International Aero Engines
NON-MODIFICATION
SERVICE BULLETIN

Date: May. 7/2007

ENGINE – ANGLE GEARBOX ASSEMBLY – TO ANNOUNCE A NEW GEARBOX WITH PARTIAL HEAT TREATED BEARING SUPPORT – NON-MODIFICATION SERVICE BULLETIN

V2500-A5 SERIES PROPULSION SYSTEMS NON-MODIFICATION SERVICE BULLETIN

This document transmits Revision 1 of Non-Modification Service Bulletin V2500-ENG-72-0527

Document History

Service Bulletin Revision Status

Initial Issue	Feb.21/2007
Revision 1	May. 7/2007

Bulletin Initial Issue

Remove	Incorporate	Reason for change
Pages 1 to 8 of the Initial Issue of Service Bulletin	Pages 1 to 8 of the Revision 1 of Service Bulletin	To correct table of affected engines.

List of Effective Pages

The effective pages to this Non-Modification Service Bulletin are as follows:

Page	Revision Number	Revision Date
Bulletin		
1	1	May. 7/2007
2	1	May. 7/2007
3	1	May. 7/2007
4	1	May. 7/2007
5	1	May. 7/2007
6	1	May. 7/2007
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8	1	May. 7/2007

ENGINE – ANGLE GEARBOX ASSEMBLY – TO ANNOUNCE A NEW GEARBOX WITH PARTIAL HEAT TREATED BEARING SUPPORT – NON-MODIFICATION SERVICE BULLETIN

1. Planning Information

A. Effectivity

V2500-A5 Engines with Serial Numbers:

V11952, V11953, V11954, V11955, V11956, V11957, V11958, V11959, V11961, 11962, V11963, V11964, V11965, V11967, V11969, V11971, V11973, V11975, V11976 ,11977, V11978, V11979, V11980, V11981, V11982, V11984, V11985,V11986 and V12147.

B. Reason

(1) Problem

A quantity of three off partially heat treated Angle Gearbox (AGB) bearing housings, p/n 4B0019, 72-60-43-01-090, were inadvertently released to production.

(2) Background

A total quantity of six bearing housings received from a vendor were identified as having been annealed but not hardened and tempered. A search was initiated and three of the parts were found in stock and quarantined. The remaining three parts had already been used for production and the assembled modules shipped for engine build.
The subsequent investigation identified a batch of 30 off gearbox modules where the remaining three bearing housings could be found. In terms of potentially affected engines, only one could be traced prior to delivery and the gearbox module was returned to the OEM for inspection. Stress levels within the housings with partial heat treatment were assessed as not affecting the mechanical characteristics. In addition, the durability of the affected parts was assessed using a comparative wear test. Investigation findings conclude that the housings with the missing heat treatment can continue in service for a time not exceeding 25000 hours, IAE believes that this time is consistent with the first visit of an engine to an Overhaul Shop.

(3) Objective

(a) Locate the remaining partially heat treated housings that were released into production.

(b) Replace the partially heat treated housings before or upon reaching 25000 hours of operation.

C. Compliance

Category Code 3

Accomplish within 25000 hours of engine life.

D. Approval

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

E. Manpower

Estimated man-hours to incorporate the full intent of this Non-Modification Service Bulletin:

(1) In service

Not applicable.

(2) At overhaul

To check if the affected engine contains a housing with partial heat treatment (see 3. Accomplishment Instructions – steps 1, 2, 3, 4, 5, 10, 11)

(a)	To remove gearbox	5 hours
(b)	To remove angle gearbox	1 hour
(c)	Inspection of angle gearbox	10 minutes
(d)	To re-fit angle gearbox	1 hour
(e)	To re-fit gearbox	5 hours

To check if the affected engine contains a housing with partial heat treatment and to replace it (see 3. Accomplishment Instructions – steps 1, 2, 3, 4, 5, 6, 7, 8, 9, 10,11, 12, 13, 14)

(a)	To disassemble and remove gearbox	10 hours
(b)	To disassemble angle gearbox	4 hours
(c)	To assemble angle gearbox	10 hours
(d)	To assemble and re-fit gearbox	35 hours

NOTE: The parts affected by this Service Bulletin are accessible at overhaul.

F. References

R (1) Internal reference No. 06VF811 and 06VF811A.

(2) ATA Locator – 72-60-00.

(3) V2500 Engine Manual (EM) (E-V2500-1IA) Chapter/Section 72-00-60-020-000.

(4) V2500 Engine Manual (EM) (E-V2500-1IA) Chapter/Section 72-60-00-030-001.

(5) V2500 Engine Manual (EM) (E-V2500-1IA) Chapter/Section 72-60-40-040-001.

(6) V2500 Engine Manual (EM) (E-V2500-1IA) Chapter/Section 72-60-43-040-001.

2. Material Information

None.

