V2500 International Aero Engines

Date: Apr.4/97

Subject: Transmittal of Revision 5 to Service Bulletin Number V2500-ENG-72-0011

Service Bulletin Revision History:

Event	Date
Basic Issue	July 6/90
Revision 1	Oct.19/90
Revision 2	Nov.16/90
Revision 3	Nov.22/91
Revision 4	Aug.20/93
Revision 5	Apr.4/97

Reasons For Issuance Of Revision:

(1) The revision is being issued because this Service Bulletin was previously superseded and the superseded part numbers were never manufactured or obtained by modification.

(2) To revise the note in the effectivity on page 2.

(3) To remove the disposition codes, source demonstration information and the approved vendors previously listed on pages 15 and 16.

Effect On Past Compliance:

None.

List Of Effective Pages:

	Bulletin Page No.	Rev. No.	Effective Date
R	1 and 2	5	Apr.4/97
	3 and 4	Basic	July 6/90
	4A and 5	1	Oct.19/90
	6 to 14	Basic	July 6/90
R	15 and 16	5	Apr.4/97
	17 and 18	2	Nov.16/90

V2500 International Aero Engines

SERVICE BULLETIN

ENGINE - HP TURBINE ROTOR AND STATOR ASSEMBLY - REWORK THE STAGE 2 TURBINE HUB ASSEMBLY TO INCORPORATE A TURBINE HUB HEATSHIELD

MODEL APPLICATION

V2500-A1

BULLETIN INDEX INDICATOR

72-45-00

Compliance Category Code	Internal Reference No.
8	87VA081 87VA081F 87VA081J 87VA081K

July 6/90
R Revision 5 Apr.4/97

V2500 – ENG – 72 – 0011

ENGINE - HP TURBINE ROTOR AND STATOR ASSEMBLY - REWORK THE STAGE 2 TURBINE HUB ASSEMBLY TO INCORPORATE A TURBINE HUB HEATSHIELD

1. Planning Information

A. Effectivity

(1) Aircraft: Airbus A320

(2) Engine: V2500-A1 Engines before Serial No.V0130 except V0125 and V0128.

NOTE: The intent of this Service Bulletin is superseded by the instructions given in Service Bulletin V2500-ENG-72-0075. The superceded part numbers given in this Service Bulletin were never manufactured or obtained by modification.

B. Reason

(1) Condition

Potential for galled snaps was found on Stage 2 Turbine Hubs and the mating snaps of Compressor Rear Hubs.

(2) Background

Galled snaps on some Stage 2 Turbine Hubs and mating snaps on the Compressor Rear Hubs can be caused by the tight fits between the HP Compressor Shaft and the HP Turbine Hubs.

(3) Objective

To make it easier to remove and install the HP Turbine Assembly with looser fits between the mating diameters of the HP Compressor Shaft and HP Turbine Hubs.

(4) Substantiation

Not considered necessary.

(5) Effects of Bulletin on Workshop Procedures:

Removal/Installation	Affected (See Supplemental Information)
Disassembly/Assembly	Affected (See Supplemental Information)
Cleaning	Not affected
Inspection/Check	Affected (See Supplemental Information)
Repair	Affected (See Supplemental Information)
Testing	Not affected

(6) Supplemental Information:

The torque procedure to preload the HP Compressor/HP Turbine Stack is revised.

It will be necessary to remove and install the Heatshield and the Metering Plugs at each disassembly and assembly.

It will be necessary to inspect the Heatshield and the Metering Plugs.

The New HP Turbine Hubs will have different dimensions from the old HP Turbine Hubs.

C. Description

(1) Removal and Installation of the Stage 1 and 2 HPT Hubs and the HP Compressor Shaft is improved. This change prevents galling on the HP Turbine Hubs as follows:

(a) A heatshield was installed to loosen fits between the Turbine Hubs and the HP Compressor Shaft. Refer to Figure 1.

(b) A change was made to the Hub dimensions to permit installation of the Heat Shield.

(c) New metering plugs are installed to maintain Disk and Heatshield alignment.

