P U B L I C A T I O N T R A N S M I T T A L

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DATE: Nov.20/12

V2500-A1/A5/D5 SERIES PROPULSION SYSTEM NON-MODIFICATION SERVICE BULLETIN

This document transmits the Initial Issue of Non-Modification Service Bulletin V2500-ENG-73-0229.

Non-Modification Service Bulletin Initial Issue

Remove	Incorporate	Reason for change
	Pages 1 to 19 of the Non-Modification Service Bulletin.	Initial Issue.

V2500-ENG-73-0229
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

International Aero Engines

SERVICE BULLETIN

NON-MODIFICATION SERVICE BULLETIN - ENGINE FUEL AND CONTROL - INSPECTION OF THE VARIABLE STATOR VANE ACTUATOR (VSVA) AND THE HIGH PRESSURE (HP) SERVO FUEL TUBE FOR CHAFING

1. Planning Information

A. Effectivity

(1) Airbus A319

(a) V2522-A5, V2524-A5, V2527M-A5 Engines from Serial No. V10001 to Serial No. V13190.

V2522-A5, V2524-A5, V2527M-A5 Engines from Serial No. V15001 to Serial No. V16549.

(2) Airbus A320

(a) V2500-A1 Engines from Serial No. V0001 to Serial No. V0361.

(b) V2527-A5, V2527E-A5 Engines from Serial No. V10001 to Serial No. V13190.

V2527-A5, V2527E-A5 Engines from Serial No. V15001 to Serial No. V16549.

(3) Airbus A321

(a) V2530-A5, V2533-A5 Engines from Serial No. V10001 to Serial No. V13190.

V2530-A5, V2533-A5 Engines from Serial no. V15001 to Serial No. V16549.

(4) Boeing MD-90

(a) V2525-D5, V2528-D5 Engines from Serial No. V20001 to Serial No. V20285.

B. Concurrent Requirements

None.

C. Reason

(1) Condition

Chafing on the High Pressure (HP) servo fuel tube and the Variable Stator Vane Actuator (VSVA) rig pin housing can occur. This is due to a loosened lock nut on the VSVA control rod assembly causing a misaligned VSVA piston clevis.

(2) Background

Four Operators have reported chafing on the HP servo fuel tube. Further investigation has shown that it is possible that the VSVA control rod bolt can touch the HP servo fuel tube. This can be caused by a misaligned VSVA piston clevis. Chafing of the VSVA control rod bolt against the HP servo fuel tube can cause a fuel leak.

If the VSVA piston clevis rotates more than 125 degrees from the correct position, in either rotating direction, the VSVA piston clevis can clash with the VSVA rig pin housing. This may limit the stroke of the VSV actuator.

(3) Objective

To instruct a one time inspection of the HP servo fuel tube and the VSVA piston clevis position and to apply an increased torque value to the lock nuts on the VSVA control rod in accordance with Service Bulletin V2500-ENG-72-0633. If required, do the corrective actions in accordance with the instructions in this Non-Modification Service Bulletin.

(4) Substantiation

The actions instructed by this Non-Modification Service Bulletin were the subject of satisfactory engineering analysis. This Non-Modification Service Bulletin complies with the applicable engine certification basis.

D. Description

This Non-Modification Service Bulletin introduces a one time inspection of the VSVA piston clevis position.

This Non-Modification Service Bulletin also refers to an increased torque value, in accordance with Service Bulletin V2500-ENG-72-0633, for the lock nuts on the VSVA control rod assembly to prevent turning of the VSVA piston clevis.

(1) Make a check of the position of the VSVA piston clevis. If the VSVA piston clevis is incorrectly positioned, make a check of the VSVA rig pin housing and the VSVA piston clevis for damage.

NOTE: A clash between the VSVA piston clevis and the VSVA rig pin housing can occur, if the VSVA piston clevis rotates more than 125 degrees in either rotating direction.

(a) If the VSVA rig pin housing or the VSVA piston clevis is damaged, replace the VSVA and adjust the position of the VSVA piston clevis. Apply the increased torque value to the lock nuts on the VSVA control rod assembly in accordance with Service Bulletin V2500-ENG-72-0633.

(b) If no damage is found, adjust the position of the VSVA piston clevis and apply the increased torque value to the lock nuts on the VSVA control rod assembly in accordance with Service Bulletin V2500-ENG-72-0633.

(2) Do an inspection for evidence of chafing on the HP servo fuel tube. If chafing exists, replace the HP servo fuel tube.

NOTE: The Accomplishment Instruction of this Non-Modification 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 4

Accomplish at the first visit of an engine to a maintenance base capable of compliance with the Accomplishment Instructions regardless of the planned action or the reason for the engine removal.

F. Approval

The compliance statement in paragraph 1.E. and the procedures in section 3. Accomplishment Instructions of this Non-Modification Service Bulletin have been shown to comply with the applicable Federal Aviation Regulations and are FAA-APPROVED for the Engine Model(s) listed.

G. Manpower

Estimated Man-hours to incorporate the full intent of this Non-Modification Service Bulletin on one engine.

NOTE: Man-hours provided for planning purposes only.

(1) In Service

(a) To gain access: 45 minutes.

(b) To perform the inspection and increase the torque: 1 hour.

(c) To replace the VSV actuator, if necessary: 3 hours.

(d) To return the engine to a serviceable status: 45 minutes.

(e) Total necessary Man-hours: 2.5 hours (5.5 hours with VSVA replacement).

(2) At Overhaul

(a) To perform the inspection and increase the torque value: 1 hour.

