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V2500-A5 SERIES PROPULSION SYSTEMS SERVICE BULLETIN

This document transmits the Revision 3 of Service Bulletin V2500-ENG-73-0219.

Document History

Service Bulletin Revision Status

Initial Issue.	Apr.15/10.
Revision 1.	Jun.24/10.
Revision 2.	Jun.25/10.

Service Bulletin Revision 3

Remove	Incorporate	Reason for change
All Pages of the Service Bulletin.	Pages 1 to 42 of the Service Bulletin.	Change clip positions CP0921 and CP6159. To update the Illustrations. To update the Accomplishment Instruction. To update the Material Information.
All Pages of the Supplement.	Page 1 of the Supplement.	To change the Mod Kit numbers. To update the prices.

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Transmittal - Page 1 of 1

CHECK THAT ALL PREVIOUS TRANSMITTALS HAVE BEEN INCORPORATED
If any have not been received please advise IAE International Aero Engines AG

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**ENGINE – VARIABLE STATOR VANE (VSV) ACTUATOR – LOW PRESSURE (LP) RETURN LINE RE-ROUTE
PIPEWORK****1. Planning Information****A. Effectivity****(1) Airbus A319**

(a) V2522-A5, V2524-A5, V2527M-A5 Engines prior to Serial No. V13191 (A5 Standard and A5 SelectOne™ Retrofit Standard).

R V2522-A5, V2524-A5, V2527M-A5 Engines prior to Serial No. V15895 (A5 SelectOne™ Production Standard).

(2) Airbus A320

(a) V2527-A5, V2527E-A5 Engines prior to Serial No. V13191 (A5 Standard and A5 SelectOne™ Retrofit Standard).

R V2527-A5, V2527E-A5 Engines prior to Serial No. V15895 (A5 SelectOne™ Production Standard).

(3) Airbus A321

(a) V2530-A5, V2533-A5 Engines prior to Serial No. V13191 (A5 Standard and A5 SelectOne™ Retrofit Standard)

R V2530-A5, V2533-A5 Engines prior to Serial No. V15895 (A5 SelectOne™ Production Standard).

B. Concurrent Requirements

The Service Bulletins that follow must be done before this one:

SB-ENG-71-0199 -	POWER PLANT – ELECTRICAL HARNESS – LIGHT DUTY – ENGINE ELECTRONIC CONTROLLER (EEC) HARNESS – CORE – INTRODUCTION OF REVISED CLIPPING FOR EXHAUST GAS TEMPERATURE (EGT) HARNESS ASSEMBLY
SB-ENG-71-0276 -	ENGINE – ENGINE BUILD UNIT (EBU) – REWORK OF ELECTRICAL HARNESS AND BRACKET ASSEMBLY TO ACCOMMODATE THE REROUTING OF THE OIL SCAVENGE TUBES
SB-ENG-72-0189 -	ENGINE – REPLACE VARIOUS TUBES IN THE BIFURCATION PANEL AREA TO PROVIDE ADEQUATE CLEARANCES WITH FAN COWL DOOR HOLD OPEN RODS
SB-ENG-73-0060 -	ENGINE – FUEL AND CONTROL – REPLACE THE TUBE CLIPS AT CLIPPING POINT 0795
SB-ENG-73-0071 -	ENGINE – FUEL AND CONTROL – REPLACEMENT OF FUEL TEMPERATURE THERMOCOUPLE WITH STUD AND NUT TERMINATIONS

- R SB-ENG-75-0081 - AIR - STAGE 10 TO HPT AIR VALVE - DELETION OF THE HPC
STAGE 10 MAKE-UP AIR VALVE AND ASSOCIATED HARDWARE
- SB-ENG-79-0088 - OIL - SCAVENGE OIL TUBES - REROUTE OF NUMBER 4 BEARING
SCAVENGE TUBE
- SB-NAC-71-0273 - NACELLE - EBU - REPLACEMENT AND REROUTING OF SEVERAL EBU
SYSTEMS TO ACCOMMODATE THE REROUTING OF THE OIL SCAVENGE
TUBES

C. Reason

R (1) Condition

The Variable Stator Vane (VSV) actuator can experience a lack of hydraulic force margin at certain operating conditions.

R (2) Background

The lack of hydraulic force margin can cause VSV interaction messages to occur during transition from take off power to climb power.

(3) Objective

R Incorporation of this Service Bulletin is designed to increase the available hydraulic pressure across the VSV actuator. This will generate VSV actuator force margin in excess of the VSV system force demand, over the entire engine operating range, and help mitigate interaction messages.

(4) Substantiation

R The changes introduced by this Service Bulletin were the subject of satisfactory engineering analysis. Over 10,000 flight cycles were completed as part of the Controlled Service Use (CSU) without any reports of VSV interaction messages. This Service Bulletin complies with the applicable engine certification basis.

(5) Effect of Bulletin on:

(a) Operation

Not affected.

(b) Maintenance

R Affected (Refer to paragraph 1.0. Other Publications Affected).

(c) Overhaul

R Affected (Refer to paragraph 1.0. Other Publications Affected).

(d) Repair Schemes

Not affected.

(e) Interchangeability

Affected (Refer to paragraph 1.B. Concurrent Requirements).

(f) Fits and Clearances

Not affected.

D. Description

This Service Bulletin introduces revised tubes and clip positions.

The changes are as follows:

- (1) The Variable Stator Vane (VSV) actuator Low Pressure (LP) return line is connected to a port in the fuel supply system. This increases the available differential pressure across the VSV actuator.
- (2) A Pressure Raising Valve (PRV) is incorporated in the VSV actuator LP return line to prevent fuel cavitation.

R **NOTE:** A regular inspection for the PRV will be introduced into the
R Aircraft Maintenance Manual under Chapter 71-00-00.

- (3) The engine fuel supply tube is modified to allow the VSV actuator LP return line to be connected.

NOTE: The Accomplishment Instruction for this Service Bulletin is divided into two INSTRUCTIONS as follows:

INSTRUCTION I - Applicable for engines "In Service".

INSTRUCTION II - Applicable for engines "At Overhaul/Shop Visit".

E. Compliance

Category Code 8

Accomplish based upon experience with the prior configuration.

F. Approval

The part number changes and/or part modifications described in sections 2 and 3 of this Service Bulletin have been shown to comply with the applicable Federal Aviation Regulations and are FAA-APPROVED for the engine models listed.

R The technical content of this Service Bulletin has been approved under the
R authority of the EASA Design Organization Approval N° EASA.21J.031.

G. Manpower

(1) In Service

R To gain access: 1 hour

R To embody: 8-12 hours

To close up: 0.5 hours

(2) At Overhaul

Applicable (hours not affected).

H. Material Price and Availability

R Modification kit MKVA573021903 or MKVA573021904 is required.

R Modification kit MKVA573021903 for engines of SBE 71-0288 standard.

R Modification kit MKVA573021904 for engines of pre SBE 71-0288 standard.

NOTE: The kit content is defined in section 2.E. Material Information.

For prices and availability of spares, refer to supplement to this Service Bulletin.

I. Tooling Price and Availability

Special tools are not required.

J. Industry Support Information

R Modification kits will be offered at a reduced price until December 31st 2015.
R Contact IAE Spares for discounted pricing details.

K. Weight and Balance

(1) Weight Change

Plus 2.0 lb (0,91 kg).

(2) Moment Arm

7.1 in. (180 mm) rearward of datum.

(3) Datum

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

L. Electrical Load Data

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

M. Software Accomplishment Summary

Not applicable.

N. References

- R (1) This Service Bulletin is subject to Aircraft Modification No.151154 and is
R covered by A/C Service Bulletin Number A320-73-1098
- R Under no circumstances shall the modified equipment, resulting from the
R application of this SB, be installed on the aircraft type unless the
corresponding modification, and if applicable, its aircraft SB are
approved.
- (2) IAE V2500 Engine Manual (E-V2500-3IA), Chapter 72-00-40.
- (3) Aircraft Maintenance Manual (A319/A320/A321) Chapter 75-32-41, 73-11-47
and 73-11-49.
- (4) IAE V2500 Service Bulletin ENG-71-0288 - POWER PLANT - ELECTRICAL
HARNESSES - INTRODUCTION OF A COMBINED EEC FAN AND IGNITION SUPPLY HARNESS
- R (5) SIL204 Issue 8 - VSVA Interaction Messages.
- (6) Internal Reference No.:
- R Engineering Change No. 09VR005, 09VR005A, 09VR005B, 09VR005C, 09VI006,
09VN310 and 09VN310A.
- R (7) Airbus acceptance Letter No.:
- R Airbus Letter M11008533.
- R (8) ATA Locator - 71-51-41, 72-38-25, 73-11-47, 73-11-49 and 79-21-41.

O. Other Publications Affected

- R (1) IAE V2500 Engine Illustrated Parts Catalogues (S-V2500-2IA, S-V2500-2IB,
S-V2500-2SA, S-V2500-2SB, S-V2500-5IA, S-V2500-5IB, S-V2500-5SA,
S-V2500-5SB, S-V2500-6IA, S-V2500-6IB, S-V2500-6SA, S-V2500-6SB,
S-V2500-7IA, S-V2500-7IB, S-V2500-7SA and S-V2500-7SB), Chapters 71-51-41,
72-38-25, 73-11-47, 73-11-49 and 79-21-41 will be amended to incorporate
the new part numbers (Refer to paragraph 2. Material Information).

- R (2) E-V2500-1IA - Engine Manual, Chapters 72-00-32, 72-00-40 and 72-00-60.
- R (3) CMM-THD-V2500-1IA - CMM Tubes, Hoses & Ducts, Chapters 73-11-47 and 73-11-49.
- R (4) Aircraft Maintenance Manual, Chapters 71-00-00, 73-11-47 and 73-11-49.
- R (5) Trouble Shooting Manual, Chapter 75-30-00.

P. Interchangeability of Parts

Affected (Refer to 2.E. Instruction/Disposition Codes).

2. Material Information

A. The kit required consists of the following parts:

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
71-51-41						
01-870	4W0119	1	.Bolt (CP0789)	-	4W0118	(B)(S1)
02-899	4W0116	1	.Bolt (CP1465)	-	4W0114	(A)(B)(S1)
02-900	K8831	1	.Washer (CP1465)	-	K8831	(B)(1)(S1)
02-902	AS62217	1	.Clamp (CP1465)	-	AS61915	(B)(S1)
73-11-47						
01-100	745-5650 -505	1	.Tube assembly	-	745-5650 -501	(A)(B)(S1)
04-100	6B1332	1	.Tube assembly	-	-	(A)(B)(D)
04-136	AS62406	1	.Clip (CP1460)	-	-	(A)(B)(D)
04-144	AS62406	1	.Clip (CP1461)	-	-	(A)(B)(D)
04-152	AS62406	1	.Clip (CP1465)	-	-	(A)(B)(D)
04-200	AS15777	1	..Thrust wire	-	-	(A)(B)(D)
04-201	AS15701	1	..Tube coupling nut	-	-	(A)(B)(D)
04-202	AS15768	1	..Welding ferrule assembly	-	-	(A)(B)(D)
04-210	JR16292	1	..Reducer	-	-	(A)(B)(D)
04-214	UP11121	1	..Tube clipping adaptor	-	-	(A)(B)(D)
04-225	K18207	1	..Reducer	-	-	(A)(B)(D)
04-240	AS15781	1	..Thrust wire	-	-	(A)(B)(D)
04-241	AS15705	1	..Tube coupling nut	-	-	(A)(B)(D)
04-242	AS15730	1	..Tube welding ferrule	-	-	(A)(B)(D)

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
73-11-47 continued						
	04-485 70100-1-6	1	.Pressure raising valve	-	-	(A)(B)(D)
	04-500 6B1353	1	.Tube assembly	-	-	(A)(B)(D)
	04-544 AS62406	1	.Clip (CP0921)	-	-	(A)(B)(D)
	04-552 AS62406	1	.Clip (CP0789)	-	-	(A)(B)(D)
	04-560 AS62406	1	.Clip (CP1072)	-	-	(A)(B)(D)
	04-600 AS15779	1	..Thrust wire	-	-	(A)(B)(D)
	04-601 AS15703	1	..Tube coupling nut	-	-	(A)(B)(D)
	04-602 AS15726	1	..Tube welding ferrule	-	-	(A)(B)(D)
R	04-614 UP11121	1	..Adaptor	-	-	(A)(B)(D)
	04-640 AS15779	1	..Thrust wire	-	-	(A)(B)(D)
	04-641 AS15703	1	..Tube coupling nut	-	-	(A)(B)(D)
	04-642 AS15726	1	..Tube welding ferrule	-	-	(A)(B)(D)
73-11-49						
	10-165 4W0114	1	.Bolt (CP1461)	-	4W0102	(A)(B)(S1)
	10-166 K8831	2	.Washer (CP1461)	-	K8831	(A)(B)(2)(S1)
R	10-170 UP10480	1	.Spacer (CP1461)	-	-	(A)(B)(D)
	10-725 4W0104	1	.Bolt (CP1489)	-	-	(A)(B)(D)
	10-726 K8831	1	.Washer (CP1489)	-	-	(A)(B)(D)
	10-728 AS62408	1	.Clip (CP1489)	-	-	(A)(B)(D)
	10-732 4W0001	1	.Nut (CP1489)	-	-	(A)(B)(D)
	12-549 4W0103	1	.Bolt (CP6158)	-	-	(A)(B)(D)



FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
73-11-49 continued						
12-550	K8831	1	.Washer (CP6158)	-	-	(A)(B)(D)
12-552	AS62406	1	.Clip (CP6158)	-	-	(A)(B)(D)
12-556	4W0001	1	.Nut (CP6158)	-	-	(A)(B)(D)
19-173	4W0105	1	.Bolt (CP5766)	-	4W0103	(A)(B)(S1)
19-174	K8831	1	.Washer (CP5766)	-	K8831	(A)(B)(S1)(1)
19-181	4W0107	1	.Bolt (CP5770)	-	4W0106	(A)(B)(S1)
19-696	MS9967-012	1	.Packing	-	-	(A)(B)(D)
19-700	6B1327	1	.Tube assembly	-	-	(A)(B)(D)
19-728	AS62406	1	.Clip (CP5766)	-	-	(A)(B)(D)
19-801	MS9197-09	1	..Tube coupling	-	-	(A)(B)(D)
19-802	6B1328	1	..Adaptor	-	-	(A)(B)(D)
19-814	UP11154	1	..Bracket, tube	-	-	(A)(B)(D)
20-157	4W0104	1	.Bolt (CP1460)	-	4W0102	(A)(B)(S1)
20-158	K8831	2	.Washer (CP1460)	-	K8831	(A)(B)(S1)(2)
R 26-157	4W0118	1	.Bolt (CP0921)	-	AS20908	(A)(B)(S1)
26-158	K8831	2	.Washer (CP0921)	-	K8831	(A)(B)(S1)(2)
R 26-162	UP10481	1	.Spacer (CP0921)	-	-	(A)(B)(D)
26-173	4W0124	1	.Bolt (CP1072)	-	4W0116	(A)(B)(S1)
R 26-174	K8831	1	.Washer (CP1072)	-	-	(A)(B)(D)
26-176	AS62416	1	.Clip (CP1072)	-	400WSS16	(A)(B)(S1)
26-179	UP10479	1	.Spacer (CP1072)	-	-	(A)(B)(D)
26-190	AS62404	1	.Clip (CP0789)	-	400WSS4	(A)(B)(S1)
26-789	4W0104	1	.Bolt (CP1492)	-	-	(A)(B)(D)

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FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
73-11-49 continued						
26-790	K8831	1	.Washer (CP1492)	-	-	(A)(B)(D)
26-792	AS62416	1	.Clip (CP1492)	-	-	(A)(B)(D)
26-796	4W0001	1	.Nut (CP1492)	-	-	(A)(B)(D)
33-040	6B1329	1	.Adaptor	-	-	(A)(B)(D)
33-042	4W0002	2	.Nut	-	-	(A)(B)(D)
33-044	MS9566-08	2	.Bolt	-	-	(A)(B)(D)
33-096	MS9967-012	1	.Packing	-	-	(A)(B)(D)
33-098	MS9967-011	1	.Packing	-	-	(A)(B)(D)
33-100	6B1331	1	.Tube assembly	-	-	(A)(B)(D)
33-128	400WSS6	1	.Clip (CP5770)	-	-	(A)(B)(D)
33-133	4W0103	1	.Bolt (CP6157)	-	-	(A)(B)(D)
33-134	K8831	1	.Washer (CP6157)	-	-	(A)(B)(D)
33-136	AS62406	1	.Clip (CP6157)	-	-	(A)(B)(D)
33-140	4W0001	1	.Nut (CP6157)	-	-	(A)(B)(D)
33-201	MS9197-08	1	..Tube coupling nut	-	-	(A)(B)(D)
33-202	UP11086	1	..Tube connector	-	-	(A)(B)(D)
33-210	EU70492	1	..Reducer	-	-	(A)(B)(D)
33-214	UP11121	2	..Tube clipping adaptor	-	-	(A)(B)(D)
33-241	MS9197-09	1	..Tube coupling nut	-	-	(A)(B)(D)
33-242	UP11087	1	..Tube connector	-	-	(A)(B)(D)
79-21-49						
R 10-165	4W0111	1	.Bolt (CP6159)	-	-	(A)(B)(D)
10-166	K8831	1	.Washer (CP6159)	-	-	(A)(B)(D)

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
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79-21-49 continued

10-168	AS62412	1	.Clip (CP6159)	-	-	(A)(B)(D)
10-172	4W0001	1	.Nut (CP6159)	-	-	(A)(B)(D)
R 10-170	UP10479	1	.Spacer (CP6159)	-	-	(A)(B)(D)

B. Parts to be reworked:

None.

C. New production parts:

None.

D. Redundant parts:

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
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71-51-41

01-871	-	1	.Washer	-	K8831	(C)(E)
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72-38-25

01-290	-	1	.Cover	-	LK62478	(C)
01-292	-	2	.Bolt	-	4W0163	(C)
01-294	-	2	.Nut	-	4W0002	(C)

73-11-49

19-100	-	1	.Tube assembly	-	6A2150	(C)
19-176	-	1	.Clip (CP5766)	-	AS62406	(C)
19-184	-	1	.Clip (CP5770)	-	400WSS6	(C)
19-201	-	2	..Tube coupling nut	-	MS9197-09	(C)
19-202	-	2	..Tube connector	-	UP11087	(C)

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E. Instruction disposition codes:

- R (A) Part of Mod kit MKVA573021903.
- R (B) Part of Mod kit MKVA573021904.
- (C) Deleted part.
- (D) Additional part.
- (E) For Pre SBE 71-0288.
- (1) This part is decreased from 2 to 1.
- (2) This part is increased from 1 to 2.
- (S1) Not Interchangeable.

R NOTE: For CSU participants with Mod kit MKVA573021902 supplied.

R Amend Mod kit MKVA573021902 as defined in the table below to be in line with Mod kit MKVA573021904:

Description	MKVA573021902	MKVA573021904
To be replaced (Bolt of CP6159)	4W0104	4W0111
To be added (Spacer of CP6159)	N/A	UP10479
To be replaced (Bolt of CP0921)	4W0104	4W0118
To be added (Spacer of CP6159)	N/A	UP10481

3. Accomplishment Instructions

A. Rework Instructions

- (1) None.

B. Assembly Instructions

INSTRUCTION I – APPLICABLE FOR ENGINES "IN SERVICE"

(1) General

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

- (a) Obey all the WARNINGS and CAUTIONS in the procedures that are referred to.

(b) Consumable Materials

- (i) Refer to the related Manual tasks given in this instruction.

(c) Tools and Equipment

- (i) Refer to the related Manual tasks given in this instruction.

- (2) Get access to the Variable Stator Vane (VSV) actuator that is installed in the central area of the engine

- (a) Deactivate the thrust reverser Hydraulic Control Unit (HCU) (Refer to the Aircraft Maintenance Manual, Chapter 78-30-00).

- (b) Open the fan cowl doors (Refer to the Aircraft Maintenance Manual, Chapter 71-13-00).

- (c) Open both halves of the thrust reverser (Refer to the Aircraft Maintenance Manual, Chapter 78-32-00).

- (3) Remove the old fuel tube (73-11-49, 19-100) from the engine (Refer to the Aircraft Maintenance Manual, Chapter 75-32-41)

- (a) Remove the two tubes (73-22-49, 05-500) and (73-11-49, 18-100) to get sufficient access for the removal of the tube (73-11-49, 19-100) and for the later installation of the two tubes (73-11-49, 19-700) and (73-11-49, 33-100).

- R (b) Cut and discard the lockwire that safeties the tube (73-11-49, 19-100) to the VSV actuator (75-32-41, 01-100) and the four way connector (73-11-49, 11-242).

- (c) Loosen the tube nuts that attach the tube to the VSV actuator (75-32-41, 01-100) and the four way connector (73-11-49, 11-242).
 - (d) At the clip position CP5770:
 - (i) Remove the nut (73-11-49, 19-188), the washer (73-11-49, 19-187), the spacer (73-11-49, 19-183) and the old bolt (73-11-49, 19-181), P/N 4W0106, that attach the old clip (73-11-49, 19-184), P/N 400WSS6 to the lug on tube (73-22-49, 09-100).
 - (e) At the clip position CP5766:
 - (i) Remove the nut (73-11-49, 19-180), the two washers (73-11-49, 19-174) and the old bolt (73-11-49, 19-173), P/N 4W0103 that attach the old clip (73-11-49, 19-176), P/N AS62406 and the clip (71-52-41, 01-126) to the lug on tube (73-22-49, 05-500).
 - (f) Remove the old servo retract fuel tube (73-11-49, 19-100), P/N 6A2150 from the engine.
- (4) Remove the cover from the bifurcation panel
- (a) Remove the two old nuts (72-38-25, 01-294), P/N 4W0002 and the two old bolts (72-38-25, 01-292), P/N 4W0163 that attach the cover (72-38-25, 01-290) to the bifurcation panel (72-38-25, 01-300).
 - (b) Remove the old cover (72-38-25, 01-290), P/N LK62478 from the bifurcation panel (72-38-25, 01-300).
- (5) Install the adaptor to the bifurcation panel
- (a) Clean the mating surfaces of the bifurcation panel (72-38-25, 01-300) and the adaptor (73-11-49, 33-040).
 - (b) Install the new adaptor (73-11-49, 33-040), P/N 6B1329 to the bifurcation panel (72-38-25, 01-300) with the two new bolts (73-11-49, 33-044), P/N MS9566-08 and the two new nuts (73-11-49, 33-042), P/N 4W0002.
 - (c) Torque the two nuts (73-11-49, 33-042) to 85-105 lbf in. (10-12 Nm).
 - (d) Seal the edge between the bifurcation panel (72-38-25, 01-300) and the adaptor (73-11-49, 33-040) circumferential, use CoMat. V08-013 Silcoset 152.

- (6) Install the two tubes (73-11-49, 33-100) and (73-11-49, 19-700) to the engine

NOTE: Adjacent tubes and their related clip positions can be loosened to ensure stress-free installation of tubes (73-11-49, 33-100) and (73-11-49, 19-700).

- (a) Loosely install the new tube (73-11-49, 33-100), P/N 6B1331 to the outlet of the VSV actuator (75-32-41, 01-100), with new packing (73-11-49, 33-096), P/N MS9967-012.
- (b) Loosely install the tube (73-11-49, 33-100) to the adaptor (73-11-49, 33-040) on the bifurcation panel (72-38-25, 01-300), with the new packing (73-11-49, 33-098), P/N MS9967-011.
- (c) At the changed clip position CP5770:
 - (i) Loosely install the new bolt (73-11-49, 19-181), P/N 4W0107, the washer (73-11-49, 19-187), the spacer (73-11-49, 19-183) and the nut (73-11-49, 19-188) that attach the new clip (73-11-49, 33-128), P/N 400WSS6 to the lug on tube (73-22-49, 09-100).
- (d) At the new clip position CP6158:
 - (i) Loosely install the new bolt (73-11-49, 12-549), P/N 4W0103, the new washer (73-11-49, 12-550), P/N K8831 and new nut (73-11-49, 12-556), P/N 4W0001 that attach the new clip (73-11-49, 12-552), P/N AS62406 to the lug on tube (73-11-49, 33-100).
- (e) At the new clip position CP6159:
 - (i) Loosely install the new bolt (79-21-49, 10-165), P/N 4W0111, the new spacer (79-21-49, 10-170), P/N UP10479, the new washer (79-21-49, 10-166), P/N K8831 and new nut (79-21-49, 10-172), P/N 4W0001 that attach the new clip (79-21-49, 10-168), P/N AS62412 to the lug on tube (73-11-49, 33-100).
- (f) Loosely install the new tube (73-11-49, 19-700), P/N 6B1327 to the four way connector (73-11-49, 11-242) with new packing (73-11-49, 19-696), P/N. MS9967-012.
- (g) At the changed clip position CP5766:
 - (i) Loosely install the new bolt (73-11-49, 19-173), P/N 4W0105, the washer (73-11-49, 19-174) and the nut (73-11-49, 19-180) that attach the clip (71-52-41, 01-126) and the new clip (73-11-49, 19-728), P/N AS62406 to the lug on tube (73-22-49, 05-500).

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(h) At the new clip position CP6157:

(i) Loosely install the new bolt (73-11-49, 33-133), P/N 4W0103, the new washer (73-11-49, 33-134), P/N K8831 and the new nut (73-11-49, 33-140), P/N 4W0001 that attach the new clip (73-11-49, 33-136), P/N AS62406 to the lug on tube (73-11-49, 19-700).

(i) Make sure the two tubes (73-11-49, 33-100) and (73-11-49, 19-700) are positioned correctly and torque the three tube nuts to the values defined below:

(i) At the VSV actuator connection torque the tube nut of the tube (73-11-49, 33-100) to 330-360 lbf in. (37,20-40,60 Nm).

(ii) At the adapter connection on the bifurcation panel torque the tube nut of the tube (73-11-49, 33-100) to 425-475 lbf in. (48-53,70 Nm).

(iii) Torque the tube nut of the tube (73-11-49, 19-700) to 425-475 lbf in (48-53,70 Nm).

(j) Safety the tube nuts on tube (73-11-49, 33-100) with CoMat 02-126 Lockwire.

(k) Safety the tube nut on tube (73-11-49, 19-700) with CoMat 02-126 Lockwire.

(l) Torque the five nuts (73-11-49, 19-188), (79-21-49, 10-172), (73-11-49, 33-140), (73-11-49, 12-556) and (73-11-49, 19-180) in the sequence that follows:

(i) At the clip position CP5770 torque the nut (73-11-49, 19-188) to 36-45 lbf in. (4-5 Nm).