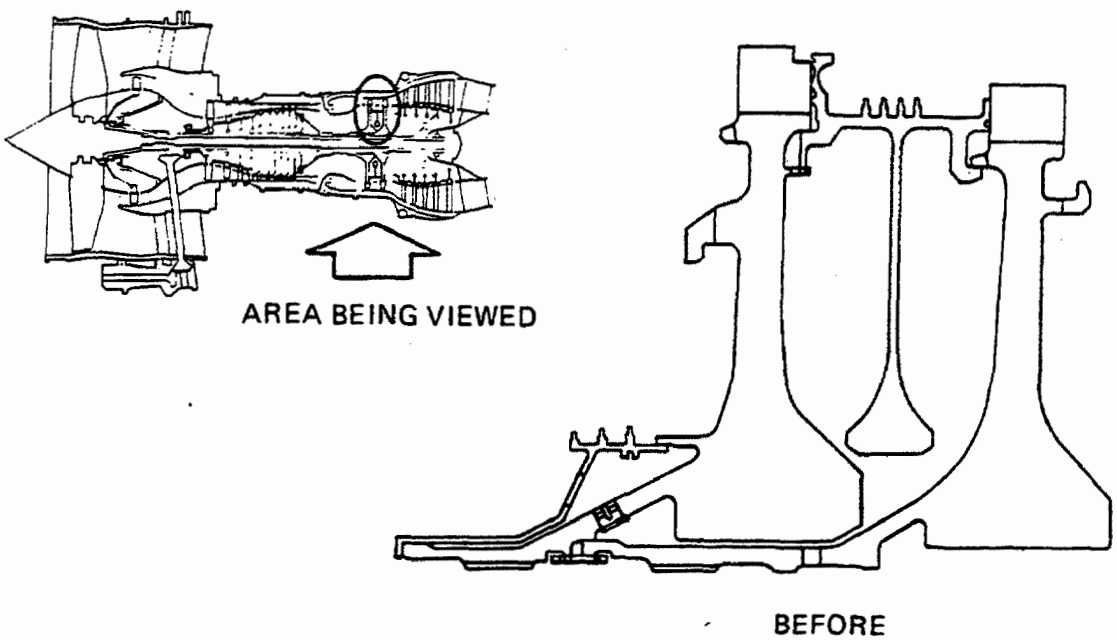
D. Approval

The Part Number Changes and/or part modifications described in Sections 2 and 3 of this Service Bulletin have been shown to comply with the applicable Federal Aviation Regulations and are FAA-APPROVED for the Engine Model listed.

E. Compliance

Category Code 8.

Accomplish based upon experience with the prior configuration.



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Before and after views of configuration changes that affect HP compressor to HP turbine hub mating diameters
Figure 1

F. Manpower

Estimated Manhours to incorporate the full intent of this Bulletin:

Venue	Estimated Manhours
(1) In service	Not applicable
(2) At overhaul	Not applicable
NOTE: The parts affected by this Service Bulletin are accessible at Overhaul	
R (3) To embody	Refer to TCR R (Vendor Company)

G. Material - Price and Availability

(1) Modification kit not required.

(2) See Material Information section for prices and availability of future spares.

H. Tooling Price and Availability

Special tools are not required.

I. Weight and Balance

(1) Weight change	None
(2) Moment arm	No effect
(3) Datum	Engine front mount centreline (Power Plant Station P.P.S.100)

J. Electrical Load Data

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

K. References

(1) V2500 Engine Illustrated Parts Catalog.

(2) V2500 Standard Practices Manual.

(3) V2500 Engine Manual.

L. Other Publications Affected

(1) The V2500 Engine Manual, Chapter/Section 72-45-10 and 72-45-31, Repair to add procedures for the new parts.

(2) The V2500 Engine Manual, Chapter/Section 72-45-10 and 72-45-31, Repair to add procedures for the new parts.

(3) The V2500 Engine Manual, Chapter/Section 72-45-10 and 72-45-31, Repair to add procedures for the new parts.

2. Accomplishment Instructions

A. Rework Instructions

(1) Do a modification to 2A1101 Stage 1 Turbine Hub (See Reference (1) Chapter/Section 72-45-11, Figure Item No.01-010) and identify as follows:

Procedure	Supplementary Information
(a) Send the Stage 1 Turbine Hub to the approved vendor to be machined.	Refer to the Material Information for the address of the approved vendor.
(b) Shot peen the Stage 1 Turbine Hub to an intensity of 6A. Use SAE 170 Maximum Cast Steel Shot with a hardness of 45 - 55 HRC or equivalent.	Refer to Figure 2 requirements. Refer to the approved procedure in Reference (2) Control No./TASK No. 70-38-13-380-501.
(i) Minimum intensity is waived in Area K.	
(ii) There must be full coverage.	
(c) Mark the new part number adjacent to the old part number. Use the vibration peen method.	Old Part Number: 2A1101 — New Part Number: 2A1901 Refer to Figure 2, requirements. Refer to the approved procedure in Reference (2), Control No./ TASK No.70-09-00-400-501.
NOTE: If the part was identified with the new part number after it was machined this step is not necessary.	
(d) Install 2A1040 Metering Plugs (12 off) in the 2A1901 Stage 1 Turbine Hub.	Refer to Figure 3, requirements.
(e) Mark the new assembly part number adjacent to the old part number. Use the vibration peen method.	Old Part Number: 2A1121 — New Part Number: 2A2021 Refer to Figure 3, requirements. Refer to the approved procedure in Reference (2), Control No./ TASK No.70-09-00-400-501.