(b) To replace the VSV actuator, if necessary: 3 hours.

H. Material Price and Availability

Not applicable.

I. Tooling Price and Availability

Special tools are not required.

J. Industry Support Information

Not applicable.

K. Electrical Load Data

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

L. Software Accomplishment Summary

Not applicable.

M. References

(1) Airbus A319/A320/A321 Aircraft Maintenance Manual, Chapters 70-23-11, 70-40-11, 71-13-00, 75-32-42 and 78-30-00.

(2) Boeing MD-90 Aircraft Maintenance Manual, Chapters 70-23-11, 70-40-11, 71-13-00, 75-33-44 and 78-30-00.

(3) IAE V2500 Engine Manual (EM), Chapter 72-00-40.

(4) Internal Reference No.

Engineering Change No. 11VR678.

(5) ATA Locators 75-32-42 and 75-33-44.

N. Other Publications Affected

None.

O. Interchangeability of Parts

Not affected.

2. Material Information

None.

3. Accomplishment Instructions

A. INSTRUCTION I - APPLICABLE FOR ENGINES "IN SERVICE"

(1) General

CAUTION: IN ORDER TO REDUCE THE POTENTIAL FOR MULTIPLE ENGINE IN-FLIGHT SHUT DOWN, POWER LOSS, OR OTHER ANOMALIES DUE TO MAINTENANCE ERROR, IAE RECOMMENDS THAT OPERATORS AVOID PERFORMING MAINTENANCE ON MULTIPLE ENGINES INSTALLED ON THE SAME AIRCRAFT AT THE SAME TIME. IF IT IS NOT POSSIBLE TO AVOID MAINTENANCE ON MORE THAN ONE ENGINE AT THE SAME TIME, IAE RECOMMENDS THAT ADDITIONAL CONTROLS BE APPLIED IN ORDER TO ENSURE THAT MAINTENANCE TASKS HAVE BEEN COMPLETED AS DEFINED. MAINTENANCE GUIDELINES SHOULD BE REVISED WHERE POSSIBLE, TO PROMOTE THIS RECOMMENDATION.

WARNING: YOU MUST BE CAREFUL WHEN YOU DO WORK ON THE ENGINE PARTS AFTER THE ENGINE IS STOPPED. THE ENGINE PARTS CAN STAY HOT FOR ALMOST ONE HOUR.

WARNING: DO NOT TOUCH HOT PARTS WITHOUT APPLICABLE GLOVES. HOT PARTS CAN CAUSE AN INJURY.

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

(b) Refer to the Aircraft Maintenance Manual, Chapter 70-23-11, for General Torque Tightening Techniques.

(c) Consumable Materials

(i) Refer to the table that follows:

MATERIAL NO.	DESIGNATION
V02-126	Lockwire

For the details of the consumable materials given in the table above refer to the Overhaul Processes and Consumables Index.

(ii) For further consumable materials refer also to the related Manual tasks given in this instruction.

(d) Tools and Equipment

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

(2) Get access to the Variable Stator Vane Actuator (VSVA) that is installed on the lower left side of the core engine

(a) Open the applicable cowl doors (Refer to the Aircraft Maintenance Manual, Chapter 71-13-00 Opening/Closing).

(b) On the centre pedestal, on the engine panel 115 VU: Put a warning notice to tell persons not to start the engine.

(c) On the overhead maintenance panel 50VU: Make sure that the ON legend of the ENG/FADEC GND PWR/1(2) pushbutton switch is OFF. Put a warning notice to tell persons not to energise the FADEC 1(2).

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

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

(3) Do an inspection of the VSVA piston clevis position, (75-32-41, 01-100) and the High Pressure (HP) servo fuel tube (73-11-49, 12-500) (Refer to Figure 1, 2 and 3)

(a) Position of the VSVA piston clevis

(i) Make sure that the slot of the VSVA piston clevis is facing forwards and that the VSVA control rod bolt is installed from the rear to the front.

(ii) Make sure that the VSVA piston clevis is aligned correctly (Refer to Figure 1, detail B).

(iii) If the VSVA piston clevis is found aligned correctly, do the steps that follow:

(1) Tighten, torque and secure the lock nuts (72-41-34, 07-089) and (72-41-34, 07-094) on the VSV actuator control rod assembly in accordance with Service Bulletin V2500-ENG-72-0633.

(iv) If the VSVA piston clevis is found misaligned and/or the VSVA control rod connection bolt (75-32-42, 01-084) is found incorrectly positioned/installed, make a check of the VSVA piston clevis, the VSVA rig pin housing and the VSVA control rod bolt for damage.

(1) If damage is found, replace the VSVA (75-32-41, 01-100) and/or the VSVA control rod bolt (75-32-42, 01-084) (Refer to the Aircraft Maintenance Manual, Chapter 75-32-41 Removal/Installation).

A Tighten, torque and secure the lock nuts (72-41-34, 07-089) and (72-41-34, 07-094) on the VSVA control rod assembly in accordance with Service Bulletin V2500-ENG-72-0633 during installation.

(2) If no damage is found, do the steps that follow: (Refer to the Aircraft Maintenance Manual, Chapter 75-32-41 Removal/Installation).

A Tighten, torque and secure the lock nuts (72-41-34, 07-089) and (72-41-34, 07-094) on the VSVA control rod assembly in accordance with Service Bulletin V2500-ENG-72-0633 during installation.

(b) Chafing on the HP servo fuel tube

(i) Inspect the HP servo fuel tube (73-11-49, 12-500) for chafing (Refer to Figure 2).

