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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V2500-A1 PROPULSION SYSTEMS SERVICE BULLETIN

This document transmits Revision 1 to Service Bulletin EV2500-72-0430 and Revision 1 to the Supplement

Document History

Service Bulletin Revision Status		Supplement Revision Status	
Initial Issue	Jun.7/02	Initial Issue	Jun.7/02

Bulletin Revision 1

Remove	Incorporate	Reason for change
All pages of the Service Bulletin	Pages 1 to 8 of the Service Bulletin	To change Compliance from Category 4 to Category 3.
All pages of Appendix 1	Pages 1 to 3 of Appendix 1	To change Compliance from Category 4 to Category 3.

Supplement Revision 1

Remove	Incorporate	Reason for change
All pages	Page 1	To change Compliance from Category 4 to Category 3.

CHECK THAT ALL PREVIOUS TRANSMITTALS HAVE BEEN INCORPORATED
If any have not been received please advise Publication Services, Rolls-Royce plc, Derby, England

LIST OF EFFECTIVE PAGES

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

	Page	Revision Number	Revision Date
	Bulletin		
R	1	1	Aug.20/02
R	2	1	Aug.20/02
R	3	1	Aug.20/02
R	4	1	Aug.20/02
R	5	1	Aug.20/02
R	6	1	Aug.20/02
R	7	1	Aug.20/02
R	8	1	Aug.20/02
	Appendix 1		
R	1	1	Aug.20/02
R	2	1	Aug.20/02
R	3	1	Aug.20/02
	Supplement		
R	1	1	Aug.20/02

ENGINE - HIGH PRESSURE TURBINE FIRST STAGE DISK METERING PLUG REPLACEMENT

1. Planning Information

A. Effectivity

(1) Airbus A320

(a) V2500-A1 Engines Serial Nos V0001 thru V0361

B. Concurrent Requirements

This Service Bulletin must be incorporated concurrently with or subsequent to Bulletins V2500-ENG-72-0095 and V2500-ENG-72-0121.

C. Reason

(1) Problem: There have been occurrences of Metering Plug fracturing in production engines. The debris from the fractured Metering Plug can migrate into the Number 4 Bearing Compartment Rear Carbon Seal area. The debris can erode the Rear Carbon Seal until the Seal fractures which then releases a large quantity of oil and subsequently the oil can ignite. Ignition can cause HPT damage.

(2) Background: The cause of the Metering Plug to fracture is due to High Cycle Fatigue. The unloaded Metering Plug tang starts to vibrate and may eventually fracture.

(3) Objective: The Metering Plug has been redesigned to eliminate this fracture mode.

(4) Substantiation: There has been extensive 3D structural analysis of the redesigned Metering Plug. The stresses in the Plug are within the material capability and therefore the Plug will greatly exceed the maximum overhaul interval in the V2500-A1 fleet. The redesigned plugs have successfully gone through validation testing. Post test inspection of the Metering Plugs and the Disk showed parts still set to blue print requirements.

(5) Effects of Bulletin on:

Removal/Installation: Not Applicable

Disassembly/Assembly: Not Applicable

Cleaning: None

Inspection/Check: Not Applicable

Repair: Not Applicable

Testing: Not Applicable

(6) Supplemental Information

None.

D. Description

A new First Stage Turbine Rotor Assembly with a redesigned Metering Plug is available for all in service engines.

E. Compliance

R Category 3

R Accomplish by November 2004.

F. Approval Data

The part number changes and/or part modifications specified in the Accomplishment Instructions and Material Information sections of this Service Bulletin have been shown to comply with the applicable Federal Aviation Regulations and are FAA-APPROVED for the engine model(s) given.

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.

G. Manpower

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

Venue	Estimated Manhours
In Service	Not Applicable
At Overhaul	15 minutes

H. Weight and Balance

Weight Change	None
Moment	No Effect
Datum	Engine Front Mount Centerline (Power Plant Station (PPS) 100)

I. Electrical Load Data

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

J. Software Accomplishment Summary

Not Applicable.