(ii) At the clip position CP6159 torque the nut (79-21-49, 10-172) to 36-45 lbf in. (4-5 Nm).

(iii) At the clip position CP6157 torque the nut (73-11-49, 33-140) to 36-45 lbf in. (4-5 Nm).

(iv) At the clip position CP6158 torque the nut (73-11-49, 12-556) to 36-45 lbf in. (4-5 Nm).

(v) At the clip position CP5766 torque the nut (73-11-49, 19-180) to 36-45 lbf in. (4-5 Nm).

(m) Retighten and torque all adjacent hardware that have been loosened before, to ensure stress-free installation of tubes (73-11-49, 33-100) and (73-11-49, 19-700).

(n) Install the two tubes (73-22-49, 05-500) and (73-11-49, 18-100) that have been removed before to get sufficient access for the removal of the tube (73-11-49, 19-100) and for the installation of the two tubes (73-11-49, 33-100) and (73-11-49, 19-700).

(7) Install the tube assembly (73-11-47, 04-100)

NOTE: Adjacent tubes and their related clip positions can be loosened to ensure stress-free installation of tube assembly (73-11-47, 04-100).

(a) Loosely install the new tube assembly (73-11-47, 04-100), P/N 6B1332 to the adaptor (73-11-49, 33-040) on the bifurcation panel (72-38-25, 01-300).

(b) Loosely install the tube assembly (73-11-47, 04-100) to the new Pressure Raising Valve (PRV) (73-11-47, 04-485), P/N 70100-1-6.

(c) At the new clip position CP1489:

(i) Loosely install the new bolt (73-11-49, 10-725), P/N 4W0104, the new washer (73-11-49, 10-726), P/N K8831 and the new nut (73-11-49, 10-732), P/N 4W0001 that attach the new clip (73-11-49, 10-728), P/N AS62408 to the lug on tube (73-11-47, 04-100).

(d) At the changed clip position CP1460:

(i) Remove the nut (73-11-49, 20-164), the old bolt (73-11-49, 20-157), P/N 4W0102 and the washer (73-11-49, 20-158) that attach the clip (73-11-49, 20-160) to the lug on tube (71-51-50, 01-100).

(ii) Loosely install the new bolt (73-11-49, 20-157), P/N 4W0104, the two new washers (73-11-49, 20-158), P/N K8831 and the nut (73-11-49, 20-164) that attach the clip (73-11-49, 20-160) and the clip (73-11-47, 04-136) to the lug on tube (71-51-50, 01-100).

(e) At the changed clip position CP1461:

(i) Remove the nut (73-11-49, 10-172), the washer (73-11-49, 10-166) and the old bolt (73-11-49, 10-165), P/N 4W0102 that attach the clip (73-11-49, 10-168) to the lug on tube (71-51-50, 01-100)

- (ii) Loosely install the new bolt (73-11-49, 10-165), P/N 4W0114, the two new washers (73-11-49, 10-166), P/N K8831, the new spacer (73-11-49, 10-170), P/N UP10480 and the nut (73-11-49, 10-172) that attach the clip (73-11-49, 10-168) and the new clip (73-11-47, 04-144), P/N AS62406 to the lug on tube (71-51-50, 01-100).
- (f) At the changed clip position CP1465:
 - (i) For Pre SBE 71-0288 engines:

Remove the nut (71-51-41, 02-906), the two washers (71-51-41, 02-900), the spacer (71-51-41, 02-904) and the old bolt (71-51-41, 02-899), P/N 4W0114 that attach the old clip (71-51-41, 02-902), P/N AS62215 and the clip (71-71-48, 02-164) to the lug on tube (71-51-50, 01-100).
 - (ii) For SBE 71-0288 engines:

Remove the nut (71-51-41, 02-906), the washer (71-51-41, 02-900), the spacer (71-51-41, 02-904) and the old bolt (71-51-41, 02-899), P/N 4W0114 that attach the clip (71-51-41, 02-902) and the clip (71-71-48, 02-164) to the lug on tube (71-51-50, 01-100).
 - (iii) For Pre SBE 71-0288 engines:

Loosely install the new bolt (71-51-41, 02-899), P/N 4W0116, the washer (71-51-41, 02-900), the spacer (71-51-41, 02-904) and the nut (71-51-41, 02-906) that attach the new clip (71-51-41, 02-902), P/N AS62217 and the new clip (73-11-47, 04-152), P/N AS62406 to the lug on tube (71-51-50, 01-100).
 - (iv) For SBE 71-0288 engines:

Loosely install the new bolt (71-51-41, 02-899), P/N 4W0116, the washer (71-51-41, 02-900), the spacer (71-51-41, 02-904) and the nut (71-51-41, 02-906) that attach the clip (71-51-41, 02-902) and the new clip (73-11-47, 04-152), P/N AS62406 to the lug on tube (71-51-50, 01-100).
- (g) Make sure the tube (73-11-47, 04-100) is positioned correctly and torque the tube nuts to the values defined below:
 - (i) At the adapter connection on the bifurcation panel torque the tube nut of tube (73-11-47, 04-100) to 159-177 lbf in. (18-20 Nm).
 - (ii) At the PRV connection torque the tube nut of tube (73-11-47, 04-100) to 283-310 lbf in. (32-35 Nm).

- (h) Safety the tube nuts on tube (73-11-47, 04-100) with CoMat 02-126 Lockwire.
- (i) Torque the four nuts (73-11-49, 10-732), (73-11-49, 20-164), (73-11-49, 10-172) and (71-51-41, 02-906) of the clip positions CP1489, CP1460, CP1461 and CP1465 to 36-45 lbf in. (4-5 Nm).
- (j) Retighten and torque all adjacent hardware that have been loosened before, to ensure stress-free installation of tube (73-11-47, 04-100).
- (8) Remove the engine fuel supply tube (73-11-47, 01-100) from the engine (Refer to the Aircraft Maintenance Manual, Chapter 73-11-47)
 - (a) Remove the old tube (73-11-47, 01-100), P/N 745-5650-501.
 - (b) Remove and discard the seal ring (73-11-47, 01-104).
- (9) Install the engine fuel supply tube (73-11-47, 01-100) on the engine (Refer to the Aircraft Maintenance Manual, Chapter 73-11-47)
 - (a) Loosely install the new engine fuel supply tube (73-11-47, 01-100), P/N 745-5650-505.
 - (b) Torque the tube coupling nuts to 1520-1680 lbf in. (172-190 Nm).
 - (c) Safety the tube coupling nuts with CoMat 02-126 Lockwire.
- (10) Install the tube assembly (73-11-47, 04-500)

NOTE: Adjacent tubes and their related clip positions can be loosened to ensure stress-free installation of the engine fuel supply tube (73-11-47, 04-500).

 - (a) Loosely install the new tube assembly (73-11-47, 04-500), P/N 6B1353 to the PRV (73-11-47, 04-485) and to the 'T' piece P/N 745-5651-501 on the new engine fuel supply tube (73-11-47, 01-100), P/N 745-5650-505.
 - (b) At the new clip position CP1492:
 - (i) Loosely install the new bolt (73-11-49, 26-789), P/N 4W0104, the new washer (73-11-49, 26-790), P/N K8831 and the new nut (73-11-49, 26-796), P/N 4W0001 that attach the new clip (73-11-49, 26-792), P/N AS62416 to the bracket on tube (73-11-47, 04-500).
 - (c) At the changed clip position CP0921:
 - (i) Remove the nut (73-11-49, 26-164), the old bolt (73-11-49, 26-157), P/N AS20908 and the washer (73-11-49, 26-158) that attach the clip (73-11-49, 26-160) to the lug on tube (79-22-49, 12-500).

- R (ii) Loosely install the new bolt (73-11-49, 26-157), P/N 4W0118,
R the two new washers (73-11-49, 26-158), P/N K8831, the new
spacer (73-11-49, 26-162), P/N UP10481 and the nut (73-11-49,
26-164) that attach the clip (73-11-49, 26-160) and the new
clip (73-11-47, 04-544), P/N AS62406 to the lug on tube
(79-22-49, 12-500).
- (d) At the changed clip position CP0789:
- (i) For Pre SBE 71-0288 engines:
- Remove the nut (71-51-41, 01-877), the washer (71-51-41,
01-876), the spacers (71-51-41, 01-875) and (71-51-41, 01-874),
the old washer (71-51-41, 01-871), P/N K8831 and the old bolt
(71-51-41, 01-870), P/N 4W0118 that attach the clip (71-51-41,
01-873) and the old clip (73-11-49, 26-190), P/N AS62404 to the
bracket on tube (73-11-49, 26-100).
- (ii) For SBE 71-0288 engines:
- Remove the nut (71-51-41, 01-877), the washer (71-51-41,
01-876), the spacers (71-51-41, 01-875) and (71-51-41, 01-874)
and the bolt (71-51-41, 01-870) that attach the clip (71-51-41,
01-873) and the old clip (73-11-49, 26-190), P/N AS62404 to the
bracket on tube (73-11-49, 26-100).
- (iii) For Pre SBE 71-0288 engines:
- Loosely install the new bolt (71-51-41, 01-870), P/N 4W0119,
the spacers (71-51-41, 01-874) and (71-51-41, 01-875), the
washer (71-51-41, 01-876) and the nut (71-51-41, 01-877) that
attach the clip (71-51-41, 01-873), the new clip (73-11-47,
04-552), P/N AS62406 and the new clip (73-11-49, 26-190), P/N
AS62404 to the bracket on tube (73-11-49, 26-100).
- (iv) For SBE 71-0288 engines:
- Loosely install the bolt (71-51-41, 01-870), the spacers
(71-51-41, 01-874) and (71-51-41, 01-875), the washer
(71-51-41, 01-876) and the nut (71-51-41, 01-877) that attach
the clip (71-51-41, 01-873), the new clip (73-11-47, 04-552),
P/N AS62406 and the new clip (73-11-49, 26-190), P/N AS62404 to
the bracket on tube (73-11-49, 26-100).
- (e) At the changed clip position CP1072:
- (i) Remove the old bolt (73-11-49, 26-173), P/N 4W0116 and the
spacer (73-11-49, 26-178) that attach the clip (79-21-49,
05-184) and the old clip (73-11-49, 26-176), P/N 400WSS16 to
the bracket (73-11-49, 01-070).

- (ii) Loosely install the new bolt (73-11-49, 26-173), P/N 4W0124, the new spacer (73-11-49, 26-179), P/N UP10479 and the spacer (73-11-49, 26-178) that attach the new clip (73-11-47, 04-560), P/N AS62406, the clip (79-21-49, 05-184) and the new clip (73-11-49, 26-176), P/N AS62416 to the bracket (73-11-49, 01-070).
- (f) Make sure the tube (73-11-47, 04-500) is positioned correctly and torque the tube nuts to 230-248 lbf in. (26-28 Nm).
- (g) Safety the tube nuts on tube (73-11-47, 04-500) with CoMat 02-126 lockwire.
- R (h) Torque the three nuts (73-11-49, 26-796), (73-11-49, 26-164) and (71-51-41, 01-877) of the clip positions CP1492, CP0921 and CP0789 to 36-45 lbf in. (4-5 Nm).
- R (i) Torque the bolt (73-11-49, 26-173) of the clip position CP1072 to 36-45 lbf in. (4-5 Nm).
- R (j) Retighten and torque all adjacent hardware that have been loosened before, to ensure stress-free installation of tube (73-11-47, 04-500).
- (11) Make sure that the work area is clean and clear of tools, equipment and other unwanted materials.
- (12) Close the access to the Variable Stator Vane (VSV) actuator.
 - (a) Close the fan cowl doors (Refer to the Aircraft Maintenance Manual, Chapter 71-13-00).
 - (b) Close both halves of the thrust reverser (Refer to the Aircraft Maintenance Manual, Chapter 78-32-00).
 - (c) Activate the thrust reverser Hydraulic Control Unit (HCU) (Refer to the Aircraft Maintenance Manual, Chapter 78-30-00).
 - R (d) Do an idle leak check (Refer to the Aircraft Maintenance Manual, Chapter 71-00-00).

INSTRUCTION II – APPLICABLE FOR ENGINES "AT OVERHAUL/SHOP VISIT"

(1) General

(a) Obey all the WARNINGS and CAUTIONS in the procedures that are referred to.

(b) Consumable Materials

(i) Refer to the related Manual tasks given in this instruction.

(c) Tools and Equipment

(i) Refer to the related Manual tasks given in this instruction.

R (2) Remove the old fuel tube (73-11-49, 19-100) from the engine (Refer to the Engine Manual, Chapter 72-00-40)

(a) Remove the two tubes (73-22-49, 05-500) and (73-11-49, 18-100) to get sufficient access for the removal of the tube (73-11-49, 19-100) and for the later installation of the two tubes (73-11-49, 19-700) and (73-11-49, 33-100).

R (b) Cut and discard the lockwire that safeties the tube (73-11-49, 19-100) to the VSV actuator (75-32-41, 01-100) and the four way connector (73-11-49, 11-242).

(c) Loosen the tube nuts that attach the tube to the VSV actuator (75-32-41, 01-100) and the four way connector (73-11-49, 11-242).

