SERVICE BULLETIN REVISION NOTICE

NON-MODIFICATION SERVICE BULLETIN — ENGINE — INSPECTION OF THE NO. 5 BEARING COMPARTMENT (OIL JET) AND OIL TUBES FOR COKING

Turbojet Engine Service Bulletin No. V2500-ENG-72-0461 Revision No. 7 dated October 1, 2015.

Revision History

Original Issue July 23, 2003

Revision 1 dated June 3, 2004

Revision 2 dated September 19, 2005

Revision 3 dated August 18, 2006

Revision 4 dated May 21, 2008

Revision 5 dated February 16, 2011

Revision 6 dated May 3, 2012

Revision 7 dated October 1, 2015

Reason for the Revision

To remove all A5 and D5 engine model information that was incorporated into IAE Service Bulletin V2500-ENG-72-0660.

To add a Summary.

To revise the Engine Effectivity and Compliance Category information in the Planning Information section.

To revise the Description.

To revise the Manpower.

To delete the D5 Engine Manual reference in the References section.

To revise the Tooling Price and Availability section.

To revise Accomplishment Instructions.

To delete Figure 1, Sheet 1, Figure 2, Sheet 1, Figure 3, Sheet 1, Figure 4, Sheet 2, Figure 5 and Figure 7, Sheet 3.

To delete the Methods 2 and 3 of Appendix 1 and Appendix 2.

Effect of Revision on Prior Compliance

None.

This is a Complete Revision (Not Applicable to the SGML version)

The format of this Service Bulletin has been changed from previous versions. This revision shows flow bars and the revision date on the bottom of every page. Technical changes incorporated in this revision are marked with revision bars. The contents are in accordance with the list of effective pages.

MODEL APPLICATION

V2500-A1

BULLETIN ISSUE SEQUENCE

V2500 Series 72-0461

Page	Revision No.	Date
1 thru 29	7	October 1/15

A copy of this Revision Notice and any future revision notices must be filed as a permanent record with your copy of the subject bulletin.

SERVICE BULLETIN

NON-MODIFICATION SERVICE BULLETIN — ENGINE — INSPECTION OF THE NO. 5 BEARING COMPARTMENT (OIL JET) AND OIL TUBES FOR COKING

MODEL APPLICATION

V2500-A1

BULLETIN ISSUE SEQUENCE

V2500 Series 72-0461

ATA NUMBER

72-50-00

Compliance Category

3

P&W Distribution Code

V2500

Summary

The purpose of this Service Bulletin is to eliminate the existing borescope inspection of the No. 5 bearing internal pressure/scavenge tubes and No. 5 bearing compartment. Damage to the No. 5 bearing compartment has resulted due to the buildup of coke/carbon in the internal tubes and oil jet assembly. The borescope inspection instrument dislodges coke and may block the No. 5 bearing oil jet assembly leading to an oil starved No. 5 bearing compartment. This Service Bulletin instructs to disconnect the internal pressure and scavenge tubes and perform an in-situ cleaning. Also, it is required that the No. 5 bearing compartment be visually inspected and the No. 5 oil jet assembly be removed cleaned and inspected. Borescope inspection is only to be accomplished post cleaning to insure no coke remains.

NOTE: For engine configurations that allow the removal of the No. 5 bearing internal pressure and scavenge tubes, NMSB V2500-ENG 72-0660 must be incorporated. NMSB V2500-ENG 72-0461 is only applicable for engine configuration with non-removable No. 5 bearing internal pressure and scavenge tubes.

Planning Information

Effectivity Data

Engine Models Applicable

V2500-A1
Engine Serial No. — All engines that are pre-Service Bulletin 72-0063.

Concurrent Requirements

None.

Reason

1. Condition: To provide improved mitigation against the risk of No. 5 bearing compartment issues, the revised Non-Modification Service Bulletin (NMSB) eliminates the existing borescope inspection of the No. 5 bearing internal pressure/scavenge tubes and No. 5 bearing compartment.
2. Background: Damage to the No. 5 bearing compartment has resulted due to the buildup of coke/carbon in the internal tubes and oil jet assembly. The borescope inspection instrument dislodges coke and may block the No. 5 bearing oil jet assembly leading to an oil starved No. 5 bearing compartment.
3. Objective: Disconnect the internal pressure and scavenge tubes and perform an in-situ cleaning. Also, it is required that the No. 5 bearing compartment be visually inspected and the No. 5 oil jet assembly be removed cleaned and inspected. Borescope inspection is only to be accomplished post cleaning to insure no coke remains.
4. Substantiation: The impact of incorrect interpretation and dislodging coke can attribute to an oil starved condition. Eliminating the borescope inspection will insure coking will not be dislodging and enter into the No. 5 oil jet assembly.
5. Effects of Bulletin on:

   Removal/Installation: Not Affected.

   Disassembly/Assembly: Not Affected.

Cleaning: Not Affected.

Inspection/Check: Not Affected.

Repair: Not Affected.

Testing: Not Affected.

6. Supplemental Information

None.

Description

1. Service experience has shown it is very important to clean the No. 5 bearing compartment oil feed, scavenge tubes and compartment oil jet to prevent the build up of coke/carbon.
2. Blocked oil scavenge tubes cause oil flooding in the No. 5 bearing compartment, which is characterized by tail pipe smoke, tail pipe fire, high oil consumption and/or oil wetness in the LPT, all of which cause maintenance disruption. Oil feed tube blockage causes oil starvation of the No. 5 bearing, which can result in bearing damage.
3. The eMMP recommends that the No. 5 bearing compartment oil feed and scavenge tubes are cleaned at 7500 hours or 5000 cycle intervals for Airbus aircraft, and at each shop visit.
4. This NMSB instructs compliance requirements to ensure the No. 5 bearing compartment oil jet and tubes are being cleaned and inspected.
5. It is the intention of this document to provide a logical process to ensure that adjacent tubes and connectors and jets are cleaned / inspected in a systematic approach to assure effective periodic maintenance of the oil service tube system hardware.

Compliance

Category 3

1. Accomplish this Non-Modification Service Bulletin at the specified hours. In-situ clean the components every 7500 hour or 5000 cycle intervals for Airbus aircraft.
2. If an engine experiences any of the following, refer to the Aircraft Maintenance Manual (AMM) and if required, clean the No. 5 bearing tubes / No. 5 oil jet assembly before next flight.
   A. Tail pipe smoke or fire
   B. Oil consumption outside AMM limits
   C. Main oil pressure outside AMM limits
   D. Oil filter clog warning during flight

Approval Data

The compliance statement and the procedures described in this Service Bulletin have been shown to comply with the applicable Federal Aviation Regulations and are FAA-APPROVED for the engine model listed.

