SERVICE BULLETIN

ENGINE FUEL AND CONTROL – FUEL SYSTEM AIR TUBE – INTRODUCTION OF PB SENSE LINE

MODEL APPLICATION

V2522-A5, V2524-A5, V2527-A5, V2527E-A5, V2527M-A5, V2530-A5, V2533-A5

BULLETIN ISSUE SEQUENCE

V2500 Series 73-0246

ATA NUMBER

73-22-49

Export Classification: EAR ECCN 9E991

Compliance Category

6, 7

P&W Distribution Code

V2500

April 8/19

Summary

The purpose of this Service Bulletin is to introduce a redesign of the Burner to EEC tube assembly, to be referred to as Pb sense line assembly, and provide rework instructions.

Planning Information

Effectivity Data

Engine Models Applicable

V2522-A5, V2524-A5, V2527M-A5, V2527-A5, V2527E-A5, V2530-A5, V2533-A5
Engine Serial Nos. V10001 thru V13190.
Engine Serial Nos. V15001 thru V18940.

Concurrent Requirements

This Service Bulletin must be done at the same time or after Reference 5, Service Bulletin No. V2500-ENG-73-0198.

If the Reference 5, Service Bulletin No. V2500-ENG-73-0198 is not implemented, a new Mod Kit PN: MKVA573024601 must be applied. This kit includes three new parts PN: 6M1250, MS9201-04, (44456 or 6M1262) and other old parts except deleted parts 6A9098 and 6A9039. The new parts installation must be accomplished in accordance with this Service Bulletin. The old parts installation must be accomplished in accordance with Reference 5, Service Bulletin No. V2500-ENG-73-0198.

Reason

1. Condition: A crack in the underlying material of the flexible portion of the post Reference 5, Service Bulletin No. V2500-ENG-73-0198, Pb Sense Line, PN 6A9039 may develop after over-bending in combination with High Cycle Fatigue (HCF) related fatigue.
2. Background: The Pb Sense Line, PN 6A9039 replaced the downchange configuration Bifurcation panel to EEC tube assembly to combat EEC sensors faults due to moisture contamination and blockages. To mitigate this, changes were made to the water trap system and tube diameter. The line was routed away from heat zones, and the ridged and flexible lines were swaged together into a single part. Operators began reporting air leaks of the new hardware found as a result of troubleshooting procedures attributed to finding root cause of a hung or slow start.
3. Objective: To replace the Pb Sense Line, PN 6A9039 line hardware.
4. Substantiation: All hardware changes have been substantiated by satisfactory engineering analysis.
5. Effects of Bulletin on:

   Removal/Installation: Affected.

   Disassembly/Assembly: Affected.

   Cleaning: Not Affected.

   Inspection/Check: Affected.

   Repair: Affected.

   Testing: Affected.
6. Supplemental Information

None.

Description

Replace PB sense line.

Compliance

Category 6 - For Engines Not Installed On Aircraft.

Accomplish when the subassembly (i.e. modules, accessories, components, build groups) is disassembled sufficiently to afford access to the affected part and to all affected spare parts.

Category 7 - For Engines Installed On Aircraft.

Accomplish when supply of superseded parts has been depleted.

Approval Data

The part number changes and/or part modifications specified in the Accomplishment Instructions and Material Information sections of this Service Bulletin have been shown to comply with the applicable Federal Aviation Regulations and are FAA-APPROVED for the engine model(s) given.

The aircraft Type Certificate (TC) holder has been informed of this change.

Manpower

1. In Service For Engines Installed On Aircraft

   To Gain and Close Access: ..... 1.0 hours.

   To Make Modifications: ..... 0.5 hours.

   Total Necessary Man Hours: ..... 1.5 hours.

2. At Overhaul For Engines Not Installed On Aircraft

   To make modifications: ..... 0.5 hours.

   Total Necessary man hours: ..... 0.5 hours.

Weight and Balance

1. Weight Change

   No Change.

2. Moment Arm

   No Effect.

3. Datum

   Engine Front Mount Centerline (Power Plant Station (PPS) 100)

Electrical Load Data

This Service Bulletin has no effect on the aircraft electrical load.

Software Accomplishment Summary

Not Applicable.

References

NOTE: In 2014 IAE converted the V2500 Technical Publications to a new system. As a result of the conversion, some manuals were consolidated. All manuals received new P&W part numbers. To facilitate the use of this Service Bulletin, a Technical Publications conversion table is provided in the Appendix.

1. ATA Locator 73-22-49.
2. V2500 Standard Practices and Processes, P&W Ref. PN 2A4414, Chapter/Section 71-01-00.
3. V2500-A5 Series Illustrated Parts Catalog, P&W Ref. PN 2A4428, Chapter/Section 73-22-49.
4. V2500 A1/A5 Series Engine Manual, P&W Ref. PN 2A4407, Chapter/Section 73-22-49.
5. V2500 Service Bulletin V2500-ENG-73-0198 (Engine Fuel and Control - Fuel System Air Tube - Introduction of Re-routed Burner to Engine Electronic Controller (EEC) Pressure (PB) Sense Line Tube Assemblies).
6. V2500 Aircraft Maintenance Manual, Chapter/Sections 71-13-00, and 71-00-00.

Other Publications Affected

NOTE: In 2014 IAE converted the V2500 Technical Publications to a new system. As a result of the conversion, some manuals were consolidated. All manuals received new P&W part numbers. To facilitate the use of this Service Bulletin, a Technical Publications conversion table is provided in the Appendix.

1. V2500-A5 Series Illustrated Parts Catalog, P&W Ref. PN 2A4428, Chapter/Section 73-22-49.
2. V2500 A1/A5 Series Engine Manual, P&W Ref. PN 2A4407, Chapter/Section 73-22-49.

Interchangeability of Parts

Old (un-used) and new parts are directly interchangeable.

*See Material Information section for details.

Information in the Appendix

Alternate Accomplishment Instructions (No)

Progression Charts (Yes)

Added Data (Yes)

Revision to Table of Limits (No)

Inspection Procedures (No)

Material Information

Material — Price and Availability

1. There is a kit, number MKVA573024601 to do this Service Bulletin.
2. Part availability information is provided in material data Instructions — Disposition.
3. Part prices were not available at the time of Service Bulletin publication. Contact IAE Spares Management & Logistics for firm quotations.

Industry Support Program

Not Applicable.

The material data that follows is for each engine.