(d) At the clip position CP5770:

(i) Remove the nut (73-11-49, 19-188), the washer (73-11-49, 19-187), the spacer (73-11-49, 19-183) and the old bolt (73-11-49, 19-181), P/N 4W0106, that attach the old clip (73-11-49, 19-184), P/N 400WSS6 to the lug on tube (73-22-49, 09-100).

(e) At the clip position CP5766:

(i) Remove the nut (73-11-49, 19-180), the two washers (73-11-49, 19-174) and the old bolt (73-11-49, 19-173), P/N 4W0103 that attach the old clip (73-11-49, 19-176), P/N AS62406 and the clip (71-52-41, 01-126) to the lug on tube (73-22-49, 05-500).

(f) Remove the old servo retract fuel tube (73-11-49, 19-100), P/N 6A2150 from the engine.

- (3) Remove the cover from the bifurcation panel
- (a) Remove the two old nuts (72-38-25, 01-294), P/N 4W0002 and the two old bolts (72-38-25, 01-292), P/N 4W0163 that attach the cover (72-38-25, 01-290) to the bifurcation panel (72-38-25, 01-300).
 - (b) Remove the old cover (72-38-25, 01-290), P/N LK62478 from the bifurcation panel (72-38-25, 01-300).
- (4) Install the adaptor to the bifurcation panel
- (a) Clean the mating surfaces of the bifurcation panel (72-38-25, 01-300) and the adaptor (73-11-49, 33-040).
 - (b) Install the new adaptor (73-11-49, 33-040), P/N 6B1329 to the bifurcation panel (72-38-25, 01-300) with the two new bolts (73-11-49, 33-044), P/N MS9566-08 and the two new nuts (73-11-49, 33-042), P/N 4W0002.
 - (c) Torque the two nuts (73-11-49, 33-042) to 85-105 lbf in. (10-12 Nm).
 - (d) Seal the edge between the bifurcation panel (72-38-25, 01-300) and the adaptor (73-11-49, 33-040) circumferential, use CoMat. V08-013 Silcoset 152.
- (5) Install the two tubes (73-11-49, 33-100) and (73-11-49, 19-700) to the engine
- NOTE:** Adjacent tubes and their related clip positions can be loosened to ensure stress-free installation of tubes (73-11-49, 33-100) and (73-11-49, 19-700).
- (a) Loosely install the new tube (73-11-49, 33-100), P/N 6B1331 to the outlet of the VSV actuator (75-32-41, 01-100), with new packing (73-11-49, 33-096), P/N MS9967-012.
 - (b) Loosely install the tube (73-11-49, 33-100) to the adaptor (73-11-49, 33-040) on the bifurcation panel (72-38-25, 01-300), with the new packing (73-11-49, 33-098), P/N MS9967-011.
 - (c) At the changed clip position CP5770:
 - (i) Loosely install the new bolt (73-11-49, 19-181), P/N 4W0107, the washer (73-11-49, 19-187), the spacer (73-11-49, 19-183) and the nut (73-11-49, 19-188) that attach the new clip (73-11-49, 33-128), P/N 400WSS6 to the lug on tube (73-22-49, 09-100).

(d) At the new clip position CP6158:

- (i) Loosely install the new bolt (73-11-49, 12-549), P/N 4W0103, the new washer (73-11-49, 12-550), P/N K8831 and new nut (73-11-49, 12-556), P/N 4W0001 that attach the new clip (73-11-49, 12-552), P/N AS62406 to the lug on tube (73-11-49, 33-100).

(e) At the new clip position CP6159:

- (i) Loosely install the new bolt (79-21-49, 10-165), P/N 4W0111, the new spacer (79-21-49, 10-170), P/N UP10479, the new washer (79-21-49, 10-166), P/N K8831 and new nut (79-21-49, 10-172), P/N 4W0001 that attach the new clip (79-21-49, 10-168), P/N AS62412 to the lug on tube (73-11-49, 33-100).

(f) Loosely install the new tube (73-11-49, 19-700), P/N 6B1327 to the four way connector (73-11-49, 11-242) with new packing (73-11-49, 19-696), P/N. MS9967-012.

(g) At the changed clip position CP5766:

- (i) Loosely install the new bolt (73-11-49, 19-173), P/N 4W0105, the washer (73-11-49, 19-174) and the nut (73-11-49, 19-180) that attach the clip (71-52-41, 01-126) and the new clip (73-11-49, 19-728), P/N AS62406 to the lug on tube (73-22-49, 05-500).

(h) At the new clip position CP6157:

- (i) Loosely install the new bolt (73-11-49, 33-133), P/N 4W0103, the new washer (73-11-49, 33-134), P/N K8831 and the new nut (73-11-49, 33-140), P/N 4W0001 that attach the new clip (73-11-49, 33-136), P/N AS62406 to the lug on tube (73-11-49, 19-700).

(i) Make sure the two tubes (73-11-49, 33-100) and (73-11-49, 19-700) are positioned correctly and torque the three tube nuts to the values defined below:

- (i) At the VSV actuator connection torque the tube nut of the tube (73-11-49, 33-100) to 330-360 lbf in. (37,20-40,60 Nm).
- (ii) At the adapter connection on the bifurcation panel torque the tube nut of the tube (73-11-49, 33-100) to 425-475 lbf in. (48-53,70 Nm).
- (iii) Torque the tube nut of the tube (73-11-49, 19-700) to 425-475 lbf in (48-53,70 Nm).

- (j) Safety the tube nuts on tube (73-11-49, 33-100) with CoMat 02-126 lockwire.
- (k) Safety the tube nut on tube (73-11-49, 19-700) with CoMat 02-126 lockwire.
- (l) Torque the five nuts (73-11-49, 19-188), (79-21-49, 10-172), (73-11-49, 33-140), (73-11-49, 12-556) and (73-11-49, 19-180) in the sequence that follows:

- R (i) At the clip position CP5770 torque the nut (73-11-49, 19-188) to 36-45 lbf in. (4-5 Nm).
- R (ii) At the clip position CP6159 torque the nut (79-21-49, 10-172) to 36-45 lbf in. (4-5 Nm).
- R (iii) At the clip position CP6157 torque the nut (73-11-49, 33-140) to 36-45 lbf in. (4-5 Nm).
- R (iv) At the clip position CP6158 torque the nut (73-11-49, 12-556) to 36-45 lbf in. (4-5 Nm).
- R (v) At the clip position CP5766 torque the nut (73-11-49, 19-180) to 36-45 lbf in. (4-5 Nm).
- R (m) Retighten and torque all adjacent hardware that have been loosened before, to ensure stress-free installation of tubes (73-11-49, 33-100) and (73-11-49, 19-700).
- (n) Install the two tubes (73-22-49, 05-500) and (73-11-49, 18-100) that have been removed before to get sufficient access for the removal of the tube (73-11-49, 19-100) and for the installation of the two tubes (73-11-49, 33-100) and (73-11-49, 19-700).

(6) Install the tube assembly (73-11-47, 04-100)

NOTE: Adjacent tubes and their related clip positions can be loosened to ensure stress-free installation of tube assembly (73-11-47, 04-100).

- (a) Loosely install the new tube assembly (73-11-47, 04-100), P/N 6B1332 to the adaptor (73-11-49, 33-040) on the bifurcation panel (72-38-25, 01-300).
- (b) Loosely install the tube assembly (73-11-47, 04-100) to the new Pressure Raising Valve (PRV) (73-11-47, 04-485), P/N 70100-1-6.

(c) At the new clip position CP1489:

- (i) Loosely install the new bolt (73-11-49, 10-725), P/N 4W0104, the new washer (73-11-49, 10-726), P/N K8831 and the new nut (73-11-49, 10-732), P/N 4W0001 that attach the new clip (73-11-49, 10-728), P/N AS62408 to the lug on tube (73-11-47, 04-100).

(d) At the changed clip position CP1460:

- (i) Remove the nut (73-11-49, 20-164), the old bolt (73-11-49, 20-157), P/N 4W0102 and the washer (73-11-49, 20-158) that attach the clip (73-11-49, 20-160) to the lug on tube (71-51-50, 01-100).
- (ii) Loosely install the new bolt (73-11-49, 20-157), P/N 4W0104, the two new washers (73-11-49, 20-158), P/N K8831 and the nut (73-11-49, 20-164) that attach the clip (73-11-49, 20-160) and the clip (73-11-47, 04-136) to the lug on tube (71-51-50, 01-100).

(e) At the changed clip position CP1461:

- (i) Remove the nut (73-11-49, 10-172), the washer (73-11-49, 10-166) and the old bolt (73-11-49, 10-165), P/N 4W0102 that attach the clip (73-11-49, 10-168) to the lug on tube (71-51-50, 01-100).
- (ii) Loosely install the new bolt (73-11-49, 10-165), P/N 4W0114, the two new washers (73-11-49, 10-166), P/N K8831, the new spacer (73-11-49, 10-170), P/N UP10480 and the nut (73-11-49, 10-172) that attach the clip (73-11-49, 10-168) and the new clip (73-11-47, 04-144), P/N AS62406 to the lug on tube (71-51-50, 01-100).

(f) At the changed clip position CP1465:

- (i) For Pre SBE 71-0288 engines:

Remove the nut (71-51-41, 02-906), the two washers (71-51-41, 02-900), the spacer (71-51-41, 02-904) and the old bolt (71-51-41, 02-899), P/N 4W0114 that attach the old clip (71-51-41, 02-902), P/N AS62215 and the clip (71-71-48, 02-164) to the lug on tube (71-51-50, 01-100).

(ii) For SBE 71-0288 engines:

Remove the nut (71-51-41, 02-906), the washer (71-51-41, 02-900), the spacer (71-51-41, 02-904) and the old bolt (71-51-41, 02-899), P/N 4W0114 that attach the clip (71-51-41, 02-902) and the clip (71-71-48, 02-164) to the lug on tube (71-51-50, 01-100).

(iii) For Pre SBE 71-0288 engines:

Loosely install the new bolt (71-51-41, 02-899), P/N 4W0116, the washer (71-51-41, 02-900), the spacer (71-51-41, 02-904) and the nut (71-51-41, 02-906) that attach the new clip (71-51-41, 02-902), P/N AS62217 and the new clip (73-11-47, 04-152), P/N AS62406 to the lug on tube (71-51-50, 01-100).

(iv) For SBE 71-0288 engines:

Loosely install the new bolt (71-51-41, 02-899), P/N 4W0116, the washer (71-51-41, 02-900), the spacer (71-51-41, 02-904) and the nut (71-51-41, 02-906) that attach the clip (71-51-41, 02-902) and the new clip (73-11-47, 04-152), P/N AS62406 to the lug on tube (71-51-50, 01-100).

(g) Make sure the tube (73-11-47, 04-100) is positioned correctly and torque the tube nuts to the values defined below:

(i) At the adapter connection on the bifurcation panel torque the tube nut of tube (73-11-47, 04-100) to 159-177 lbf in. (18-20 Nm).

(ii) At the PRV connection torque the tube nut of tube (73-11-47, 04-100) to 283-310 lbf in. (32-35 Nm).

(h) Safety the tube nuts on tube (73-11-47, 04-100) with CoMat 02-126 lockwire.

(i) Torque the four nuts (73-11-49, 10-732), (73-11-49, 20-164), (73-11-49, 10-172) and (71-51-41, 02-906) of the clip positions CP1489, CP1460, CP1461 and CP1465 to 36-45 lbf in. (4-5 Nm).

R (j) Retighten and torque all adjacent hardware that have been loosened before, to ensure stress-free installation of tube (73-11-47, 04-100).

R (7) Remove the engine fuel supply tube (73-11-47, 01-100) from the engine (Refer to the Engine Manual, Chapter 72-00-60)

(a) Remove the old engine fuel supply tube (73-11-47, 01-100), P/N 745-5650-501.

(b) Remove and discard the seal ring (73-11-47, 01-104).

R (8) Install the engine fuel supply tube (73-11-47, 01-100) on the engine
(Refer to the Engine Manual, Chapter 73-11-47)

R (a) Install the new engine fuel supply tube (73-11-47, 01-100), P/N
745-5650-505.

(b) Torque the tube coupling nuts to 1520-1680 lbf in. (172-190 Nm).

(c) Safety the tube coupling nuts with CoMat 02-126 lockwire.

(9) Install the tube assembly (73-11-47, 04-500)

NOTE: Adjacent tubes and their related clip positions can be loosened to ensure stress-free installation of the engine fuel supply tube (73-11-47, 04-500).

R (a) Loosely install the new tube assembly (73-11-47, 04-500), P/N 6B1353 to the PRV (73-11-47, 04-485) and to the 'T' piece P/N 745-5651-501 on the new engine fuel supply tube (73-11-47, 01-100), P/N 745-5650-505.

(b) At the new clip position CP1492:

(i) Loosely install the new bolt (73-11-49, 26-789), P/N 4W0104, the new washer (73-11-49, 26-790), P/N K8831 and the new nut (73-11-49, 26-796), P/N 4W0001 that attach the new clip (73-11-49, 26-792), P/N AS62416 to the bracket on tube (73-11-47, 04-500).

(c) At the changed clip position CP0921:

(i) Remove the nut (73-11-49, 26-164), the old bolt (73-11-49, 26-157), P/N AS20908 and the washer (73-11-49, 26-158) that attach the clip (73-11-49, 26-160) to the lug on tube (79-22-49, 12-500).

