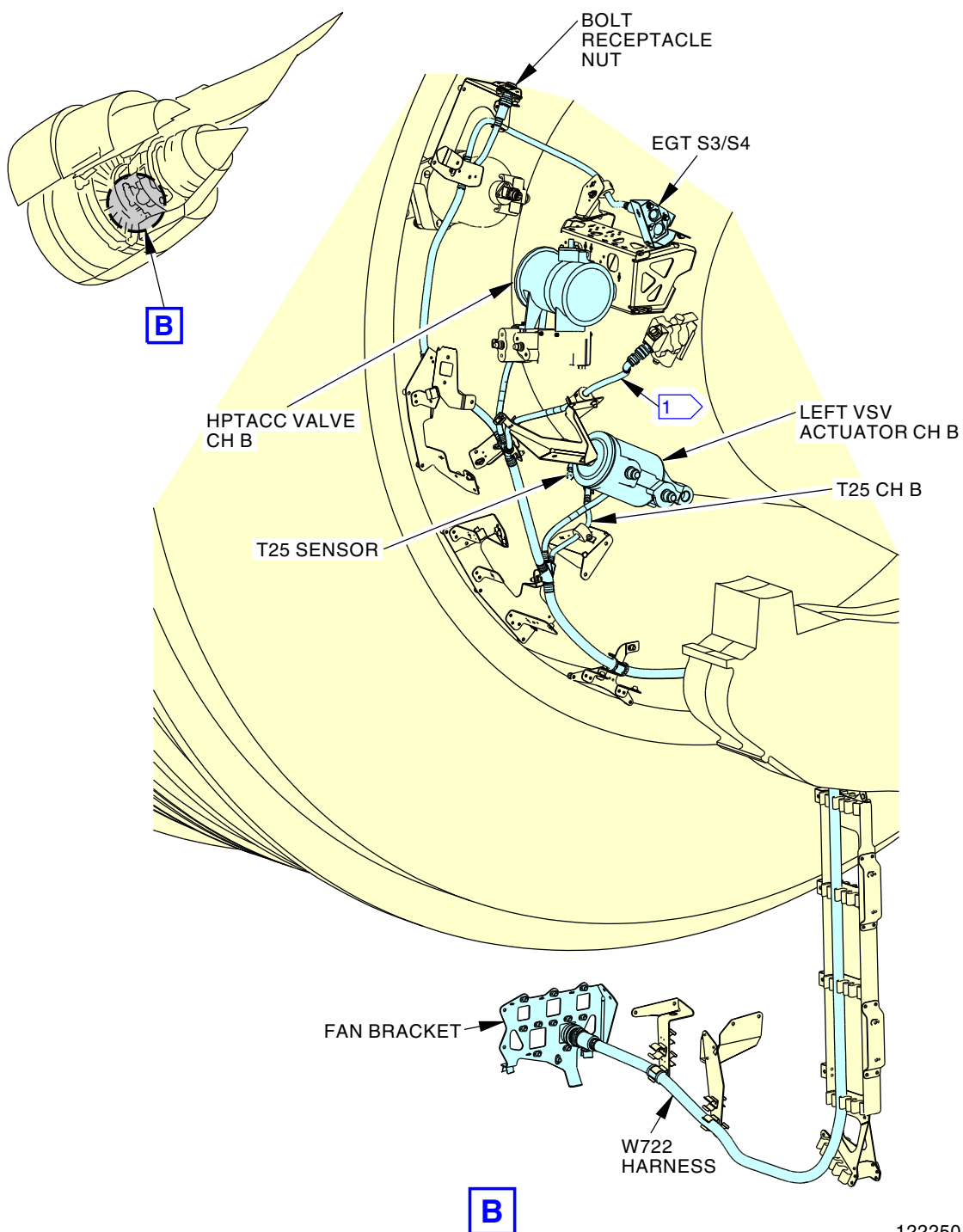
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1 ONLY PRE-SB 777-GE100-73-0012

1222504-01-A

373166 S0000132534_V4

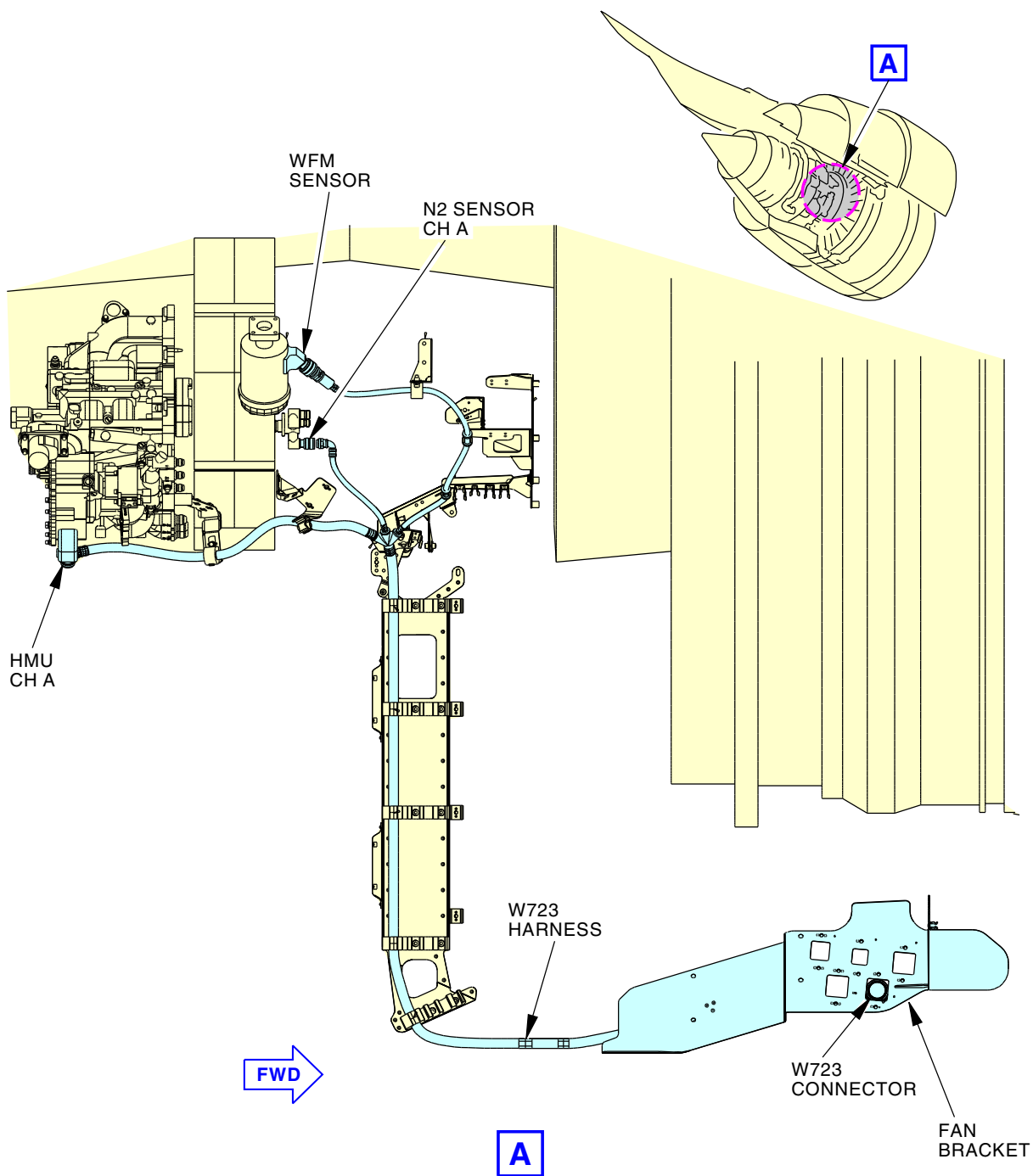
W722 Electrical Harness Routing
Figure 426/73-22-01-990-838-H01 (Sheet 2 of 2)

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1221460-01-A
376439 S0000132536_V2

W723 Electrical Harness Routing
Figure 427/73-22-01-990-839-H01

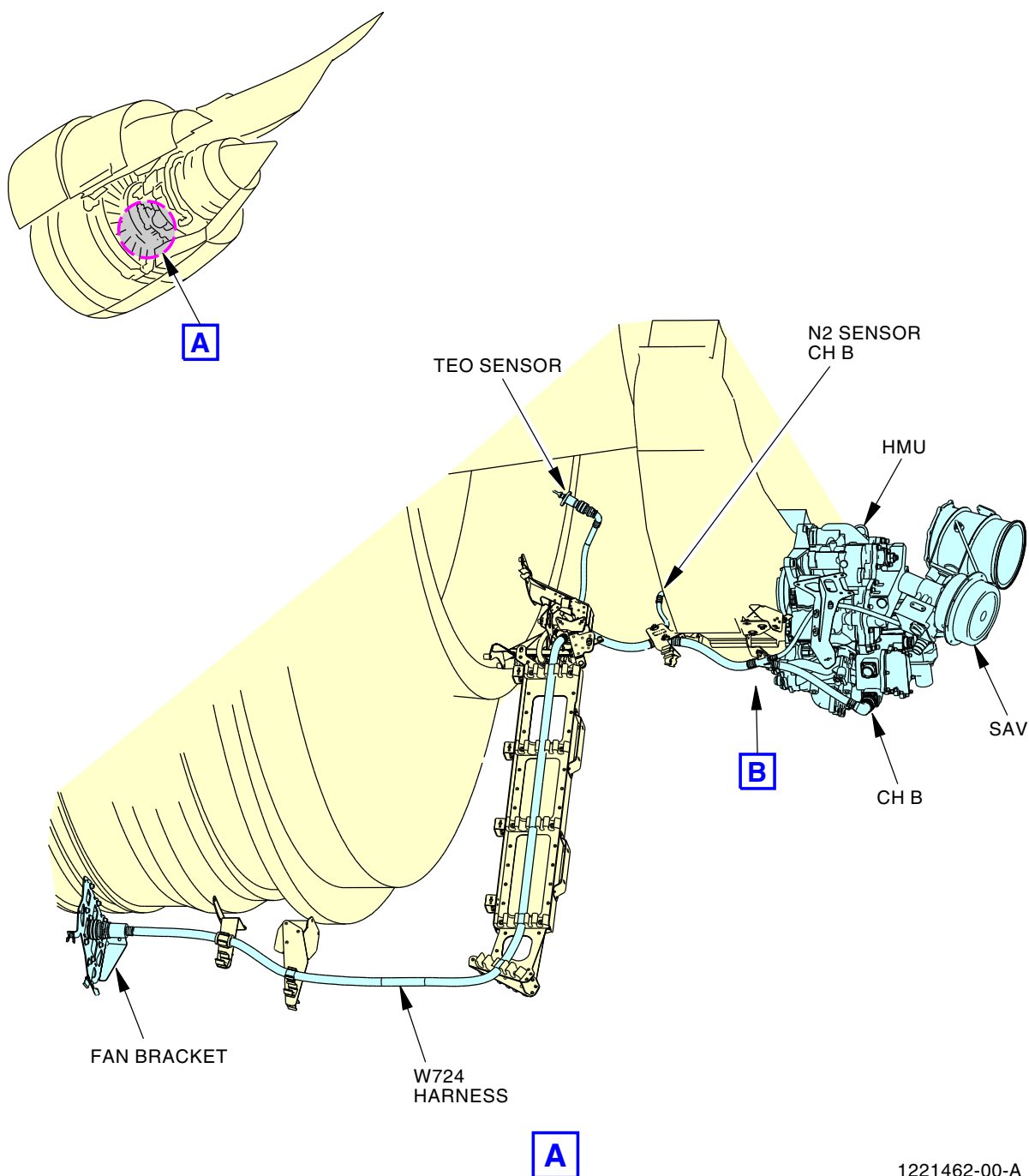
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1221462-00-A

373285 S0000132541_V2

W724 Electrical Harness Routing
Figure 428/73-22-01-990-840-H01 (Sheet 1 of 2)