(1) If the HP servo fuel tube (73-11-49, 12-500) is not chafed, continue with paragraph 3.B..

(2) If the HP servo fuel tube (73-11-49, 12-500) is found chafed, replace the HP servo fuel tube (73-11-49, 12-500).

(c) Replace the HP servo fuel tube (Refer to Figure 3)

WARNING: DO NOT LET ENGINE FUEL STAY ON YOUR SKIN FOR A LONG TIME. FLUSH THE FUEL FROM YOUR SKIN WITH WATER. THE FUEL IS POISONOUS AND CAN GO THROUGH YOUR SKIN AND IN TO YOUR BODY.

CAUTION: DO NOT LET ENGINE FUEL FALL ON THE ENGINE. UNWANTED FUEL MUST BE REMOVED IMMEDIATELY WITH A CLEAN LINT FREE CLOTH. THE FUEL CAN CAUSE DAMAGE TO THE SURFACE PROTECTION AND TO SOME PARTS.

(i) Remove the nuts, bolts and washers that attach the clips at clip positions CP5748 or CP6158

(1) For pre SBE 73-0219 engines:

At the clip position CP5748, remove the clip (73-11-49, 12-528) from the old HP servo fuel tube (73-11-49, 12-500).

(2) For SBE 73-0219 engines:

At the clip position CP6158, remove the clip (73-11-49, 12-552) from the old HP servo fuel tube (73-11-49, 12-500).

(ii) Cut and discard the lockwire that safeties the tube connector on (73-11-49, 12-500) to the VSVA. Use a crowsfoot spanner to loosen the tube connector.

(iii) Cut and discard the lockwire that safeties the tube connector on tube (73-11-49, 12-500) to the tube (73-11-49, 11-100). Remove the tube connector and drain the fuel from the tube into a suitable fuel resistant container. Discard the packing (73-11-49, 12-496). Remove the tube connector from the VSVA and discard the packing (73-11-49, 12-496).

(iv) Install appropriate blanks to the connection on the VSVA (75-32-41, 01-100) and the connection on tube (73-11-49, 11-100).

(v) Install the two clips (73-11-49, 12-528) and (73-11-49, 12-552) on the replaced HP servo fuel tube (73-11-49, 12-500).

(vi) Lightly lubricate a new packing (73-11-49, 12-496) with CoMat 10-060 liquid paraffin or CoMat 10-038 petroleum jelly. Remove the blank and install the packing on the lower connection of tube (73-11-49, 11-100).

(vii) Install the tube connector of tube (73-11-49, 12-500) on to the lower connection of tube (73-11-49, 11-100).

(viii) Lightly lubricate a new packing (73-11-49, 12-496) with CoMat 10-060 liquid paraffin or CoMat 10-038 petroleum jelly. Remove the blank and install the packing on the connection of the VSVA (75-32-41, 01-100).

(ix) Install the tube connector of tube (73-11-49, 12-500) on the connection of the VSVA (75-32-41, 01-100).

(x) Install the clip positions CP5748 or CP6158

(1) For pre SBE 73-0219 engines:

At the clip position CP5748, install the bolt (73-11-49, 13-181), the two washers (73-11-49, 13-182) and the nut (73-11-49, 13-188) that attach the clip (73-11-49, 12-528) to the clip (73-11-49, 13-184).

(2) For SBE 73-0219 engines:

At the clip position CP6158, install the bolt (73-11-49, 12-549), the washer (73-11-49, 12-550) and the nut (73-11-49, 12-556) that attach the clip (73-11-49, 12-552) to the lug on tube (73-11-49, 33-100).

(xi) Make a check that the tube (73-11-49, 12-500) is installed with the correct clearances and without tension.

(xii) Torque the nuts (73-11-49, 13-188) and (73-11-49, 12-556) to 35.4 to 44.3 lbf in. (4 to 5 Nm).

(xiii) Use a crowsfoot spanner to torque the tube connectors of tube (73-11-49, 12-500) to 425 to 475 lbf in. (48 to 53,7 Nm).

(xiv) Safety the tube connectors of tube (73-11-49, 12-500) with lockwire.

B. Make sure that the work area is clean and clear of tools, equipment and other unwanted materials.

C. Close the Access to the VSVA

(1) Close the thrust reverser halves (Refer to the Aircraft Maintenance Manual, Chapter 78-32-00).

(2) Activate the thrust reverser HCU (Refer to the Aircraft Maintenance Manual, Chapter 78-30-00).

(3) Close the applicable cowl doors (Refer to the Aircraft Maintenance Manual, Chapter 71-13-00 Opening/Closing).

(4) Remove the warning notices.

(5) If the VSVA and/or the HP servo fuel tube was replaced

(a) Do an Idle leak check or Dry motor leak check (Refer to the Aircraft Maintenance Manual, Chapter 71-00-00).

(b) Do a High power assurance test (Refer to the Aircraft Maintenance Manual, Chapter 71-00-00).

D. Recording Instructions

(1) Record the incorporation of Non-Modification Service Bulletin V2500-ENG-73-0229 in the applicable engine record.

(2) Inform the local IAE office that Non-Modification Service Bulletin V2500-ENG-73-0229 has been accomplished and provide the completed Accomplishment Form.

E. 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) Refer to the Standard Practices Manual TASK 70-41-00-400-501 for General Torque Tightening Techniques.

(c) Consumable Materials

(i) Refer to the table that follows:

MATERIAL NO.	DESIGNATION
V02-126	Lockwire

For the details of the consumable materials given in the table above refer to the Overhaul Processes and Consumables Index.