R (ii) Loosely install the new bolt (73-11-49, 26-157), P/N 4W0118, the two new washers (73-11-49, 26-158), P/N K8831, the new spacer (73-11-49, 26-162), P/N UP10481 and the nut (73-11-49, 26-164) that attach the clip (73-11-49, 26-160) and the new clip (73-11-47, 04-544), P/N AS62406 to the lug on tube (79-22-49, 12-500).

(d) At the changed clip position CP0789:

(i) For Pre SBE 71-0288 engines:

Remove the nut (71-51-41, 01-877), the washer (71-51-41, 01-876), the spacers (71-51-41, 01-875) and (71-51-41, 01-874), the old washer (71-51-41, 01-871), P/N K8831 and the old bolt (71-51-41, 01-870), P/N 4W0118 that attach the clip (71-51-41, 01-873) and the old clip (73-11-49, 26-190), P/N AS62404 to the bracket on tube (73-11-49, 26-100).

(ii) For SBE 71-0288 engines:

Remove the nut (71-51-41, 01-877), the washer (71-51-41, 01-876), the spacers (71-51-41, 01-875) and (71-51-41, 01-874) and the bolt (71-51-41, 01-870) that attach the clip (71-51-41, 01-873) and the old clip (73-11-49, 26-190), P/N AS62404 to the bracket on tube (73-11-49, 26-100).

(iii) For Pre SBE 71-0288 engines:

Loosely install the new bolt (71-51-41, 01-870), P/N 4W0119, the spacers (71-51-41, 01-874) and (71-51-41, 01-875), the washer (71-51-41, 01-876) and the nut (71-51-41, 01-877) that attach the clip (71-51-41, 01-873), the new clip (73-11-47, 04-552), P/N AS62406 and the new clip (73-11-49, 26-190), P/N AS62404 to the bracket on tube (73-11-49, 26-100).

(iv) For SBE 71-0288 engines:

Loosely install the bolt (71-51-41, 01-870), the spacers (71-51-41, 01-874) and (71-51-41, 01-875), the washer (71-51-41, 01-876) and the nut (71-51-41, 01-877) that attach the clip (71-51-41, 01-873), the new clip (73-11-47, 04-552), P/N AS62406 and the new clip (73-11-49, 26-190), P/N AS62404 to the bracket on tube (73-11-49, 26-100).

(e) At the changed clip position CP1072:

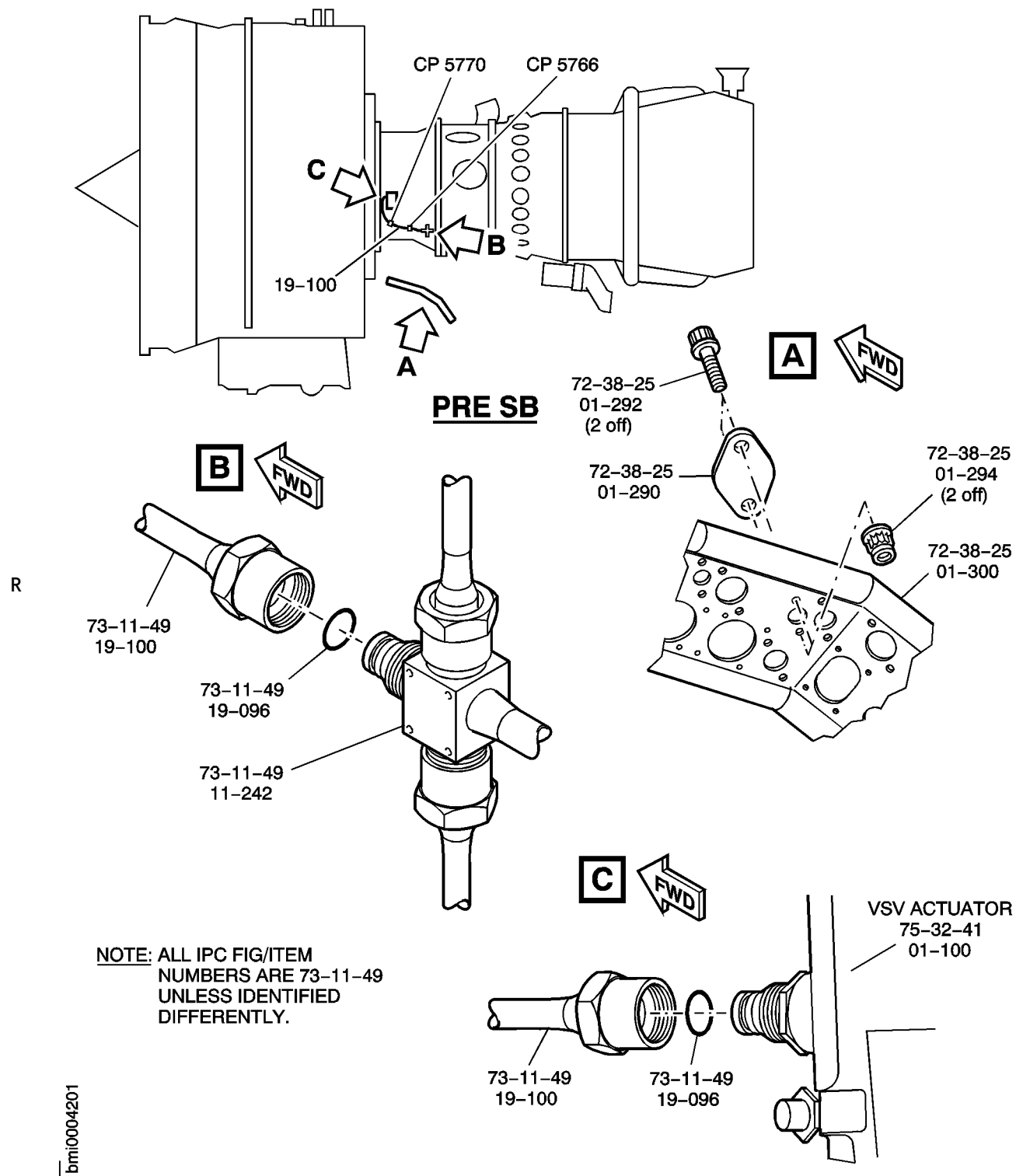
(i) Remove the old bolt (73-11-49, 26-173), P/N 4W0116 and the spacer (73-11-49, 26-178) that attach the clip (79-21-49, 05-184) and the old clip (73-11-49, 26-176), P/N 400WSS16 to the bracket (73-11-49, 01-070).

(ii) Loosely install the new bolt (73-11-49, 26-173), P/N 4W0124, the new spacer (73-11-49, 26-179), P/N UP10479 and the spacer (73-11-49, 26-178) that attach the new clip (73-11-47, 04-560), P/N AS62406, the clip (79-21-49, 05-184) and the new clip (73-11-49, 26-176), P/N AS62416 to the bracket (73-11-49, 01-070).

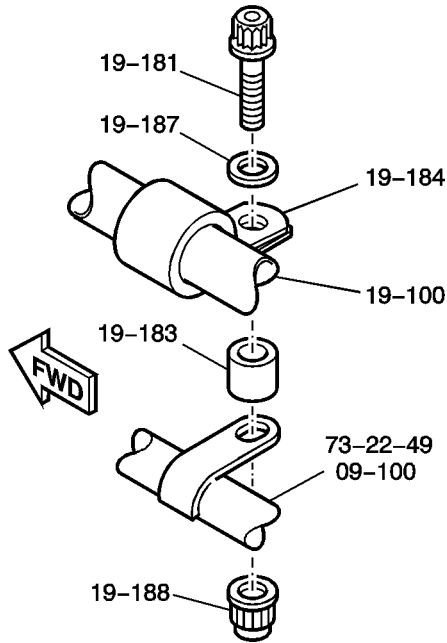
- (f) Make sure the tube (73-11-47, 04-500) is positioned correctly and torque the tube nuts to 230-248 lbf in. (26-28 Nm).
- (g) Safety the tube nuts on tube (73-11-47, 04-500) with CoMat 02-126 lockwire.
- R (h) Torque the three nuts (73-11-49, 26-796), (73-11-49, 26-164) and (71-51-41, 01-877) of the clip positions CP1492, CP0921 and CP0789 to 36-45 lbf in. (4-5 Nm).
- R (i) Torque the bolt (73-11-49, 26-173) of the clip position CP1072 to 36-45 lbf in. (4-5 Nm).
- R (j) Retighten and torque all adjacent hardware that have been loosened before, to ensure stress-free installation of tube (73-11-47, 04-500).
- (10) Make sure that the work area is clean and clear of tools, equipment and other unwanted materials.

C. Recording Instructions

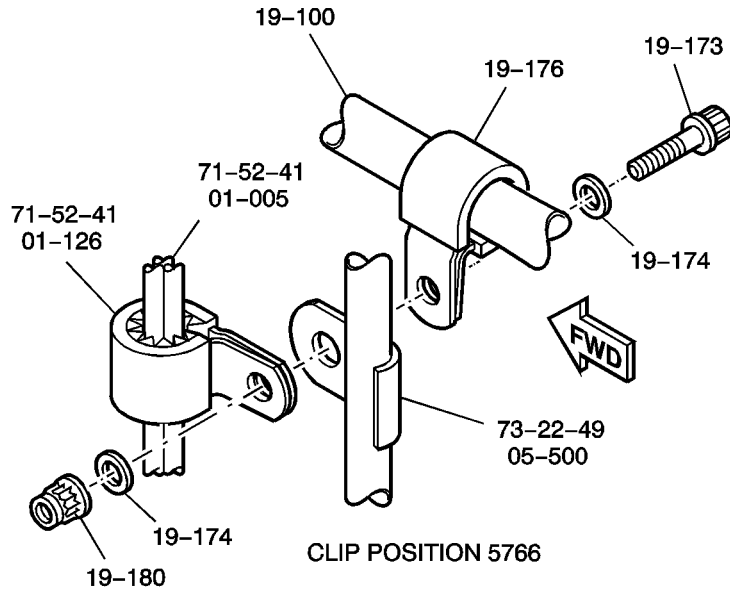
- (1) A record of accomplishment is necessary.



Removal
Figure 1 (Sheet 1 of 5)



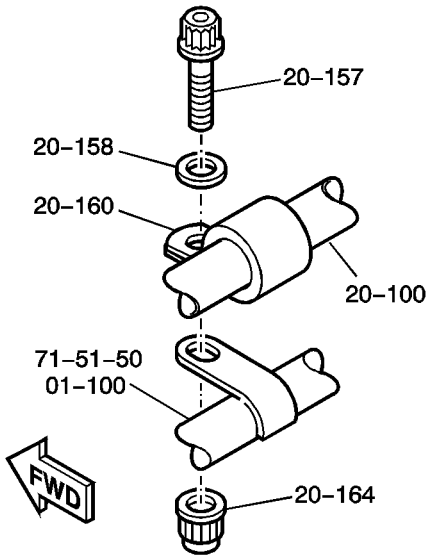
CLIP POSITION 5770



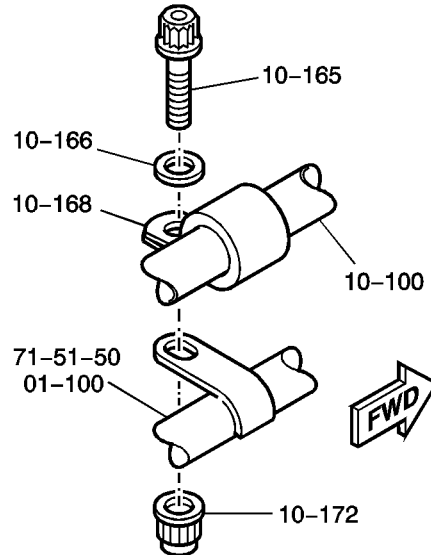
CLIP POSITION 5766

NOTE: ALL IPC FIG/ITEM NUMBERS ARE 73-11-49 UNLESS IDENTIFIED DIFFERENTLY.