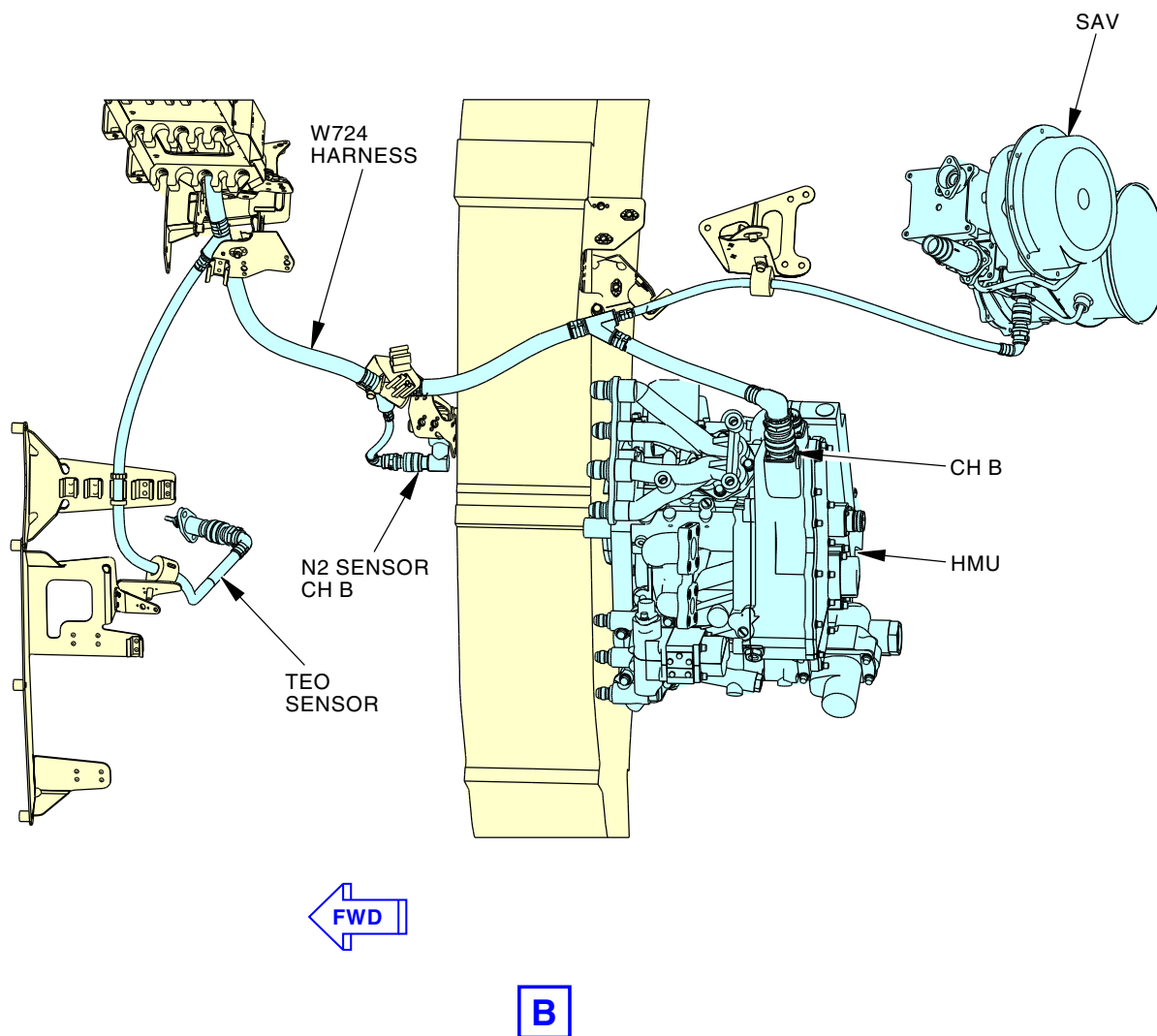
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1222622-00-A

373604 S0000132542_V2

W724 Electrical Harness Routing
Figure 428/73-22-01-990-840-H01 (Sheet 2 of 2)

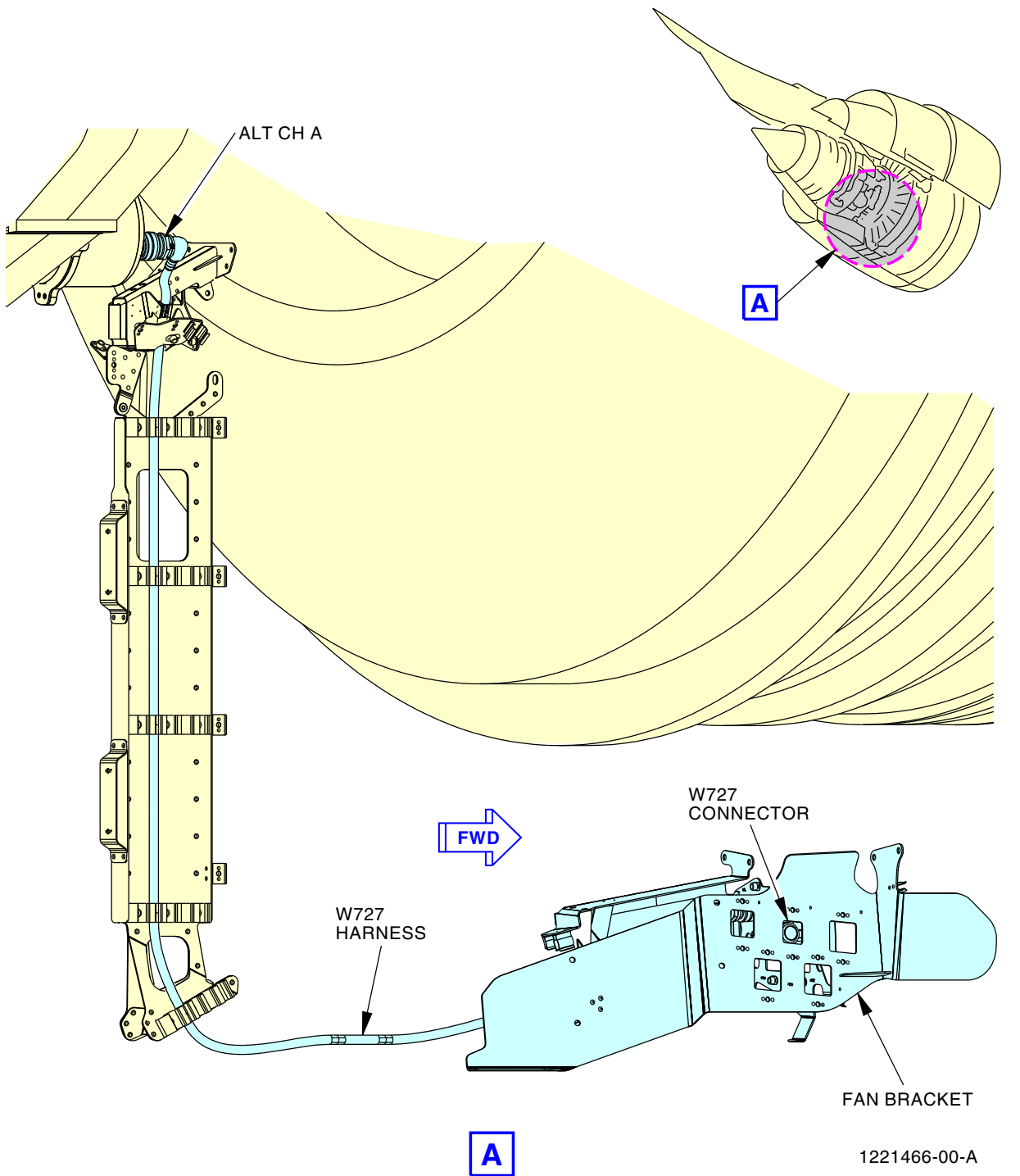
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W727 Electrical Harness Routing
Figure 429/73-22-01-990-841-H01

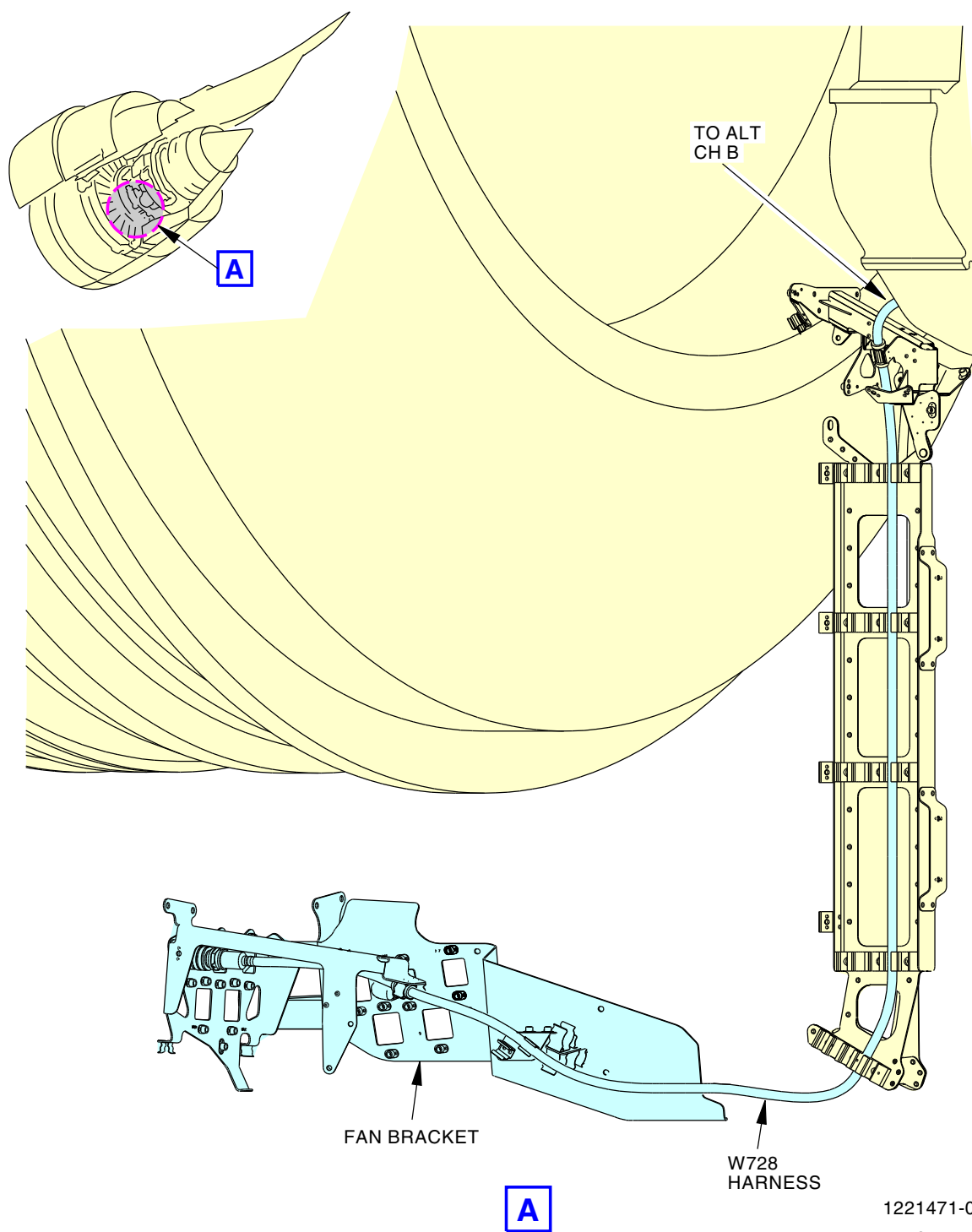
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1221471-00-A
374826 S0000132545_V2