For V2522-A5, V2524-A5, V2527-A5, V2527E-A5, V2527M-A5, V2530-A5, V2533-A5 Engines:

New PN	Qty	Estimate of Unit Price ($)	Keyword	Old PN	Instructions — Disposition
6M1250	1	*	TUBE, BURNER TO EEC, ASSEMBLY	6A9039 (73-22-49-07-100 B)	(2)(A)(C2)
44456 (73-22-49, 07-500 F)	1	*	TUBE, A/O, FLEX		(2)(A)(S3)
			OR		
6M1262	1	*	TUBE, A/O, FLEX		(2)(A)
MS9201-04 (73-22-49-07-110)	1	*	NUT, PLAIN HEXAGON HEAD		(A)
	3	*	NUT	4W0001 (73-22-49-03-846) (73-22-49-07-260)	(C1)(C2)
	3	*	BOLT, MACHINE DOUBLE HEX	4W0102 (73-22-49-03-847) (73-22-49-07-253)	(C1)(C2)
	1	*	BRACKET	6A9098 (73-22-49-03-848)	(C2)
			OR		
	REF	*	BOLT	4W0342 (73-22-49-07-253)	(C1)(C2)
	1	*	WASHER	K8831 (73-22-49-07-254)	(C1)(C2)
	1	*	CLIP	AS62406 (73-22-49-07-256)	(C1)(C2)

Instructions/Disposition Code Statements:

Parts Modification Conditions

Estimated part prices are provided when they are available at time of publication. The Estimate of Unit Price is only for planning purposes and does not constitute a firm quotation. An asterisk (*) is shown where part pricing information was unavailable. In either case, contact IAE Spares for firm quotations.

(2) The new part is a replacement part only, and cannot be obtained by modification of the old part.

Spare Parts Availability

(A) The new part is available.

(C1) The old part will continue to be supplied for use at other locations.

(C2) The old part will continue to be supplied for use in other engine models.

(S3) Parts (PN 44456) with in-service history may not be used to accomplish this Service Bulletin.

Vendor Services or Special Components/Materials

Not Applicable.

Tooling — Price and Availability

Special tools are not required to accomplish this Service Bulletin.

Reidentified Parts

Not Applicable.

Other Material Information Data

Not Applicable.

Accomplishment Instructions

For Engines Not Installed On Aircraft do the following steps:

1. Remove the Pb Sense Line, PN 6A9039 (73-22-49, 07-100). See Figures 1 and 2.
   A. Remove the bolts, the washers, the nuts and the clips at the CP1482, CP1481, CP1017, and CP0586. CP1482 hardware not needed for install.
   B. Disconnect the Pb Sense Line, PN 6A9039 (73-22-49, 07-100) from the Tube, Assembly, PN 6A9045 (73-22-49, 06-500).
   C. Disconnect the Pb Sense Line, PN 6A9039 (73-22-49, 07-100) from P3 Union, PN 5A8234 (72-22-34, 01-270) at the EEC, remove the PN 6A9039 from engine.
   D. Remove the Bracket, PN 6A9098 (73-22-49, 03-848). Bracket not needed for install.
2. Install the Pb Sense Line, PN 6M1250 (73-22-49, 01-100). See Figure 4 and 5.
   NOTE: To maintain an ideal fit, install top end of the Tube Assembly, PN 6A9045 (73-22-49, 06-500) connector flange to approximately 1.25 in (32 mm) from the center of CP0584. See Figure 5.
   A. Install the Pb Sense Line, PN 6M1250 (73-22-49, 07-100) to the Bracket PN 6A9096 (73-22-49, 03-800) with the Locknut, PN MS9201-04 (73-22-49, 07-110), fingertight.
   B. Connect the Pb Sense Line, PN 6M1250 (73-22-49, 07-100) to the Tube Assembly, PN 6A9045 (73-22-49, 06-500). Fingertight.
   C. Torque the Locknut, PN MS9201-04 (73-22-49, 07-110) to 38 to 42 lbf-in (4.3 to 4.7 N.m).
   D. Torque the Coupling Nuts between the Pb Sense Line, PN 6M1250 (73-22-49, 07-100) and Tube Assembly, PN 6A9045 (73-22-49, 06-500) to 159 to 177 lbf-in (17 to 20 N.m).
3. Install the Clipping Positions CP1017, CP1481 and CP0586. See Figures 6, 7, and 8.
   A. Install the Bolt, PN 4W0342 (73-22-49, 07-261), the Washer, PN K8831 (73-22-49, 07-262), the Clip, PN AS62406 (73-22-49, 07-264) and the Nut, PN 4W0001 (73-22-49, 07-268) at the CP1481, fingertight.
   B. Install the Bolt, PN 4W0357 (71-51-41, 02-087), the Clip, PN AS62213 (71-51-41, 02-090), the Spacer, PN 5W1032 (71-51-41, 02-092), the Clip, PN AS62406 (73-22-49, 07-272) and the Nut, PN 4W0001 (71-51-41, 02-094) at the CP1017, fingertight.
   C. Install the Bolt, PN 4W0363 (73-22-49, 03-149), the Washer, PN K8831 (73-22-49, 03-150), the Clip, PN AS62406 (73-22-49, 07-280), the Clip, PN AS62404 (73-22-49,10-552), the Clip, PN AS62404 (73-22-49, 03-152), the Spacer, PN 5W1032 (73-22-49, 03-154), the Clip PN AS62404 (75-32-49, 08-136) and the Clip, PN AS62404 (75-32-49, 04-136) at the CP0586, fingertight.
   D. Torque the nuts at the Clipping Positions CP1017, CP1481 and CP0586 to 36 to 45 lbf-in (4 to 5 N.m).
4. Install the Flex Tube, PN 44456 or 6M1262 (73-22-49, 07-500). See Figures 3.
   A. Connect the Flex Tube, PN 44456 or 6M1262 (73-22-49, 07-500) to the Pb Sense Line, PN 6M1250, fingertight.
      NOTE: Ensure extended neck of the flex tube is installed facing down.

CAUTION: IF CLEARANCE IN CP1481 IS NOT SUFFICIENT OR CONTACT APPEARS BETWEEN THE TUBE, PN 6M1250 (73-22-49, 07-100) AND THE BRACKET, PN 5W8351 (73-22-49, 07-800). SEE FIGURE 5. ADJUSTMENT OF PROPER CLEARANCE IS NECESSARY. TO ADJUST DISTANCE BETWEEN THE TUBE AND THE BRACKET LOOSEN THE BOLTS PN 4W1064 (73-22-49, 07-801). SET PROPER DISTANCE 0.05 IN (1.3 MM) MIN AND TORQUE THE NUTS TO 85 -105 LBF-IN (9.6 - 11.9 N.M).

CAUTION: FLEXIBLE HOSE IS MADE WITH STAINLESS STEEL CORE UNDER THE PROTECTIVE MESH COVERINGS. EXTREME BENDING MAY CAUSE INTERNAL DAMAGE TO THE HOSE. HANDLE WITH CARE.

B. Connect the Flex Tube, PN 44456 or 6M1262 (73-22-49, 07-500) to EEC Union, PN 5A8234 (72-22-34, 01-270), fingertight.

C. Torque the Nuts on both ends of the Flex Tube, PN 44456 or 6M1262 (73-22-49, 07-500) to 142 to 150 lbf-in (16 to 17 N.m).

D. Safety the locking nut, the coupling nut and the flex tube nut with CoMat 02-126 Lockwire.

5. Recording Instructions

A. A record of accomplishment is required.

For Engines Installed On Aircraft do the following steps:

NOTE: Service Bulletin incorporation on engines installed on aircraft may be desirable and should be individually evaluated.