(ii) For further consumable materials refer also to the related Manual tasks given in this instruction.

(d) Tools and Equipment

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

(2) Get access to the Variable Stator Vane Actuator (VSVA) that is installed on the lower left side of the core engine

(3) Do an inspection of the VSVA piston clevis position and the High Pressure (HP) servo fuel tube (73-11-49, 12-500) (Refer to Figure 1, 2 and 3)

(a) Position of the VSVA piston clevis

(i) Make sure that the slot of the VSVA piston clevis is facing forwards and that the VSVA control rod bolt (75-32-42, 01-084) is installed from the rear to the front.

(ii) Make sure that the VSVA piston clevis is aligned correctly (Refer to Figure 1, detail B).

(iii) If the VSVA piston clevis is found aligned correctly, do the steps that follow:

(1) Tighten, torque and secure the lock nuts (72-41-34, 07-089) and (72-41-34, 07-094) on the VSV actuator control rod assembly in accordance with Service Bulletin V2500-ENG-72-0633.

(iv) If the VSVA piston clevis is found misaligned and/or the VSVA control rod bolt (75-32-42, 01-084) is found incorrectly positioned/installed, make a check of the VSVA piston clevis, the VSVA rig pin housing and the VSVA control rod bolt for damage.

(1) If damage is found, replace the VSVA (75-32-41, 01-100) and/or the VSVA control rod bolt (Refer to the Engine Manual, Chapter 72-00-40 Removal/Installation).

A Tighten, torque and secure the lock nuts (72-41-34, 07-089) and (72-41-34, 07-094) on the VSVA control rod assembly in accordance with Service Bulletin V2500-ENG-72-0633 during installation.

(2) If no damage is found, do the steps that follow: (Refer to the Engine Manual, Chapter 72-00-40 Removal/Installation)

A Tighten, torque and secure the lock nuts (72-41-34, 07-089) and (72-41-34, 07-094) on the VSVA control rod assembly in accordance with Service Bulletin V2500-ENG-72-0633.

(b) Chafing on the HP servo fuel tube

(i) Inspect the HP servo fuel tube (73-11-49, 12-500) (Refer to Figure 2).

(1) If the HP servo fuel tube (73-11-49, 12-500) is not chafed, continue with paragraph 3.F..

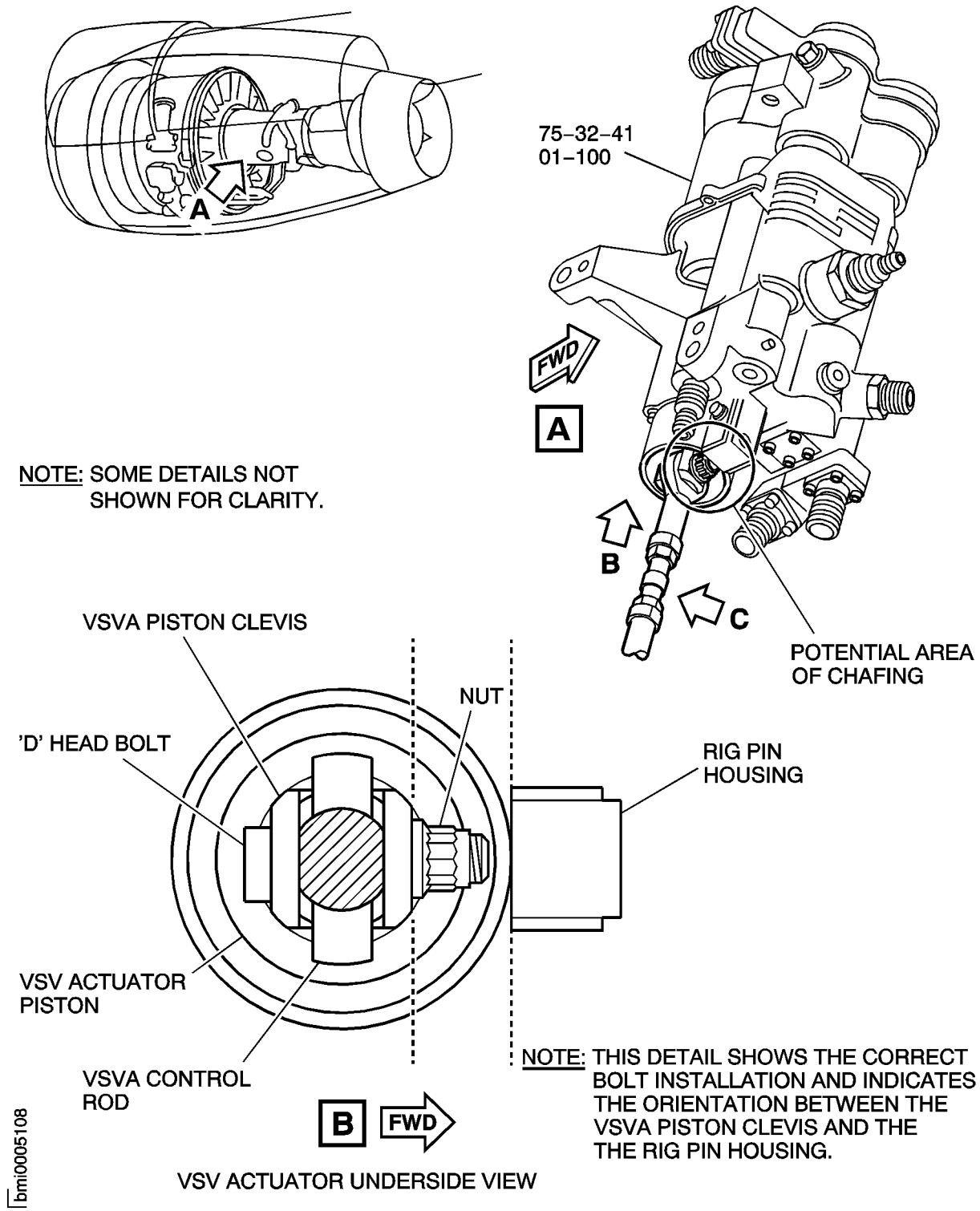
(2) If the HP servo fuel tube (73-11-49, 12-500) is found chafed, replace the HP servo fuel tube (73-11-49, 12-500) (Refer to the Engine Manual, Chapter 72-00-40).