W728 Electrical Harness Routing
Figure 430/73-22-01-990-842-H01

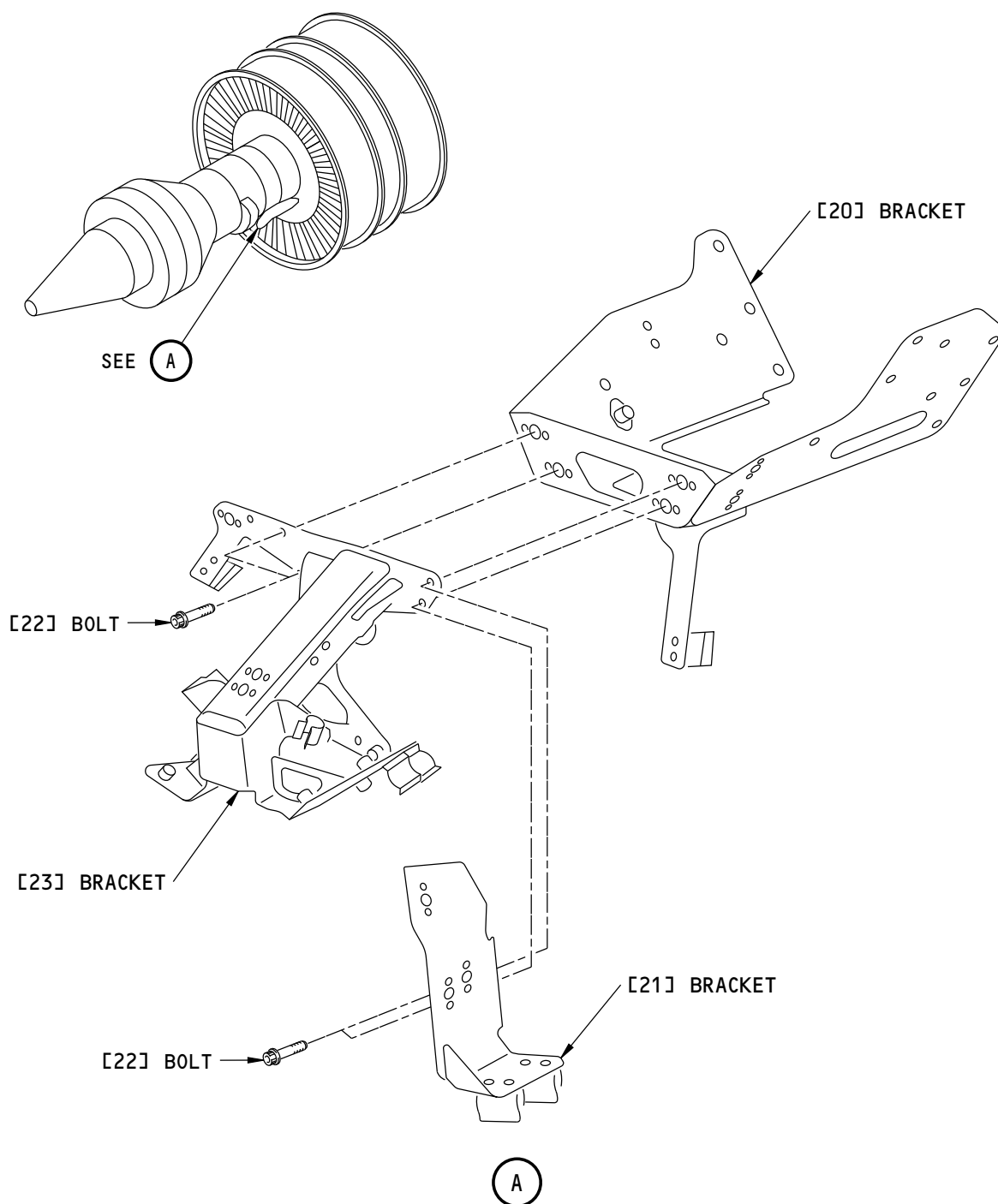
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2458893 S0000571526_V1

Removal and Installation of the Bracket.
Figure 431/73-22-01-990-850-H00

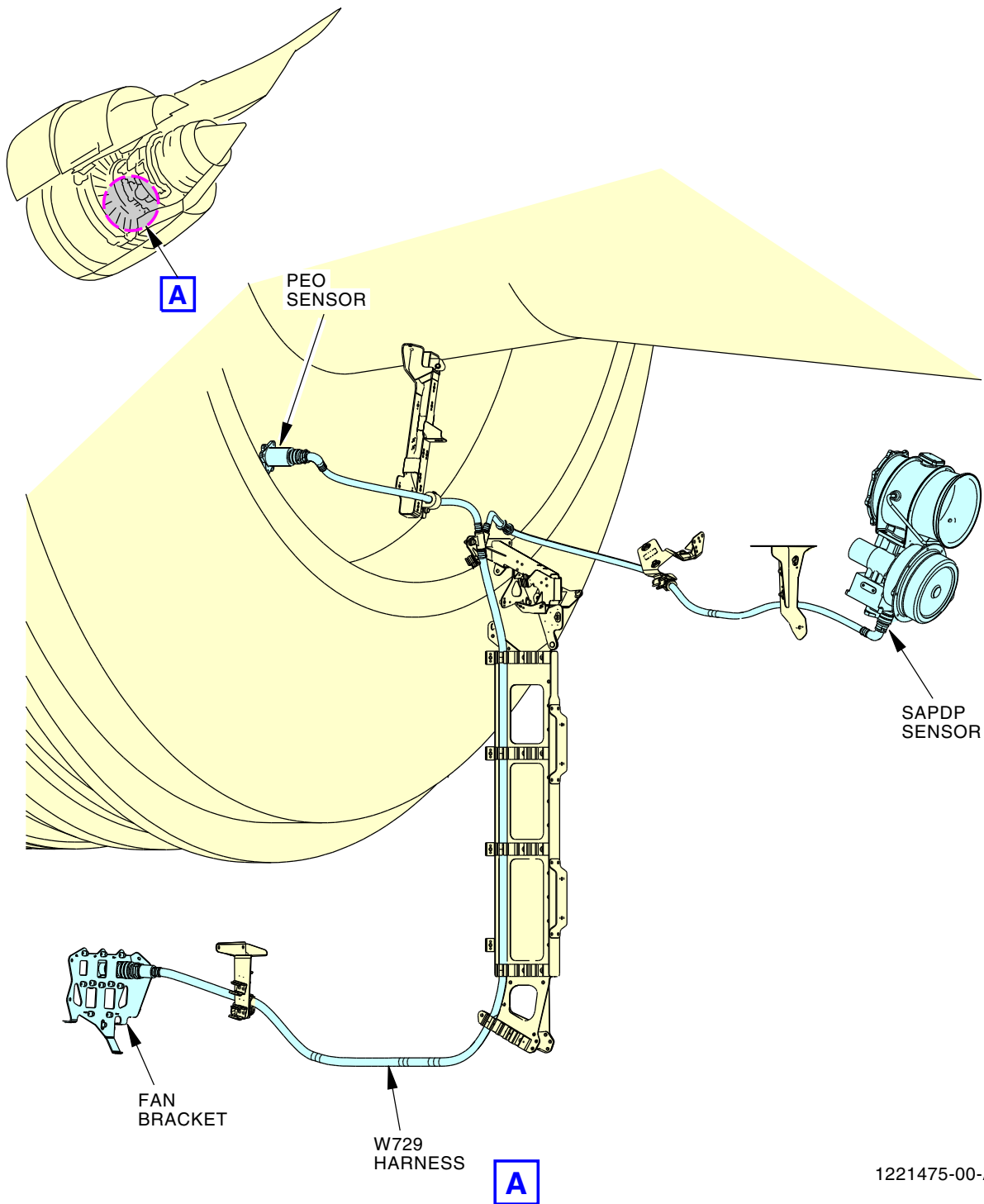
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1221475-00-A

374904 S0000132546_V2

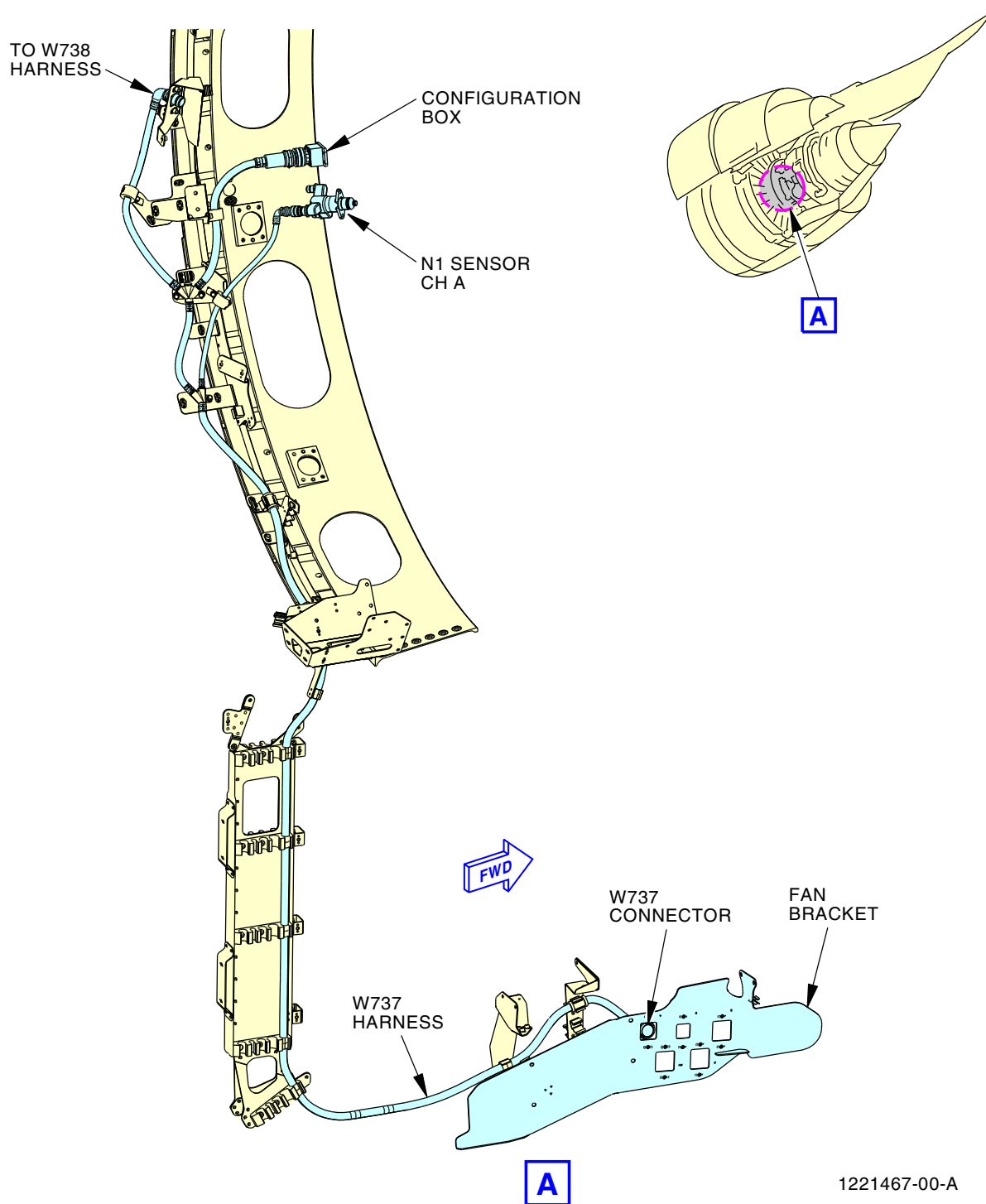
W729 Electrical Harness Routing
Figure 432/73-22-01-990-843-H01

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1221467-00-A

376285 S0000132551_V2

W737 Electrical Harness Routing
Figure 433/73-22-01-990-846-H01 (Sheet 1 of 2)