ATA codes are for EM only.

WARNING: DO NOT TOUCH THE ENGINE COMPONENTS FOR A SHORT TIME AFTER THE ENGINE IS SHUT DOWN. THE COMPONENTS CAN STAY HOT FOR UP TO 1 HOUR AND CAN CAUSE INJURY.

1. Open the fan cowl doors (Refer to Reference 6, Aircraft Maintenance Manual (AMM), Chapter/Section 71-13-00).

2. Remove the Pb Sense Line, PN 6A9039 (73-22-49, 07-100). See Figures 1 and 2.

A. Remove the bolts, the washers, the nuts and the clips at the CP1482, CP1481, CP1017 and CP0586. CP1482 hardware not needed for install.

B. Disconnect the Pb Sense Line, PN 6A9039 (73-22-49, 07-100) from the Tube, PN 6A9045 (73-22-49, 06-500).

C. Disconnect the Pb Sense Line, PN 6A9039 (73-22-49, 07-100) from P3 Union, PN 5A8234 (72-22-34, 01-270) at the EEC, remove the Tube, PN 6A9039 from engine.

D. Remove the Bracket, PN 6A9098 (73-22-49, 03-848). Bracket not needed for install.

3. Install the Pb Sense Line, PN 6M1250 (73-22-49, 01-100). See Figure 4 and 5.

NOTE: To maintain an ideal fit, install top end of the Tube, PN 6A9045 (73-22-49, 06-500) connector flange to approximately 1.25 in (32 mm) from the center of CP0584. See Figure 5.

A. Install the Pb Sense Line, PN 6M1250 (73-22-49, 07-100) to the Bracket, PN 6A9096 (73-22-49, 03-800) with the Locknut, PN MS9201-04 (73-22-49, 07-110), fingertight.

B. Connect the Pb Sense Line, PN 6M1250 (73-22-49, 07-100) to the Tube, PN 6A9045 (73-22-49, 06-500), fingertight.

C. Torque the Locknut, PN MS9201-04 (73-22-49, 07-110) to 38 to 42 lbf-in (4.3 to 4.7 N.m).

D. Torque the coupling nuts between the Pb Sense Line, PN 6M1250 (73-22-49, 07-100) and Tube, PN 6A9045 (73-22-49, 06-500) to 159 to 177 lbf-in (17 to 20 N.m).

4. Install the clipping positions CP1017, CP1481 and CP0586. See Figures 6, 7 and 8.

A. Install the Bolt, PN 4W0342 (73-22-49, 07-261), the Washer, PN K8831 (73-22-49, 07-262), the Clip, PN AS62406 (73-22-49, 07-264) and the Nut, PN 4W0001 (73-22-49, 07-268) at the CP1481, fingertight.

B. Install the Bolt, PN 4W0357 (71-51-41, 02-087), the Clip, PN AS62213 (71-51-41, 02-090), the Spacer, PN 5W1032 (71-51-41, 02-092), the Clip, PN AS62406 (73-22-49, 07-272) and the Nut, PN 4W0001 (71-51-41, 02-094) at the CP1017, fingertight.

C. Install the Bolt, PN 4W0363 (73-22-49, 03-149), the Washer, PN K8831 (73-22-49, 03-150), the Clip, PN AS62406 (73-22-49, 07-280), the Clip, PN AS62404 (73-22-49,10-552), the Clip, PN AS62404 (73-22-49, 03-152), the Spacer, PN 5W1032 (73-22-49, 03-154), the Clip, PN AS62404 (75-32-49, 08-136) and the Clip, PN AS62404 (75-32-49, 04-136) at the CP0586, fingertight.

D. Torque the nuts at the clipping positions CP1017, CP1481, and CP0586 to 36 to 45 lbf-in (4 to 5 N.m).

5. Install the Flex Tube, PN 44456 or 6M1262 (73-22-49, 07-500). See Figures 3.

A. Connect the Flex Tube, PN 44456 or 6M1262 (73-22-49, 07-500) to the Pb Sense Line, PN 6M1250 (73-22-49, 01-100), fingertight.

NOTE: Ensure extended neck of the flex tube is installed facing down.

CAUTION: IF CLEARANCE IN CP1481 IS NOT SUFFICIENT OR CONTACT APPEARS BETWEEN THE PB SENSE LINE, PN 6M1250 (73-22-49, 07-100) AND THE BRACKET, PN 5W8351 (73-22-49, 07-800), SEE FIGURE 5. ADJUSTMENT OF PROPER CLEARANCE IS NECESSARY. TO ADJUST DISTANCE BETWEEN THE TUBE AND THE BRACKET LOOSEN THE BOLTS, PN 4W1064 (73-22-49, 07-801). SET PROPER DISTANCE 0.05 IN (1.3 MM) MIN AND TORQUE THE NUTS TO 85 - 105 LBF-IN. (9.6 - 11.9 N.M), OR DAMAGE MAY OCCUR.

CAUTION: FLEXIBLE HOSE IS MADE WITH STAINLESS STEEL CORE UNDER THE PROTECTIVE MESH COVERINGS. EXTREME BENDING MAY CAUSE INTERNAL DAMAGE TO THE HOSE. HANDLE WITH CARE.