(2) Do a modification to 2A0902 Stage 2 Turbine Hub (See Reference (1) Chapter/Section 72-45-31, Figure Item No.01-011) and identify as follows:

Procedure	Supplementary Information
(a) Send the Stage 2 Turbine Hub to the approved vendor to be machined.	Refer to the Material Information for the address of the approved vendor.
(b) Shot peen the Stage 2 Turbine Hub to an intensity of 6A. Use SAE 170 Maximum Cast Steel Shot with a hardness of 45 - 55 HRC or equivalent. (i) No masking is necessary.	Refer to Figure 4 requirements. Refer to the approved procedure in Reference (2) Control No./ TASK No.70-38-13-380-501.
(c) Mark the new part number adjacent to the old part number. Use the vibration peen method.	Old Part Number: 2A0902 — New Part Number: 2A1302 Refer to Figure 4, requirements. Refer to the approved procedure in Reference (2), Control No./ TASK No.70-09-00-400-501.
NOTE: If the part was identified with the new part number after it was machined this step is not necessary.	
(d) Install 2A1041 Stage 2 HPT Heat shield (1 off) on the 2A1302 Stage 2 Turbine Hub (1 off).	Refer to Figure 5, requirements.
(e) Install 2A1125 HPT Metering Plugs (4 off) in the four holes from the inside (flanged end to contact the inner diameter of the hub).	Refer to Figure 5, requirements.
(f) Mark the new assembly part by the approved procedure. Use the vibration peen method.	New Part Number: 2A1702 Refer to Figure 5, requirements. Refer to the approved procedure in Reference (2), Control No./ TASK No.70-09-00-400-501.

B. Assembly Instructions

(1) Assemble the Stage 1 Turbine Rotor Assembly by use of the approved procedures in Reference (3) Chapter/Section 72-45-10, Assembly and as follows:

(a) Use 2A2021 Stage 1 Turbine Hub Assembly (1 off). Refer to Figure 6.

(b) Identify 2A1621 Stage 1 Turbine Rotor Assembly to 2A2321. Use the vibration peen method in Reference (1), Chapter/Section 70-09-00, Marking of Parts. See Figure 1.

(c) Identify 2A1021 Stage 1 Turbine Rotor Assembly to 2A1921. Use the vibration peen method given in Reference (1), Chapter/Section 70-09-00, Marking of Parts. See Figure 1.

(2) Assemble the Stage 2 Turbine Rotor Assembly by use of the approved procedure in Reference (3), Chapter/Section 72-45-30, Assembly, and as follows:

(a) Use 2A1702 Stage 2 Turbine Hub Assembly (1 off). Refer to Figure 7.

(b) Identify 2A1022 Stage 2 Turbine Rotor Assembly to 2A1722. Use the vibration peen method given in Reference (1), Chapter/Section 70-09-00, Marking of Parts. See Figure 2.