Manpower

Estimate of manhours to embody this Non-Modification Service Bulletin in full:

1. In Service

To gain access	2 hours
To clean/inspect	7 hours
To close up	3 hours
Total	12 hours

Weight and Balance

1. Weight Change

   None.

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 — 72-50-50.
2. V2500 A1 Series Engine Manual, P&W Ref. PN 2A4407, Chapter/Section 72-50-53.
3. Airbus A319/A320/A321 Aircraft Maintenance Manual, Chapter/Section 71-00-00, 71-13-00, 78-11-12, 72-51-41, 78-30-00, 78-32-00.
4. SIL 157 — Tail Pipe Smoke/Turbine Exhaust Case (TEC) Cleaning during Shop Visit.
5. V2500 Service Bulletin V2500-ENG-72-0063 (Engine — LP Turbine Rotor And Stator Assembly — Introduce New Tube Assemblies Required For Modified Turbine Exhaust Case).

Other Publications Affected

1. None.

Interchangeability of Parts

None.

Information in the Appendix

Alternate Accomplishment Instructions (No)

Progression Charts (No)

Supplement (Yes)

Added Data (Yes)

Revision to Table of Limits (No)

Inspection Procedures (No)

Material Information

Tooling — Price and Availability

1. Borescope, 6 mm. or 4 mm. flex video/standard.
2. IAE 1P17038 — Puller.
3. IAE 1P16426 Remove/Installation Driver
4. IAE 1F10153 Installation Rod

Accomplishment Instructions

1. Accomplishment Instructions

A. GAIN ACCESS

(1) Open the engine fan cowls in accordance with Reference 3, Aircraft Maintenance Manual, Task 71-13-00.

WARNING: YOU MUST DEACTIVATE THE THRUST REVERSER HYDRAULIC CONTROL UNIT BEFORE YOU WORK ON OR AROUND THE THRUST REVERSER. IF YOU DO NOT DO THIS THE THRUST REVERSER CAN OPERATE ACCIDENTALLY AND CAUSE INJURY AND DAMAGE.

(2) Deactivate the thrust reverser hydraulic control unit (Reference 3, Aircraft Maintenance Manual, Task 78-30-00-040-012).

(3) Open the thrust reverser halves (Reference 3, Aircraft Maintenance Manual, Task 78-32-00-010-010).

NOTE: Airflow checking of the compartment for blockage is not practical due to the inaccuracy of results that may lead to inadvertently accepting partially blocked passageways. Airflow checking could also increase the possibility of dislodging carbon particles, if they are present, which could then migrate through the system, potentially leading to oil jet blockage.

B. Tools and Support Equipment required:

IAE 1P17038 — Puller

IAE 1P16426 Remove/Installation Driver

IAE 1F10153 Installation Rod

Borescope, 6 mm. or 4 mm. flex video/standard.

C. Cleaning and inspection of the oil pressure tube (Figure 1 and Figure 2) for all A1 engine models Pre Service Bulletin V2500-ENG-72-0063.

(1) Remove the exhaust cone in accordance with Reference 3, Task 78-11-12-000-010.

(2) Remove 3 bolts and nuts (Figure 2, items 114 and 110).

(3) Remove bolt , nut and clip (Figure 1, items 350, 340 and 370).

(4) Remove bolt and nut (Figure 1, items 230 and 220.

(5) Remove 3 bolts (Figure 1 item 270.

(6) Disengage the tube from the flange

(7) Remove and discard packing (Figure 1 item 390).

(8) Disconnect the feed tube (Figure 1 items 170 and 150) from the external tube (Figure 2 item 100).

(9) Remove and discard packing (Figure 2 item 116).

(10) Clean in situ per Appendix 1 procedure Method 1, or remove the engine from the aircraft and perform Reference 2, Task 72-50-53-300-006, Repair 006, VRS5390.

(11) Using borescope equipment, examine ID bore of the oil feed tube (Figure 1, item 170) for evidence of coking.

(12) If no coke is present, then do steps that follow:

(a) Connect external tube (Figure 2, item 100) using new packing (Figure 2, item 116).

(b) Connect internal feed tube (Figure 1 item 170) using metallic seal (Figure 1 item 390).

(c) Install 3 bolts (Figure 1 item 270). Torque bolts in increments of 25 lbf-in (2.82 Nm) to 101.784 lbf-in (11.5 Nm).

(d) Torque the 3 bolts and nuts (Figure 2, items 114 and 110) to 85 to 95 lbf-in (9 to 10 Nm).

(e) Install the clamp to the oil feed tube (Figure 1 item 370). Attach the clamp to the bracket with the bolt (Figure 1 item 350) and locknut (Figure 1 item 340). Torque to 17.701 lbf-in (2.0 Nm).

D. Inspection of the oil scavenge tube (Figure 3 and Figure 4) for all A1 engine models Pre Service Bulletin V2500-ENG-72-0063.

(1) Remove the bolts and nuts (Figure 3, items 540, 550, 560, 570).

(2) Remove the nut, the washer, the two spacers and the bolt from the bracket (Figure 3 items 610, 620, 630, 640).

(3) Remove the three bolts which attach the flange of the oil scavenge tube to the flange of the No. 5 bearing compartment (Figure 3 item 600).

(4) Disengage the tube from the flange.

(5) Remove and discard metallic seal (Figure 3 item 700).

(6) Disconnect scavenge tube from external tube.

(7) Remove and discard packing (Figure 4, item 117).

(8) Clean in situ per Appendix 1 procedure Method 1, or remove the engine from the aircraft and perform Reference 2, Engine Manual, Task 72-50-53-300-007, Repair 007, VRS5391.

CAUTION: THE RIGHT ANGLE BEND INSIDE THE TUBE CONTAINS A SHARP CORNER WHICH MAY CAUSE THE BORESCOPE TO BECOME STUCK. USE CAUTION WHEN FEEDING THE BORESCOPE THROUGH THE TUBE TO PREVENT SEIZURE.

(9) Using borescope equipment, examine the ID bore of the oil scavenge tube (Figure 3, item 520) for evidence of coking.

(10) If no coke is present, then do the steps that follow:

(a) Connect external tube (Figure 4, item 216) using new packing (Figure 4, item 117).

(b) Install metallic seal 1 off to the flange of the oil scavenge tube (Figure 3 item 700).

(c) Install the three bolts which attach the oil scavenge tube to the No. 5 bearing compartment. Torque the bolts in increments of 25 lbf-in (2.82 Nm) to 101.784 lbf-in (11.5 Nm) (Figure 3 item 600).

(d) Attach the clamp to the bracket with the bolt, washer, two spacers and Torque to 39.828 lbf-in (4.5 Nm) (Figure 3 items 610, 620, 630, 640).