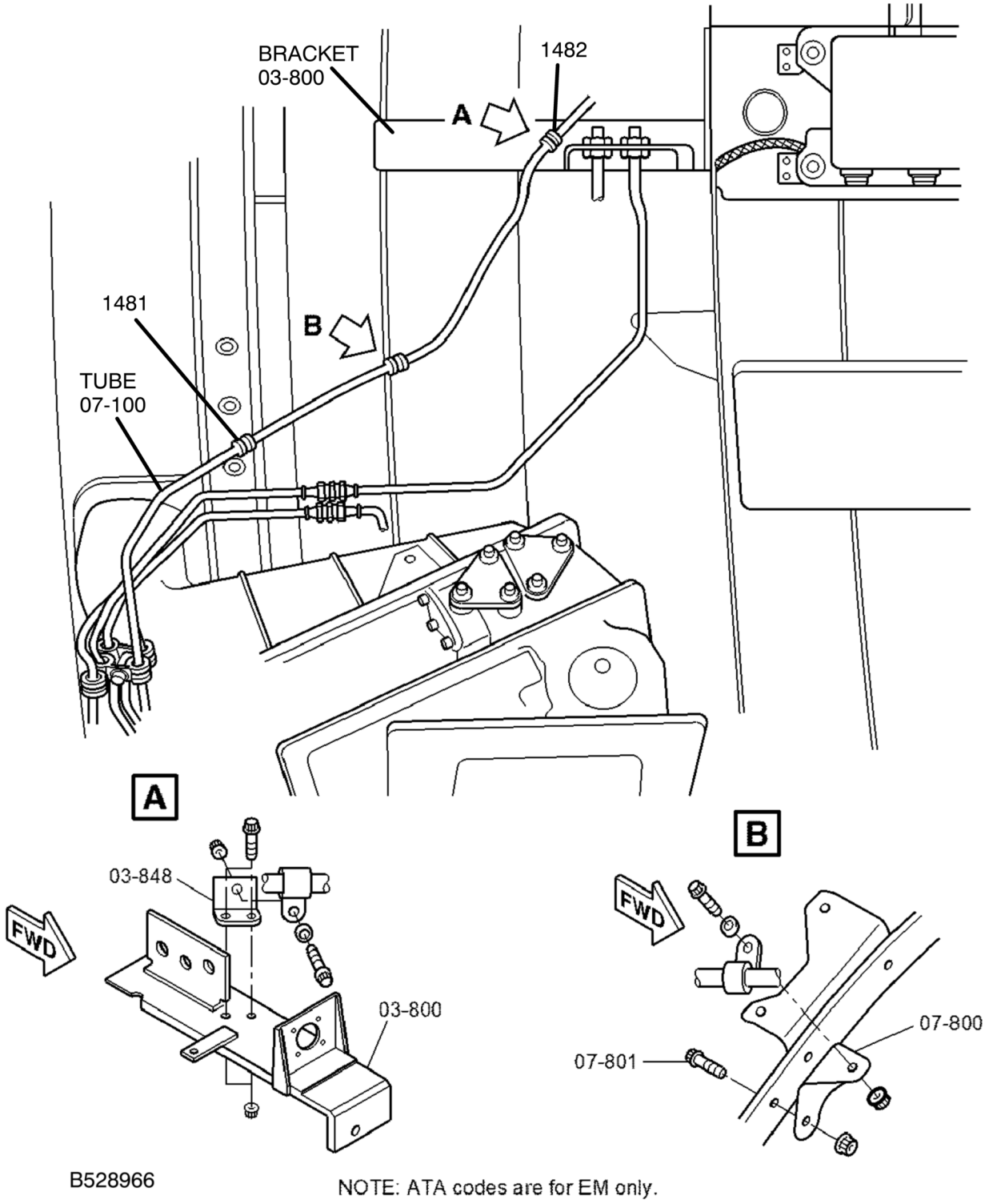
B. Connect the Flex Tube, PN 44456 or 6M1262 (73-22-49, 07-500) to EEC Union, PN 5A8234 (72-22-34, 01-270), fingertight.

C. Torque the Nuts on both ends of the Flex Tube, PN 44456 or 6M1262 (73-22-49, 07-500) to 142 to 150 lbf-in (16 - 17 N.m).

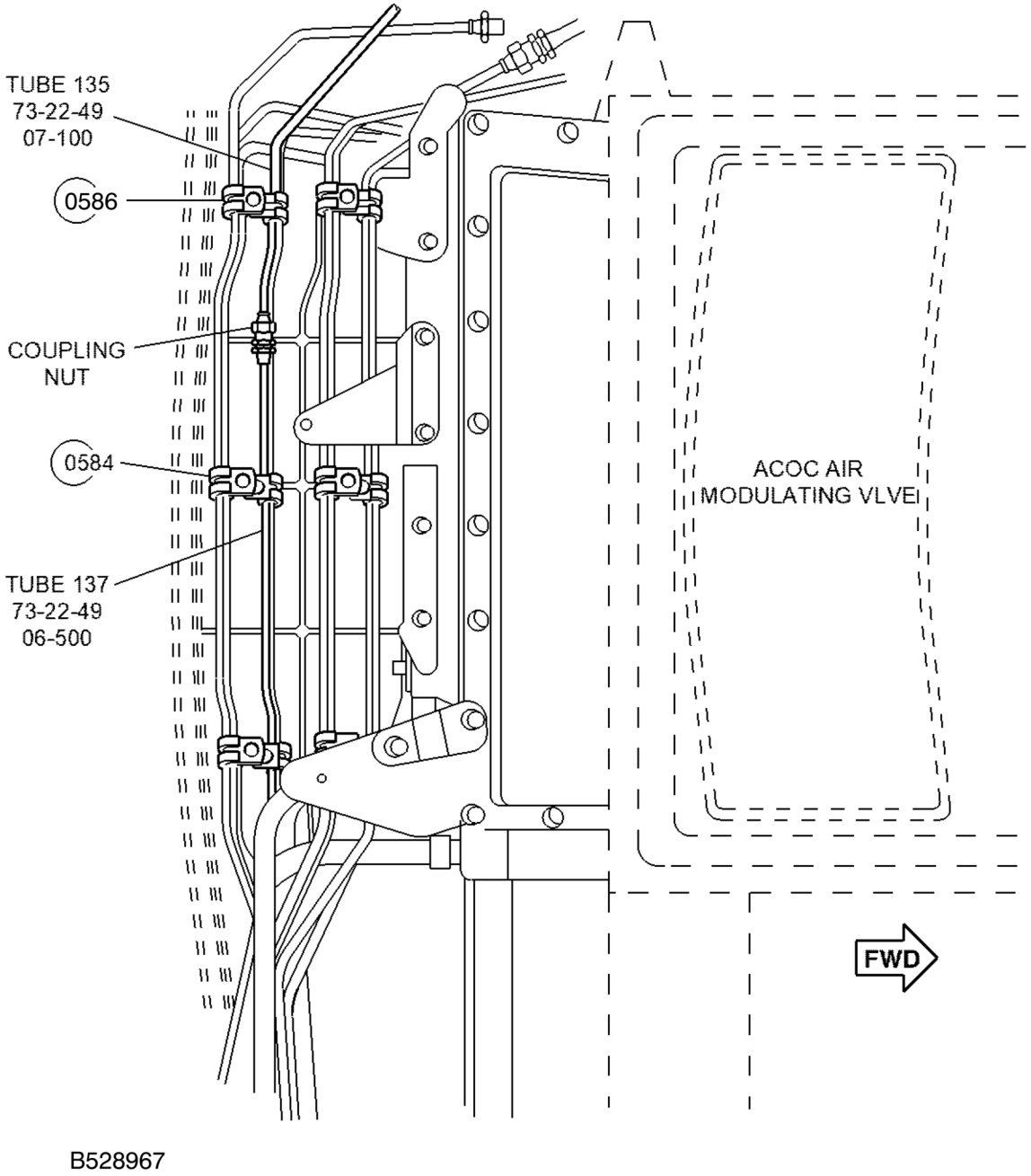
D. Safety the Locking Nut, the Coupling Nut and the Flex Tube Nut with CoMat 02-126 Lockwire.