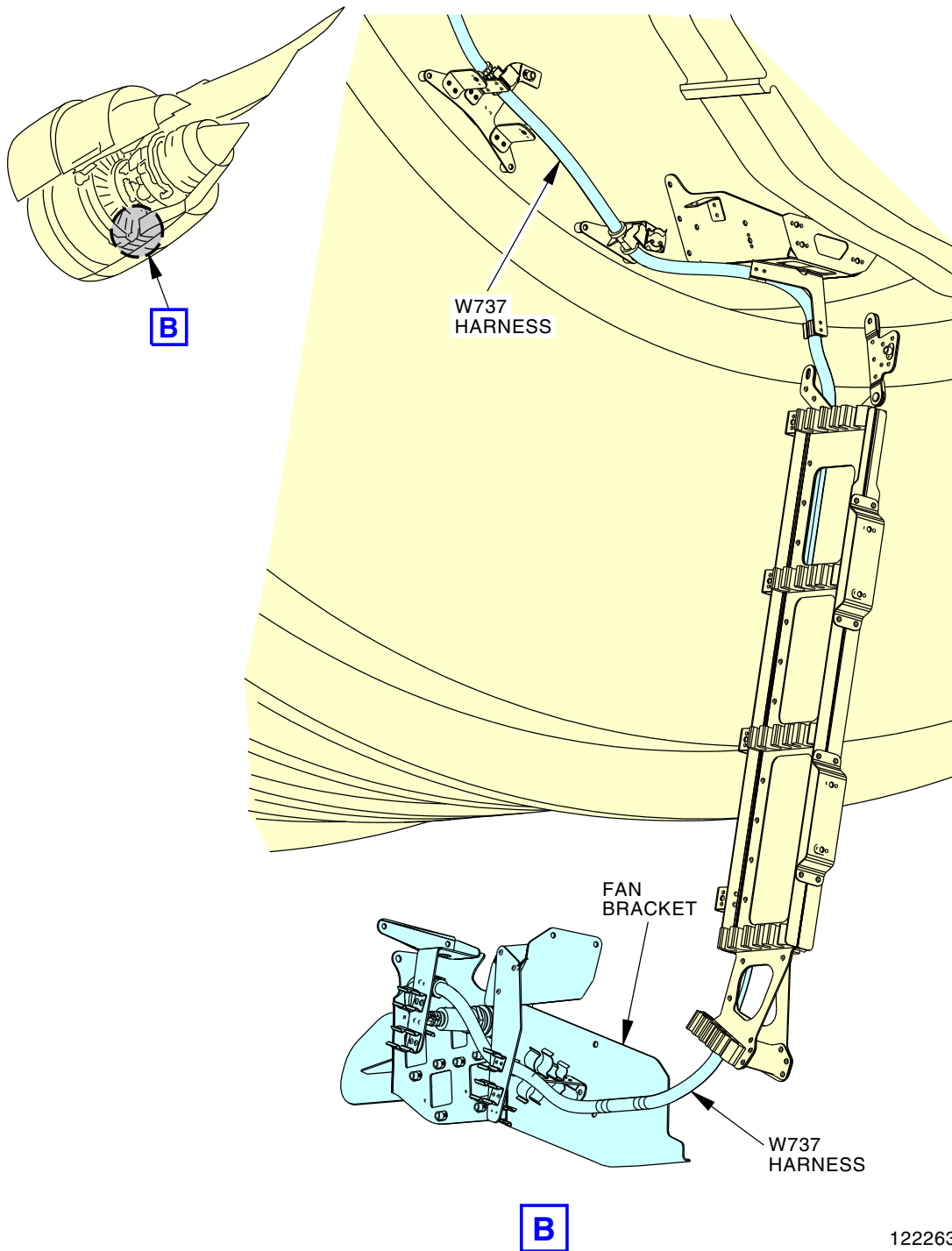
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1222633-00-A

376345 S0000132552_V2

W737 Electrical Harness Routing
Figure 433/73-22-01-990-846-H01 (Sheet 2 of 2)

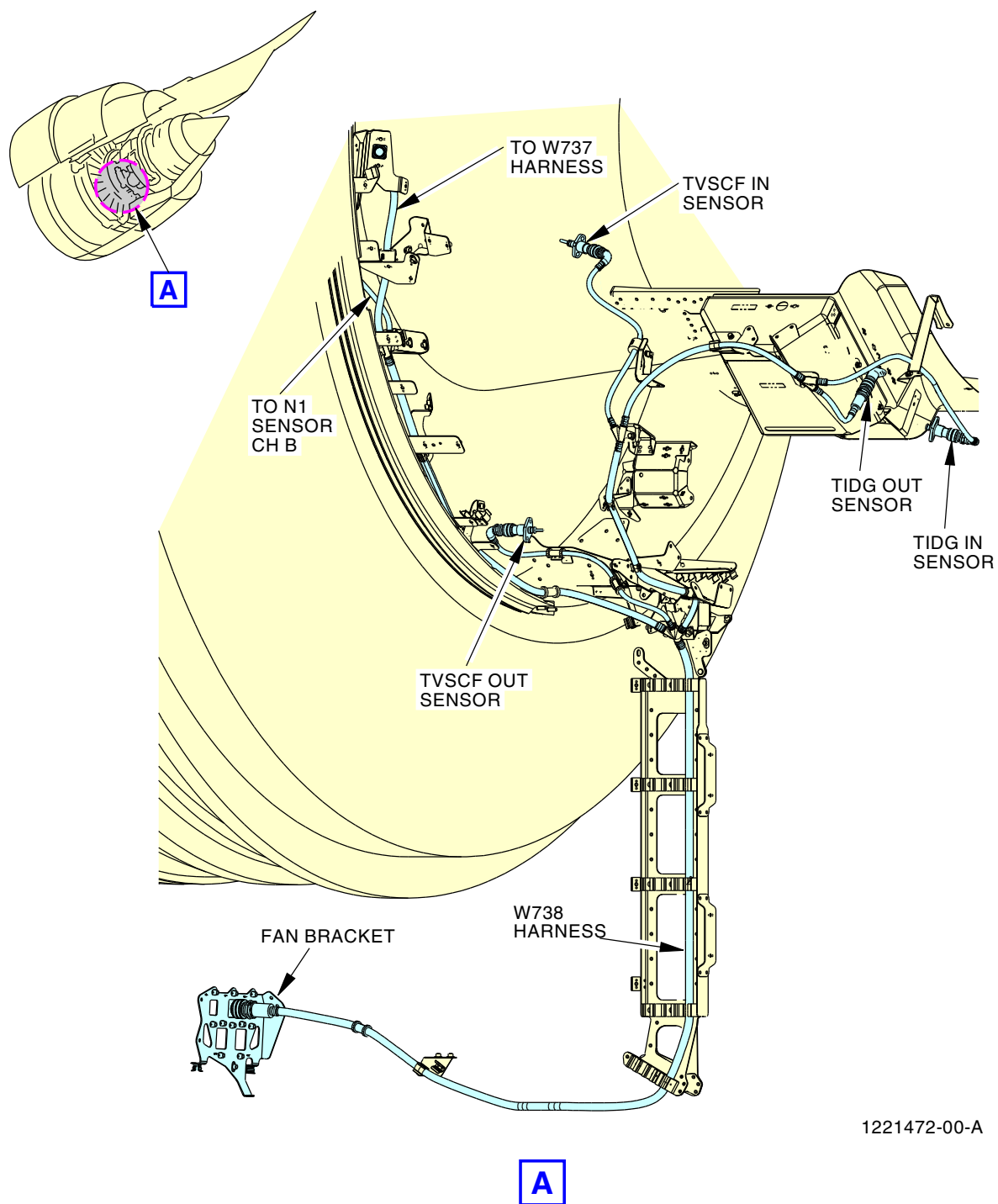
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1221472-00-A

376374 S0000132553_V2

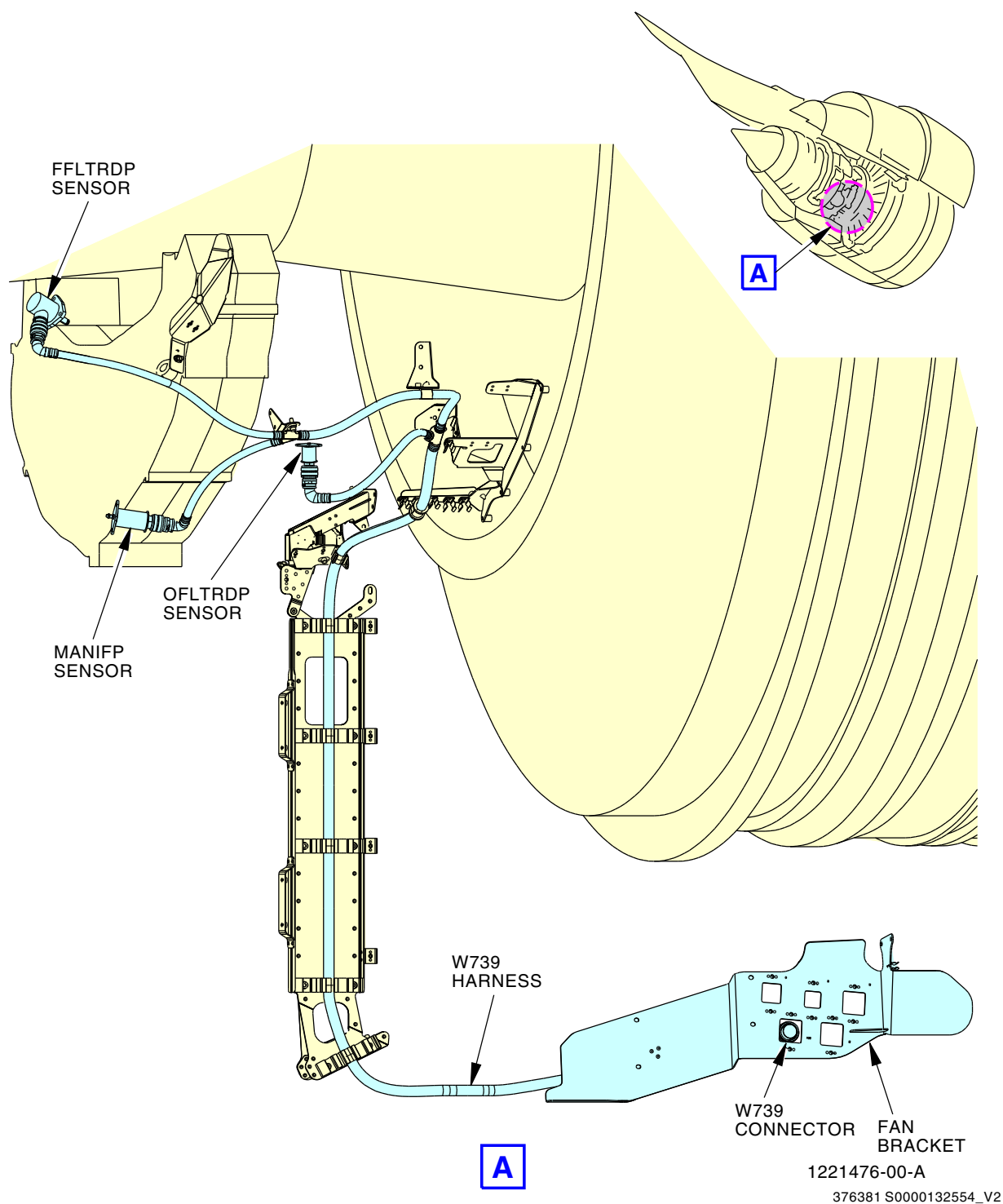
W738 Electrical Harness Routing
Figure 434/73-22-01-990-847-H01

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W739 Electrical Harness Routing
Figure 435/73-22-01-990-848-H01

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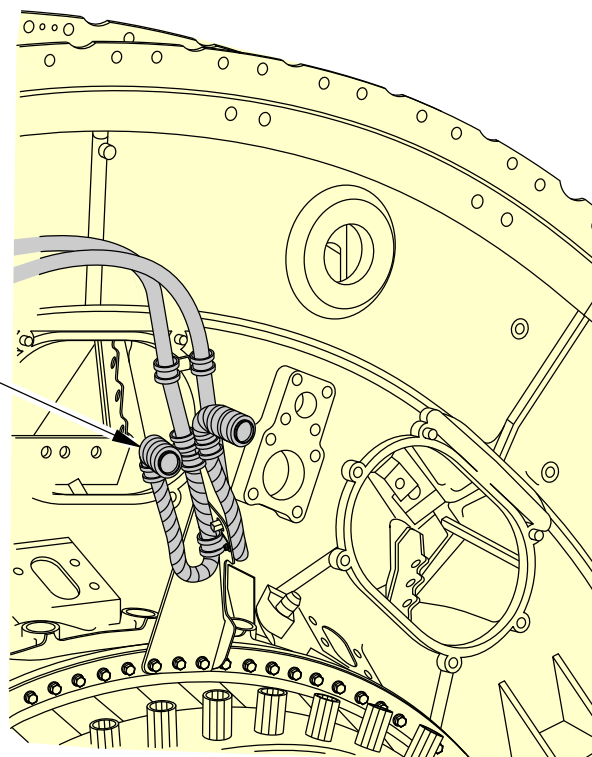
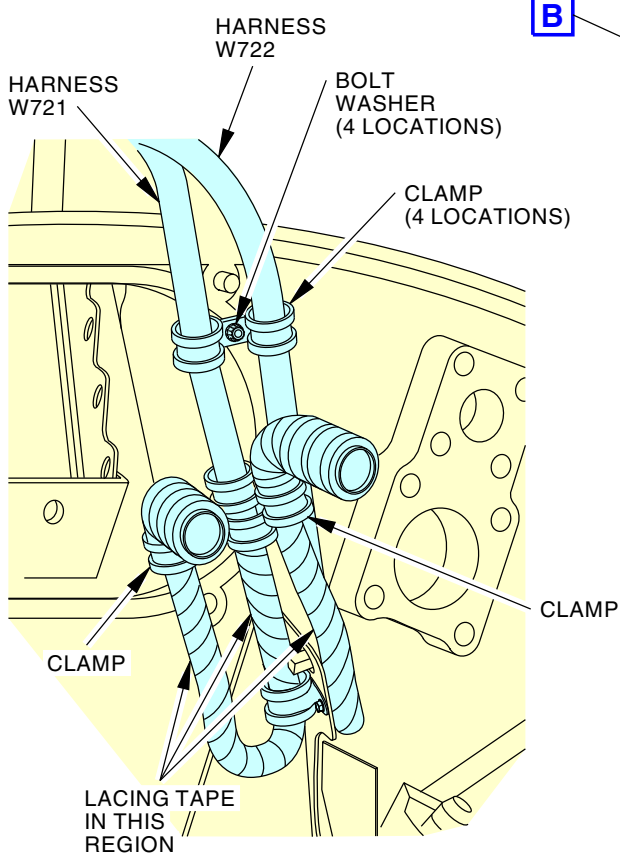
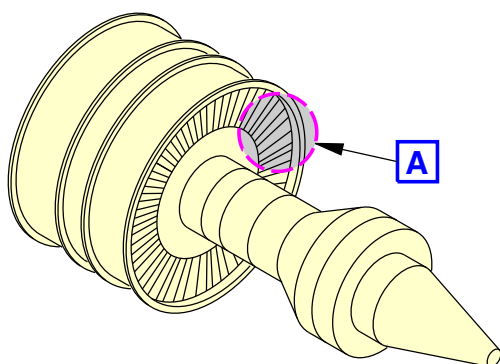
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A