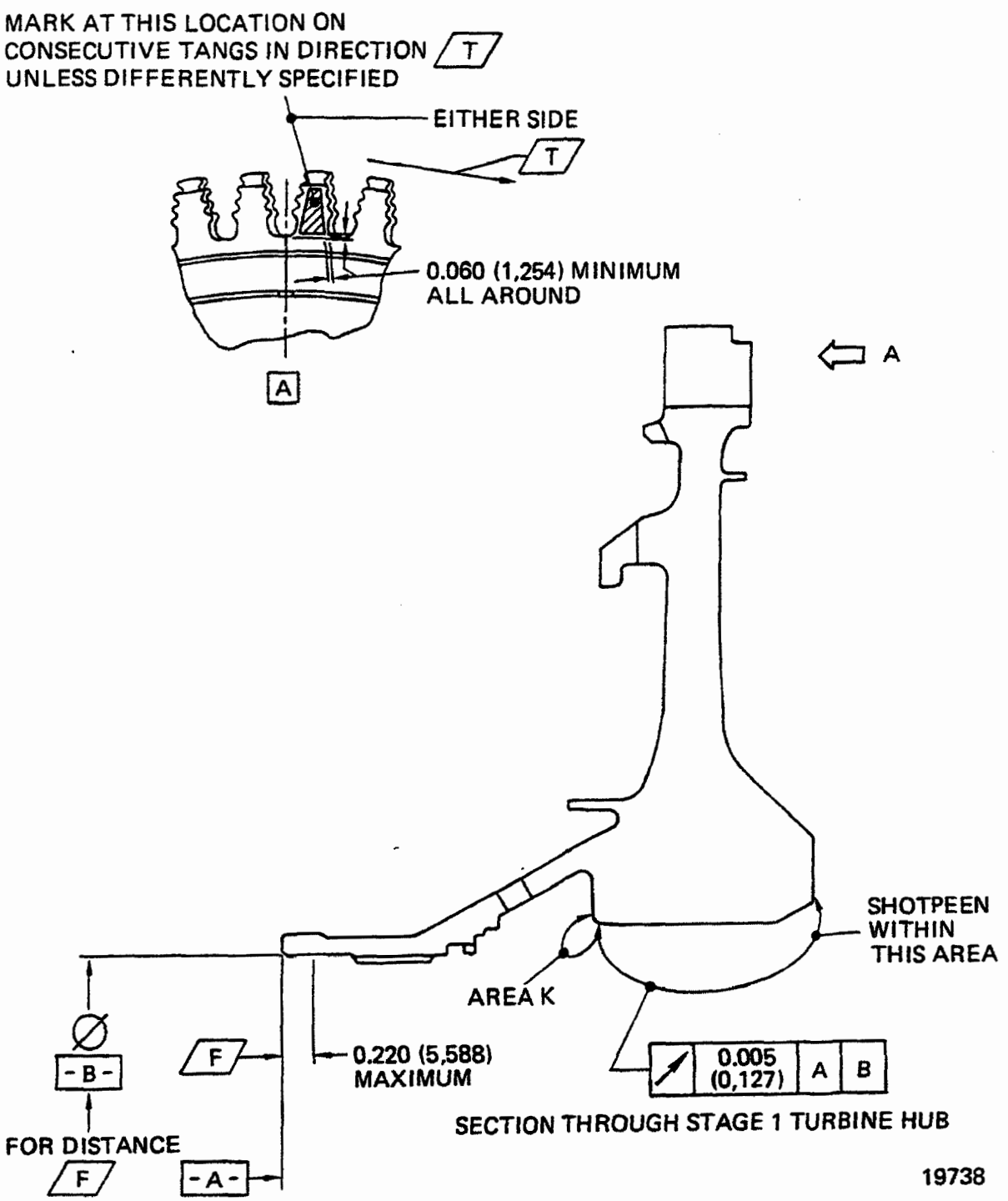
CAUTION: WHEN THE HP TURBINE ASSEMBLY WITH THE NEW HUBS IS INSTALLED, THE COUPLING NUT MUST BE TORQUED BY THE NEW PROCEDURE (OR DAMAGE TO THE PARTS CAN RESULT).

(3) When the HP Turbine Assembly is installed torque the Bearing Retaining Nut by the approved procedure in Reference (3), Chapter/Section 72-00-45, Installation -01 Except:

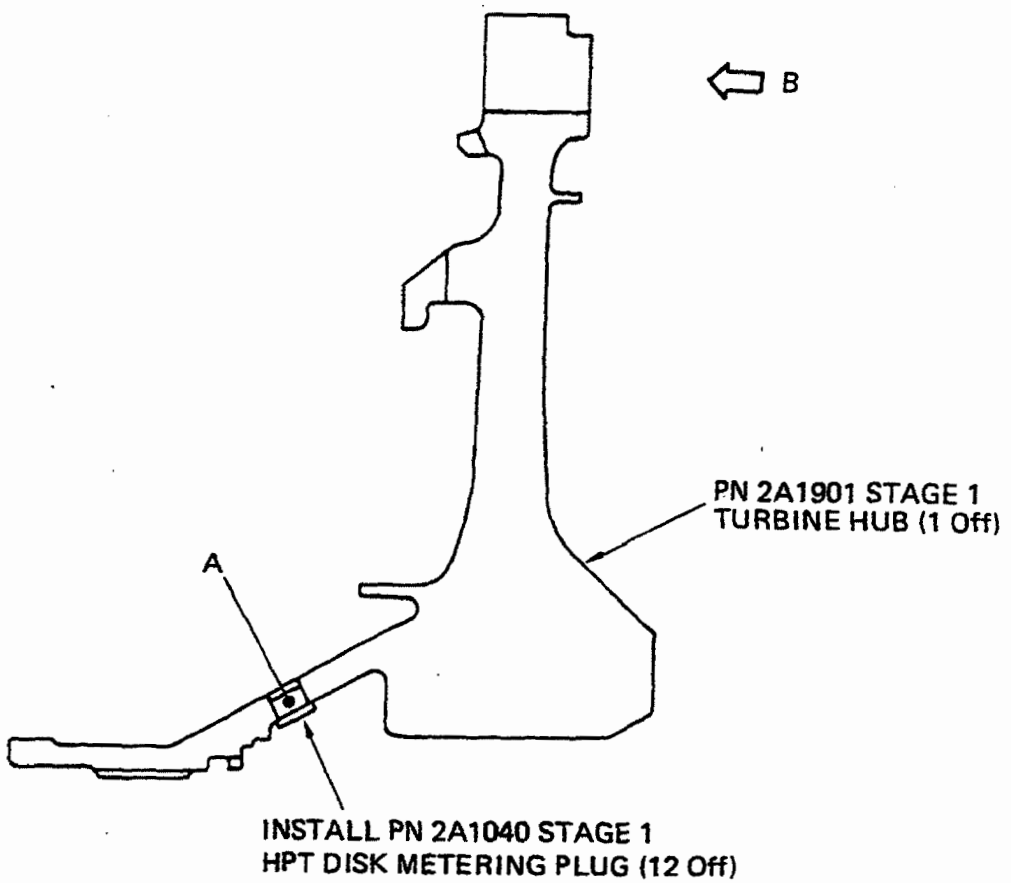
(a) The additional angle of turn will be 88 degrees plus or minus 1 degree after the nut is torqued to 500 lbin (56,492 Nm).