6. Make sure that working area is clean and free from foreign objects.

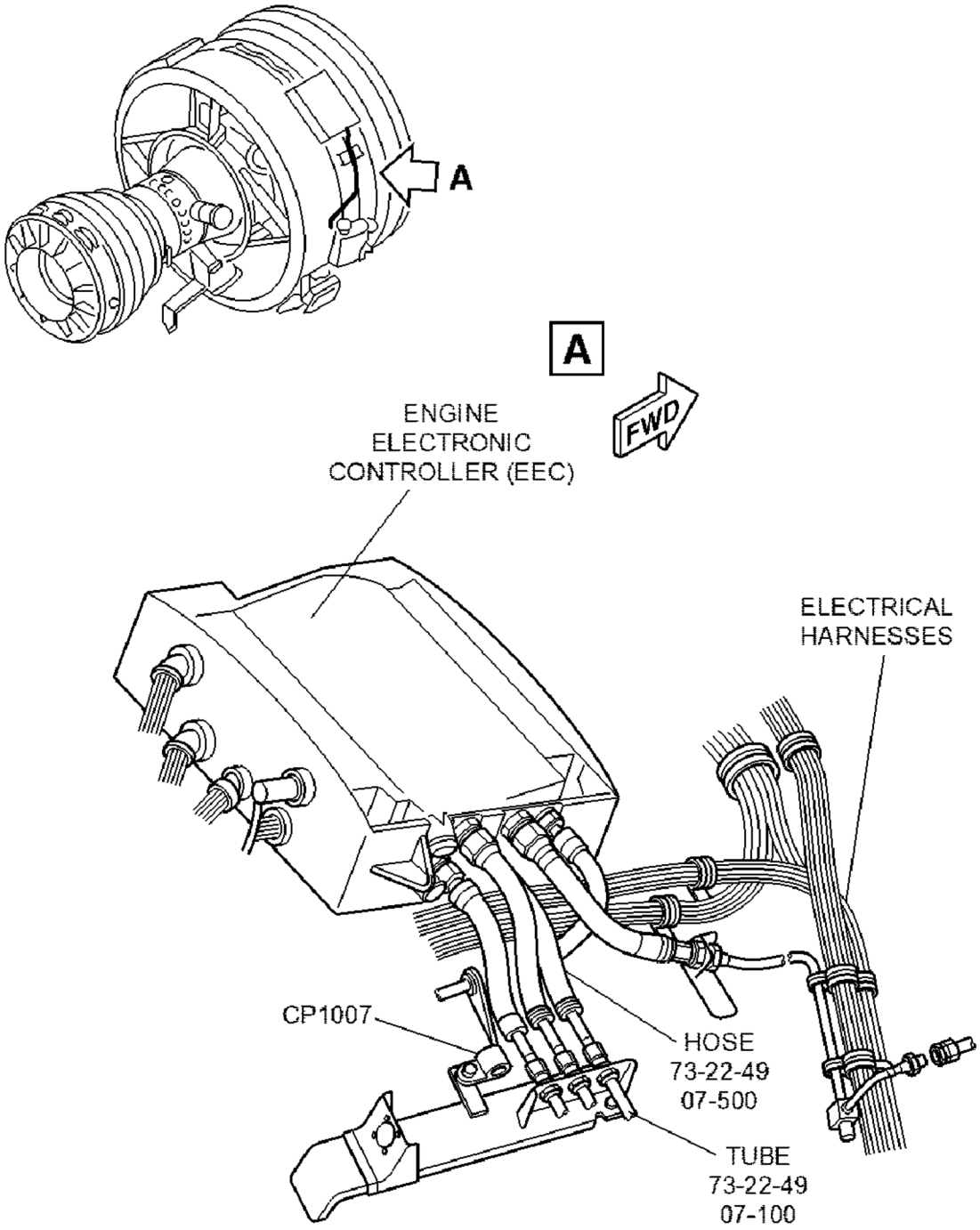
7. Close the fan cowl doors (Refer to Reference 6, Aircraft Maintenance Manual (AMM), Chapter 71-13-00).
8. Perform Idle Leak Check Test No.3 (Refer to Reference 6, Aircraft Maintenance Manual (AMM), Chapter 71-00-00-710-012).
9. Recording Instructions
   A. A record of accomplishment is required.



CONFIGURATION OF PB SENSE LINE
FIGURE 1



CONFIGURATION OF PB SENSE LINE LOWER MOUNTING
FIGURE 2



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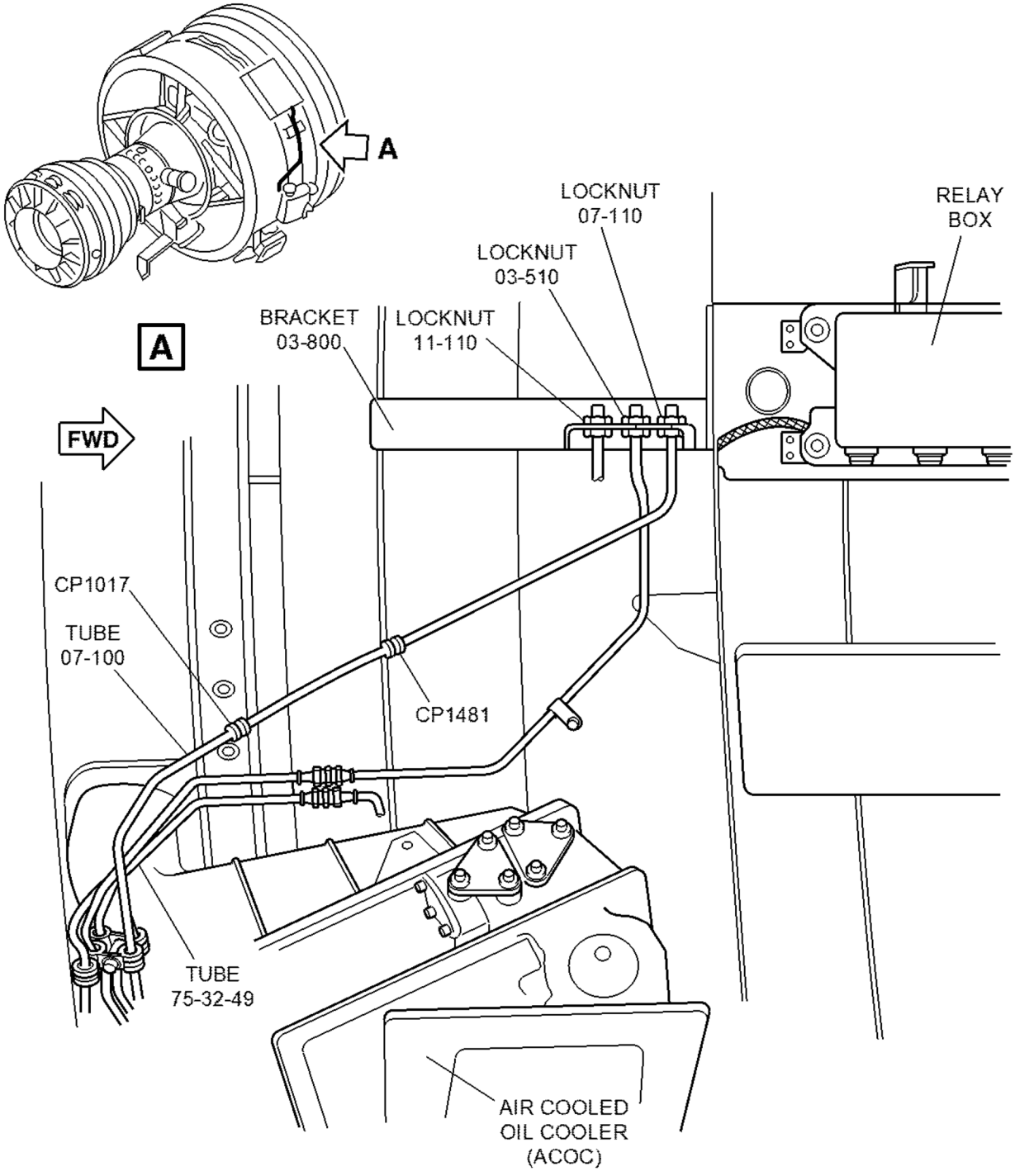
NOTE: Some parts not shown for clarity.