K. References

1. V2500 Information Bulletin V2500-ENG-70-0008 (Information - Announcement Of New Stage 1 HPT Metering Plugs).

2. IAE V2500 Service Bulletin V2500-ENG-72-0095 (Engine - HP Turbine Rotor And Stator Assembly - Provide A New HPT Retaining Nut).

3. IAE V2500 Service Bulletin V2500-ENG-72-0121 (Engine - HP Turbine Rotor And Stator Assembly - Provide A New Stage 2 HPT Air Seal Assembly).

4. IAE V2500 Service Bulletin V2500-ENG-72-0123 (Engine - HP Turbine Rotor And Stator Assembly - Provide A New Stage 1 HPT Hub Metering Plug With A Smaller Metering Hole And Transfer the Hub Details To The Stage 1 Turbine Rotor Assembly).

5. IAE V2500 Service Bulletin V2500-ENG-72-0351 (Engine - HP Turbine Rotor And Stator Assembly - Introduce A New First Stage Turbine Air Seal).

6. V2500 Engine Illustrated Parts Catalogs (S-V2500-1IA), Chapter/Section 72-45-11.

7. V2500 Engine Manual (E-V2500-1IA), Chapter/Section 72-45-00.

R 8. Pratt and Whitney Internal Reference Nos. 01VC391, 01VC391-01.

9. ATA Locator - 72-45-00.

L. Other Publications Affected

1. V2500 Engine Illustrated Parts Catalogs (S-V2500-1IA), Chapter/Section 72-45-11.

M. Interchangeability of Parts

Old and new parts are directly interchangeable in complete sets.

N. Information in the Appendix

Alternate Accomplishment Instructions (No)

Progression Charts (Yes)

Added Data (Yes)

Revision to Table of Limits (Yes)

Inspection Procedures (No)

2. Material Information

A. Material - Price and Availability

1. Part prices were not available at the time of Service Bulletin publication. Contact IAE's Spare Parts Sales Department for firm quotations.

2. There is no kit provided to do this Service Bulletin.

B. Industry Support Program

Not Applicable.

C. The material data that follows is for each engine.

NOTE: The prices 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 Catalog for current prices.

For V2500-A1 Engines:

New PN	Qty	Estimate of Unit Price ($)	Keyword	Old PN	Inst/Disp
2A9221	1	*	.Turbine Rotor - 1 Stg, Assy of	2A5201 (72-45-10-01-010)	(1)
2A3833	12	*	..Metering Plug HPT Hub, Stage 1	2A2181 (72-45-11-01-040)	(D)(N)
			OR		
2A2121-002	1	*	.Turbine Rotor - 1 Stg, Assy of	2A2121-001 (72-45-10-01-010)	(1)
2A3833	12	*	..Metering Plug HPT Hub, Stage 1	2A2181 (72-45-11-01-040)	(D)(N)

D. Instructions/Disposition Code Statements:

(1) The new part can be obtained by modification of the old part as specified in the Accomplishment Instructions.
(D) The new part is a detail of the assembly. It is available as a replacement part.
(N) The old part is not available.

E. Tooling - Price and Availability

Tool P/N IAE1P16494 will be available on 60 Day Full Manufacturing lead time quote basis to assist in the assembly of the Metering Plugs into the Turbine Hub.

F. Reidentified Parts

Reidentified Parts Data

New PN	Keyword	Old PN
2A9221	Turbine Rotor - 1 Stg, Assy of	2A8021
2A2121-002	Turbine Rotor - 1 Stg, Assy of	2A2121-001

G. Other Material Information Data

Not Applicable.

3. Accomplishment Instructions

(1) Remove the 1st Stage Disk Metering Plugs P/N 2A2181 (12 off) from the Turbine Rotor Assembly, 1st Stage (see Reference (4) Chapter Section 72-45-00).