(e) Install the bolts and locknuts which attach the oil scavenge tube to the bracket (Figure 3, items 540, 550, 560, 570). Torque to 101.784 lbf-in (11.5 Nm).

(f) Torque the 4 bolts and nuts (Figure 3, items 540, 550, 560, 570) to 85 to 95 lbfin (9 to 10 Nm).

E. Inspection of No. 5 bearing oil jet, transfer tube and compartment (Figure 6).

CAUTION: INTRODUCTION OF DIRT OR DEBRIS INTO THE BEARING COMPARTMENT MAY RESULT IN BEARING DAMAGE. MAINTAIN CLEAN WORK AREA AND ENSURE COMPARTMENT REMAINS COVERED AND PROTECTED WHEN NOT BEING WORKED. MINIMIZE THE TIME THE COMPARTMENT IS EXPOSED WHENEVER POSSIBLE.

(1) Remove No. 5 bearing compartment rear cover (ATA 72-58-01) using IAE 1P17038 Puller (Removal/Installation of the No. 5 compartment rear cover is detailed in Reference 3, Aircraft Maintenance Manual, Task 72-51-41).

CAUTION: WHEN REMOVING NO. 5 COMPARTMENT COVER, USE CARE TO AVOID FRACTURING BOLTS.

(2) Remove, clean and inspect the No. 5 bearing oil jet assembly for coke/blockage (Figure 6):

(a) Release and remove the oil filter from the oil jet. Use IAE 1P16426 Remove/Installation Driver 1 off.

(b) Move the oil transfer tube rearward into the oil jet until the removal of the oil jet is possible.

(c) Move the oil jet forward and disengage from the front flange of the No. 5 bearing compartment. Remove the oil jet.

(d) Remove the oil transfer tube from the oil jet and discard the 2 seal rings.

(e) Replace or clean in accordance with Appendix 1 procedure.

(f) Inspect the ID bores of oil nozzle and transfer tube for coke/blockage. (It is recommended to use a borescope of appropriate size or other optical equipment suitable as possible to inspect ID bores).

(3) Inspection of No. 5 bearing support (Figure 7).

(a) Remove the bolts which attach the upper and lower deaerator on the retaining plate to the No. 5 bearing housing.

(b) Remove the upper and lower deaerator.

(c) Inspect the No. 5 bearing support for blockage of oil return holes.

1 If the total area of holes blockage is equivalent to the area of at least two fully-blocked holes cleaning is required.

NOTE: If total area of hole blockage is equivalent to the area of at least two fully-blocked holes, proper scavenging of oil from the No. 5 compartment will be affected. This can cause oil flooding of the compartment, and result in oil leakage past the carbon seal, and subsequent tailpipe smoke or fire event.

(d) If hole blockage is confirmed, proceed as follows:

1 Carefully clean using pick to remove as much coke as possible to clear passages.

2 Using vacuum completely remove all loose particles from the compartment.

3 If blockage is eliminated after cleaning:

a Reinspect compartment within 600 hours. Inspect No. 5 bearing support for blockage of oil return holes. Refer to Step E(3)(c). Proceed to Step F.

4 If unable to clear blockage of two or more oil return holes:

a It is recommended the engine be removed from service within 600 flight hours for removal and thorough cleaning of the TEC. Proceed to Step F.

(e) If no hole blockage exist proceed as follows:

1 If required, using vacuum, completely remove all loose particles from the compartment. Proceed to Step F.

F. Install the upper and lower deaerator, oil jet and transfer tube (Figure 6 and Figure 7).

(1) Install the upper and lower deaerator on the retaining ring. Align the holes with the cutout on the ends over the oil feed port.

(a) Install the bolts which attach the upper and lower deaerator on the retaining ring.

(b) Torque the bolts between 85 to 105 lbf-in (10 to 12 Nm).

(2) Install the No. 5 bearing oil jet and transfer tube (Figure 6) as follows:

(a) Install toroidal sealing rings 2 off on both ends of the oil transfer tube.

(b) Install one end of the oil transfer tube into the ID of the oil jet. Push the transfer tube into the oil jet in order to permit the subsequent installation.

(c) Install the oil jet and align the eccentric diameter with the hole on the front flange of the No. 5 bearing compartment.

(d) Push the transfer tube from the rear with IAE 1F10153 installation Rod 1 off until it is fully installed into the flange of the No. 5 bearing housing.

(e) Install the oil filter into the threaded hole of the oil jet. Torque the oil filter to 371.736 lbf-in (42.0 Nm). Use IAE 1F10182 Removal/Installation Driver 1 off.

(f) Install No. 5 bearing compartment rear cover (ATA 72-58-01) using IAE 1P17038 Puller (Removal/Installation of the No. 5 compartment rear cover is detailed in Reference 3, Aircraft Maintenance Manual, Task 72-51-41).

G. If inspection of No.5 bearing compartment has been accomplished proceed to CLOSE UP ACTIONS.

H. CLOSE UP ACTIONS

(1) Install No. 5 compartment cover as follows:

(a) Lubricate the packing with engine oil. Install the packing on the compartment cover making sure the open side of the packing shows in forward direction.

(b) Install the compartment cover on the turbine exhaust case.

(c) Install the thermal blanket (72-58-01) onto the cover and align the bolt holes.

(d) Treat bolt threads and underside of bolt heads with CoMat 10-129 Anti-seize paste.

(e) Install the bolts. Torque the bolts between 62 to 72 lbfin. (7 to 8 Nm). Wipe off excess anti-seize paste.

(2) Install Exhaust cone in accordance with Reference 3, Aircraft Maintenance Manual, Task 78-11-12).

(3) Close the thrust reverser halves in accordance with Reference 3, Aircraft Maintenance Manual, Task 78-32-00-010-010).

(4) Activate the thrust reverser hydraulic control unit in accordance with Reference 3, Aircraft Maintenance Manual, Task 78-30-00-440-012).

(5) Close the engine fan cowls in accordance with Reference 8, Aircraft Maintenance Manual, Task 71-13-00).