C. Recording Instructions

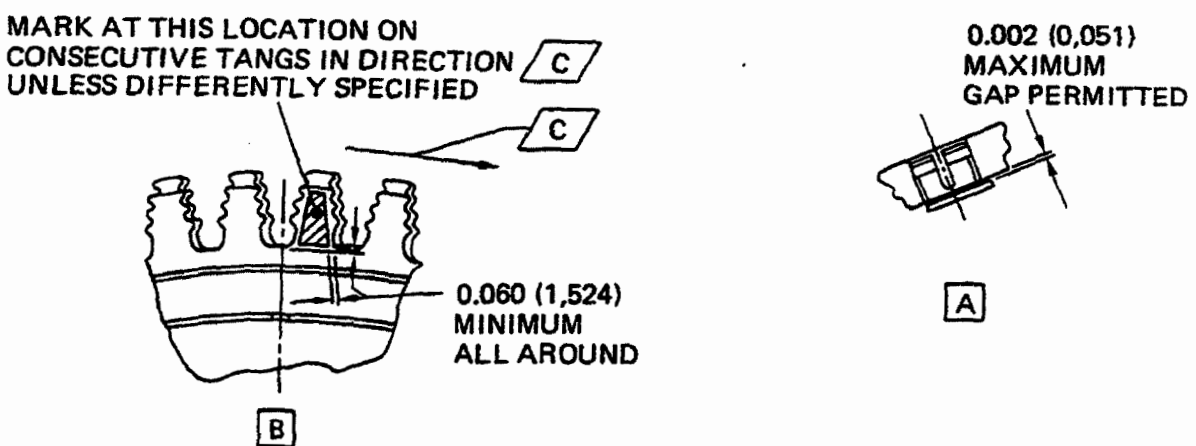
(1) A record of accomplishment is necessary.



Modification of the stage 1 turbine hub
Figure 2



SECTION THROUGH STAGE 1 TURBINE HUB ASSEMBLY



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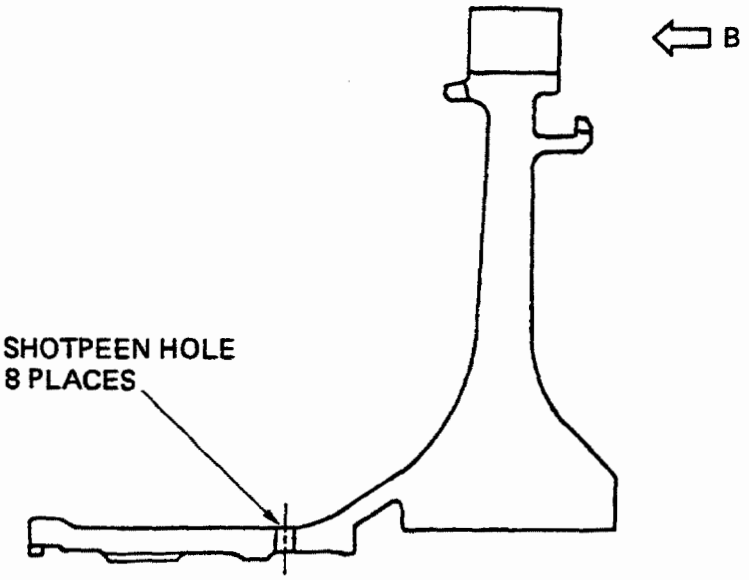
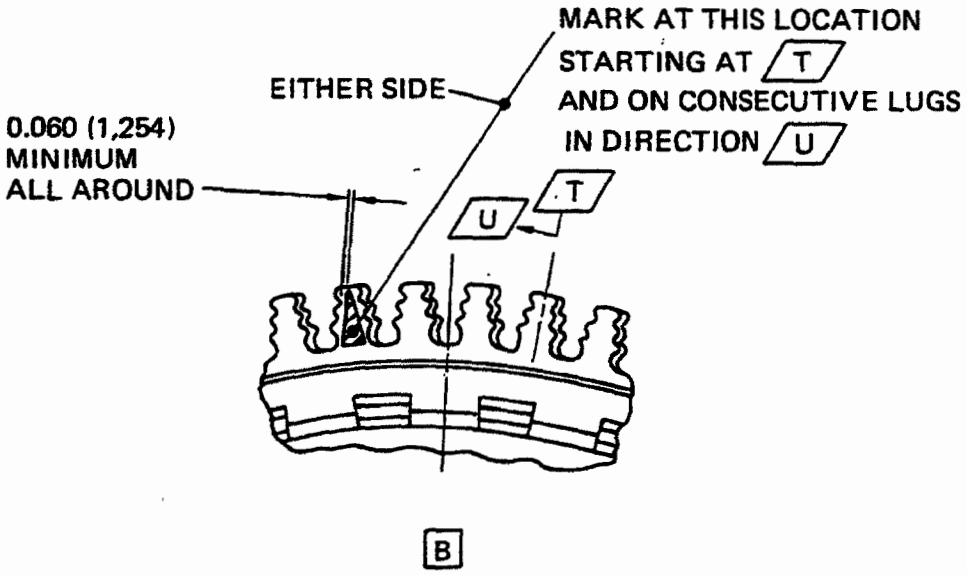
Modification of the stage 1 turbine hub (Installation of disk metering plugs)
Figure 3