F. Make sure that the work area is clean and clear of tools, equipment and other unwanted materials.

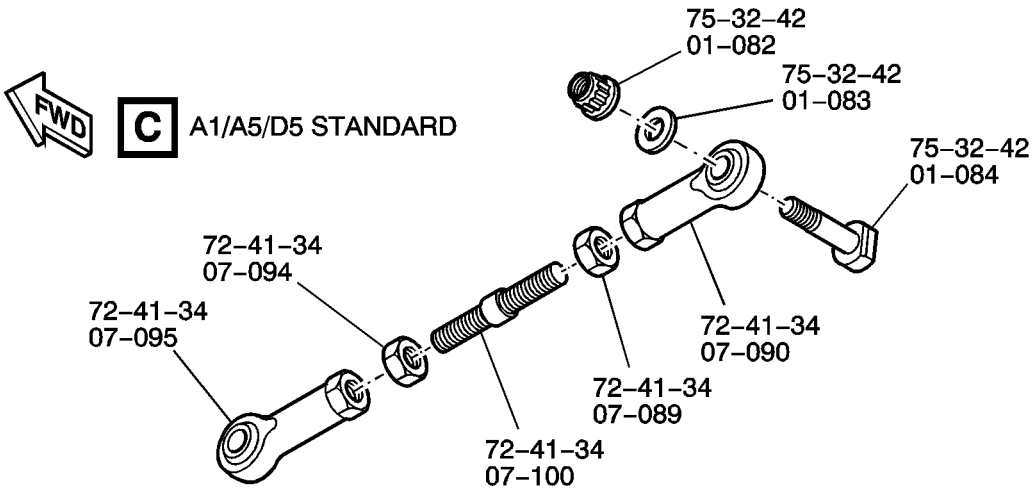
G. Recording Instructions

(1) Record the incorporation of Non-Modification Service Bulletin V2500-ENG-73-0229 in the applicable engine record.

(2) Inform the local IAE office that Non-Modification Service Bulletin V2500-ENG-73-0229 has been accomplished and provide the completed Accomplishment Form.



Variable Stator Vane Actuator (VSVA)
Figure 1 (Sheet 1 of 2)



NOTE: SOME DETAILS NOT SHOWN FOR CLARITY.

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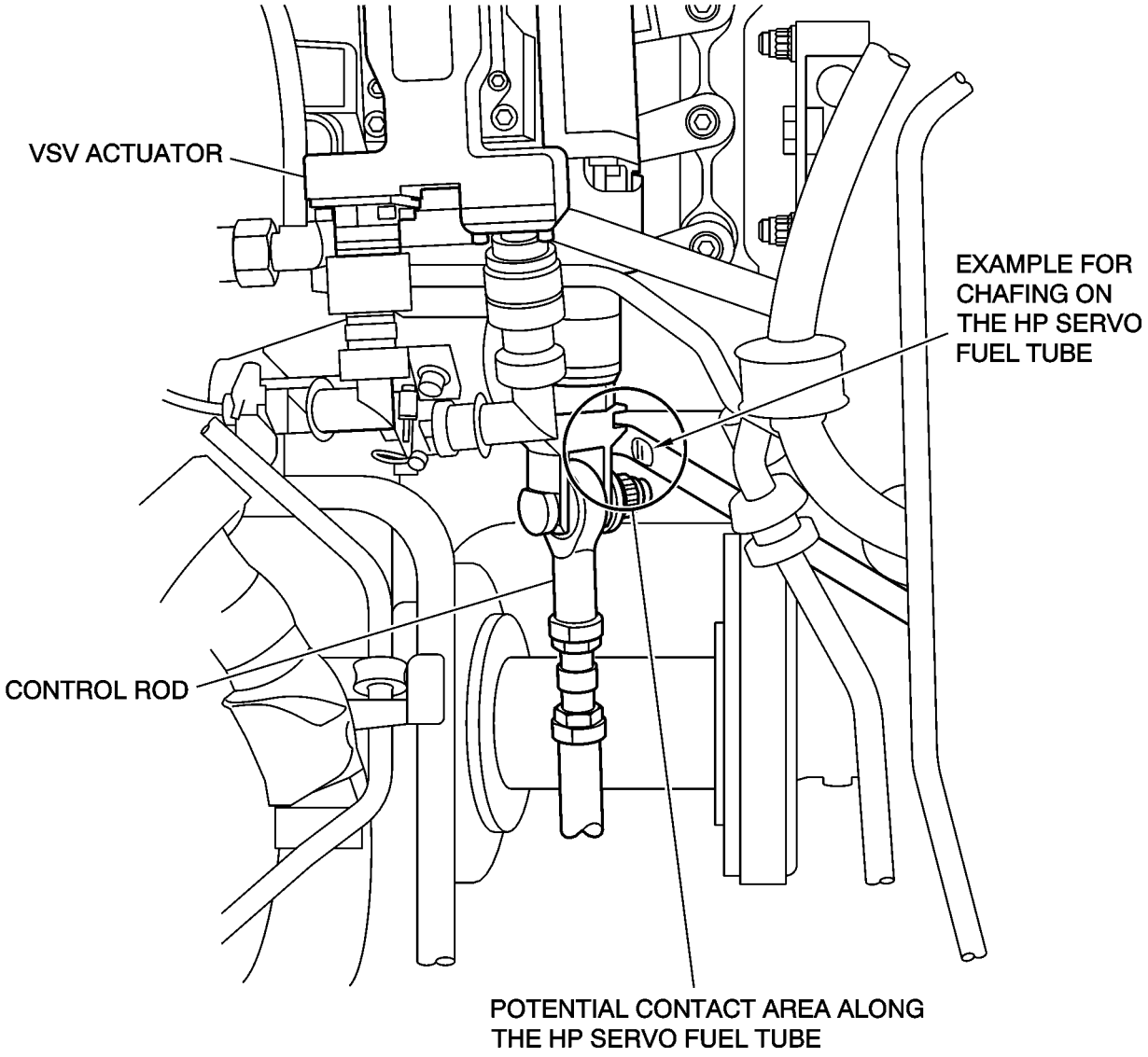
Variable Stator Vane Actuator (VSVA)
Figure 1 (Sheet 2 of 2)