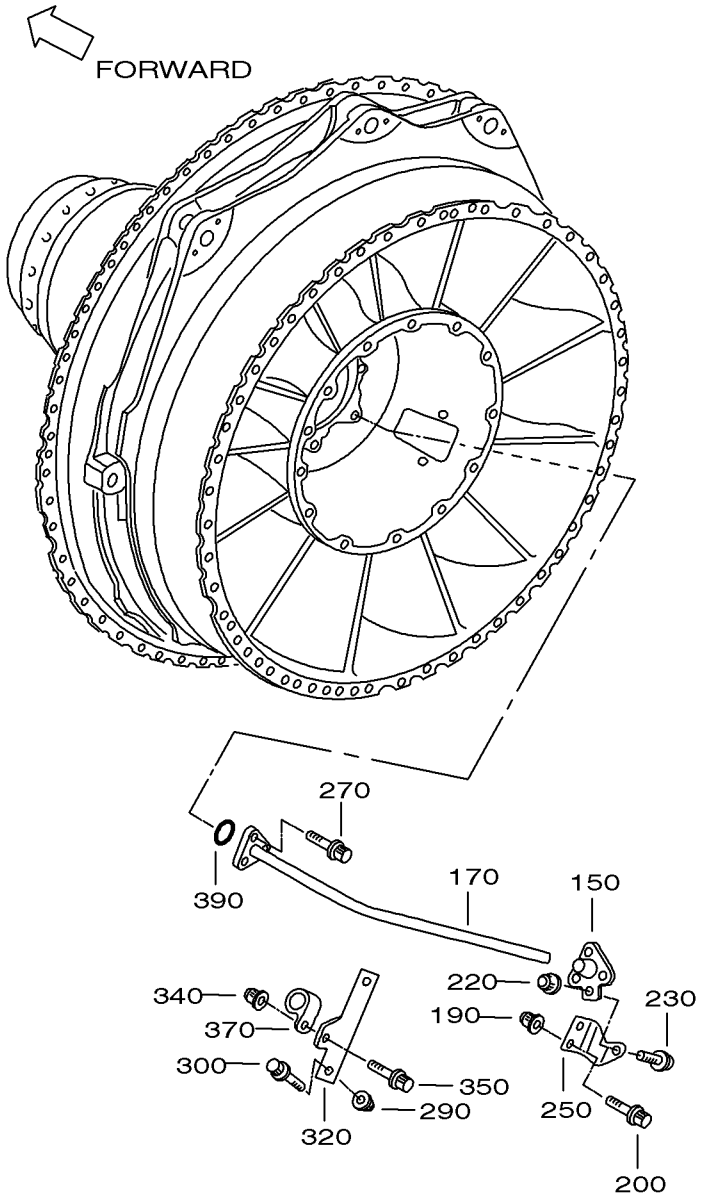
I. CHECK ENGINE

(1) Perform the following checks on the engine before entry in to service:

(a) Idle leak check in accordance with Reference 3, Aircraft Maintenance Manual, Test 3 — Task 71-00-00-710-012.

NOTE: Leak check can be performed prior to reinstallation of exhaust cone.