SECTION THROUGH STAGE 2 TURBINE HUB



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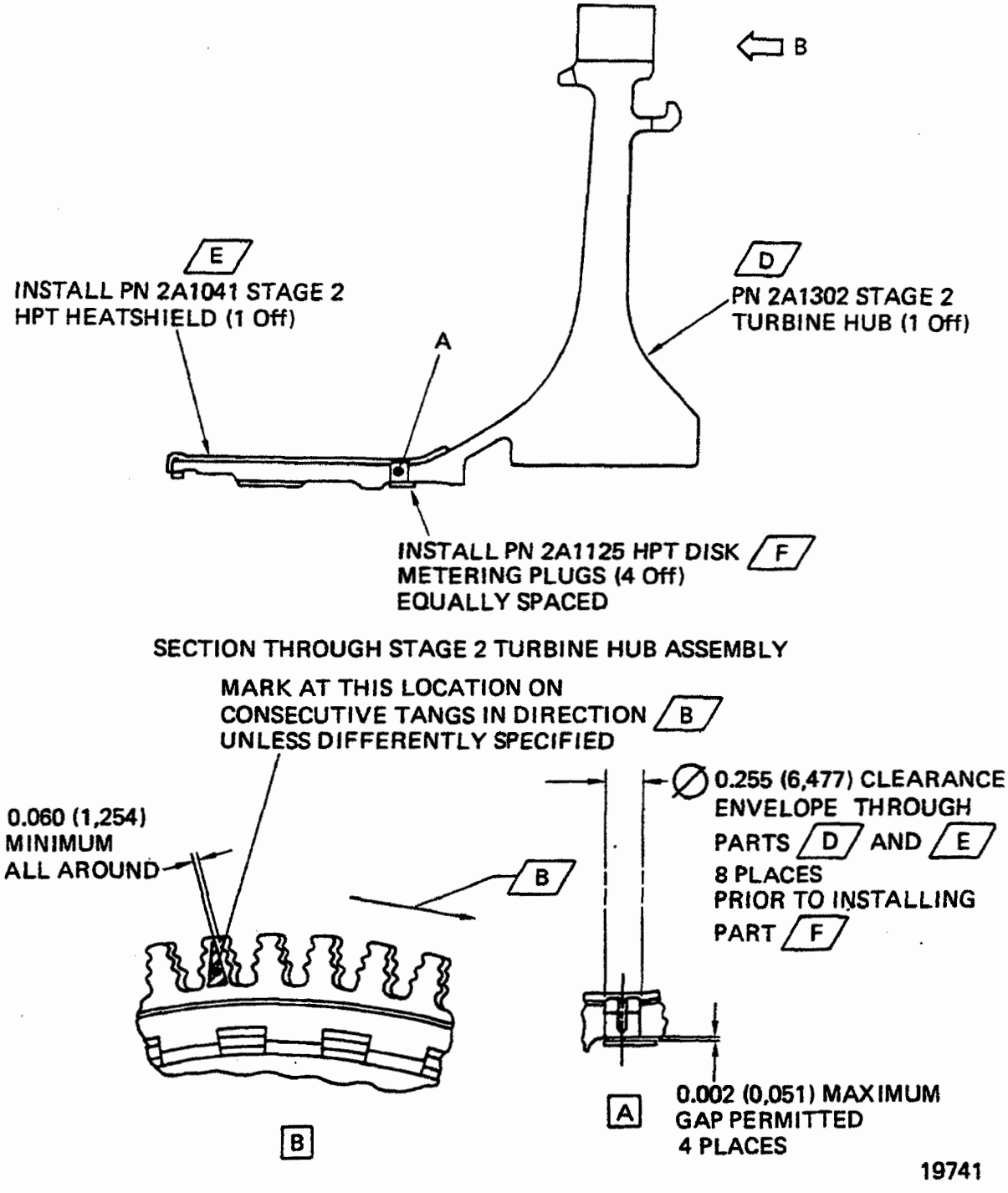
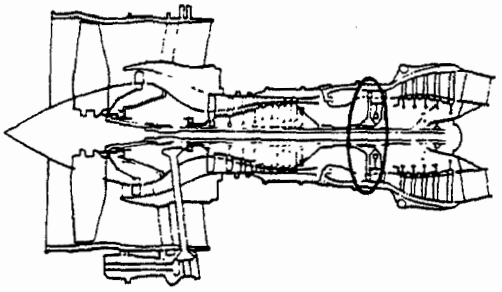
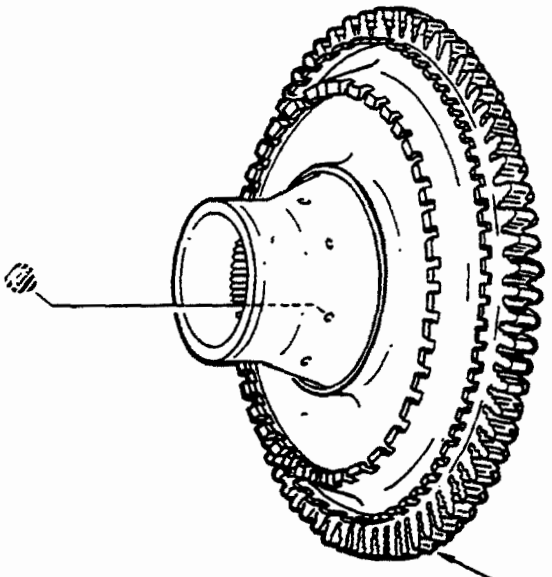
Modification of the stage 2 turbine hub
Figure 4