3. Accomplishment Instructions

A. Action

NOTE: The following instructions are meant to perform only those EM tasks and subtasks required to find and replace the housings with the missing heat treatment. If this is done during a full overhaul, the remaining EM tasks must be performed in full.

(1) Identify the affected engine. Before you start the work, make sure that the serial numbers of Engine, Gearbox Module, Main Gearbox and Angle Gearbox match according to the table of Fig.1. Report any discrepancy to International Aero Engines Technical Services.

(2) Remove the External Gearbox Module. Refer to EM 72-00-60-020-000.

(3) Visually examine the External Gearbox Module. Refer to EM 72-00-60-220-001.

(4) Remove the Angle Gearbox from the Main Gearbox. Refer to EM 72-60-00-030-065.

(5) Visually examine the data engraved on the front of AGB Bearing Housing 01-090. Refer to Fig.2. If the data include LL10X002 you must replace the part. Do steps (6) to (14). If datum LL10X002 is not indicated, refit the AGB, go to step (12).

(6) Disassemble the Angle Gearbox Assembly. Refer to EM 72-60-40-040-001. Stop disassembly after SUBTASK 72-60-40-040-054.

(7) Disassemble the Angle Gearbox Driven Gear and Layshaft Assembly. Refer to EM 72-60-43-040-01. Stop disassembly after SUBTASK 72-60-43-040-054 and discard the Bearing Housing 01-090.

(8) Clean the disassembled parts. Refer to the applicable EM sections.

(9) Visually check the general condition of the disassembled parts. Refer to the applicable EM sections if any anomalous condition is observed.

(10) Assemble the Angle Gearbox Driven Gear and Layshaft Assembly. Use a new Bearing Housing. Refer to EM 72-60-43-440-001 and start with SUBTASK 72-60-43-440-052.

(11) Assemble the Angle Gearbox Assembly. Refer to EM 72-60-40-440-001. Start with SUBTASK 72-60-40-440-051 and then go to SUBTASK 72-60-40-440-055, do all the following tasks except SUBTASKS 72-60-40-440-066 and 72-60-40-440-068. The replacement of the Bearing Housing 01-090 may affect contact and backlash between drive and driven gears of the angle gearbox. If required, follow SUBTASK 72-60-40-220-051 and change only Shim 01-175.

(12) Install the Angle Gearbox to the Main Gearbox. Refer to EM 72-60-00-430-064.

(13) Install the External Gearbox Module. Refer to EM 72-00-60-420-000.

(14) Return the Bearing Housing 01-090 to the following address:

AVIO Spa
Via I Maggio 108 - gate 20
10040 Rivalta di Torino (TO)
Attention Monica Calligaro
ITALY

B. Recording Instructions

(1) A record of accomplishment is necessary in the Engine Log Book.

(2) Inform the IAE local office that this Non-Modification-Service-Bulletin has been accomplished by sending the feedback form. (Page 8 of this Non-Modification-Service-Bulletin). When the three housings with missing heat treatment are replaced this Service Bulletin may be discontinued.

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ENGINE SERIAL NUMBER	GEARBOX, ACCESSORY MODULE		MAIN GEARBOX		ANGLE GEARBOX ASSEMBLY	
	PART NUMBER	SERIAL NUMBER	PART NUMBER	SERIAL NUMBER	PART NUMBER	SERIAL NUMBER
V11952		603742		FAEE8315		FAEE8319
V11953		603739		FAEE8239		FAEE8243
V11954		603744		FAEE8361		FAEE8366
V11955		603737		FAEE7798		FAEE7812
V11956		603746		FAEE8376		FAEE8380
V11957		603743		FAEE8322		FAEE8327
V11958		603740		FAEE8257		FAEE8268
V11959		603741		FAEE8276		FAEE8282
V11961		603745		FAEE8369		FAEE8373
V11962		603736		FAEE7766		FAEE7770
V11963		603747		FAEE8383		FAEE8387
V11964		603738		FAEE7831		FAEE7835
V11965		603748		FAEE8414		FAEE8418
V11967		603749		FAEE8421		FAEE8425
V11969	4A1076	603753	4A1028	FAEE8658	4A0074-N	FAEE8662
V11971		603756		FAEE8679		FAEE8683
V11973		603751		FAEE8539		FAEE8543
V11975		603755		FAEE8672		FAEE8676
V11976		603750		FAEE8502		FAEE8536
V11977		603757		FAEE8686		FAEE8690
V11978		603752		FAEE8546		FAEE8590
V11979		603758		FAEE8693		FAEE8697
V11980		603759		FAEE8700		FAEE8704
V11981		603761		FAEE8781		FAEE8785
V11982		603760		FAEE8707		FAEE8778
V11984		603762		FAEE8841		FAEE8845
V11985		603765		FAEE8880		FAEE8884
V11986		603764		FAEE8859		FAEE8863
V12147		603763		FAEE8848		FAEE8856