INSTALLATION OF PB SENSE LINE FLEX TUBE (73-22-49, 07-500)
FIGURE 3



NOTE: 1. Some parts not shown for clarity.
2. All EIPC FIG/ITEM numbers 73-22-49.

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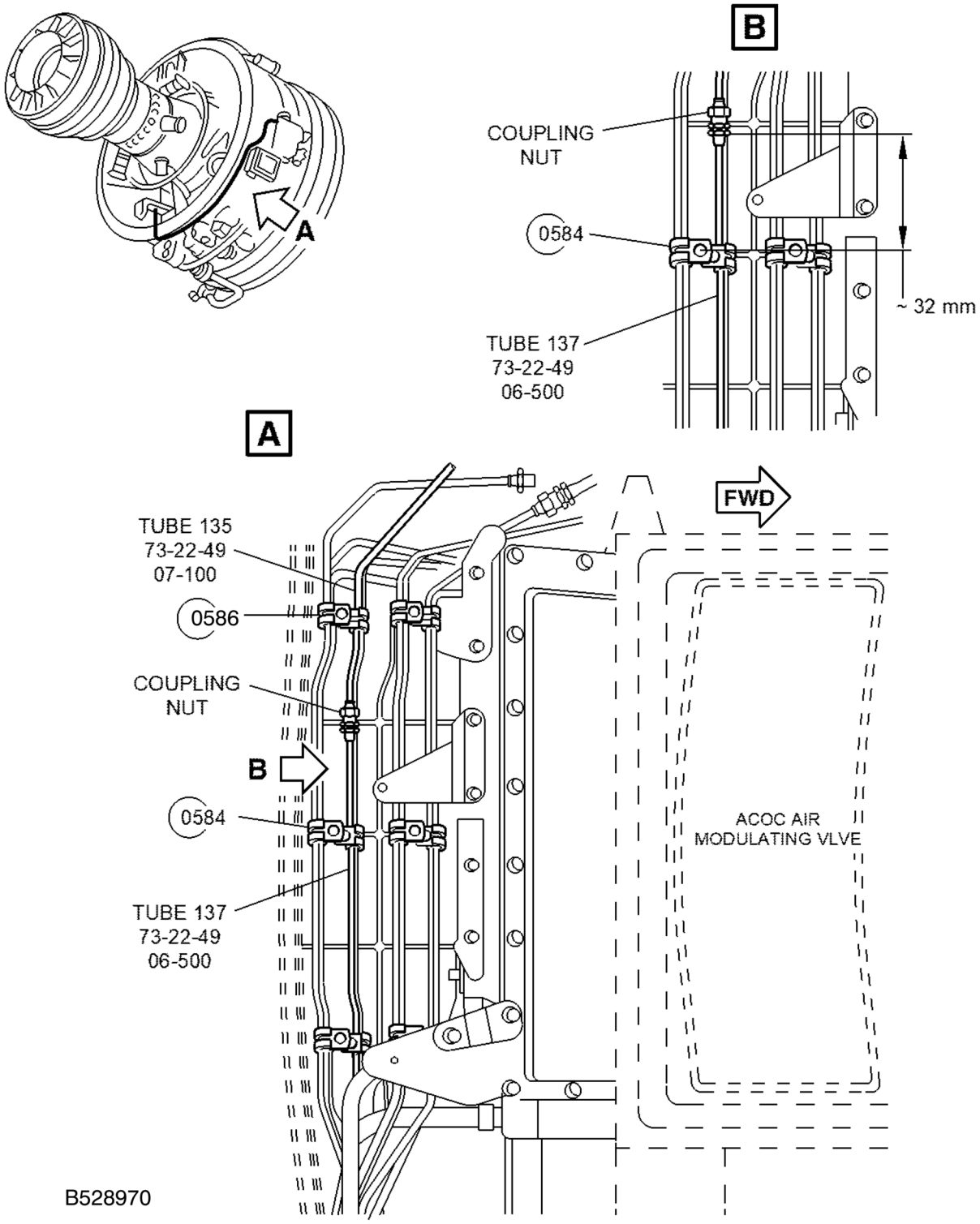
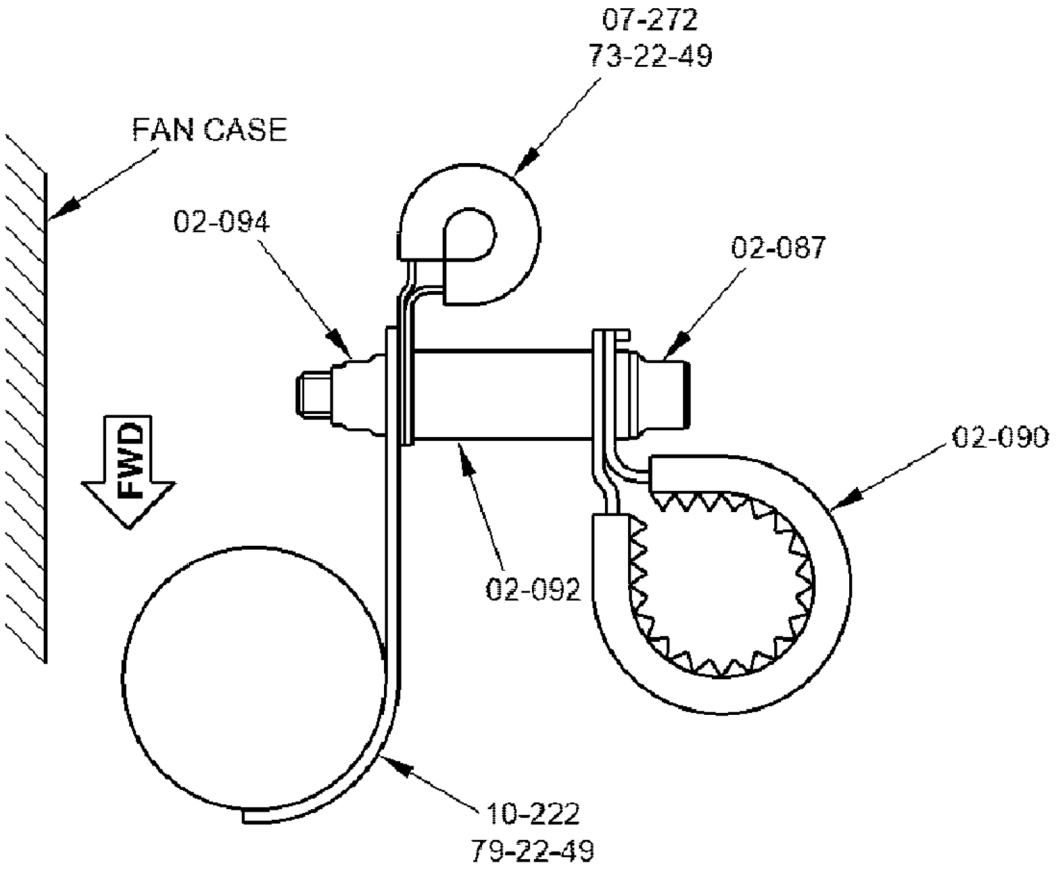
INSTALLATION OF PB SENSE LINE TUBE 6M1250
FIGURE 4