(2) Measure the Metering Plug holes in the Turbine Hub.

(a) If the hole diameter is between 0.377 in. (9.576 mm) and 0.383 in. (9.728 mm) accept and record the dimensions.

(b) If the hole diameter is between 0.384 in. (9.754 mm) and 0.387 in. (9.830 mm) accept part for select fit only and record the dimension.

(c) If A. or B. does not apply, perform one of the following:

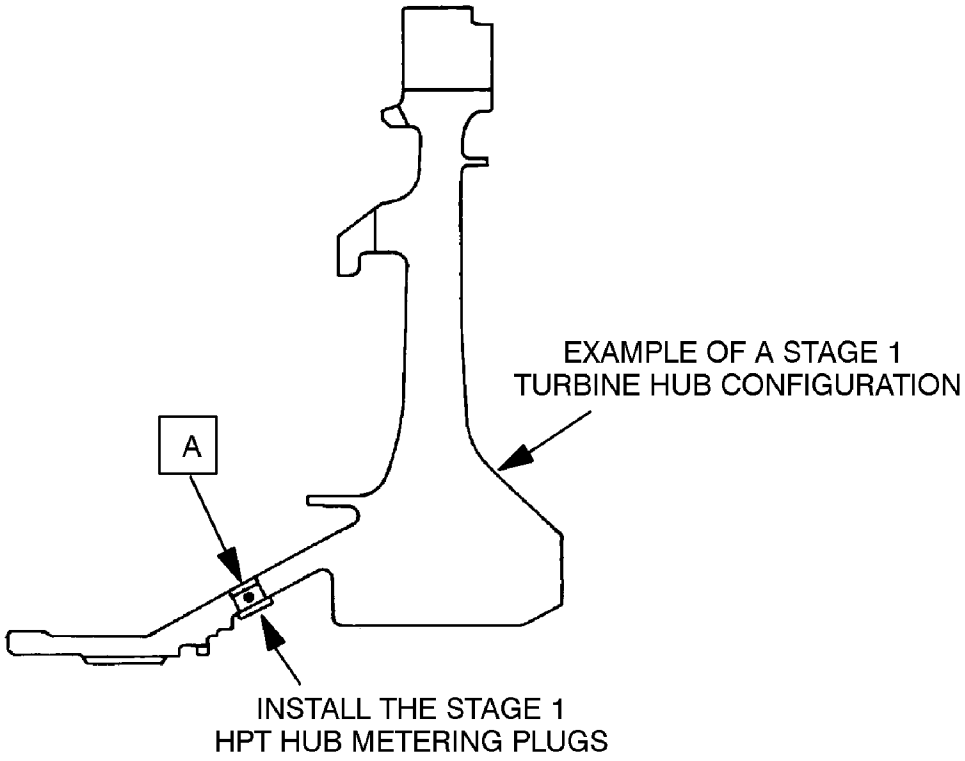
(i) If only one hole does not meet requirements in A. or B. identify the hole location, assembly requirements will allow one plug not to be installed if hole diameter is out of limits. This must be recorded in the engine build records.

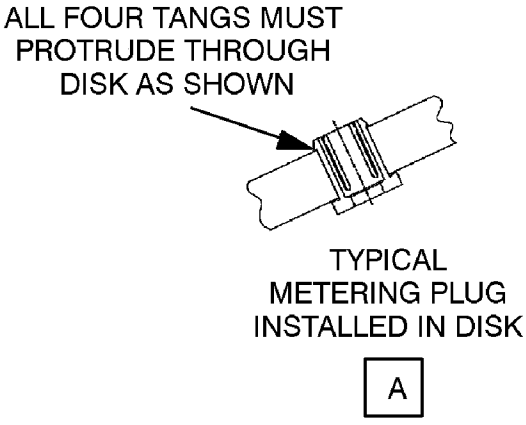
(ii) If more than one hole does not meet requirements in A. or B. contact IAE.