GRAPHIC B520259a HAS BEEN DELETED
FROM THIS SERVICE BULLETIN

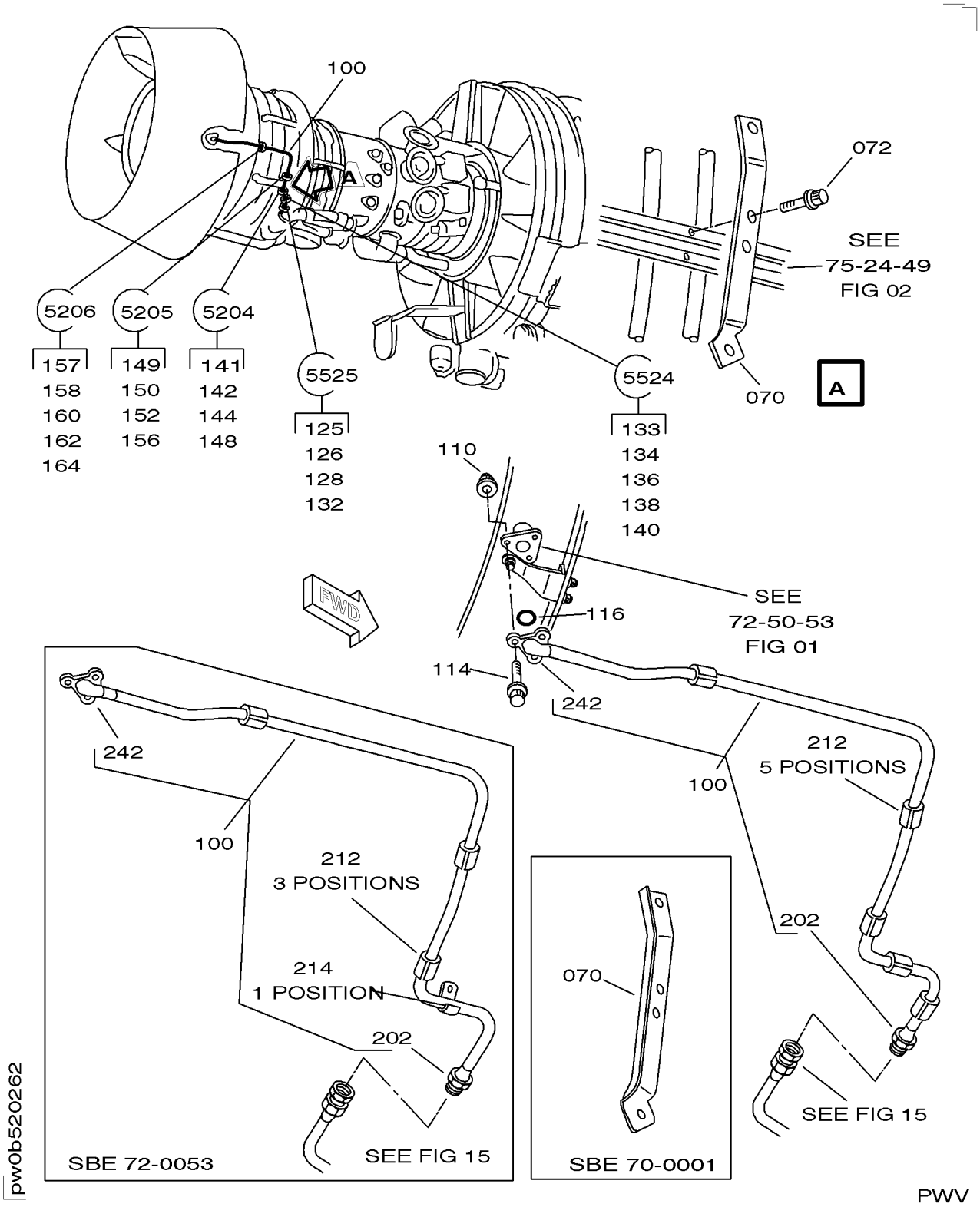


pw0b520260

PWV

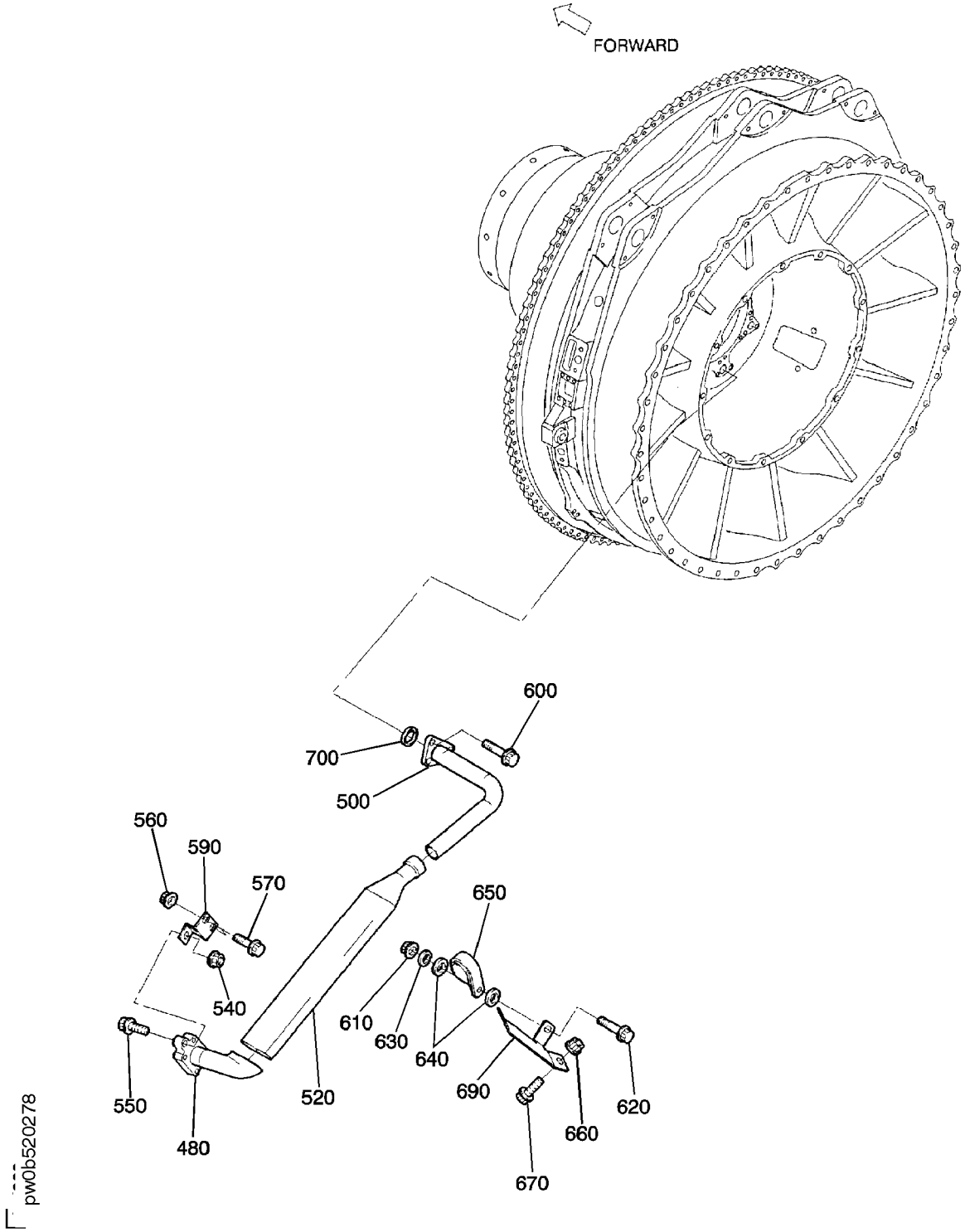
OIL FEED TUBE THROUGH THE TEC STRUT
REFERENCE 5, PRE SERVICE BULLETIN V2500-ENG-72-0063 TEC (A1)
FIGURE 1