PRE SB

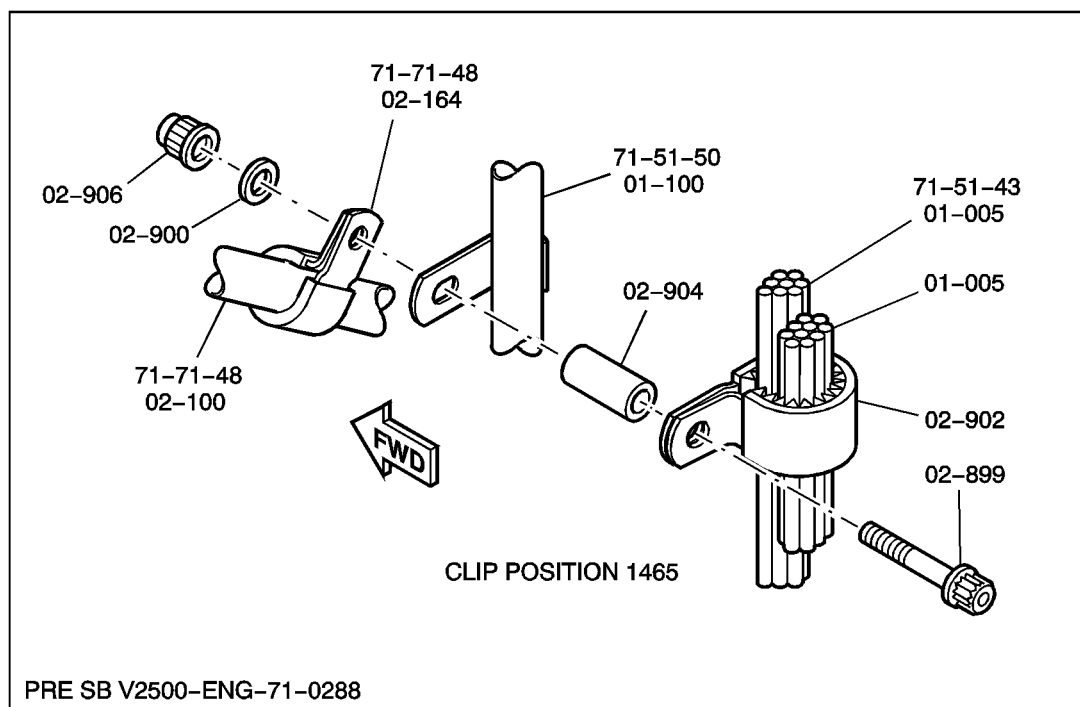
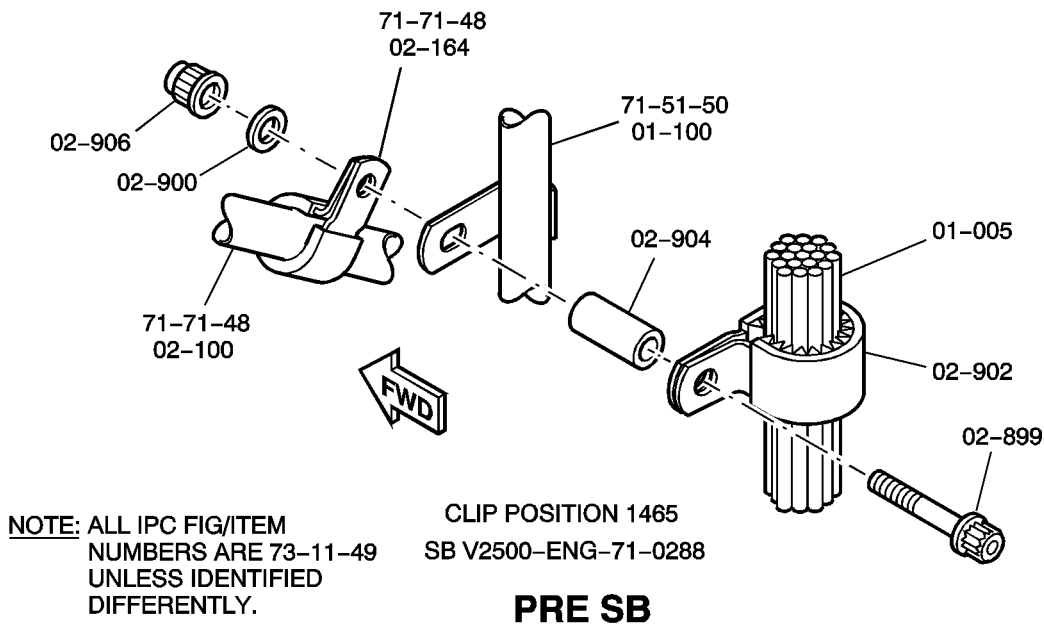


CLIP POSITION 1460

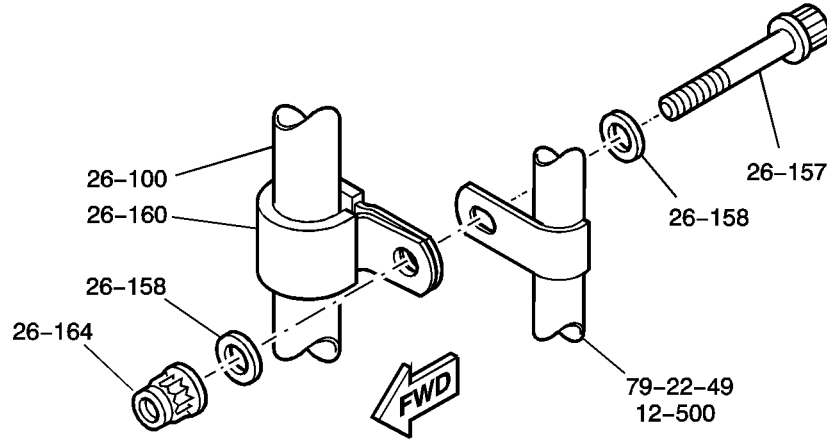


CLIP POSITION 1461

Removal
Figure 1 (Sheet 2 of 5)



Removal
Figure 1 (Sheet 3 of 5)

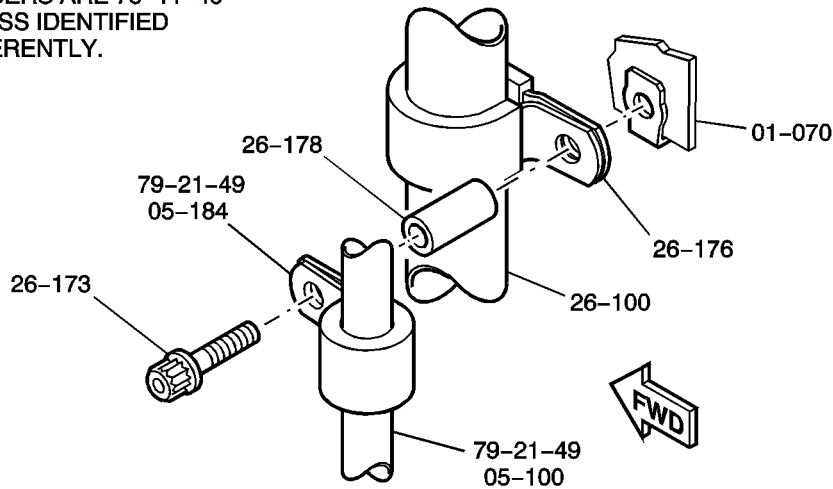


CLIP POSITION 0921

PRE SB

R

NOTE: ALL IPC FIG/ITEM
NUMBERS ARE 73-11-49
UNLESS IDENTIFIED
DIFFERENTLY.



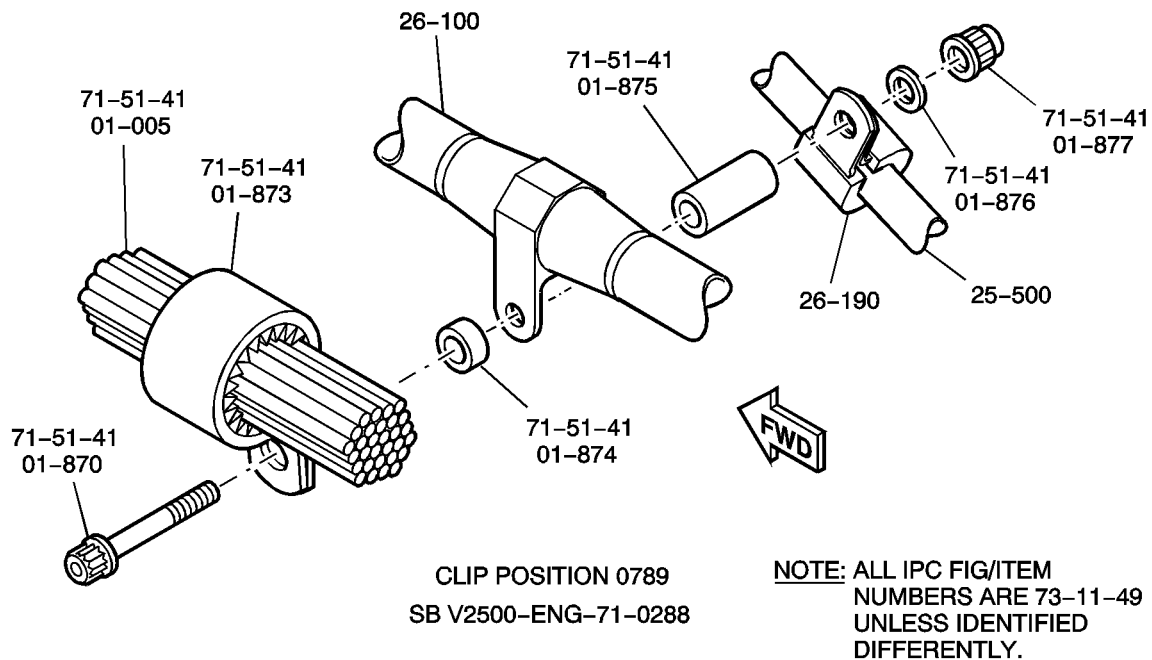
CLIP POSITION 1072

Removal

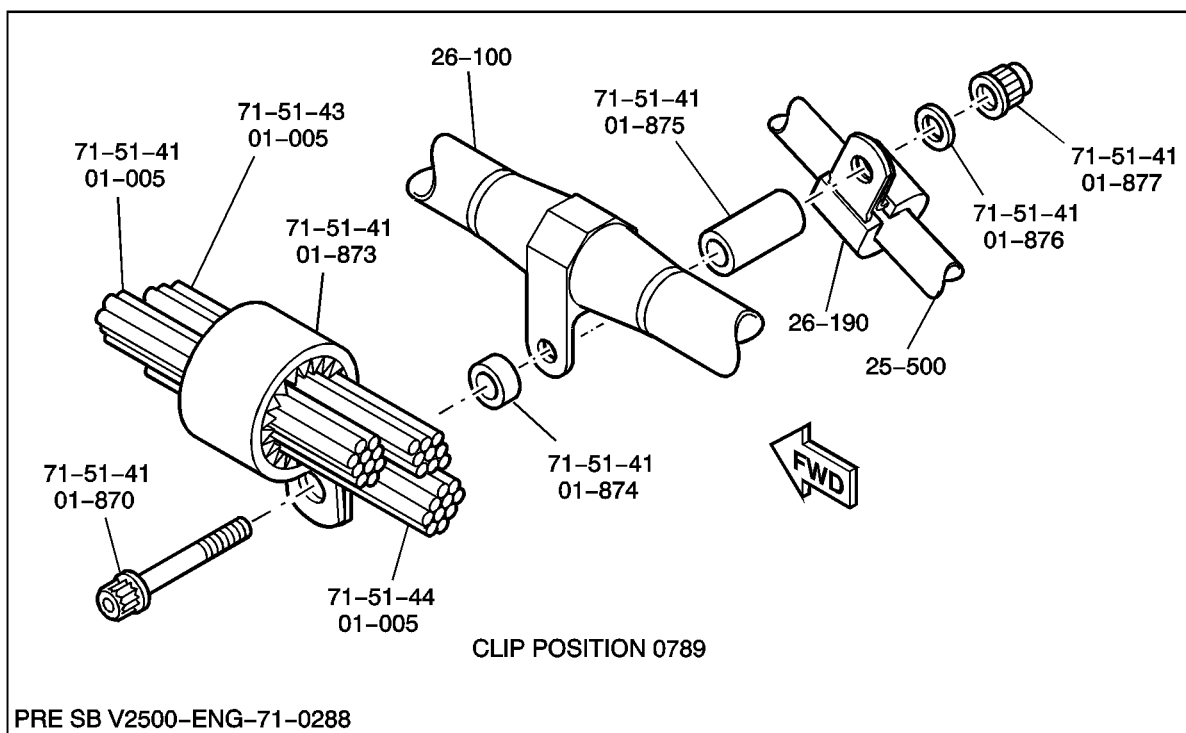
Figure 1 (Sheet 4 of 5)

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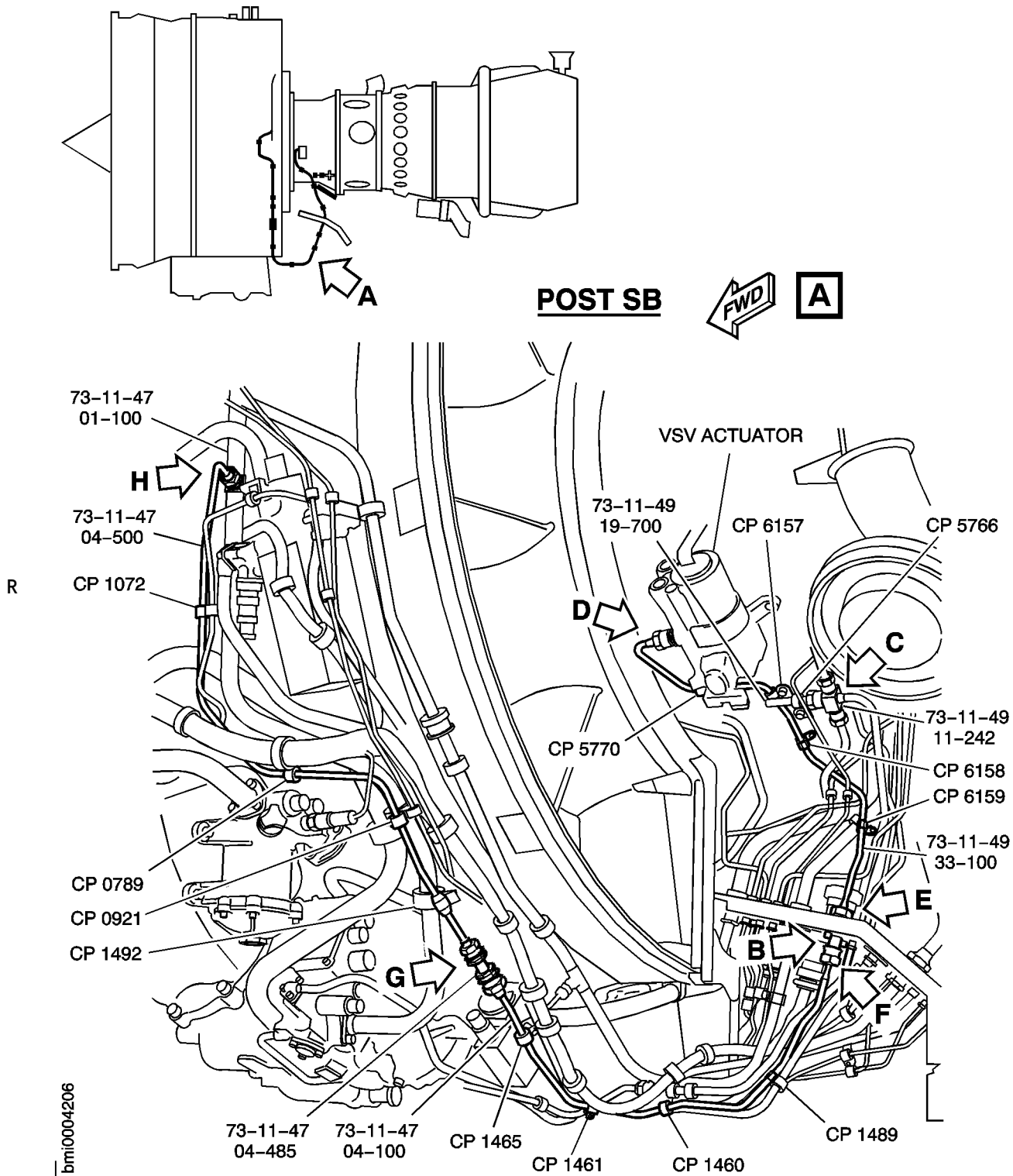
R
R