(3) If all fits are acceptable, use IAE tool P/N IAE1P16494 or IAE1P17763 or other suitable drift to install and seat all 12 (or 11 depending on requirements reference 2. C. (1)) new stage 1 Metering Plugs through the rear bore of the hub into the inner diameter holes of the stage 1 Turbine Hub. Make sure the rear side of the Metering Plug tab touches the outer diameter surface of the Hub. See Figure 1.

(4) Recording Instructions

(a) A record of accomplishment is required.





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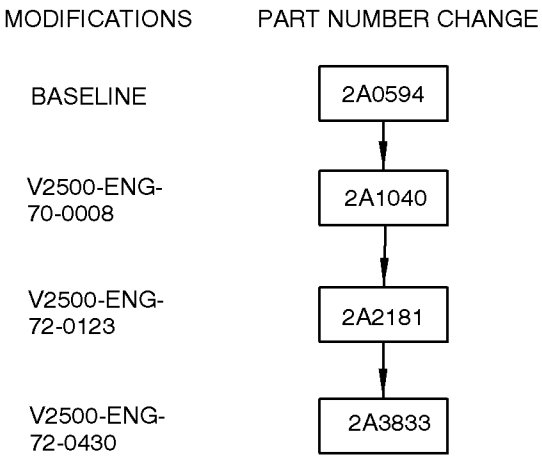
Location of Metering Plug in Hub Assembly Turbine Stage 1
Figure 1

APPENDIX 1

Parts Progression To Show the Changed Part in Relation to Other Parts

Added Data

Number values shown in parenthesis adjacent to U.S. values are Systeme Internationale equivalents.



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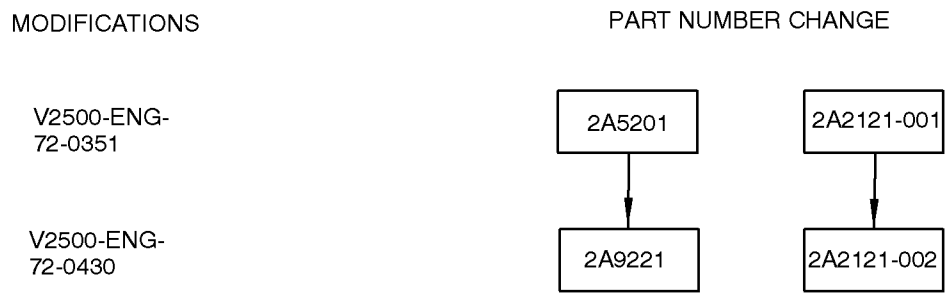
Family Tree - HPT 1st Stage Disk Metering Plug. Ref. Catalog Sequence No. 72-45-11.
Fig. 01 Item 040
Figure 2



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Family Tree - Turbine Rotor 1st Stage Assembly of. Ref. Catalog Sequence No. 72-45-10. Fig. 01 Item 010
Figure 3

ENGINE - HIGH PRESSURE TURBINE FIRST STAGE DISK METERING PLUG REPLACEMENT

Revision to Table of Limits

Engine Manual(s), Chapter/Section 72-45-10, Revision 52., dated November 1, 2002 is scheduled to incorporate the Part Service Life Limits related to this Service Bulletin and will take precedence over the Service Bulletin.

Revision to Table of Limits fits are as follows

Ref No.	I F R	Part Name	Dimensions New Parts Min - Max	Limits Min - Max	Used Parts Fits Min - Max
1516		Metering Plug	0.387 - 0.392 in. (9.830 - 9.957 mm)		0.387 - 0.392 in. (9.830 - 9.957 mm)
		Hub-Turb, 1 Stage	0.377 - 0.383 in. (9.576 - 9.728 mm)	0.0004T - 0.015T (0.012T - 0.381T)	0.384 - 0.387 in. (9.754 - 9.830 mm)