NOTE: THE VSVA CLEVIS AND CONTROL ROD END ARE SHOWN INCORRECTLY POSITIONED.

NOTE: SOME PARTS NOT SHOWN FOR CLARITY.

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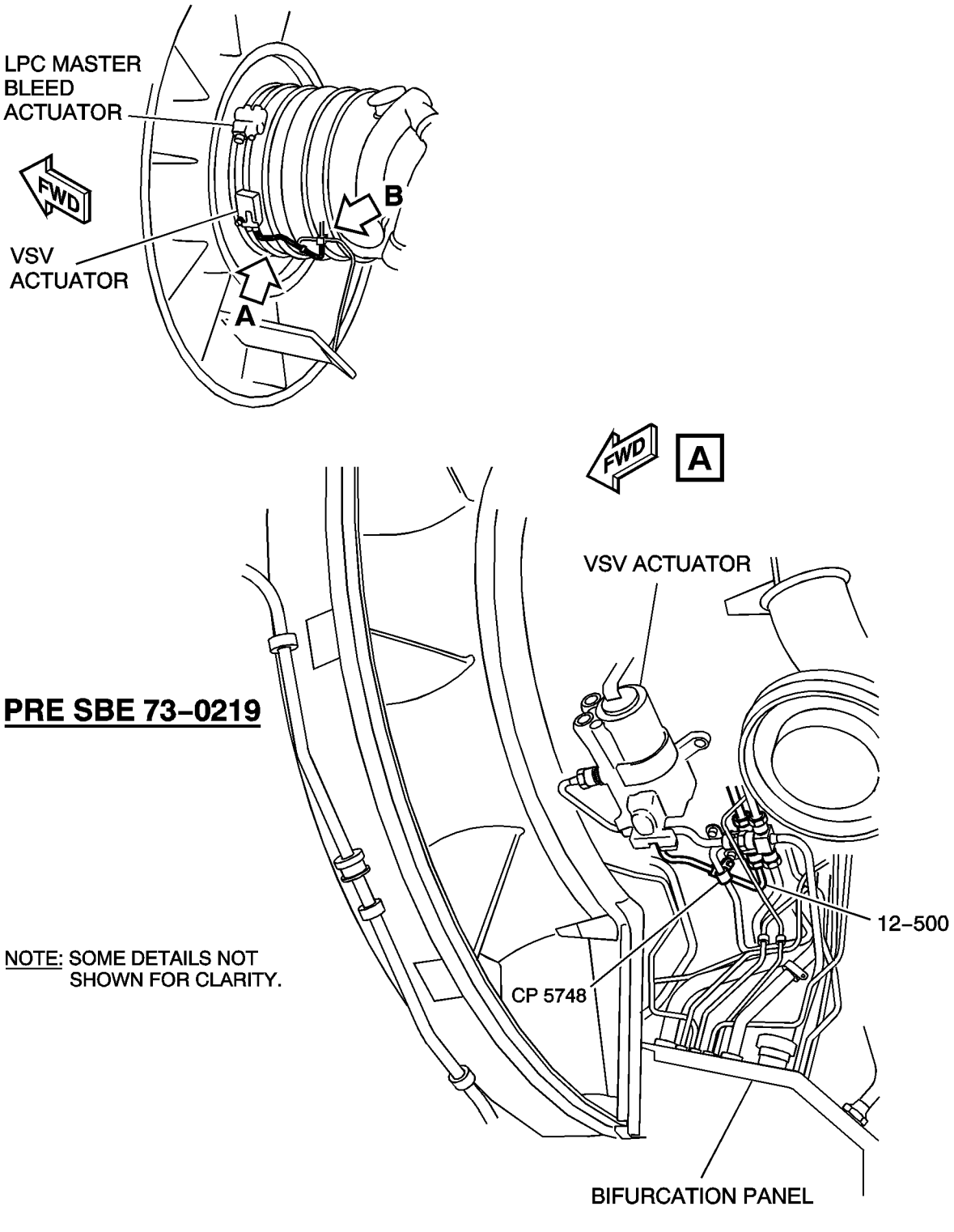
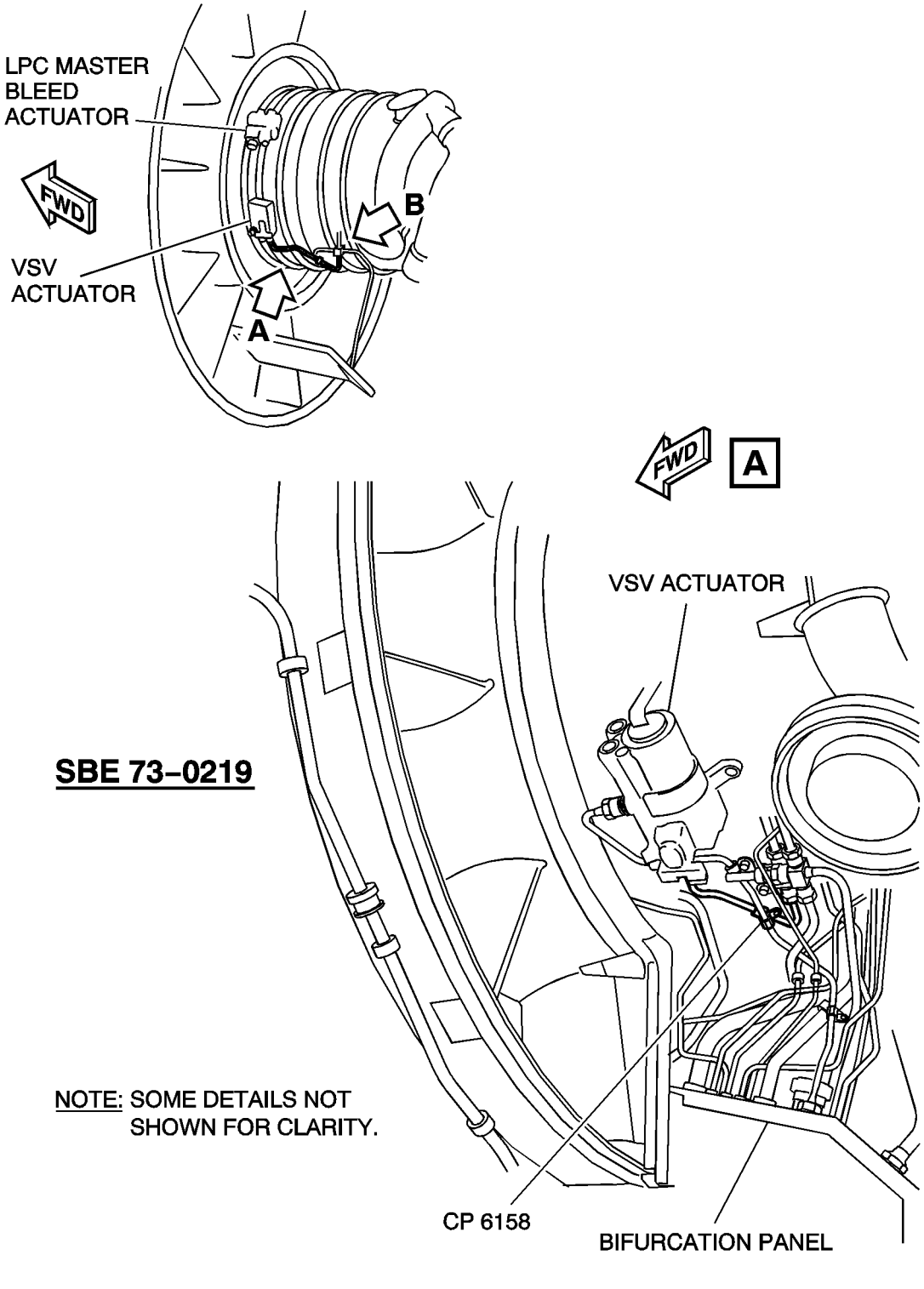
Variable Stator Vane Actuator (VSVA)
Figure 2