B

1361597-00

2153361 S0000470447_V3

Location of the Clamps and the Lacing Tape
Figure 436/73-22-01-990-849-H00

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TASK 73-22-01-400-803-H01**7. EEC (FADEC) Electrical Harnesses (W721-W724, W727-W729, and W737-W739) Installation****A. General**

- (1) This task is the installation procedure for the EEC (FADEC) electrical harnesses that are on the engine core.

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- (2) This service bulletin is from the engine manufacturer and is referenced in this task:
- (a) This Service Bulletin installs the new electrical harnesses for engines without anti-ice system.

ARO ALL**B. References**

Reference	Title
20-10-11-000-801	P-Clamps Removal (P/B 401)
20-10-11-400-802	P-Clamp Installation (P/B 401)
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
70-00-01-400-807-H01	Electrical Connector - Disconnect and Connect (P/B 201)
71-00-00-800-833-H00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-814-H00	Close the Fan Cowl Panel (Selection) (P/B 201)
78-31-00-410-816-H00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-805-H00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)

D. Consumable Materials

Reference	Description	Specification
D50043 [C02-058]	Compound - Antiseize, Acheson GP460 (For Threaded Fasteners 0.250 Inches Diameter Or Larger, C02-079 Is An Alternative)	GE A50TF201 Class A

E. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

F. Access Panels

Number	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

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SUBTASK 73-22-01-420-014-H01



USE TEFLON-JAWED PLIERS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.



MAKE SURE THE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU CONNECT THEM. THE CONTAMINATION OF THE ELECTRICAL CONNECTOR CAN CAUSE DAMAGE TO THE EQUIPMENT.



MAKE SURE THAT THERE IS NO TENSION IN THE ELECTRICAL HARNESSES WHEN YOU CONNECT THE ELECTRICAL CONNECTORS. IF THERE IS TENSION, ADJUST THE HARNESS IN THE SPRING CLIPS AND HINGE CLAMPS. TENSION CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS AND THE HARNESSSES.

- (1) Use teflon-jawed pliers, STD-664 to install the W721 EEC (FADEC) harness (Figure 418, Figure 419, and Figure 425) (Electrical Connector - Disconnect and Connect, TASK 70-00-01-400-807-H01):
 - (a) Remove the protective covers from the harness connectors and receptacle and component receptacles.
 - (b) Put the harness in its position in the spring clips.
 - (c) Put the loop clamps in their position on the harness.
 - (d) Loosely connect the W721 harness connector (DP72102) to the W701 harness receptacle (DJ70102) on the fan bracket.
 - (e) Loosely connect the W721 harness connector (DP72104) to the right VSV actuator CH A actuator receptacle.
 - (f) Loosely connect the W721 harness connector (DP72111) to the T3 sensor CH A receptacle.
 - (g) Loosely connect the W721 harness connector (DP72103) to the EGT S1/S2 receptacle.
 - (h) Loosely connect the W721 harness connector (DP72105) to the LPTACC valve SW receptacle.
 - (i) Loosely connect the W721 harness connector (DP72106) to the LPTACC valve SOL receptacle.
 - (j) Loosely connect the W721 harness connector (DP72109) to the left VBV actuator CH A actuator receptacle.
 - (k) Loosely connect the W721 harness connector (DP72107) to the HPTACC valve CH A receptacle.
 - (l) Loosely connect the W721 harness connector (DP72110) to the T25 sensor CH A receptacle.
 - (m) Attach the W722 harness receptacle (DJ72212) to the bracket with bolts and nuts.
 - (n) Tighten the harness connectors.
 - (o) Attach the loop clamps to the engine with bolts.

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- (p) Attach the branches of the W721 harness that are not used as follows. Refer to figure 434.
- 1) Install two clamps at the upper location of the harnesses and attach with a bolt and nut.
 - a) Tighten the nut to 110-120 pound-inches (12.4-13.6 Newton-meters).
 - 2) Install two clamps around the harness and install other clamps around each electrical terminals and attach with a bolt and nut.
 - a) Tighten the nut to 110-120 pound-inches (12.4-13.6 Newton-meters).
- NOTE: Each pair of clamps uses one bolt and one nut.
- 3) On each cable loop in the region, apply lacing tape as necessary to attach each loop (TASK 20-10-11-000-801 and TASK 20-10-11-400-802).

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- (q) Tighten the bolts to 110-120 pound-inches (12.4-13.6 Newton-meters).
- (r) Close the lower bifurcation heat shield:
- 1) Apply a thin coat of Acheson GP460 compound, D50043 [C02-058] on the threads of the two bolts [13].
 - 2) Put the harness in position between the fire block [18] and fire block [19].
 - 3) Put the lower cover [17], fire block [18] and fire block [19] in position and install the bolts [13] and nuts [14] to attach the lower cover [17] to the heat shield [12].
 - 4) Tighten the two nuts [14] to 110-120 pound-inches (12.4-13.6 Newton-meters).
 - 5) Install the two rings [15] and cable [16] to the lower cover [17] and heat shield [12].

SUBTASK 73-22-01-420-015-H01



USE TEFLON-JAWED PLIERS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.



MAKE SURE THE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU CONNECT THEM. THE CONTAMINATION OF THE ELECTRICAL CONNECTOR CAN CAUSE DAMAGE TO THE EQUIPMENT.



MAKE SURE THAT THERE IS NO TENSION IN THE ELECTRICAL HARNESSES WHEN YOU CONNECT THE ELECTRICAL CONNECTORS. IF THERE IS TENSION, ADJUST THE HARNESS IN THE SPRING CLIPS AND HINGE CLAMPS. TENSION CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS AND THE HARNESSES.

- (2) Use teflon-jawed pliers, STD-664 to install the W722 EEC (FADEC) electrical harness (Figure 418, Figure 420, and Figure 426)(Electrical Connector - Disconnect and Connect, TASK 70-00-01-400-807-H01):
- (a) Remove the protective covers from the harness connectors and receptacle and the component receptacles.
 - (b) Put the W722 harness in its position in the spring clips.
 - (c) Put the loop clamps in their position on the W722 harness.

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- (d) Loosely connect the W722 harness connector (DP72202) to the W702 harness receptacle (DJ70202) on the fan bracket.
- (e) Loosely connect the W722 harness connector (DP72209) to the right VBV actuator CH B actuator receptacle.
- (f) Loosely connect the W722 harness connector (DP72211) to the T3 sensor CH B receptacle.
- (g) Loosely connect the W722 harness connector (DP72203) to the EGT S3/S4 receptacle.
- (h) Loosely connect the W722 harness connector (DP72205) to the CCC valve SW receptacle.
- (i) Loosely connect the W722 harness connector (DP72206) to the CCC valve SOL.
- (j) Loosely connect the W722 harness connector (DP72204) to the left VSV actuator CH B receptacle.
- (k) Loosely connect the W722 harness connector (DP72207) to the HPTACC valve CH B receptacle.
- (l) Loosely connect the W722 harness connector (DP72210) to the T25 sensor CH B receptacle.
- (m) Attach the W722 harness receptacle (DJ72212) to the bracket with bolts and nuts.
- (n) Tighten the harness connectors.
- (o) Attach the loop clamps to the engine with bolts.
- (p) Tighten the bolts to 55-70 pound inches (6.2-7.9 Newton-meters).

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- (q) Attach the branches of the W721 harness that are not used as follows. Refer to figure 434.
 - 1) Install two clamps at the upper location of the harnesses and attach with a bolt and nut.
 - a) Tighten the nut to 110-120 pound-inches (12.4-13.6 Newton-meters).
 - 2) Install two clamps around the harness and install other clamps around each electrical terminals and attach with a bolt and nut.
 - a) Tighten the nut to 110-120 pound-inches (12.4-13.6 Newton-meters).
- NOTE: Each pair of clamps uses one bolt and one nut.
- 3) On each cable loop in the region, apply lacing tape as necessary to attach each loop (TASK 20-10-11-000-801 and TASK 20-10-11-400-802).

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- (r) Close the lower bifurcation heat shield:
 - 1) Apply a thin coat of Acheson GP460 compound, D50043 [C02-058] on the threads of the two bolts [13].
 - 2) Put the harness in position between the fire block [18] and fire block [19].
 - 3) Put the lower cover [17], fire block [18] and fire block [19] in position and install the bolts [13] and nuts [14] to attach the lower cover [17] to the heat shield [12].
 - 4) Tighten the two nuts [14] to 110-120 pound-inches (12.4-13.6 Newton-meters).
 - 5) Install the two rings [15] and cable [16] to the lower cover [17] and heat shield [12].

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SUBTASK 73-22-01-420-016-H01

**CAUTION**

USE TEFLON-JAWED PLIERS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

**CAUTION**

MAKE SURE THE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU CONNECT THEM. THE CONTAMINATION OF THE ELECTRICAL CONNECTOR CAN CAUSE DAMAGE TO THE EQUIPMENT.

**CAUTION**

MAKE SURE THAT THERE IS NO TENSION IN THE ELECTRICAL HARNESSES WHEN YOU CONNECT THE ELECTRICAL CONNECTORS. IF THERE IS TENSION, ADJUST THE HARNESS IN THE SPRING CLIPS AND HINGE CLAMPS. TENSION CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS AND THE HARNESSES.

- (3) Use teflon-jawed pliers, STD-664 to install the W723 EEC (FADEC) electrical harness (Figure 418, Figure 421, and Figure 427)(Electrical Connector - Disconnect and Connect, TASK 70-00-01-400-807-H01):
- (a) Remove the protective covers from the harness connectors and receptacle and the component receptacles.
 - (b) Put the W723 harness in its position in the spring clips.
 - (c) Put the loop clamps in their position on the W723 harness.
 - (d) Loosely connect the W723 harness connector (DP72302) to the W703 harness receptacle (DJ70302) on the fan bracket.
 - (e) Loosely connect the W723 harness connector (DP72304) to the WFM sensor receptacle.
 - (f) Loosely connect the W723 harness connector (DP72303) to the N2 sensor CH A receptacle
 - (g) Loosely connect the W723 harness connector (DP72305) to the HMU CH A receptacle.
 - (h) Tighten the harness connectors.
 - (i) Attach the loop clamps to the engine with bolts.
 - (j) Tighten the bolts to 55-70 pound-inches (6.2-7.9 Newton-meters).
 - (k) Close the lower bifurcation heat shield:
 - 1) Apply a thin coat of Acheson GP460 compound, D50043 [C02-058] on the threads of the two bolts [13].
 - 2) Put the harness in position between the fire block [18] and fire block [19].
 - 3) Put the lower cover [17], fire block [18] and fire block [19] in position and install the bolts [13] and nuts [14] to attach the lower cover [17] to the heat shield [12].
 - 4) Tighten the two nuts [14] to 110-120 pound-inches (12.4-13.6 Newton-meters).
 - 5) Install the two rings [15] and cable [16] to the lower cover [17] and heat shield [12].