GRAPHIC B520261 HAS BEEN DELETED
FROM THIS SERVICE BULLETIN

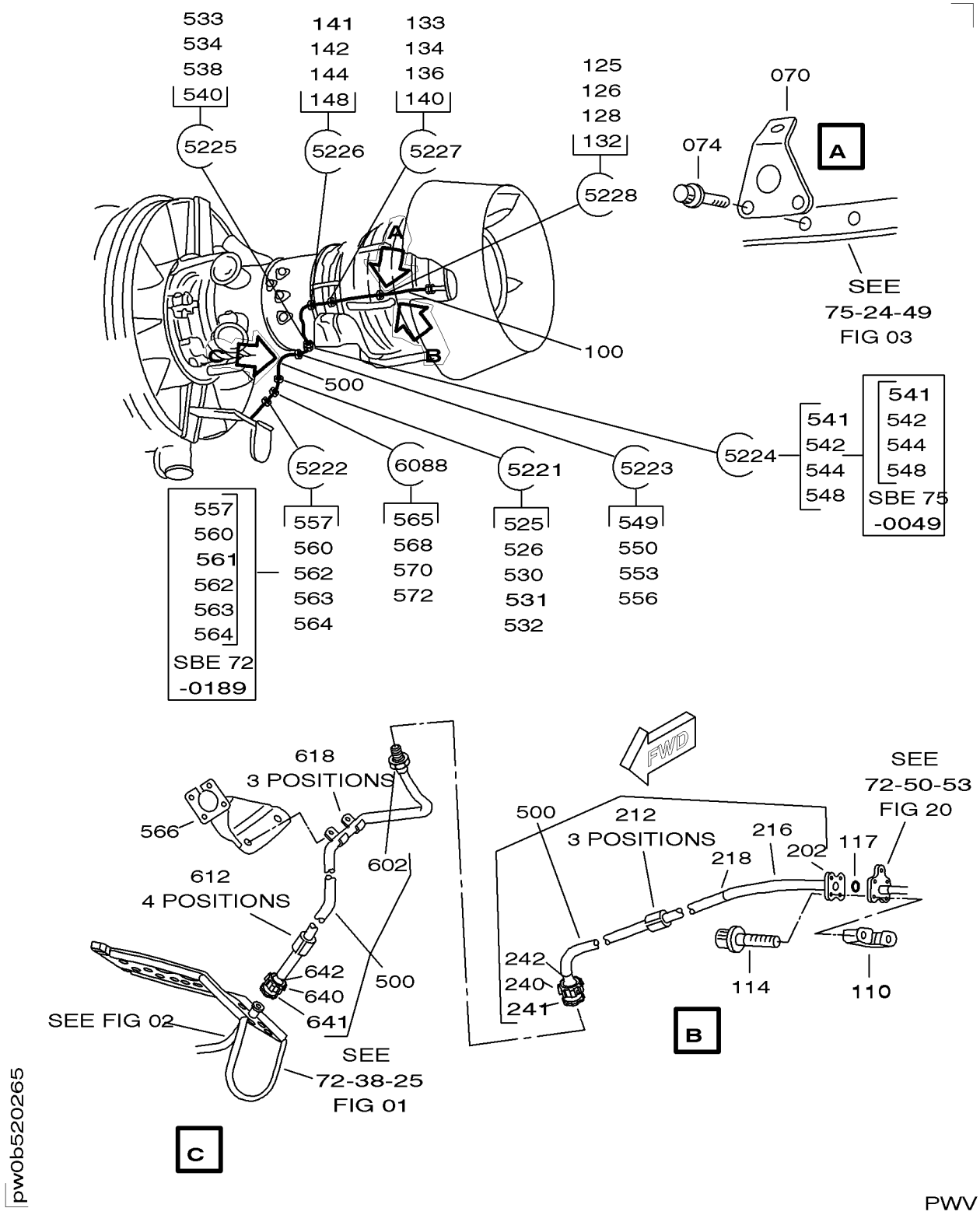


OIL FEED TO ELBOW AT TEC STRUT EXIT
REFERENCE 5, PRE SERVICE BULLETIN V2500-ENG-72-0063 TEC (A1)
FIGURE 2

GRAPHIC B520263 HAS BEEN DELETED
FROM THIS SERVICE BULLETIN



OIL SCAVENGE TUBE RUNNING THROUGH TEC STRUT
REFERENCE 5, PRE SERVICE BULLETIN V2500-ENG-72-0063 TEC (A1)
FIGURE 3