Modification of the stage 2 turbine hub (Installation of the disk heatshield and metering plugs)
Figure 5





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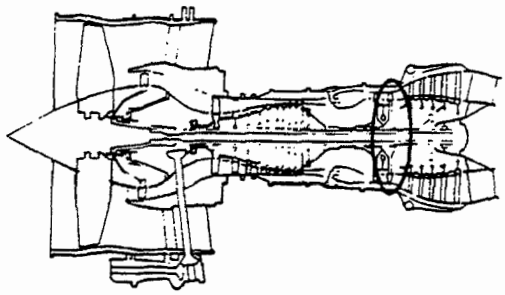
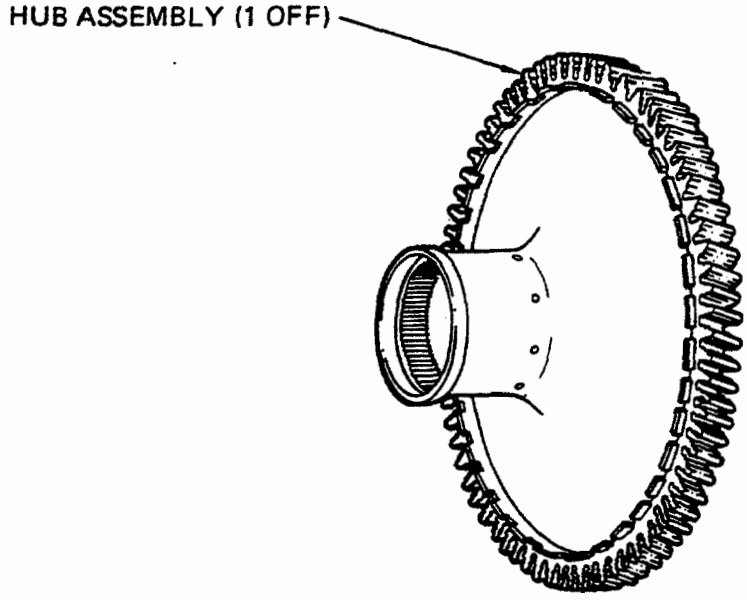
Location of stage 1 turbine hub assembly
Figure 6





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Location of stage 2 turbine hub assembly
Figure 7

3. Material Information

Applicability: For each V2500 Engine to incorporate this Bulletin.