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SUBTASK 73-22-01-420-017-H01



USE TEFLON-JAWED PLIERS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.



MAKE SURE THE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU CONNECT THEM. THE CONTAMINATION OF THE ELECTRICAL CONNECTOR CAN CAUSE DAMAGE TO THE EQUIPMENT.



MAKE SURE THAT THERE IS NO TENSION IN THE ELECTRICAL HARNESSES WHEN YOU CONNECT THE ELECTRICAL CONNECTORS. IF THERE IS TENSION, ADJUST THE HARNESS IN THE SPRING CLIPS AND HINGE CLAMPS. TENSION CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS AND THE HARNESSES.

- (4) Use teflon-jawed pliers, STD-664 to install the W724 EEC (FADEC) electrical harness (Figure 418, Figure 422, and Figure 428)(Electrical Connector - Disconnect and Connect, TASK 70-00-01-400-807-H01):
- (a) Remove the protective covers from the harness connectors and receptacle and the component receptacles.
 - (b) Put the W724 harness in its position in the spring clips.
 - (c) Put the loop clamps in their position on the W724 harness.
 - (d) Loosely connect the W724 harness connector (DP72402) to the W704 harness receptacle (DJ70402) on the fan bracket.
 - (e) Loosely connect the W724 harness connector (DP72405) to the HMU CH B receptacle.
 - (f) Loosely connect the W724 harness connector (DP72404) to the TEO sensor CH A/B receptacle.
 - (g) Loosely connect the W724 harness connector (DP72406) to the SAV receptacle.
 - (h) Loosely connect the W724 harness connector (DP72403) to the N2 sensor CH B receptacle.
 - (i) Tighten the harness connectors.
 - (j) Attach the loop clamps to the engine with bolts.
 - (k) Tighten the bolts to 55-70 pound-inches (6.2-7.9 Newton-meters).
 - (l) Close the lower bifurcation heat shield:
 - 1) Apply a thin coat of Acheson GP460 compound, D50043 [C02-058] on the threads of the two bolts [13].
 - 2) Put the harness in position between the fire block [18] and fire block [19].
 - 3) Put the lower cover [17], fire block [18] and fire block [19] in position and install the bolts [13] and nuts [14] to attach the lower cover [17] to the heat shield [12].
 - 4) Tighten the two nuts [14] to 110-120 pound-inches (12.4-13.6 Newton-meters).
 - 5) Install the two rings [15] and cable [16] to the lower cover [17] and heat shield [12].

SUBTASK 73-22-01-420-026-H00

- (5) Install either bracket [23] as follows (Figure 431):

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- P/N 351-310-203-0 (for PRE SB 777-GE100 73-0084 W727 EEC(FADEC) electrical harness), or
 - P/N 351-310-204-0 (for POST SB 777-GE100 73-0084 W727 EEC(FADEC) electrical harness).
- (a) Install the bracket [23] on the bracket [20].
 - (b) Install the two bolts [22] that attach the bracket [23] to the bracket [20].
 - (c) Install the bracket [21] on the bracket [23].
 - (d) Install the two bolts [22] that attach the bracket [21] to the bracket [23].
 - (e) Torque the bolts [22] to 110 in-lb (12.4 N·m)-120 in-lb (13.6 N·m).
 - (f) Connect all the harnesses and tubing installed on the bracket [23].

SUBTASK 73-22-01-420-018-H01



USE TEFLON-JAWED PLIERS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.



MAKE SURE THE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU CONNECT THEM. THE CONTAMINATION OF THE ELECTRICAL CONNECTOR CAN CAUSE DAMAGE TO THE EQUIPMENT.



MAKE SURE THAT THERE IS NO TENSION IN THE ELECTRICAL HARNESSES WHEN YOU CONNECT THE ELECTRICAL CONNECTORS. IF THERE IS TENSION, ADJUST THE HARNESS IN THE SPRING CLIPS AND HINGE CLAMPS. TENSION CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS AND THE HARNESSSES.

- (6) Use teflon-jawed pliers, STD-664 to install the W727 EEC (FADEC) electrical harness (Figure 418, Figure 423, and Figure 429) (Electrical Connector - Disconnect and Connect, TASK 70-00-01-400-807-H01):
 - (a) Remove the protective covers from the harness connectors and receptacle and the component receptacles.
 - (b) Put the W727 harness [1] in its position in the spring clips.
 - (c) Put the loop clamps in their position on the W727 harness.
 - (d) Loosely connect the W727 harness connector (DP72703) to the W707 harness receptacle (DJ70703) on the fan bracket.
 - (e) Loosely connect the W727 harness connector (DP72702) to the ALT CH A receptacle.
 - (f) Tighten the harness connectors.
 - (g) Attach the loop clamps to the engine with bolts.
 - (h) Tighten the bolts to 55-70 pound-inches (6.2-7.9 Newton-meters).
 - (i) Close the lower bifurcation heat shield:
 - 1) Apply a thin coat of Acheson GP460 compound, D50043 [C02-058] on the threads of the two bolts [13].
 - 2) Put the harness in position between the fire block [18] and fire block [19].

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- 3) Put the lower cover [17], fire block [18] and fire block [19] in position and install the bolts [13] and nuts [14] to attach the lower cover [17] to the heat shield [12].
- 4) Tighten the two nuts [14] to 110-120 pound-inches (12.4-13.6 Newton-meters).
- 5) Install the two rings [15] and cable [16] to the lower cover [17] and heat shield [12].

SUBTASK 73-22-01-420-019-H01

**CAUTION**

USE TEFLON-JAWED PLIERS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

**CAUTION**

MAKE SURE THE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU CONNECT THEM. THE CONTAMINATION OF THE ELECTRICAL CONNECTOR CAN CAUSE DAMAGE TO THE EQUIPMENT.

**CAUTION**

MAKE SURE THAT THERE IS NO TENSION IN THE ELECTRICAL HARNESSES WHEN YOU CONNECT THE ELECTRICAL CONNECTORS. IF THERE IS TENSION, ADJUST THE HARNESS IN THE SPRING CLIPS AND HINGE CLAMPS. TENSION CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS AND THE HARNESSES.

- (7) Use teflon-jawed pliers, STD-664 to install the W728 EEC (FADEC) electrical harness (Figure 418, Figure 423, and Figure 430)(Electrical Connector - Disconnect and Connect, TASK 70-00-01-400-807-H01):
 - (a) Remove the protective covers from the harness connectors and receptacle and the component receptacles.
 - (b) Put the W728 harness in its position in the spring clips.
 - (c) Put the loop clamps in their position on the W728 harness.
 - (d) Loosely connect the W728 harness connector (DP73803) to the W708 harness receptacle (DJ70803) on the fan bracket.
 - (e) Loosely connect the W728 harness connector (DP72802) to the ALT CH B receptacle.
 - (f) Tighten the harness connectors.
 - (g) Attach the loop clamps to the engine with bolts.
 - (h) Tighten the bolts to 55-70 pound-inches (6.2-7.9 Newton-meters).
 - (i) Close the lower bifurcation heat shield:
 - 1) Apply a thin coat of Acheson GP460 compound, D50043 [C02-058] on the threads of the two bolts [13].
 - 2) Put the harness in position between the fire block [18] and fire block [19].
 - 3) Put the lower cover [17], fire block [18] and fire block [19] in position and install the bolts [13] and nuts [14] to attach the lower cover [17] to the heat shield [12].
 - 4) Tighten the two nuts [14] to 110-120 pound-inches (12.4-13.6 Newton-meters).
 - 5) Install the two rings [15] and cable [16] to the lower cover [17] and heat shield [12].

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SUBTASK 73-22-01-420-020-H01

**CAUTION**

USE TEFLON-JAWED PLIERS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

**CAUTION**

MAKE SURE THE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU CONNECT THEM. THE CONTAMINATION OF THE ELECTRICAL CONNECTOR CAN CAUSE DAMAGE TO THE EQUIPMENT.

**CAUTION**

MAKE SURE THAT THERE IS NO TENSION IN THE ELECTRICAL HARNESSES WHEN YOU CONNECT THE ELECTRICAL CONNECTORS. IF THERE IS TENSION, ADJUST THE HARNESS IN THE SPRING CLIPS AND HINGE CLAMPS. TENSION CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS AND THE HARNESSES.

- (8) Use teflon-jawed pliers, STD-664 to install the W729 EEC (FADEC) electrical harness (Figure 418, Figure 424, and Figure 432)(Electrical Connector - Disconnect and Connect, TASK 70-00-01-400-807-H01):
- (a) Remove the protective covers from the harness connectors and receptacle and the component receptacles.
 - (b) Put the W729 harness in its position in the spring clips.
 - (c) Put the loop clamps in their position on the W729 harness.
 - (d) Loosely connect the W729 harness connector (DP72902) to the W709 harness receptacle (DJ70902) on the fan bracket.
 - (e) Loosely connect the W729 harness connector (DP72903) to the PEO sensor CH A/B receptacle.
 - (f) Loosely connect the W729 harness connector (DP72904) to the SAP sensor CH A/B receptacle.
 - (g) Tighten the harness connectors.
 - (h) Attach the loop clamps to the engine with bolts.
 - (i) Tighten the bolts to 55-70 pound-inches (6.2–7.9 Newton-meters).
 - (j) Close the lower bifurcation heat shield:
 - 1) Apply a thin coat of Acheson GP460 compound, D50043 [C02-058] on the threads of the two bolts [13].
 - 2) Put the harness in position between the fire block [18] and fire block [19].
 - 3) Put the lower cover [17], fire block [18] and fire block [19] in position and install the bolts [13] and nuts [14] to attach the lower cover [17] to the heat shield [12].
 - 4) Tighten the two nuts [14] to 110-120 pound-inches (12.4-13.6 Newton-meters).
 - 5) Install the two rings [15] and cable [16] to the lower cover [17] and heat shield [12].

SUBTASK 73-22-01-420-023-H01

**CAUTION**

USE TEFLON-JAWED PLIERS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

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MAKE SURE THE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU CONNECT THEM. THE CONTAMINATION OF THE ELECTRICAL CONNECTOR CAN CAUSE DAMAGE TO THE EQUIPMENT.

**CAUTION**

MAKE SURE THAT THERE IS NO TENSION IN THE ELECTRICAL HARNESSES WHEN YOU CONNECT THE ELECTRICAL CONNECTORS. IF THERE IS TENSION, ADJUST THE HARNESS IN THE SPRING CLIPS AND HINGE CLAMPS. TENSION CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS AND THE HARNESSSES.

- (9) Use teflon-jawed pliers, STD-664 to install the W737 EEC (FADEC) electrical harness (Figure 418, Figure 423, and Figure 433)(Electrical Connector - Disconnect and Connect, TASK 70-00-01-400-807-H01):
- (a) Remove the protective covers from the harness connectors and receptacles and the component receptacle.
 - (b) Put the W737 harness in its position in the spring clips.
 - (c) Put the loop clamps in their position on the W737 harness.
 - (d) Loosely connect the W737 harness connector (DP73702) to the W707 harness (DJ70702) receptacle.
 - (e) Loosely connect the W737 harness connector (DP73704) to the N1 sensor CH A receptacle.
 - (f) Loosely connect the W737 harness connector (DP73706) to the configuration box receptacle.
 - (g) Loosely connect the W737 harness receptacle (DJ73707) to the W738 harness connector (DP73807).
 - (h) Tighten the harness connectors.
 - (i) Attach the loop clamps to the engine with bolts.
 - (j) Tighten the bolts to 55-70 pound-inches (6.2-7.9 newton-meters).
 - (k) Close the lower bifurcation heat shield:
 - 1) Apply a thin coat of Acheson GP460 compound, D50043 [C02-058] on the threads of the two bolts [13].
 - 2) Put the harness in position between the fire block [18] and fire block [19].
 - 3) Put the lower cover [17], fire block [18] and fire block [19] in position and install the bolts [13] and nuts [14] to attach the lower cover [17] to the heat shield [12].
 - 4) Tighten the two nuts [14] to 110-120 pound-inches (12.4-13.6 Newton-meters).
 - 5) Install the two rings [15] and cable [16] to the lower cover [17] and heat shield [12].