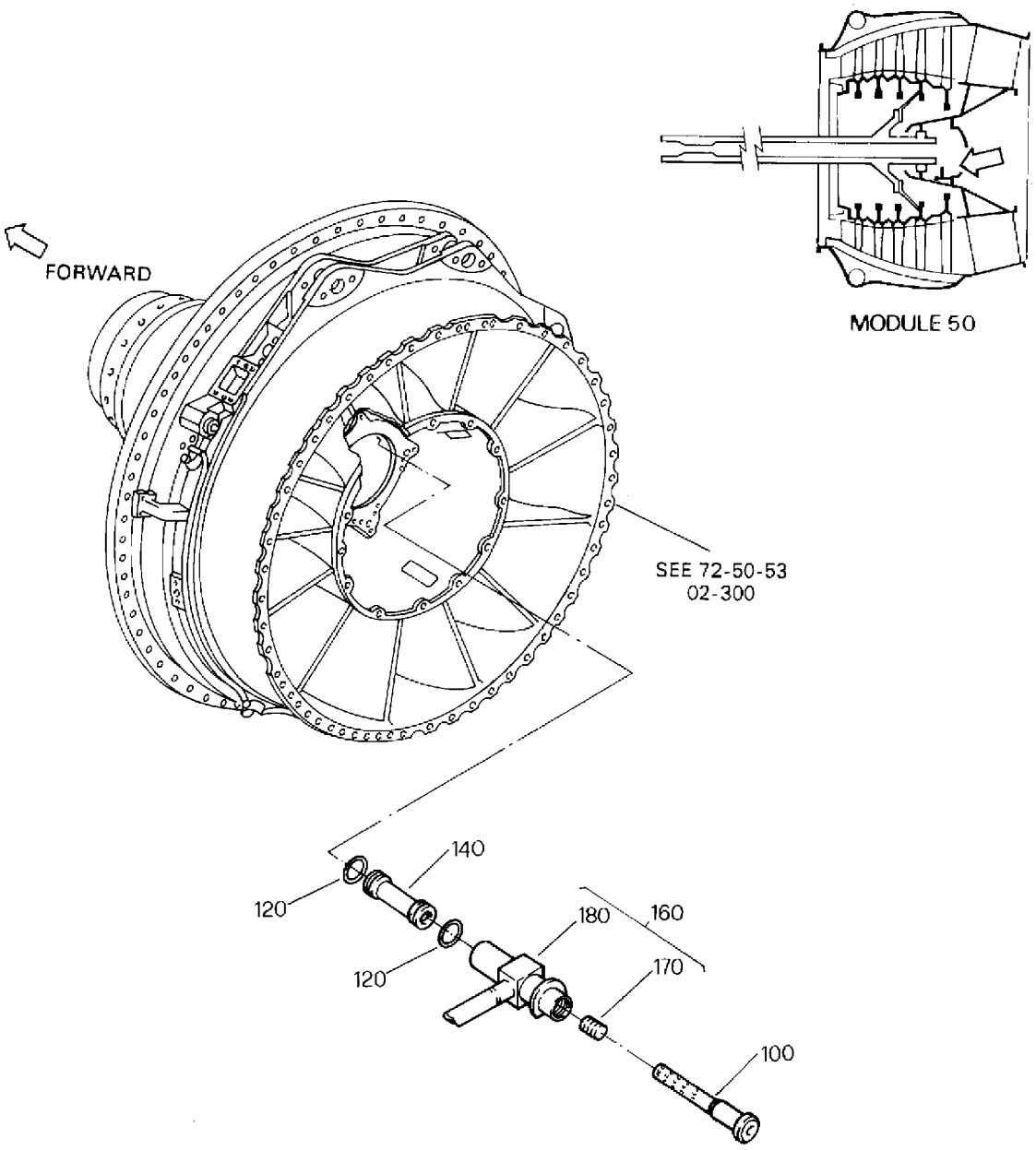


SCAVENGE LINE FROM TEC STRUT EXIT
(A1/A5)
FIGURE 4

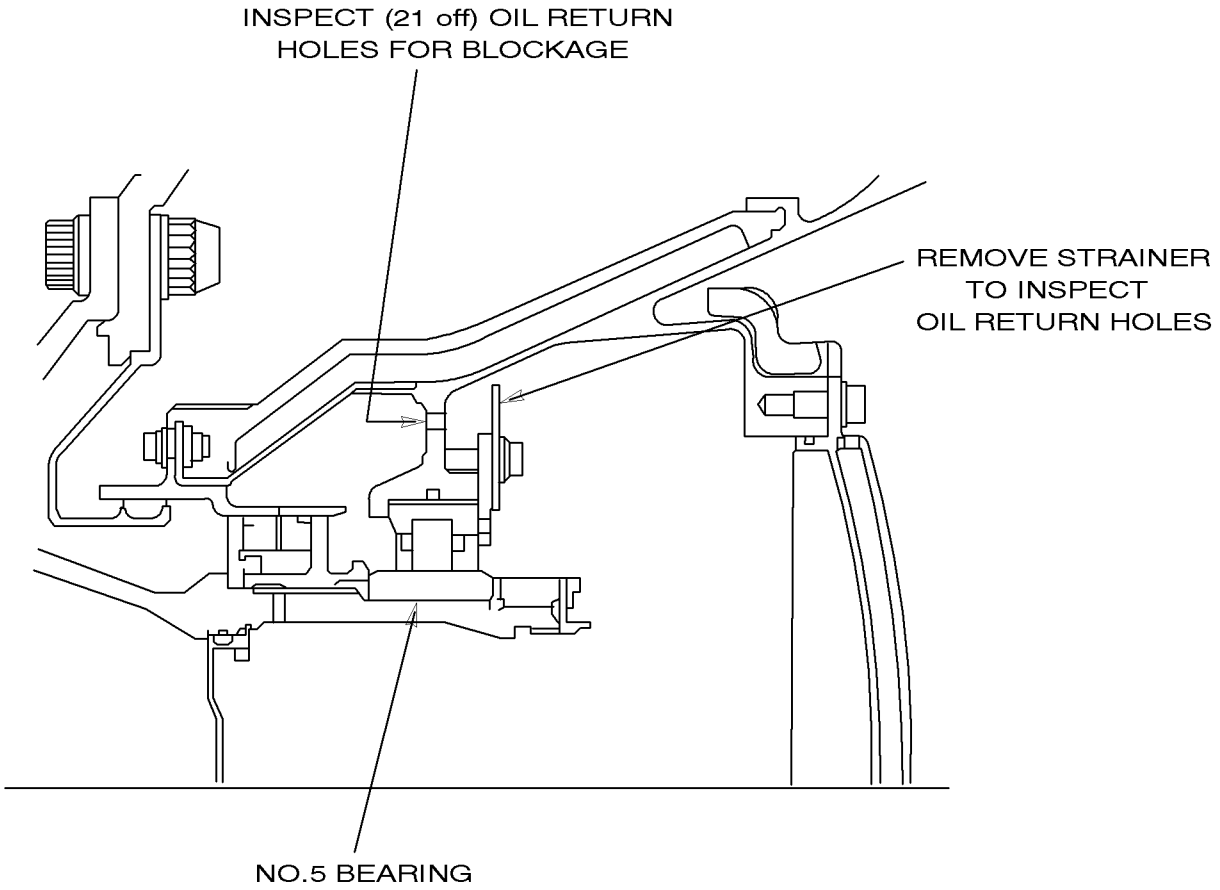
GRAPHIC B520266 HAS BEEN DELETED
FROM THIS SERVICE BULLETIN

GRAPHIC B520267 HAS BEEN DELETED
FROM THIS SERVICE BULLETIN

GRAPHIC B520268 HAS BEEN DELETED
FROM THIS SERVICE BULLETIN



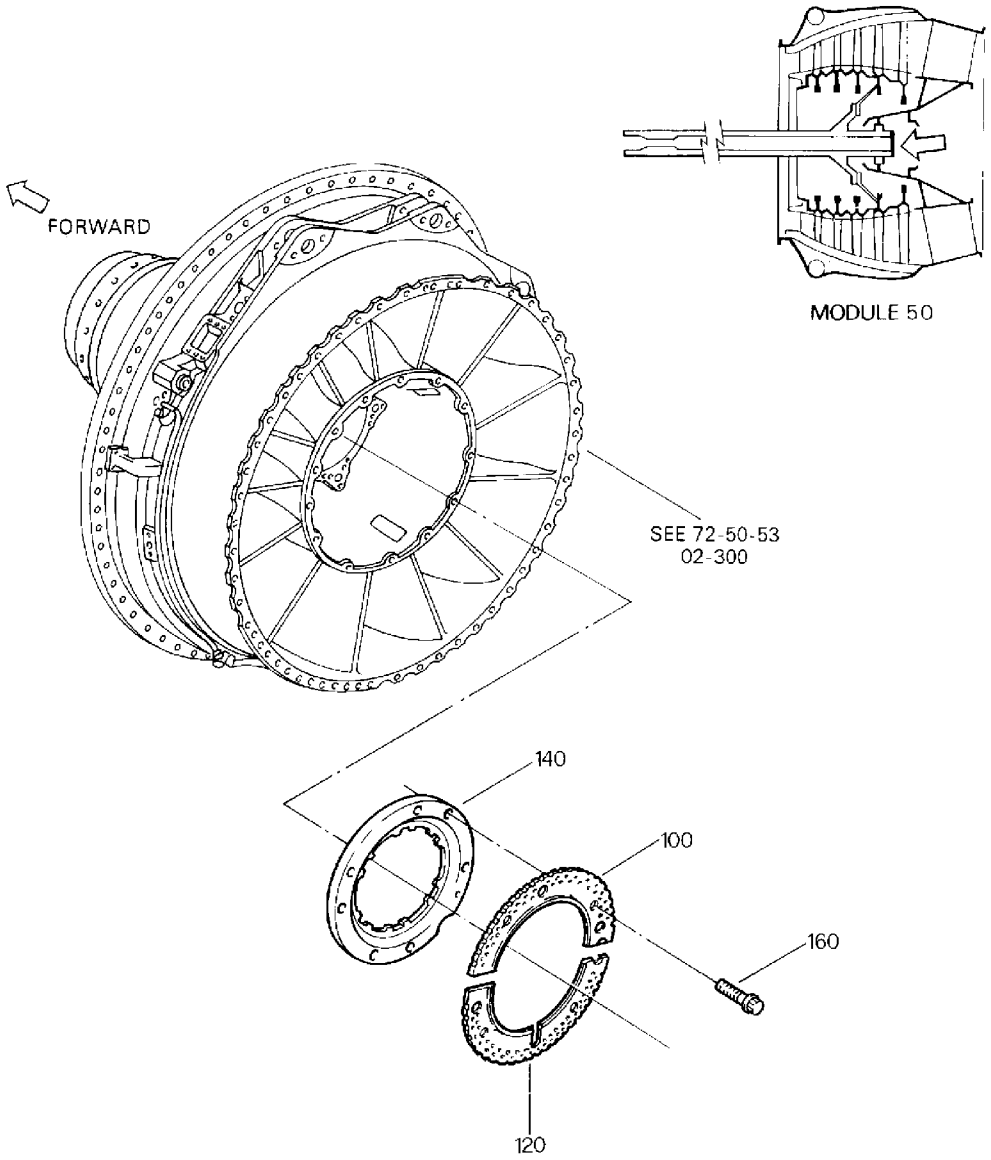
NO. 5 BEARING OIL JET AND TRANSFER TUBE
FIGURE 6



