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V2500-A1 SERIES PROPULSION SYSTEMS SERVICE BULLETIN

This document transmits Revision 1 to Service Bulletin EV2500-72-0397

Document History

Service Bulletin Revision Status
 Initial Issue Feb.16/01

Supplement Revision Status

Bulletin Revision 1

Remove
 All pages of the
 Service Bulletin

Incorporate
 Pages 1 to 9 of the
 Service Bulletin

Reason for change
 Editorial changes

V2500-ENG-72-0397

Transmittal - Page 1 of 2

CHECK THAT ALL PREVIOUS TRANSMITTALS HAVE BEEN INCORPORATED

If any have not been received please advise Publication Services, Rolls-Royce plc, Derby, England

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LIST OF EFFECTIVE PAGES

The effective pages to this Service Bulletin following incorporation of Revision 1 are as follows:

<u>Page</u>		<u>Revision Number</u>	<u>Revision Date</u>
	Bulletin		
R	1	1	Jul.7/01
R	2	1	Jul.7/01
R	3	1	Jul.7/01
R	4	1	Jul.7/01
R	5	1	Jul.7/01
R	6	1	Jul.7/01
R	7	1	Jul.7/01
R	8	1	Jul.7/01
R	9	1	Jul.7/01

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ENGINE – MAIN GEARBOX ASSEMBLY – INSPECTION OF THE SCAVENGE PUMP DRIVE GEAR ASSEMBLY
– NON-MODIFICATION SERVICE BULLETIN

1. Planning Information

A. Effectivity

(1) V2500-A1

Gearbox serial numbers 600318, 600328, 600333, 600334, 600335, 600336 and 600340

(2) ATA Locator 72-60-00

B. Concurrent Requirements

None

C. Reason

There have been two In Flight Shut Downs (IFSD) resulting from the fracture of the scavenge pump drive gearshaft. Investigation shows the fractures were caused by abnormal loading. An indication of abnormal loading is micro-pitting on the gear teeth of the scavenge pump drive gearshaft that drives the scavenge pump.

This Non-Modification Service Bulletin (NMSB) is issued to inspect the gear teeth of the drive gearshafts of the gearboxes with the serial numbers listed above, as the engineering investigation concluded these gearboxes to be affected.

Micro-pitting gives the gear tooth a frosted, matte or grey stained appearance under magnification, the surface appears to be covered with very fine pits.

D. Compliance

Category Code 3

IAE have confirmed there are no suspect gearboxes installed on the same aircraft, thus IAE recommend this NMSB is accomplished within 150 hours flying time from receipt, to minimise the possibility of having a single engine IFSD.

NOTE: Recommended maintenance practice: In order to reduce the potential for multiple engine in-flight shutdown, power loss or other anomalies due to maintenance error, IAE recommend operators avoid performing this 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 to make sure that these maintenance tasks have been completed as defined.

Feb 16/01

R Jul. 7/01

V2500-ENG-72-0397

Page 1 of 9



E. Approval

R

The compliance at 1.D. and the procedures outlined in Section 3 of this Non-Modification Service Bulletin, comply with the Federal Aviation Regulations and are FAA approved for the engine models listed.

F. Manpower

Estimate of manhours to embody this Service Bulletin in full:

(1) On wing inspection

(a) To gain access	1 hour 30 minutes
(b) To embody	30 minutes
(c) To close up	1 hour 30 minutes
(d) Total	3 hours 30 minutes

(2) Maintenance base

(a) Replace the scavenge drive gear assembly	Total 48 hours
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G. References

- (1) Internal reference number 01VR704
- (2) Airbus – V2500 Aircraft Maintenance Manual
- (3) IAE V2500 Engine Manual
- (4) IAE V2500 Component Maintenance Manual
- (5) Service Information Letter (SIL) 158

H. Other publications affected

None

2. Material Information

None



3. Accomplishment Instructions

A. Tools and Equipment

- (1) The tools that follow are required to accomplish this Service Bulletin

Tool number	Qty	Function	Description
6F10408	1	Inspect	Borescope equipment

NOTE: Suitable alternatives are acceptable

- (2) Additional tooling is required, as identified in the referenced tasks in 3. Accomplishment Instructions.

B. Pre-requisite actions

Remove the oil scavenge pump as detailed in the Aircraft Maintenance Manual, 79-22-41, Removal/Installation.