SUBTASK 73-22-01-420-024-H01

**CAUTION**

USE TEFLON-JAWED PLIERS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

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(CAUTION PRECEDES)



CAUTION

MAKE SURE THE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU CONNECT THEM. THE CONTAMINATION OF THE ELECTRICAL CONNECTOR CAN CAUSE DAMAGE TO THE EQUIPMENT.



CAUTION

MAKE SURE THAT THERE IS NO TENSION IN THE ELECTRICAL HARNESSES WHEN YOU CONNECT THE ELECTRICAL CONNECTORS. IF THERE IS TENSION, ADJUST THE HARNESS IN THE SPRING CLIPS AND HINGE CLAMPS. TENSION CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS AND THE HARNESSSES.

- (10) Use teflon-jawed pliers, STD-664 to install the W738 EEC (FADEC) electrical harness (Figure 418, Figure 423, and Figure 434)(Electrical Connector - Disconnect and Connect, TASK 70-00-01-400-807-H01):
- (a) Remove the protective covers from the harness connectors and receptacle and the component receptacles.
 - (b) Put the W738 harness in its position in the spring clips.
 - (c) Put the loop clamps in their position on the W738 harness.
 - (d) Loosely connect the W738 harness connector (DP73802) to the W708 harness connector (DJ70802) on the fan bracket.
 - (e) Loosely connect the W738 harness connector (DP73806) to the TIDG IN sensor receptacle.
 - (f) Loosely connect the W738 harness connector (DP73808) to the TVSCF IN sensor receptacle.
 - (g) Loosely connect the W738 harness connector (DP73807) to the W737 receptacle (DJ73707).
 - (h) Loosely connect the W738 harness connector (DP73804) to the N1 sensor CH B receptacle.
 - (i) Loosely connect the W738 harness connector (DP73803) to the TVSCF OUT sensor receptacle.
 - (j) Loosely connect the W738 harness connector (DP73805) to the TIDG OUT sensor receptacle.
 - (k) Tighten the harness connectors.
 - (l) Attach the loop clamps to the engine with bolts.
 - (m) Tighten the bolts to 55-70 pound-inches (6.2-7.9 Newton-meters).
 - (n) Close the lower bifurcation heat shield:
 - 1) Apply a thin coat of Acheson GP460 compound, D50043 [C02-058] on the threads of the two bolts [13].
 - 2) Put the harness in position between the fire block [18] and fire block [19].
 - 3) Put the lower cover [17], fire block [18] and fire block [19] in position and install the bolts [13] and nuts [14] to attach the lower cover [17] to the heat shield [12].
 - 4) Tighten the two nuts [14] to 110-120 pound-inches (12.4-13.6 Newton-meters).
 - 5) Install the two rings [15] and cable [16] to the lower cover [17] and heat shield [12].

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SUBTASK 73-22-01-410-006-H01

**CAUTION**

USE TEFLON-JAWED PLIERS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

**CAUTION**

MAKE SURE THE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU CONNECT THEM. THE CONTAMINATION OF THE ELECTRICAL CONNECTOR CAN CAUSE DAMAGE TO THE EQUIPMENT.

**CAUTION**

MAKE SURE THAT THERE IS NO TENSION IN THE ELECTRICAL HARNESSES WHEN YOU CONNECT THE ELECTRICAL CONNECTORS. IF THERE IS TENSION, ADJUST THE HARNESS IN THE SPRING CLIPS AND HINGE CLAMPS. TENSION CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS AND THE HARNESSES.

- (11) Use teflon-jawed pliers, STD-664 to install the W739 EEC (FADEC) harness (Figure 418, Figure 424, and Figure 435)(Electrical Connector - Disconnect and Connect, TASK 70-00-01-400-807-H01):
- (a) Remove the protective covers from the harness connectors and receptacle and component receptacles.
 - (b) Put the harness in its position in the spring clips.
 - (c) Put the loop clamps in their position on the harness.
 - (d) Loosely connect the W739 harness connector (DP73903) to the W709 harness receptacle (DJ70903).
 - (e) Loosely connect the W739 harness connector (DP73904) to the MANIFP sensor CH A/B receptacle.
 - (f) Loosely connect the W739 harness connector (DP73905) to the OFLTRDP sensor CH A/B receptacle.
 - (g) Loosely connect the W739 harness connector (DP73902) to the FFLTRDP sensor CH A/B receptacle.
 - (h) Tighten the harness connectors.
 - (i) Attach the loop clamps to the engine with bolts.
 - (j) Tighten the bolts to 55-70 pound inches (6.2-7.9 Newton-meters).
 - (k) Close the lower bifurcation fire seal:
 - 1) Apply a thin coat of Acheson GP460 compound, D50043 [C02-058] on the threads of the two bolts [13].
 - 2) Put the harness in position between the fire block [18] and fire block [19].
 - 3) Put the lower cover [17], fire block [18] and fire block [19] in position and install the bolts [13] and nuts [14] to attach the lower cover [17] to the heat shield [12].
 - 4) Tighten the two nuts [14] to 110-120 pound-inches (12.4-13.6 Newton-meters).
 - 5) Install the two rings [15] and cable [16] to the lower cover [17] and heat shield [12].

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H. Put the Airplane Back to its Usual Condition

SUBTASK 73-22-01-410-002-H01



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Do these tasks in sequence to safely close the left and right thrust reversers on the applicable engine:
 - (a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-410-816-H00.
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine
 - (b) Do this task: Close the Fan Cowl Panel (Selection), TASK 71-11-04-410-814-H00.
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine
 - (c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-805-H00.
 - (d) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

I. EEC (FADEC) Electrical Harness Installation Test

SUBTASK 73-22-01-710-002-H01

- (1) Do the tests listed in the Power Plant Test Reference Table (TASK 71-00-00-800-833-H00).

————— **END OF TASK** —————

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FUEL FLOW INDICATING SYSTEM - INSPECTION/CHECK

TASK 73-31-00-210-801-H01

1. Fuel Flow Indicating System Inspection

A. General

- (1) This procedure contains one task, an examination of the fuel flow indicating system.
- (2) To examine the fuel flow indicating system you must open the right thrust reverser.
- (3) This procedure will examine the fuel flow transmitter (referred to as the FFT).

B. References

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
27-81-00-860-805	Retract the Leading Edge Slats (P/B 201)
71-11-04-010-814-H00	Open the Fan Cowl Panel (Selection) (P/B 201)
71-11-04-410-814-H00	Close the Fan Cowl Panel (Selection) (P/B 201)
73-31-01-000-801-H01	Fuel Flow Transmitter Removal (P/B 401)
73-31-01-400-801-H01	Fuel Flow Transmitter Installation (P/B 401)
78-31-00-010-816-H00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-806-H00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)
78-31-00-410-816-H00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-805-H00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

D. Access Panels

Number	Name/Location
414AR	Right Fan Cowl Panel, Left Engine
416AR	Right Thrust Reverser, Left Engine
424AR	Right Fan Cowl Panel, Right Engine
426AR	Right Thrust Reverser, Right Engine

E. Fuel Flow Indicating System Inspection

SUBTASK 73-31-00-010-003-H01



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO OPEN THE THRUST REVERSER(S). IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR

- (1) Do these tasks in sequence to safely open the right thrust reverser on the applicable engine:
 - (a) Do this task: Retract the Leading Edge Slats, TASK 27-81-00-860-805.
 - (b) Do this task: Leading Edge Slat - Deactivation, TASK 27-81-00-040-801.
 - (c) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-806-H00.

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- (d) For the right fan cowl panel, do this task:
Open the Fan Cowl Panel (Selection), TASK 71-11-04-010-814-H00

<u>Number</u>	<u>Name/Location</u>
414AR	Right Fan Cowl Panel, Left Engine
424AR	Right Fan Cowl Panel, Right Engine

- (e) For the right thrust reverser, do this task:
Open the Thrust Reverser (Selection), TASK 78-31-00-010-816-H00

<u>Number</u>	<u>Name/Location</u>
416AR	Right Thrust Reverser, Left Engine
426AR	Right Thrust Reverser, Right Engine

SUBTASK 73-31-00-210-001-H01

- (2) Examine the fuel flow transmitter (FFT):
- (a) Look for signs of fuel leaks.
 - 1) If you see signs of fuel leaks, replace the gasket seals (TASK 73-31-01-400-801-H01).
 - (b) Make sure the FFT is not loose.
 - 1) If the FFT is loose, tighten the bolts (TASK 73-31-01-400-801-H01).
 - (c) Look for dents in the FFT.
 - 1) If you see dents, replace the FFT. These are the tasks: Fuel Flow Transmitter Removal, TASK 73-31-01-000-801-H01 and Fuel Flow Transmitter Installation, TASK 73-31-01-400-801-H01
 - (d) Look for cracks in the FFT.
 - 1) If you see cracks, replace the FFT. These are the tasks: Fuel Flow Transmitter Removal, TASK 73-31-01-000-801-H01 and Fuel Flow Transmitter Installation, TASK 73-31-01-400-801-H01
 - (e) Make sure the electrical connector is not loose.

SUBTASK 73-31-00-410-003-H01



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (3) Do these tasks in sequence to safely close the right thrust reverser on the applicable engine:
- (a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-410-816-H00.
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
416AR	Right Thrust Reverser, Left Engine
426AR	Right Thrust Reverser, Right Engine
 - (b) Do this task: Close the Fan Cowl Panel (Selection), TASK 71-11-04-410-814-H00.
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
414AR	Right Fan Cowl Panel, Left Engine
424AR	Right Fan Cowl Panel, Right Engine

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- (c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-805-H00.
- (d) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

———— **END OF TASK** ————

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FUEL FLOW TRANSMITTER - REMOVAL/INSTALLATION

1. General

- A. This procedure contains two tasks:
- (1) A removal of the fuel flow transmitter
 - (2) An installation of the fuel flow transmitter.

TASK 73-31-01-000-801-H01

2. Fuel Flow Transmitter Removal

A. General

- (1) This task is the removal procedure for the fuel flow transmitter (FFT).
- (2) You must open the right thrust reverser to get access to remove the fuel flow transmitter (FFT).

B. References

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
27-81-00-860-805	Retract the Leading Edge Slats (P/B 201)
70-00-01-400-807-H01	Electrical Connector - Disconnect and Connect (P/B 201)
71-11-04-010-814-H00	Open the Fan Cowl Panel (Selection) (P/B 201)
78-31-00-010-816-H00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-806-H00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-201	Container - Fuel Resistant, 5 U.S.-Gal (19 l)
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)

D. Consumable Materials

Reference	Description	Specification
D00552 [C02-019]	Oil - Engine Lubricating	GE Spec. D50TF1

E. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

F. Access Panels

Number	Name/Location
414AR	Right Fan Cowl Panel, Left Engine
416AR	Right Thrust Reverser, Left Engine
424AR	Right Fan Cowl Panel, Right Engine
426AR	Right Thrust Reverser, Right Engine

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G. Prepare for the Fuel Flow Transmitter Removal

SUBTASK 73-31-01-010-001-H01



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO OPEN THE THRUST REVERSER(S). IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR

- (1) Do these tasks in sequence to safely open the right thrust reverser on the applicable engine:

- (a) Do this task: Retract the Leading Edge Slats, TASK 27-81-00-860-805.
- (b) Do this task: Leading Edge Slat - Deactivation, TASK 27-81-00-040-801.
- (c) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-806-H00.
- (d) For the right fan cowl panel, do this task:

Open the Fan Cowl Panel (Selection), TASK 71-11-04-010-814-H00

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

414AR	Right Fan Cowl Panel, Left Engine
424AR	Right Fan Cowl Panel, Right Engine

- (e) For the right thrust reverser, do this task:

Open the Thrust Reverser (Selection), TASK 78-31-00-010-816-H00

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

416AR	Right Thrust Reverser, Left Engine
426AR	Right Thrust Reverser, Right Engine

SUBTASK 73-31-01-860-001-H01

- (2) Do these steps to make sure the fuel control valve and the spar valve stay in the closed position:

- (a) Make sure that the FUEL CONTROL switch is in the CUTOFF position.
 - 1) Install a DO-NOT-OPERATE tag on the FUEL CONTROL switch.
- (b) Push the STAT switch on the display select panel of the glareshield (P55).
 - 1) Make sure you do not see the applicable ENG FUEL VALVE L(R) or FUEL SPAR VALVE L(R) status messages.
- (c) For the applicable engines, open these circuit breakers and install safety tags:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C28001	L ENGINE FUEL SPAR VALVE
A	19	C28002	R ENGINE FUEL SPAR VALVE
B	4	C76601	L ENG FUEL VALVE
B	19	C76600	R ENG FUEL VALVE

H. Fuel Flow Transmitter Removal

SUBTASK 73-31-01-020-001-H01



MAKE SURE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU DISCONNECT THEM. CONTAMINATION OF ELECTRICAL CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.