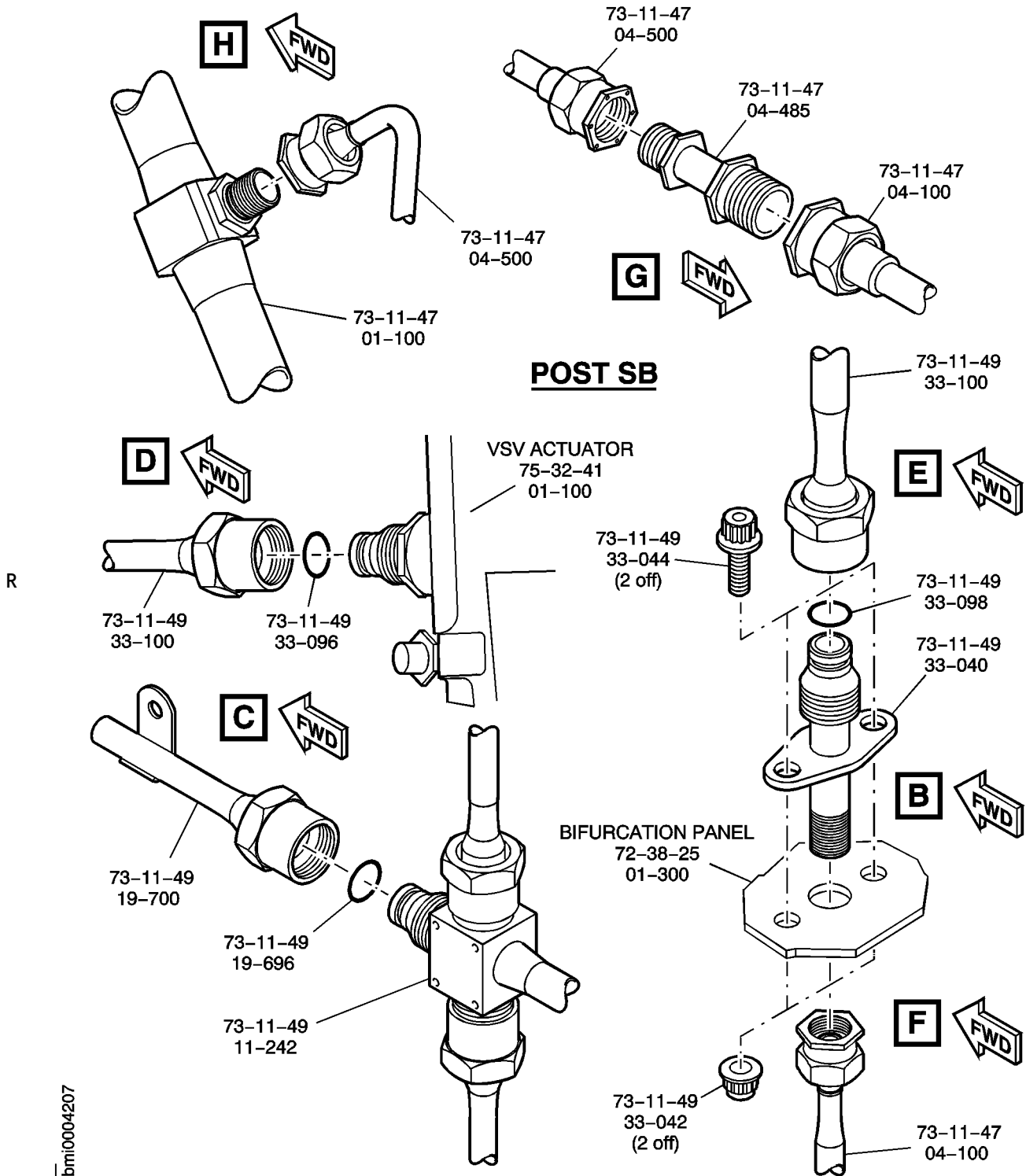
PRE SB



Removal
Figure 1 (Sheet 5 of 5)



Installation
Figure 2 (Sheet 1 of 7)



Installation
Figure 2 (Sheet 2 of 7)

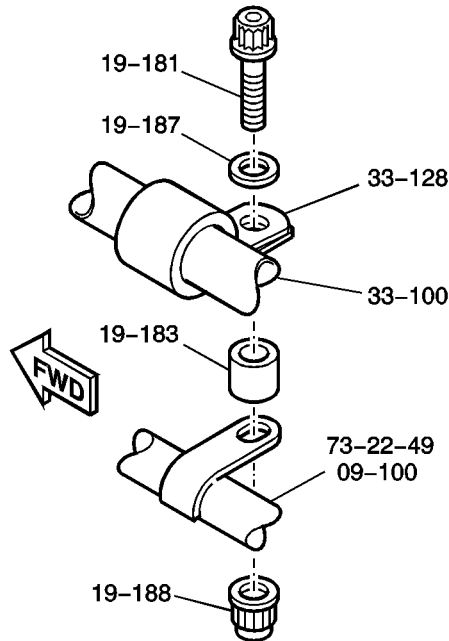
Apr.15/10
Mar.18/11 Revision 3

V2500-ENG-73-0219

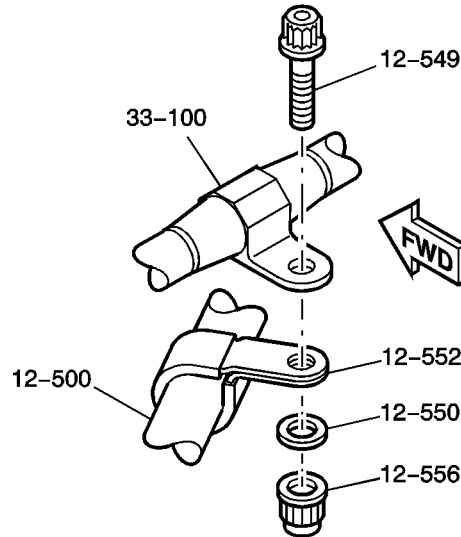
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IAE PROPRIETARY INFORMATION

Not subject to the E.A.R. per 15 C.F.R. Chapter 1, Part 73.13(b)(3).



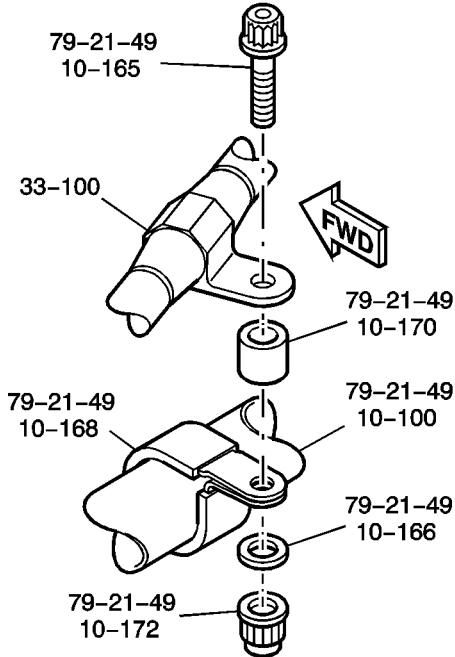
CLIP POSITION 5770



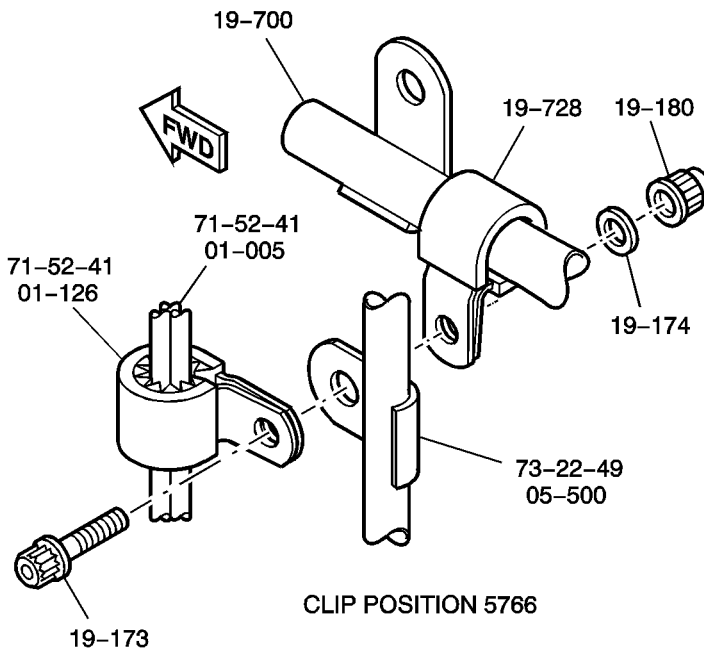
CLIP POSITION 6158

NOTE: ALL IPC FIG/ITEM NUMBERS ARE 73-11-49 UNLESS IDENTIFIED DIFFERENTLY.

POST SB

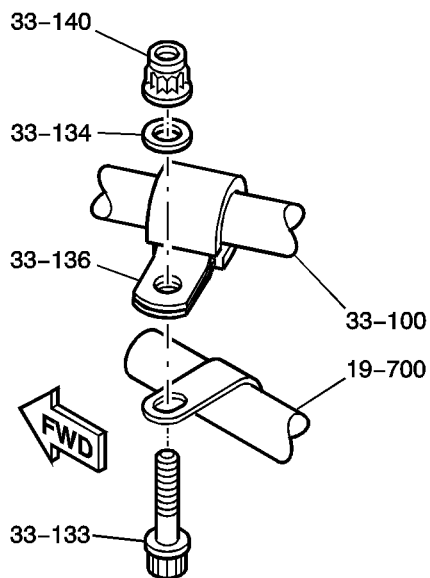


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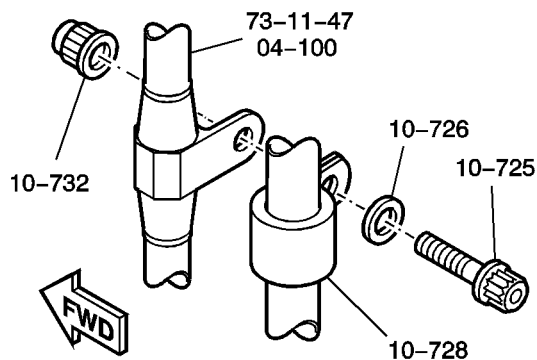


CLIP POSITION 5766

Installation
Figure 2 (Sheet 3 of 7)



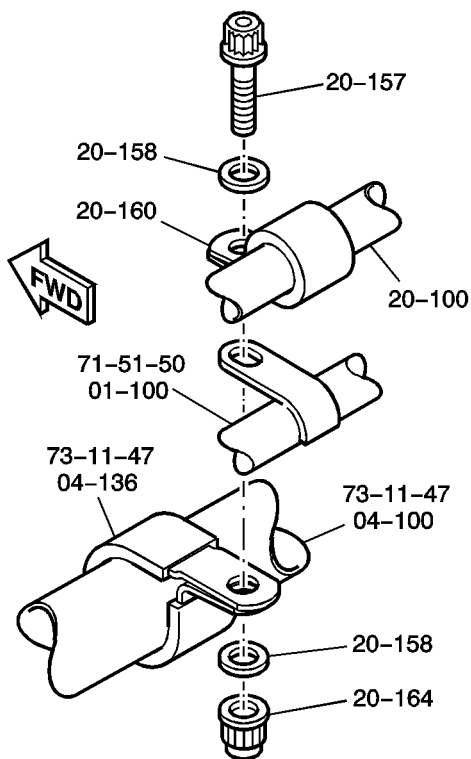
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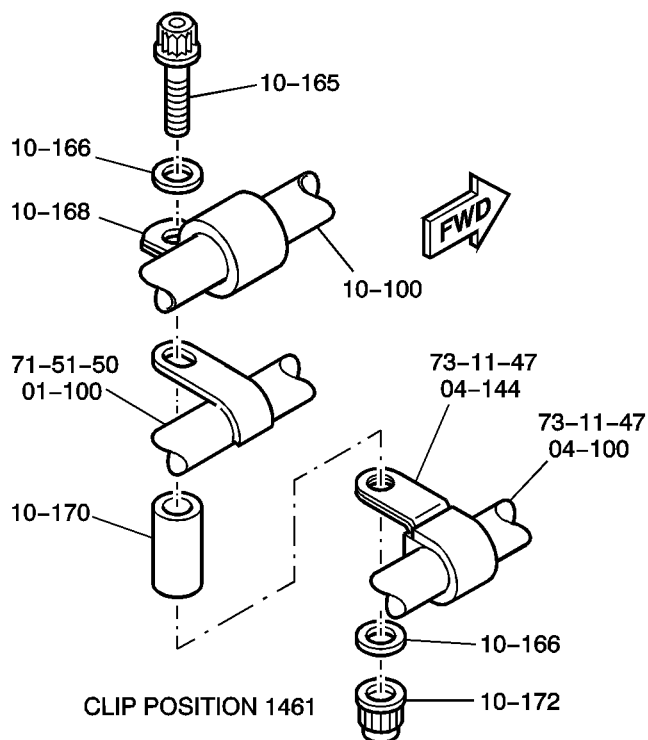
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NOTE: ALL IPC FIG/ITEM NUMBERS ARE 73-11-49 UNLESS IDENTIFIED DIFFERENTLY.