INSTALLATION OF PB SENSE LINE TUBE LOWER MOUNTING
FIGURE 5



NOTE: 1. All EIPC FIG/ITEM numbers are 71-51-41 unless identified differently.

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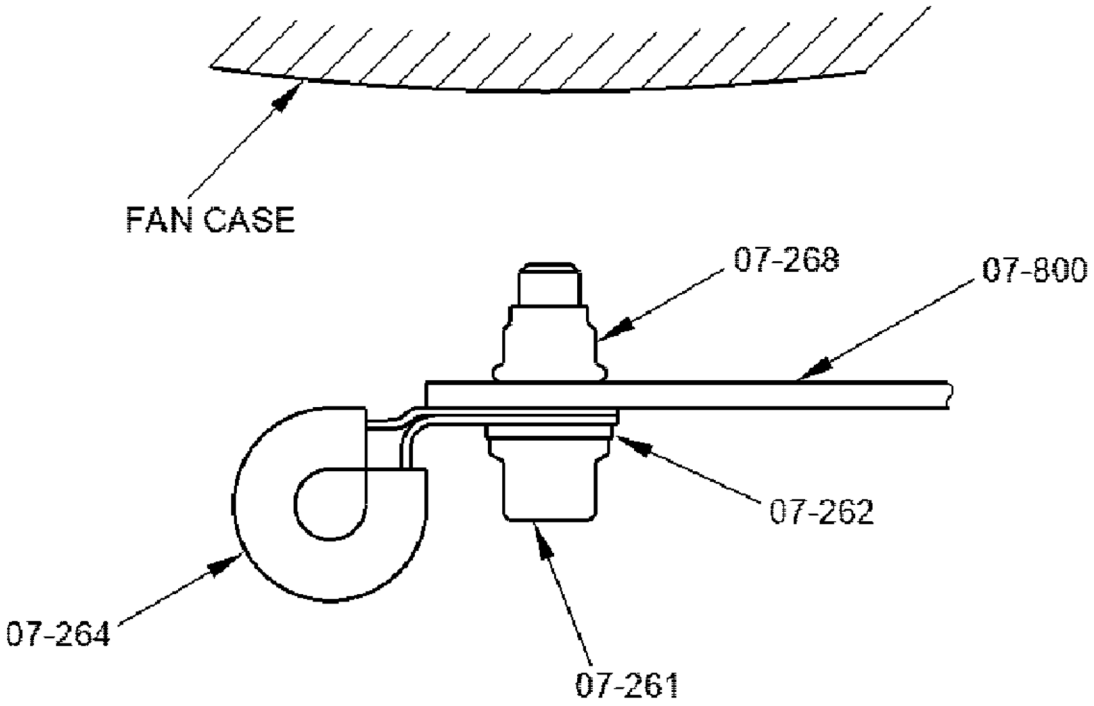
CLIP POSITION CP1017
FIGURE 6



NOTE: 1. All EIPC FIG/ITEM numbers are 73-22-49

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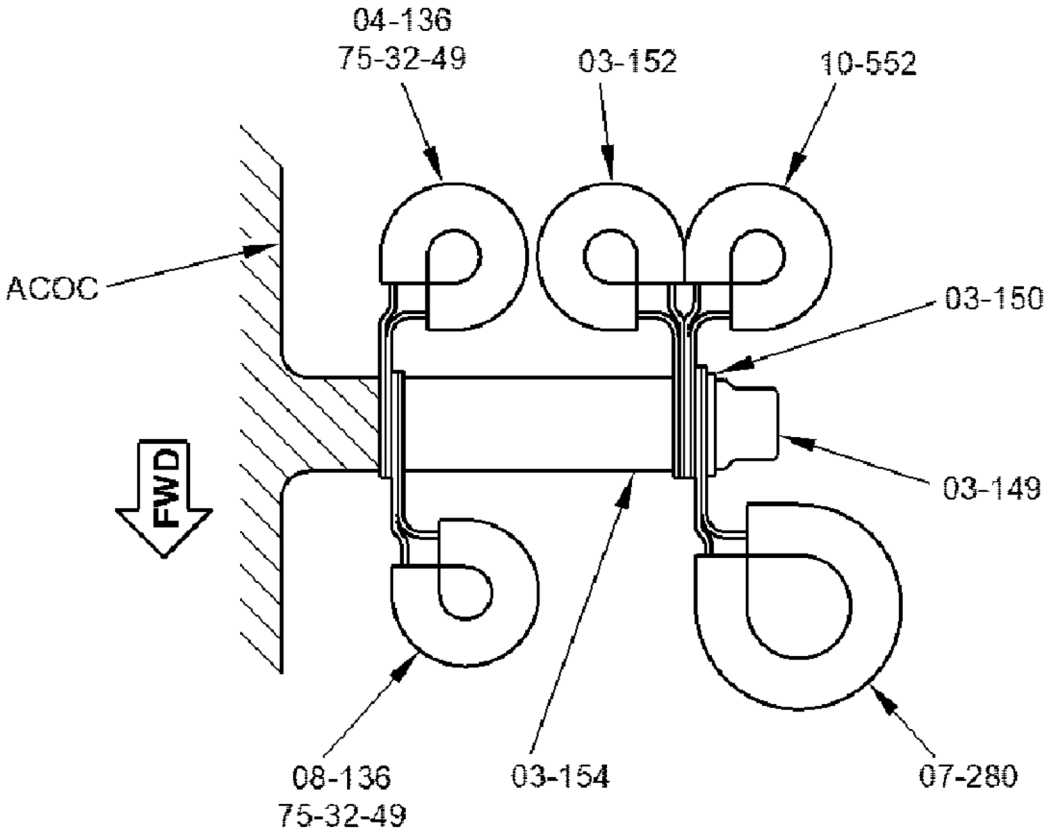
CLIP POSITION 1481
FIGURE 7



NOTE: 1. All EIPC FIG/ITEM numbers are 73-22-49 unless identified differently.