C. Inspection procedure

- R (1) Examine the condition of the drive gear (79-22-41, 01-300) on the oil scavenge pump. Refer to Fig 1 and 2.
- (a) If required, use a 5x magnifying lens and observe the contact area of the gear teeth.
- R (b) If micro-pitting is found outside the limits defined in part 3.D. replace the gear, as detailed in CMM TASK 79-22-41-060-401.
- (c) Make sure the scavenge pump complies with SIL 158 soft time recommendation.
- R (2) Examine the condition of the oil scavenge drive gear assy (72-60-26, 01-140) of the main gearbox. Refer to Fig 1, 2 and 3.
- R (a) If required, use a 5x magnifying lens and inspect the 16 teeth spur gear.
- (b) If micro-pitting is found outside the fly-on limits defined in part 3.D. replace the whole assembly as detailed in 3.C.(3).
- R (c) If no micro-pitting is found on the 16 teeth spur gear, then continue with the inspection that follows.
- (d) Use the IAE 6F10408 borescope equipment and inspect the 61 teeth spur gear.



(e) If micro-pitting is found outside the fly-on limits defined in part 3.D. replace the whole assembly as detailed in part (3) that follows.

R (3) Remove the scavenge drive gear assembly (72-60-26, 01-140).

(a) Remove the external gearbox module, as detailed in the Aircraft Maintenance Manual, 72-60-00, Removal/Installation.

(b) Remove the angle gearbox, as detailed in the Engine manual, TASK 72-60-00, SUBTASK 72-60-00-030-060.

(c) Remove the angle gearbox support housing, as detailed in the Engine Manual, TASK 72-60-00, SUBTASK 72-60-10-040-058.

(d) Remove the scavenge drive gear assembly, as detailed in the Engine Manual, TASK 72-60-00, SUBTASK 72-60-10-040-061.

R (4) Install the replacement scavenge drive gear assembly (72-60-26, 01-140).

NOTE: Apart from the checks that follow, this procedure is the reverse of (3) above.

(a) Before installation, make sure the appropriate fits and clearance checks are carried out, as detailed in the Engine Manual, TASK 72-60-00.

D. Fly-on Limits

(1) If micro-pitting is observed over more than 10 percent of the whole area of the gear teeth, reject the gear.

(2) If micro-pitting is found over less than 10 percent of the whole contact area of the gear teeth, the gearbox may be acceptable for a further 150 hours service operation.

NOTE: The suitability of the gear for a further 150 hours of operation, depends not only on the area of pitting observed, but also on the severity of the pitting. IAE Technical Services will provide guidance with the interpretation by arranging for Fiat Avio personnel to be present during the inspections.

E. Rejected gears disposition

Rejected gears should be returned to the address that follows:

FIAT-AVIO Spa
312 Via Nizza
10127 TORINO
ITALY
Attn: Roberto Vigitello (FiatAvio Product Support)



F. Spare parts provision requirement

External gearbox module 72-60-00, Fig 1

Item	Part number	Quantity	Description
240	AS3209-162	1	Packing, pref.

These parts to be rejected during disassembly, reprovisioning is Mandatory

Scavenge oil pump drive gear assembly 72-60-26, Fig 1

Item	Part number	Quantity	Description
100	4T0070(*)	1	Bearing, roller IC
140	4P0010	1	Gear, drive
180	4T0120(**)	1	Bearing, roller IC
200	4W0002(***)	6	Nut

(*) Alternative part numbers: 4T0071, 4T0073

(**) Alternative part numbers: 4T0121, 4T0123

(***) Alternative part number: AS20625

Scavenge oil pump, 79-22-41, Fig 1

Item	Part number	Quantity	Description
300	4P7316	1	Gear, drive

This part to be rejected along with gear 4P0010, reprovisioning is Mandatory, see (4) Gear replacement

External gearbox module, 72-60-10, Fig 1

Item	Part number	Quantity	Description
845	AS3209-165	2	Packing
850	AS3209-151	1	Packing

These parts to be rejected during disassembly, reprovisioning is Mandatory

To order replacement parts, please fax a Free of Charge purchase order to IAE Spares. The fax number is US 860 656 4121, please title the PO GEARBOX IFSD INVESTIGATION.

NOTE: IAE recommend replacement parts are ordered in advance of the inspections. Findings to date show a high probability the gear will have micro-pitting greater than the acceptable fly-on limit.



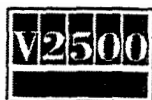
G. Close up actions

Install the oil scavenge pump, as detailed in the Aircraft Maintenance Manual, 79-22-41, Removal/Installation.