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(CAUTION PRECEDES)



USE TEFLON-JAWED PLIERS TO LOOSEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

- (1) Use the teflon-jawed pliers, STD-664 to disconnect the electrical connector [5] (TASK 70-00-01-400-807-H01):
 - (a) Disconnect the electrical connector [5] from the FFT [12] .
 - (b) Install a protective cover on the electrical receptacle on the FFT and the electrical connector [5] .

SUBTASK 73-31-01-020-002-H01

- (2) Remove the FFT [12] Figure 401:

NOTE: Make sure the fuel pressure is released before FFT removal.

 - (a) Put a 5 U.S.-gal (19 l) fuel resistant container, STD-201 below the FFT [12].
 - (b) Remove the four bolts [2] that attach the fuel inlet tube [1] movable flange and the upper FFT support bracket [4] to the FFT inlet.
 - (c) Install a protective cover on the fuel tube opening.
 - 1) Move the tube out of the way.
 - (d) Remove the gasket seal [3].
 - 1) Examine the gasket seal [3] for damage.
 - a) If the gasket seal [3] is not damaged, then keep it for the subsequent installation.
 - b) If the gasket seal [3] is damaged, then replace it.
 - (e) Remove the bolts [8] that attach the fuel outlet tube [10] and the lower FFT support bracket [9] to the FFT [12].
 - (f) Pull the FFT [12] away from the engine and off of the fuel outlet tube [10] and let the fuel drain into the container.
 - (g) Remove the FFT [12].
 - 1) Install protective covers on the two FFT openings.
 - (h) Remove the gasket seal [11] from the fuel outlet tube [10].
 - 1) Examine the gasket seal [11] for damage.
 - a) If the gasket seal [11] is not damaged, then keep it for the subsequent installation.
 - b) If the gasket seal [11] is damaged, then replace it.
 - 2) Install a protective cover on the fuel tube opening.

SUBTASK 73-31-01-620-001-H01

YOU MUST DO THE PRESERVATION PROCEDURE FOR THE FFT IF YOU WILL NOT INSTALL THE FFT WITHIN 24 HOURS. IF YOU DO NOT, YOU CAN CAUSE DAMAGE TO THE FFT.

- (3) If preservation is required, do the preservation procedure for the FFT [12].
 - (a) Fill the FFT [12] with clean oil, D00552 [C02-019] .

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- (b) Move the FFT [12] back and forth to make sure the oil touches all the inside surface of the FFT.
- (c) Permit the engine oil to drain from the FFT [12] into an 5 U.S.-gal (19 l) fuel resistant container, STD-201.
- (d) Install protective covers in the inlet and outlet ports of the FFT [12].

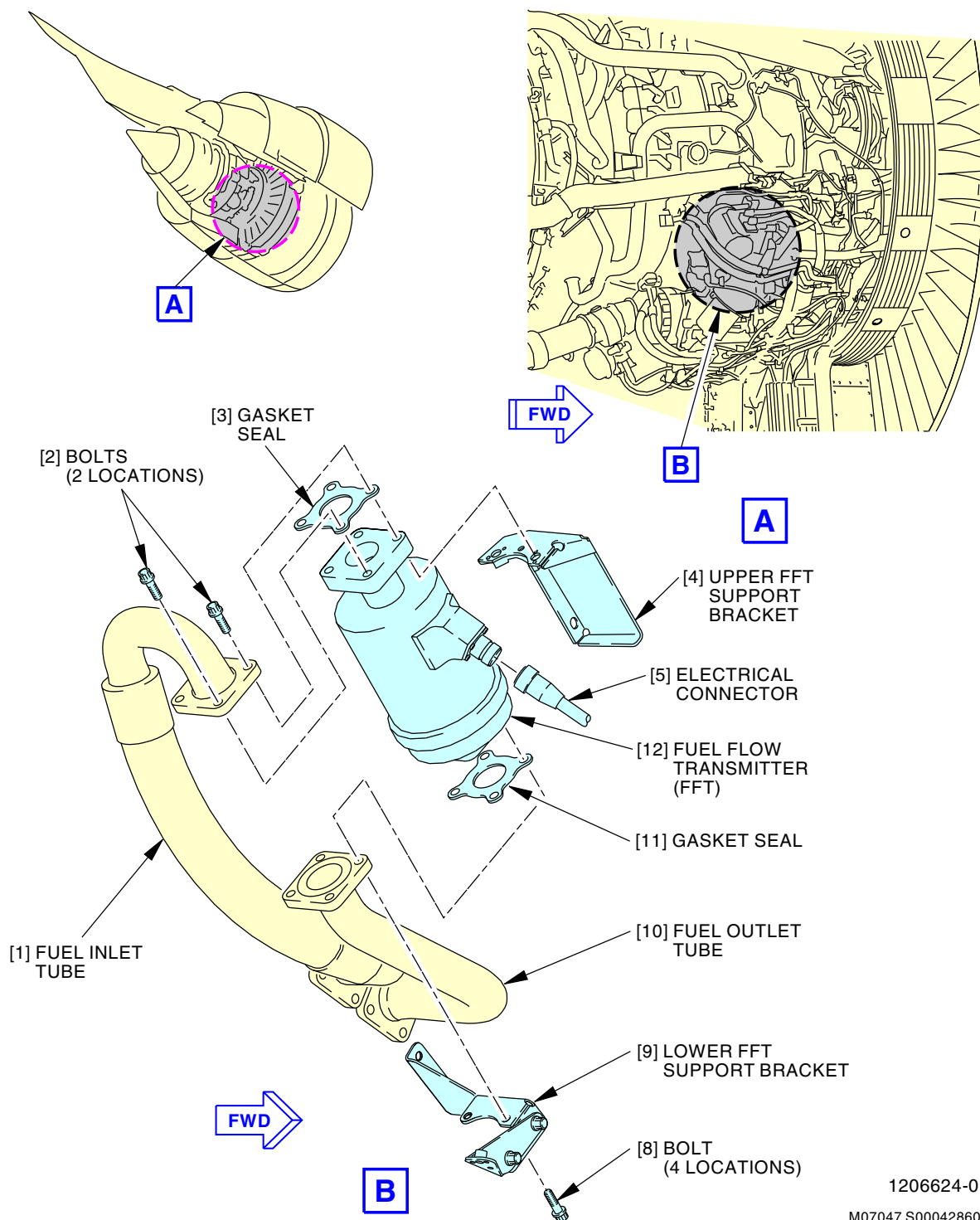
———— **END OF TASK** ————

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**Fuel Flow Transmitter Installation
Figure 401/73-31-01-990-801-H01**

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TASK 73-31-01-400-801-H01

3. Fuel Flow Transmitter Installation

A. General

- (1) This task is the installation procedure for the fuel flow transmitter (FFT).
- (2) You must do the tests that are listed in the power plant test reference table after you replace the fuel flow transmitter (FFT).

B. References

Reference	Title
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
70-00-01-400-807-H01	Electrical Connector - Disconnect and Connect (P/B 201)
71-00-00-800-833-H00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-814-H00	Close the Fan Cowl Panel (Selection) (P/B 201)
78-31-00-410-816-H00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-805-H00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-203	Container - Oil Resistant, 1 U.S.-Gal (3.8 l)
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)

D. Consumable Materials

Reference	Description	Specification
D00504	Grease - Petrolatum	VV-P-236
D00552 [C02-019]	Oil - Engine Lubricating	GE Spec. D50TF1
D50043 [C02-058]	Compound - Antiseize, Acheson GP460 (For Threaded Fasteners 0.250 Inches Diameter Or Larger, C02-079 Is An Alternative)	GE A50TF201 Class A

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Gasket seal	73-31-01-03-015	ARO ALL
11	Gasket seal	73-31-01-03-015	ARO ALL
12	FFT	73-31-01-03-020	ARO ALL

F. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

G. Access Panels

Number	Name/Location
414AR	Right Fan Cowl Panel, Left Engine
416AR	Right Thrust Reverser, Left Engine
424AR	Right Fan Cowl Panel, Right Engine
426AR	Right Thrust Reverser, Right Engine

H. Fuel Flow Transmitter (FFT) Installation

SUBTASK 73-31-01-420-001-H01

- (1) Install the FFT [12] Figure 401:

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- (a) Remove the protective covers from the inlet and outlet ports of the FFT [12].
- (b) If the FFT was preserved, then do these steps:
 - 1) Remove the protective covers from the fuel openings in the FFT.
 - 2) Drain the oil, D00552 [C02-019] from the FFT [12] into an 1 U.S.-gal (3.81 l) oil resistant container, STD-203.
- (c) Lubricate the threads of the bolts [8] and bolts [2] with the Acheson GP460 compound, D50043 [C02-058].
- (d) Remove the protective covers from the fuel outlet tube [10].
- (e) Lubricate the gasket seal [11] with grease, D00504.
- (f) Put the gasket seal [11] on the flange of the fuel outlet tube [10].
- (g) Carefully put the FFT [12] in its position on the flange of the fuel outlet tube [10] and the lower FFT support bracket [9].
- (h) Loosely install the bolts [8] that connect the flange of the fuel outlet tube [10] and the lower FFT support bracket [9] to the outlet port of the FFT [12].
- (i) Remove the protective covers from the fuel inlet tube [1].
- (j) Lubricate the gasket seal [3] with grease, D00504.
- (k) Install the gasket seal [3] on the fuel inlet tube [1].
- (l) Move the flange of the fuel inlet tube [1] into its position on the inlet port of the FFT [12].
- (m) Put the upper FFT support bracket [4] in its correct position on the inlet port of the FFT [12].
- (n) Loosely install the bolts [2] through the fuel inlet tube [1], the inlet port of the FFT [12], and the upper FFT support bracket [4].
- (o) Make sure that the FFT system components are in their correct position.
 - 1) Make sure that there is on preload on the FFT system components.
- (p) Tighten the bolts [2] and the bolts [8] to 110-120 pound-inches (12.4-13.6 Newton-meters).

SUBTASK 73-31-01-420-002-H01

MAKE SURE THE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU CONNECT THEM. THE CONTAMINATION OF THE ELECTRICAL CONNECTOR CAN CAUSE DAMAGE TO THE EQUIPMENT.



USE TEFLON-JAWED PLIERS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

- (2) Use a teflon-jawed pliers, STD-664 to connect the electrical connector [5] (harness) (TASK 70-00-01-400-807-H01):
 - (a) Remove the protective cover from the electrical connector [5] and the electrical connector on the FFT.
 - (b) Connect the electrical connector [5] to the FFT [12].
 - 1) Tighten the electrical connector [5].

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I. Put the Airplane Back to its Usual Condition

SUBTASK 73-31-01-410-001-H01



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Do these tasks in sequence to safely close the right thrust reverser on the applicable engine:

(a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-410-816-H00.

1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
416AR	Right Thrust Reverser, Left Engine
426AR	Right Thrust Reverser, Right Engine

(b) Do this task: Close the Fan Cowl Panel (Selection), TASK 71-11-04-410-814-H00.

1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
414AR	Right Fan Cowl Panel, Left Engine
424AR	Right Fan Cowl Panel, Right Engine

(c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-805-H00.

(d) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

SUBTASK 73-31-01-860-002-H01

(2) Do these steps to put the fuel control valve and the spar valve to the serviceable condition:

(a) Make sure that the FUEL CONTROL switch is in the CUTOFF position.

(b) For the applicable engine, remove the safety tags and close these circuit breakers:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C28001	L ENGINE FUEL SPAR VALVE
A	19	C28002	R ENGINE FUEL SPAR VALVE
B	4	C76601	L ENG FUEL VALVE
B	19	C76600	R ENG FUEL VALVE

J. Fuel Flow Transmitter Installation Test

SUBTASK 73-31-01-710-001-H01

(1) Do the tests listed in the Power Plant Test Reference Table (TASK 71-00-00-800-833-H00).

————— END OF TASK —————

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