POST SB

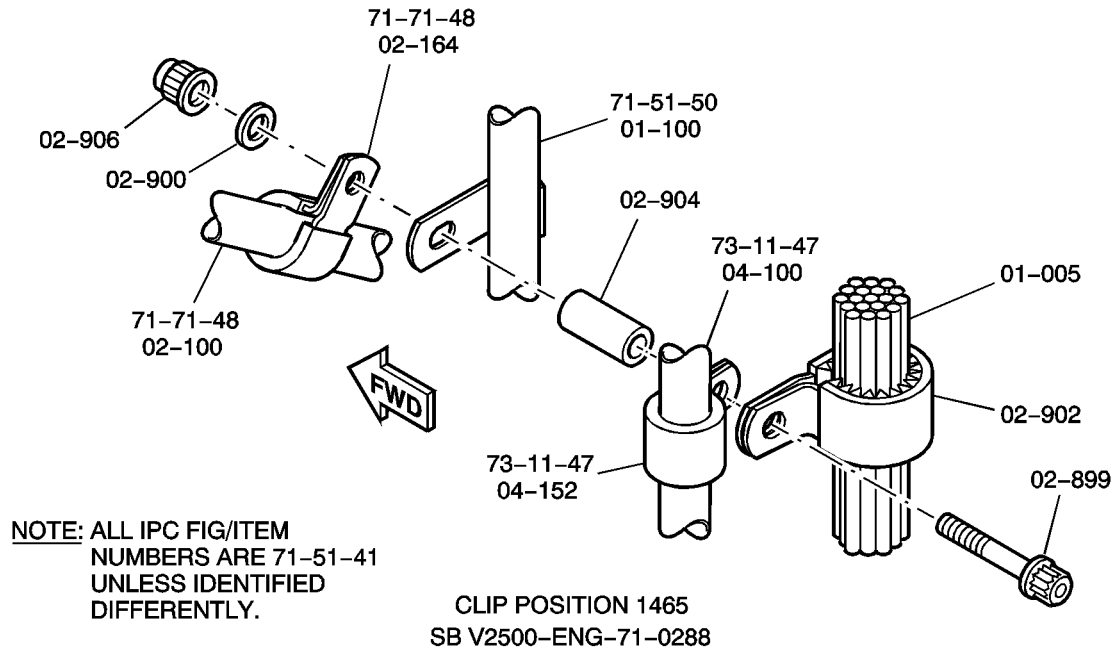


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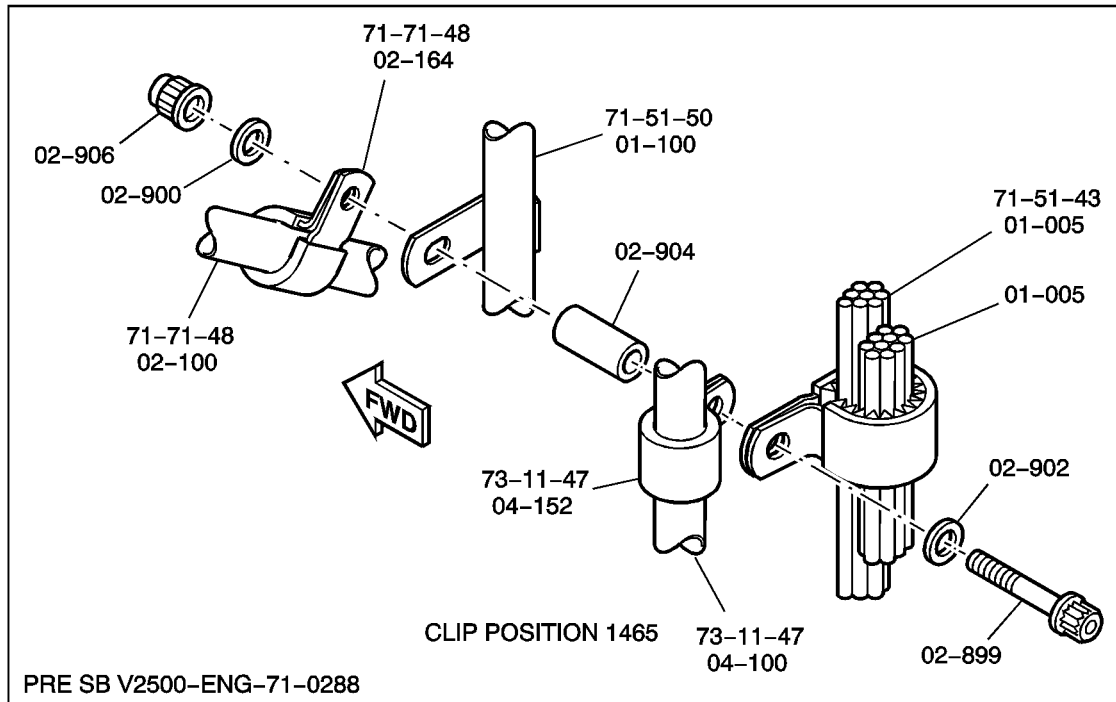


CLIP POSITION 1461

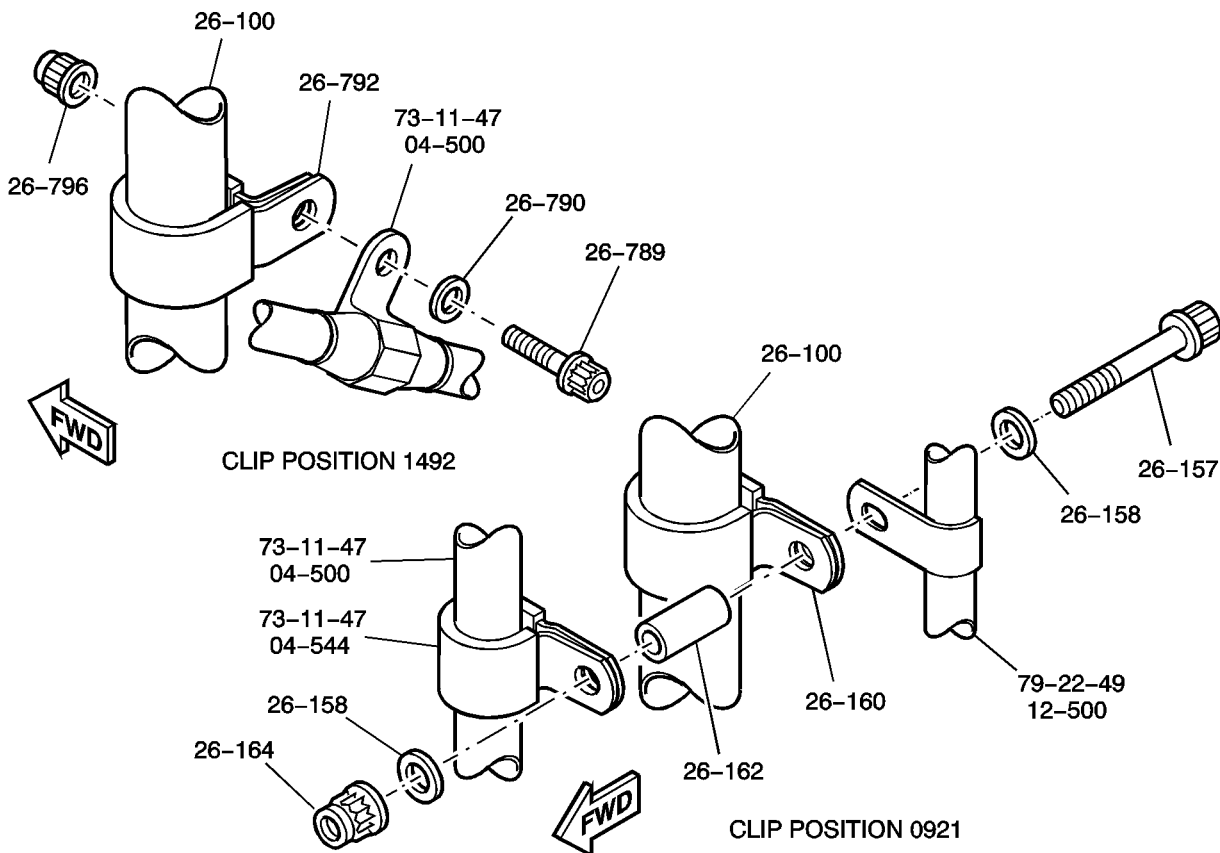
Installation
Figure 2 (Sheet 4 of 7)



POST SB

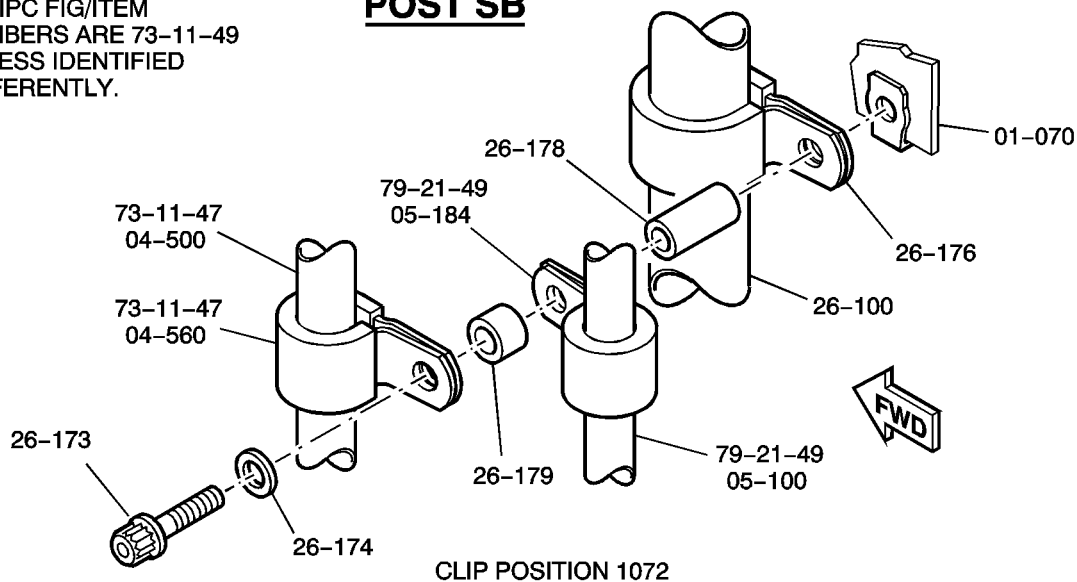


Installation
Figure 2 (Sheet 5 of 7)

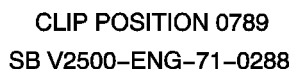


NOTE: ALL IPC FIG/ITEM NUMBERS ARE 73-11-49 UNLESS IDENTIFIED DIFFERENTLY.

POST SB



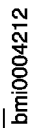
Installation
Figure 2 (Sheet 6 of 7)



NOTE: ALL IPC FIG/ITEM
NUMBERS ARE 73-11-49
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POST SB

R



Installation
Figure 2 (Sheet 7 of 7)

R
R

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IAE PROPRIETARY INFORMATION

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Not subject to the EAR per 15 C.F.R. Chapter I, Part 754.3(b)(3).

ENGINE – VARIABLE STATOR VANE (VSV) ACTUATOR – LOW PRESSURE (LP) RETURN LINE RE-ROUTE
PIPEWORKSUPPLEMENT – PRICES AND AVAILABILITY

The prices (if shown) are for estimating purposes only and as such are given in good faith, without commercial liability for advanced planning purposes only. Refer to IAE Spares and/or current price catalogue for current prices.

1. Modification Kit:

	Part No.	Description	Unit Price US Dollars
R	MKVA573021903	Mod kit	15,271.00
R	MKVA573021904	Mod kit	15,342.00
R	Modification kits will be made available from June 2011.		
R	Contact IAE Spares for discounted pricing details.		

2. New Production Parts:

Not applicable.

3. Tools

None.