H. Record of accomplishment

A record of accomplishment is necessary

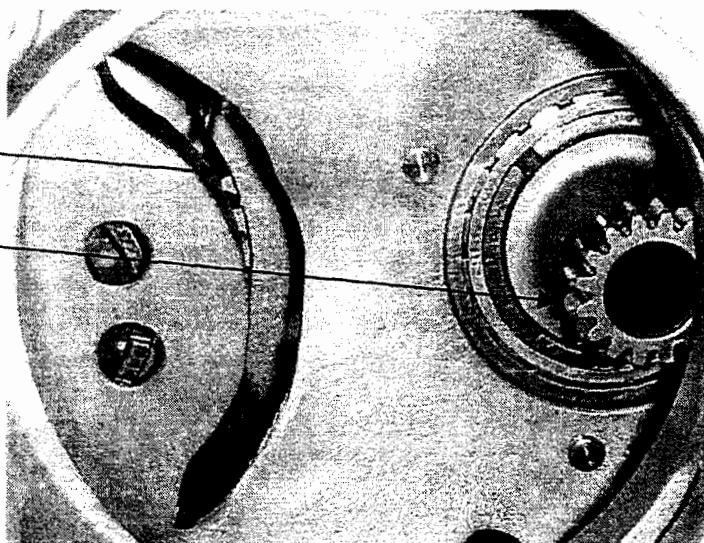
Inform the IAE representative that this Non-Modification Service Bulletin has been accomplished.



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61 teeth spur gear

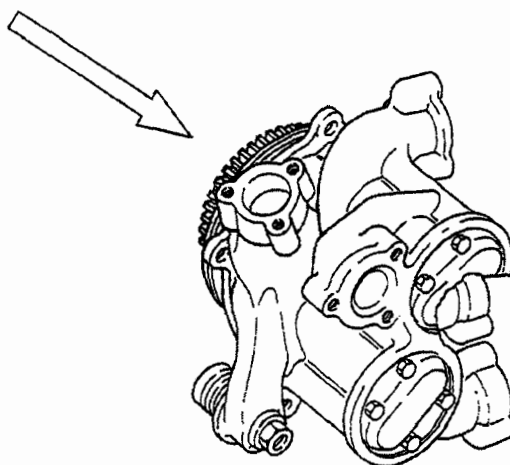
16 teeth spur gear



VIEW with Scavenge Pump Removed.
Scavenge Drive Gear Assembly (72-60-26, 01-140) installed

SCAVENGE OIL PUMP DRIVE
GEAR

79-22-41, 01-300



Gear Locations
Fig 1

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Feb.16/01
Jul. 7/01

V2500-ENG-72-0397

Page 7

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SERVICE BULLETIN

7

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Wear/micro-pitting on the oil scavenge drive gear (79-22-41, 01-300), reject condition

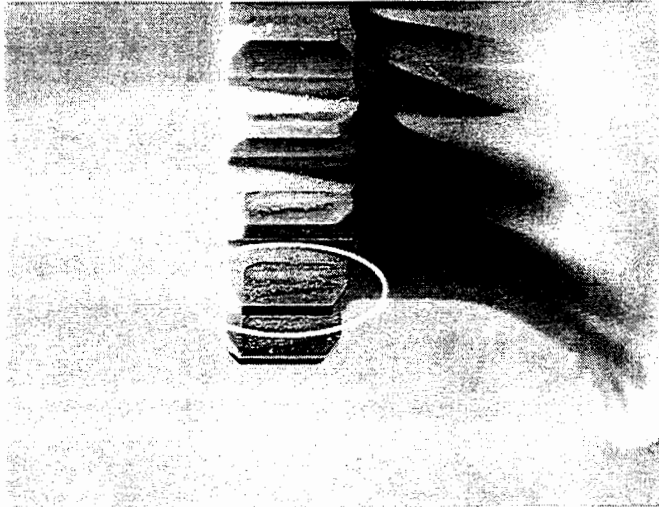
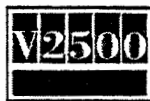
Fig 2

Feb.16/01
Jul. 7/01

V2500-ENG-72-0397

Page 8

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Example of Micropitting
(visual examination, surface appears to be covered with very fine pits)

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Scavenge drive gear assembly, Z16 spur gear, reject micro-pitting condition
Fig 3

Feb.16/01
Jul. 7/01

V2500-ENG-72-0397
Page 9

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