pw0b520270

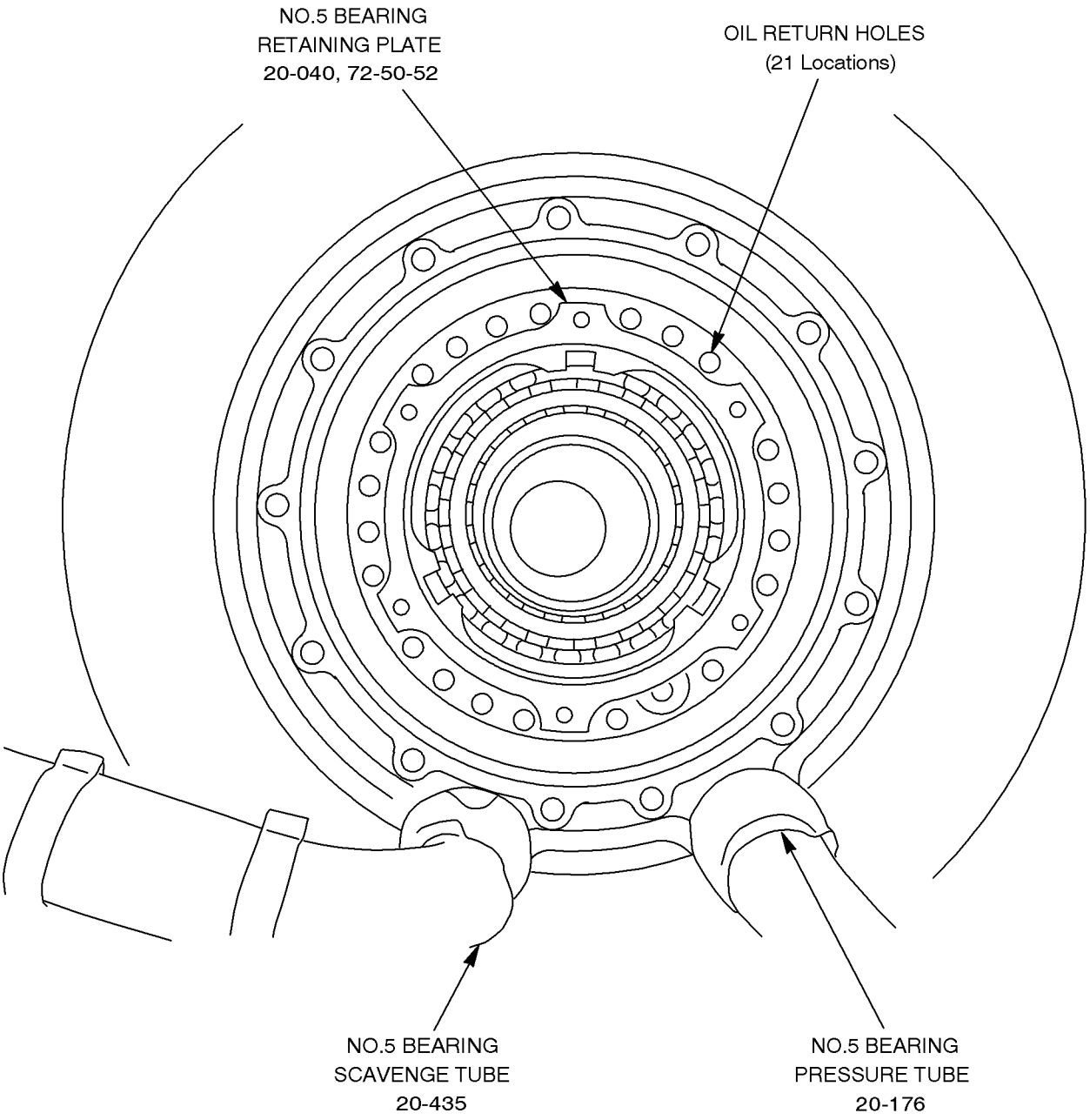
PWV

NO. 5 BEARING SUPPORT
FIGURE 7, SHEET 1



NO. 5 BEARING SUPPORT
FIGURE 7, SHEET 2

GRAPHIC B520272b HAS BEEN DELETED
FROM THIS SERVICE BULLETIN



pw0b520273c

NOTE: All EIPC Figure/Item numbers are 72-50-53 unless identified differently.

NO. 5 BEARING SUPPORT
FIGURE 7, SHEET 3

Appendix

Supplement

1. Appendix 1-Cleaning Method

WARNING: REFER TO THE MANUFACTURER'S MATERIAL SAFETY DATA SHEETS FOR CONSUMABLE MATERIAL INFORMATION. THIS INCLUDES HAZARDOUS INGREDIENTS, PHYSICAL AND CHEMICAL CHARACTERISTICS, FIRE, EXPLOSION, REACTIVITY, HEALTH HAZARD DATA, PRECAUTIONS FOR SAFE HANDLING AND USE OF CONTROL MEASURES.

CAUTION: DO NOT USE THIS PROCEDURE ON CARBON SEALS OR ENGINE BEARINGS.

DO NOT IMMERSE INSULATED TUBES.

DO NOT USE THIS ON TUBES WITH ALUMINIUM FITTINGS.

DO NOT USE A METAL BRUSH TO CLEAN THE TUBE BORES. WIRE BRUSHING CAN CAUSE SCRATCHES THAT ROUGHEN THE SURFACE AND INCREASE THE POSSIBILITY OF COKE FORMATION. SCRATCHES CAN ALSO CAUSE CRACKS TO FORM, WHICH COULD RESULT IN TUBE FAILURE.

A. Method 1-Local Removal of Carbon by Alkaline Gel

Equipment and Material

CoMat 01-455 and 01-456 — Carbon remover — Alkaline gel

Procedure

NOTE: This procedure is approved for use on magnesium, steel, nickel, cobalt and titanium. It is not recommended for tubes, jets or fittings that are completely blocked with coke. This cleaning is most effective to alleviate moderate coking encountered with routine periodic maintenance and has been found non-aggressive to parent metals.

(1) Mask or plug the part.

(2) Apply Alkaline Gel carbon remover as received, 100 percent by volume, at ambient temperature to the part. Soak for 10 minutes to 12 hours. For more effective removal of heavy accumulations of coke, soak in 2 hour increments, fully flush with cold or hot water pressure spray, and repeat.

(3) Fully flush with cold or hot water pressure spray.

(4) Borescope the tubes to ensure they are totally free from coke/carbon build up.

(5) If coke/carbon is still present, repeat the procedure.

NOTE: Following a maximum soak time of 24 hours, if carbon remains, it may be more cost effective to replace hardware.

Added Data

Internal Reference Information

Revision No.	Reference Document	Origination
0 thru 6	EC03VC142 EC03VR864 EC04VC092 EC04VC248 EC04VC248A EC04VC248B IEN08VC088 IEN10VC028 IEN10VC028A EA12VC012	WC/TR/RG/JDH DM/CMS
7	EA15VC292	DM/IEL

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.