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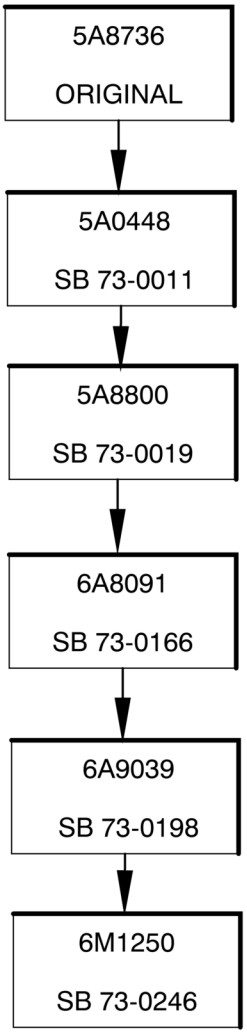
CLIP POSITION CP0586
FIGURE 8

Appendix

Parts Progression To Show the Changed Part in Relation to Other Parts



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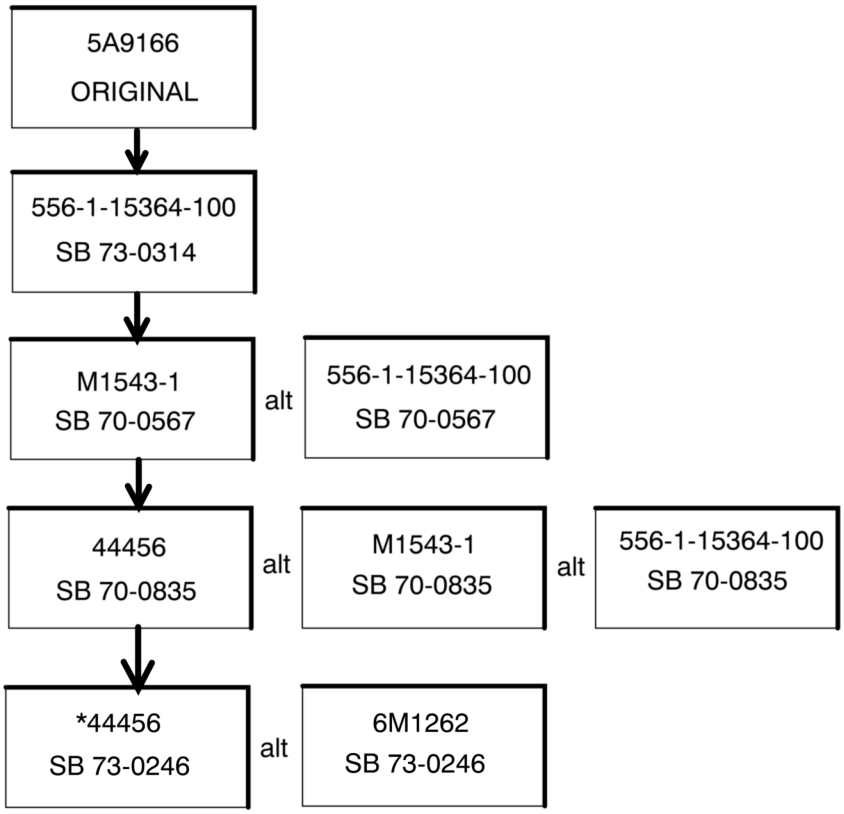
73-22-49-07-500
Flex Tube



*M1543-1 AND 5556-1-15364-100 no longer alternatives to 44456 in post 73-0246 configurations.

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73-22-49-07-100
FLEX TUBE

Added Data

Internal Reference Information

Revision No.	Reference Document	Origination
Original	EC17VU003, EC17VU003A	DJ, JP/RCM

Number values shown in parentheses adjacent to U.S. values are International System of units (SI) equivalents.

To calculate part life, include the hours and/or cycles since the part was made. Use the total hours or cycles to calculate life limits that are the result of part modification, a part used in an engine with different thrust, or for some other reason.

NOTE: In 2014 IAE converted the V2500 Technical Publications to a new system. As a result of the conversion, some manuals were consolidated. All manuals received new P&W part numbers. To facilitate the use of this Service Bulletin, the following Technical Publications cross reference table is provided.

Technical Publications Cross Reference Table

Publication	Engine Model(s)	IAE IETM Pub Ref	P&W Part Number
ENGINE MANUAL — A1, A5	All	E-V2500-1IA	2A4407
CMM-EHC — A1, A5	All	EHC-V2500-1IA	2A4409
CMM-FN — A1, A5	All	FN-V2500-1IA	2A4410
CMM-MMC — A1, A5	All	MECH-V2500-1IA	2A4411
CMM-THD — A1, A5	All	THD-V2500-1IA	2A4412
TLM — A1, A5	All	T-V2500-1IA	2A4408
ENGINE MANUAL — D5	All	E-V2500-3IA	2A4416
CMM-EHC — D5	All	EHC-V2500-31A	2A4418
CMM-FN — D5	All	FN-V2500-3IA	2A4419
CMM-MMC — D5	All	MECH-V2500-3IA	2A4420
CMM-THD — D5	All	THD-V2500-3IA	2A4423
TLM — D5	All	T-V2500-3IA	2A4417
SPPM (SPM) — A1, A5, D5	All	SPP-V2500-1IA	2A4414
EIPC — A1	V2500-A1102Q00	S-V2500-1IA	2A4427

Publication	Engine Model(s)	IAE IETM Pub Ref	P&W Part Number
EIPC — A5	V2522/V2524/V2527M-AQ02	S-V2500-6IA	2A4428
	V2522/V2524/V2527M-AQ03	S-V2500-6IB	
	V2522/V2524/V2527M-SQ02	S-V2500-6SA	
	V2522/V2524/V2527M-SQ03	S-V2500-6SB	
	V2522/V2524/V2527M-SQ04	S-V2500-6NA	
	V2522/V2524/V2527M-SQ05	S-V2500-6NB	
	V2527/V2527E-AQ02	S-V2500-7IA	
	V2527/V2527E-AQ03	S-V2500-7IB	
	V2527/V2527E-SQ02	S-V2500-7SA	
	V2527/V2527E-SQ03	S-V2500-7SB	
	V2527/V2527E-SQ04	S-V2500-7NA	
	V2527/V2527E-SQ05	S-V2500-7NB	
	V2530-AQ02	S-V2500-2IA	
	V2530-AQ03	S-V2500-2IB	
	V2530-SQ02	S-V2500-2SA	
	V2530-SQ03	S-V2500-2SB	
	V2530-SQ04	S-V2500-2NA	
	V2530-SQ05	S-V2500-2NB	
	V2533-AQ02	S-V2500-5IA	
	V2533-AQ03	S-V2500-5IB	
	V2533-SQ02	S-V2500-5SA	
	V2533-SQ03	S-V2500-5SB	
	V2533-SQ04	S-V2500-5NA	
	V2533-SQ05	S-V2500-5NB	
EIPC — D5	V2525/V2528-AQ02	S-V2500-3IA	2A4426
	V2525/V2528-AQ03	S-V2500-3IB	
	V2525/V2528-AQ04	S-V2500-3IC	