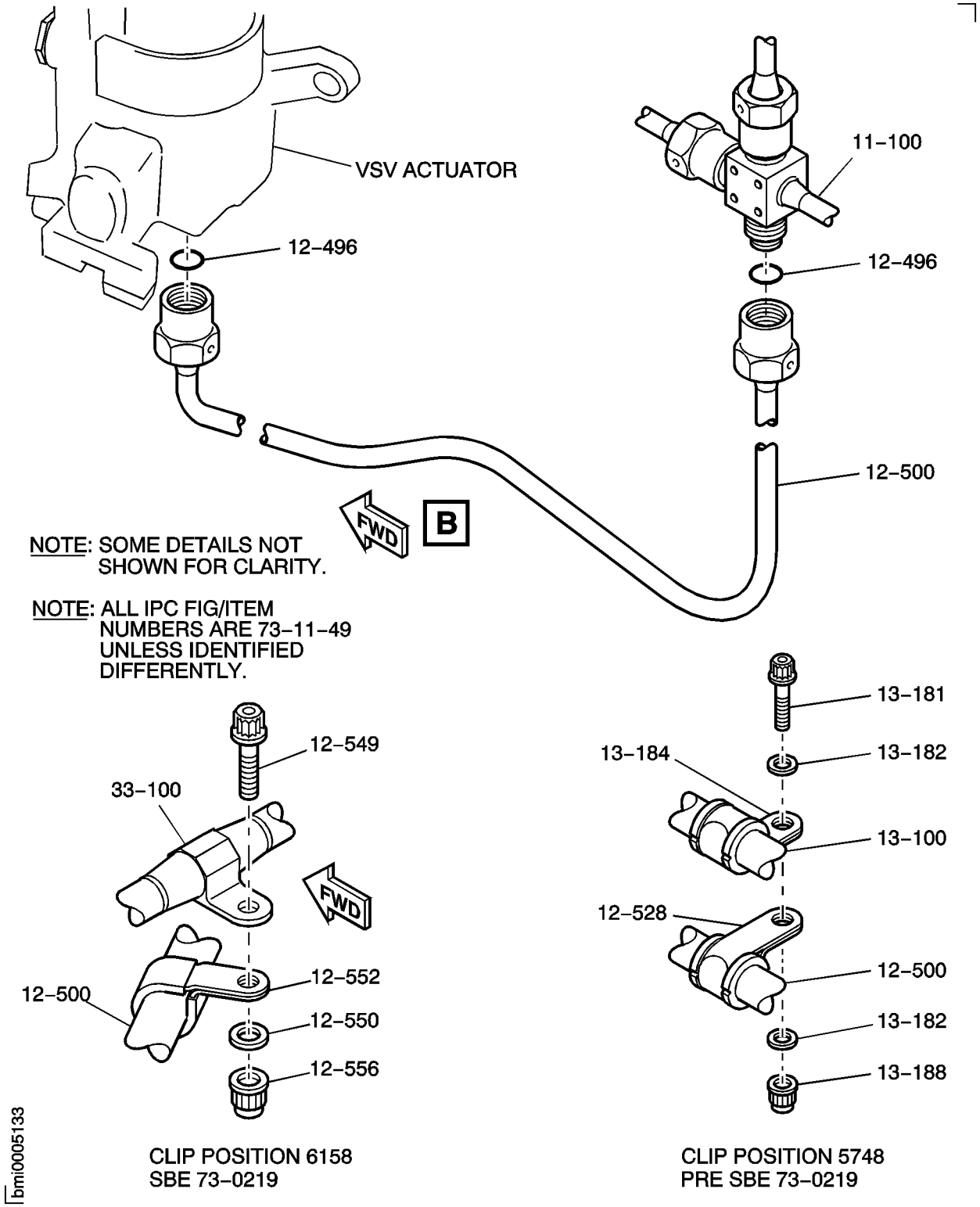
PRE SBE 73-0219

NOTE: SOME DETAILS NOT SHOWN FOR CLARITY.

Variable Stator Vane Actuator (VSVA)
Figure 3 (Sheet 1 of 3)



Variable Stator Vane Actuator (VSVA)
Figure 3 (sheet 2 of 3)



Variable Stator Vane Actuator (VSVA)
Figure 3 (sheet 3 of 3)

VSVA HP SUPPLY TUBE CHAFING		
AIRCRAFT SERIAL NUMBER	OPERATOR	ACCOMPLISHMENT DATE
ENGINE SERIAL NUMBER (ESN)	ENGINE TIME SINCE NEW (TSN)	ENGINE CYCLES SINCE NEW (CSN)

TSLSV/CSLSV:	
TIME SINCE LAST VSVA REPLACEMENT	CYCLES SINCE LAST VSVA REPLACEMENT
TIME SINCE LAST VSV SYSTEM TORQUE CHECK	CYCLES SINCE LAST VSV SYSTEM TORQUE CHECK
TIME SINCE LAST VSV LUBRICATION	CYCLES SINCE LAST VSV LUBRICATION
TIME SINCE LAST CORE WASH	CYCLES SINCE LAST VSV CORE WASH

	VSVA FUEL LINE LEAKAGE FOUND		VSVA FUEL LINE CHAFING FOUND		VSVA CONTROL ROD POSITION (FIGURE 1 B)	
	YES	NO	YES	NO	CORRECT	INCORRECT
FINDINGS: TICK AS APPROPRIATE	☐	☐	☐	☐	☐	POSITION OF CONTROL ROD NUT DEGREES FROM POINT ZERO ☐ °
LEAK QUANTITY IN DROPS PER MINUTE						

bmi0005110

Accomplishment Form
Figure 4

SERVICE BULLETIN FEEDBACK FORM

Please use this form to give feedback on the quality of this Service Bulletin. The input you provide will be used to analyse areas of improvement and to take action to further improve on the quality of our Service Bulletins.

We thank you for the time you spent in completing this form.

Please rate on a scale of 1 to 5, with 5 being the highest score:

- General quality rating of this Service Bulletin	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
- Quality rating of the Accomplishment Instructions	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
- Quality rating of the Illustration	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
- Is this Service Bulletin easy to understand ?	☐ Yes ☐ No

If you have had difficulties to perform this Service Bulletin please quote below the area(s) and give a short description of the issue:

Planning Information Section:		Material Information Section:	Accomplishment Instruction Section:
☐ 1.A.	☐ 1.I.	☐ 2.A.	☐ General
☐ 1.B.	☐ 1.J.	☐ 2.B.	☐ Get Access
☐ 1.C.	☐ 1.K.	☐ 2.C.	☐ Removal/Installation
☐ 1.D.	☐ 1.L.	☐ 2.D.	☐ Inspection
☐ 1.E.	☐ 1.M.	☐ 2.E.	☐ Test
☐ 1.F.	☐ 1.N.	☐ 2.F.	☐ Close the Access
☐ 1.G.	☐ 1.O.		☐ Log Book Entry
☐ 1.H	☐ 1.P.		

Explanatory notes:

Operator:	Overhaul Site:
Name/Title:	Date:

Please send the completed Service Bulletin Feedback Form to IAE, Customer Support.
Email: GPIAECUSTCOM@IAEV2500.COM