A. Kits associated with this Bulletin:

None.

B. Parts affected by this Bulletin:

	New Part No. (ATA No.)	Qty.	Est'd Unit Price ($)	Keyword	Old Part No. (IPC No.)	Instructions Disposition
	Applicability: For each V2500 Engine to incorporate this Bulletin which incorporates V2500-ENG-72-0013.					
R	2A2321 (72-45-10)	1	-	Turbine Rotor - Stage 1, Assembly	2A2621 (01-010)	(S1)
R	2A2021 (72-45-11)	1	-	.Hub Assembly Turbine, Stage 1	2A1121 (01-010)	(S1)
R	2A1901 (72-45-11)	1	-	..Hub Turbine Stage 1	2A1101 (01-011)	(S1)
	Applicability: For each V2500 Engine to incorporate this Bulletin which does not incorporate V2500-ENG-72-0013.					
R	2A1921 (72-45-10)	1	-	Turbine Rotor - Stage 1, Assembly	2A1021 (01-010)	(S1)
R	2A2021 (72-45-11)	1	-	.Hub Assembly, Turbine - Stage 1	2A1121 (01-010)	(S1)
R	2A1901 (72-45-11)	1	-	..Hub Turbine, Stage 1	2A1101 (01-011)	(S1)
	Applicability: For each V2500 Engine to incorporate this Bulletin.					
	- (72-45-31)	-	-	Hub Turbine, Stage 2	2A0902 (01-010)	
R	2A1722 (72-45-30)	1	-	Turbine Rotor - Stage 2	2A1022 (01-010)	(S1)
R	2A1702 (72-45-31)	1	-	.Hub Assembly, Turbine - Stage 2	- (01-010)	(S1)
R	2A1302 (72-45-31)	1	-	..Hub Turbine, Stage 2	- (01-011)	(S1)
	2A1041 (72-45-31)	1	2700.00	..Shield - Heat, HPT Stage 2	- (01-020)	(S1) (A)
	2A1125 (72-45-31)	4	29.70	Metering Plug - HPT Disk, Stage 2	- (01-030)	(S1) (A)

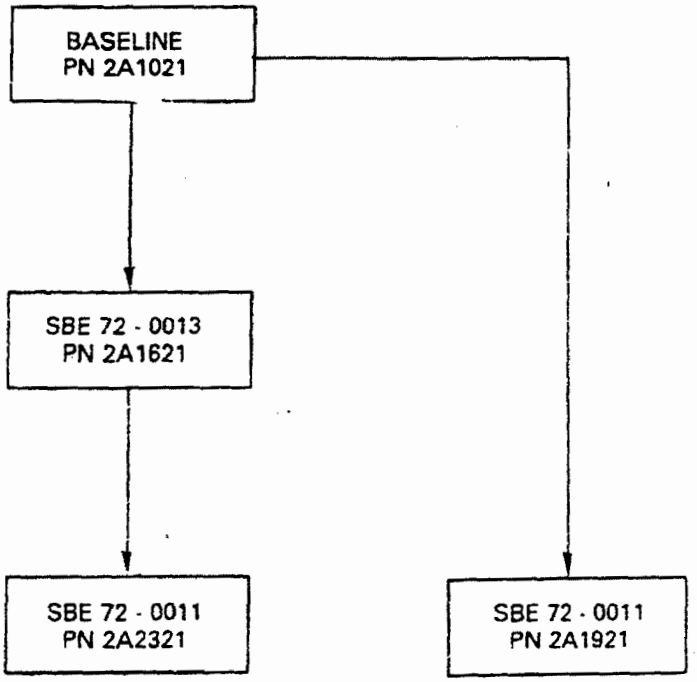
New Part No. (ATA No.)	Qty.	Est'd Unit Price ($)	Keyword	Old Part No. (IPC No.)	Instructions Disposition

C. Instruction/Disposition Code Statements:

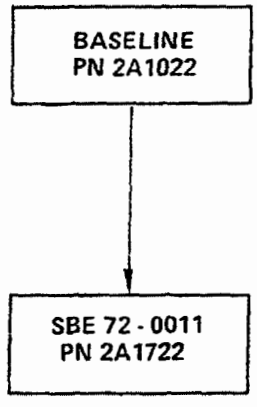
(S1) New parts coded (S1) must replace old parts coded (S1) as a COMPLETE SET per engine.
(A) New part is currently available.

R

NOTE: The estimated 1990 unit prices shown are provided for planning purposes only and do not constitute a firm quotation. Consult the IAE Price Catalog or contact IAE's Spare Parts Sales Department for information concerning firm prices.



Family tree - Stage 1 HPT rotor assembly
Figure 8



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Family tree - Stage 2 HPT rotor assembly
Figure 9