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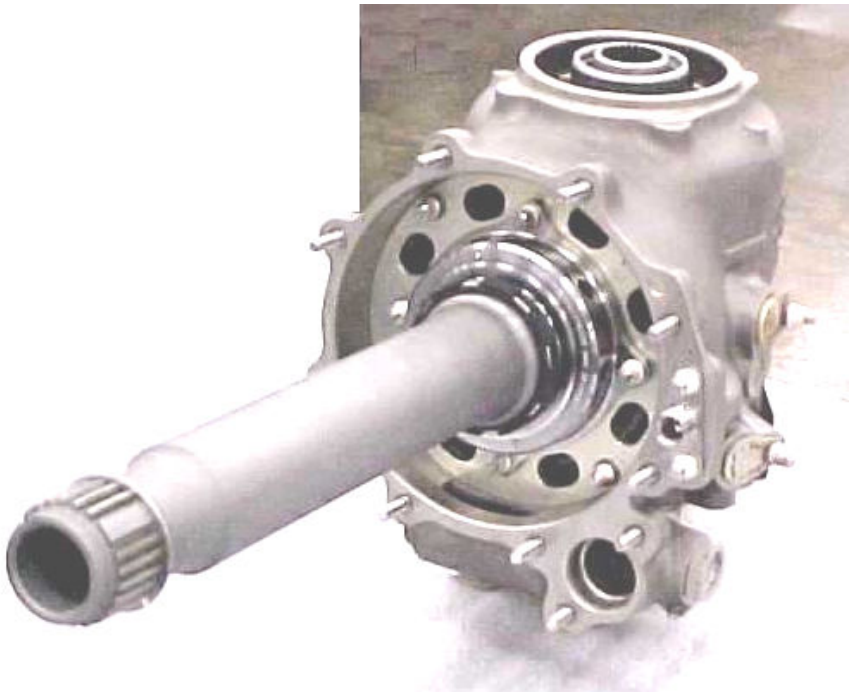
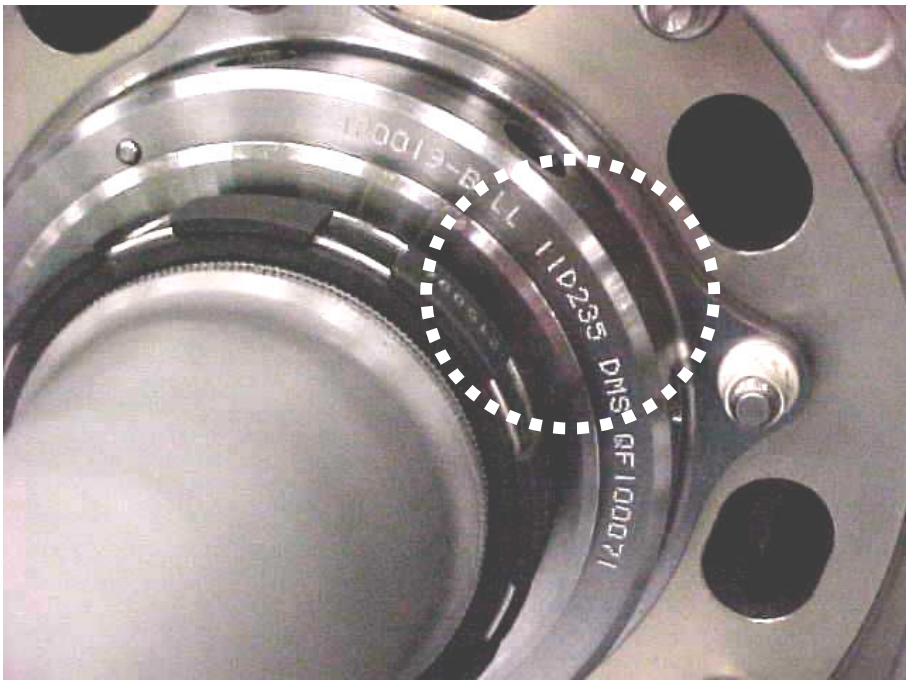
Affected engines
Figure 1





Inspection of the (01-090) Bearing Housing Batch
Figure 2

Angle Gearbox Inspection Feedback Proforma

Overhaul Shop:_____ Date:_____

Inspected by:_____ Signature:_____

Engine Details:

Engine Number:_____

Hours:_____

Cycles:_____

Gearbox Details:

Part Number:_____

Serial Number:_____

Angle Gearbox Details:

Part Number:_____

Serial Number:_____

Pass/Fail:_____

Send this completed proforma to the following address:

IAE International Aero Engines AG
c/o Rolls-Royce Deutschland Ltd & Co KG
Technical Services
Eschenweg 11, Dahlewitz
D_15827 Blankenfelde-Mahlow
Germany

Inspection Results – Feedback Form