Date: Oct.5/00

Subject: Transmittal of Revision 1 To Service Bulletin Number V25000-ENG-72-0341

Service Bulletin Revision History:

Event	Date
Basic Issue	Nov.11/98
Revision 1	Oct.5/00

Reason For Issuance Of Revision:

(1) To add model and correct effectivity.

(2) Update IPC Part Catalog Manual numbers.

(3) Update Material Information.

(4) Update Accomplishment Instructions.

(5) Correct part number in Figure 1.

(6) Reformat to latest specifications.

(7) Make editorial corrections.

Effect on Prior Compliance:

None.

List of Effective Pages:

Bulletin Page No.	Rev. No.	Effective Date
1 to 11	1	Oct.5/00
12	Basic	Nov.11/98
13	1	Oct.5/00

V2500 International Aero Engines
SERVICE BULLETIN

ENGINE - HP TURBINE ROTOR AND STATOR ASSEMBLY - PROVIDE A NEW STAGE 1 HIGH PRESSURE TURBINE SUPPORT ASSEMBLY WHICH CONTAINS A NEW SEAL

MODEL APPLICATION

V2500-A1
V2522-A5
V2524-A5
V2527-A5
V2527E-A5
V2527M-A5
V2530-A5
V2533-A5
V2525-D5
V2528-D5

BULLETIN INDEX LOCATOR

72-44-00

Compliance Category Code	Internal Reference No.
6	97VC031A, 97VC031I

Nov.11/98
Revision 1 Oct.5/00

ENGINE - HP TURBINE ROTOR AND STATOR ASSEMBLY - PROVIDE A NEW STAGE 1 HIGH PRESSURE TURBINE SUPPORT ASSEMBLY WHICH CONTAINS A NEW SEAL

1. Planning Information

A. Effectivity

(1) Aircraft: Airbus A319, A320, A321

McDonnell Douglas MD-90

(2) Engine: V2500-A1 Engines Before Serial No. V0362
V2522-A5 Engines before Serial No V10526
V2524-A5 Engines before Serial No V10526
V2527-A5 Engines before Serial No V10526
V2527E-A5 Engines before Serial No V10526
V2527M-A5 Engines before Serial No V10526
V2530-A5 Engines before Serial No V10526
V2533-A5 Engines before Serial No V10526
V2525-D5 Engines Serial No. V20260
V2528-D5 Engines Serial No. V20260

B. Concurrent Requirements

None

C. Reason

(1) Condition:

There has been a number of engines in which significant Exhaust Gas Temperature (EGT) margin has been recovered upon the replacement of the subject Stage 1 stationary Seal. Subsequent analysis predicts the subject Seal can creep sufficiently in service, reducing the sealing ability, causing a leakage concern.

(2) Background:

Excessive preload in the installed static seal can result in excessive creep during engine operation and, as a result, leakage due to the compromised sealing.

(3) Objective:

Introduce a redesigned static air seal in which the preload has been reduced, improving the creep characteristics. In addition, change the coating the air seal from a chromium carbide to nickel, to be consistent with other air seals of similar design and function. A new vane support with enlarged cooling holes, a shortened rear rail, and coating on the rear rail are also provided.

(4) Substantiation

One hundred and sixty six hours of testing on a test engine was successfully completed, which included 150 hours and 43 minutes and 500 cycles of endurance testing. The first 150 hours of endurance testing represent 25 hours at takeoff thrust and 108.33 hours at maximum continuous thrust.

The test engine was tested for 150 hours/500 flight cycles at Takeoff (T/O) and maximum continuous conditions representative of the worst service condition and the engine test data showed that part performance was not affected and any small differences in temperature environment between models of engine would not significantly influence the results of the test. This seal is an improvement on all models of engine run at similar test conditions.

The study of features of this change indicate that there is no detrimental impact on engine operation and operability.

(5) Effects of Bulletin on Workshop Procedures:

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.

D. Description

(1) The purpose of this Service Bulletin is to provide a new Stage 1 High Pressure Turbine (HPT) Support Assembly which contains a new seal.

E. Approval

The Part Number Changes and/or part modifications described in Section 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.

The 'compliance' statement and the procedures described in paragraph F of this Service Bulletin have been shown to comply with the applicable Federal Aviation Regulations and are FAA-Approved for the Engine Model listed.

F. Compliance

Category 6

Accomplish when the subassembly (i.e. modules, accessories, components, build groups) is disassembled sufficiently to afford access to the affected part and to all affected spare parts.

G. Manpower

Estimated Manhours to incorporate the full intent of this Bulletin:

Venue		Estimated Manhours
(1)	In service	Not applicable
(2)	At overhaul	Not applicable

H. Material - Price and Availability

(1) Modification kit is not required. Parts are supplied as single line items.

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

I. Tooling - Price and Availability

Special tools are not required to accomplish this Service Bulletin.

J. Weight and Balance

(1)	Weight change	None
(2)	Moment arm	No effect
(3)	Datum	Engine Front mount Centerline (Power Plant station (PPS) 100)

K. Electrical Load Data

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

L. References

(1) IAE V2500 Service Bulletins:

V2500-ENG-72-0002 (Engine - Stage 1 Turbine Nozzle Assembly And HP Turbine Rotor And Stator Assembly - Incorporation Of Offset Supports)

(2) The V2500 Engine Illustrated Parts Catalogs (S-V2500-1IA, S-V2500-2IA, S-V2500-2IB, S-V2500-3IA, S-V2500-3IB, S-V2500-5IA, S-V2500-5IB, S-V2500-6IA, S-V2500-6IB, S-V2500-7IA, and S-V2500-7IB), Chapter/Section 72-44-10 add the new parts.

(3) The V2500 Engine Manual (E-V2500-1IA), 72-44-10 and 72-44-00, Assembly.

(4) The V2500 Engine Manual (E-V2500-3IA), 72-44-10 and 72-44-00, Assembly.

(5) The V2500 Standard Practices/Processes Manual (SPP-V2500-1IA), 70-09-00 Marking of Parts.

M. Other Publications Affected

(1) The V2500 Engine Illustrated Parts Catalog, Chapter/Section 72-44-10 to add the new part.

(2) The V2500 Engine Manual(E-V2500-1IA or E-V2500-3IA), 72-44-10 Cleaning to add the new part.

(3) The V2500 Engine Manual(E-V2500-1IA or E-V2500-3IA), 72-44-10 Inspection to add the new part.

(4) The V2500 Engine Manual (E-V2500-1IA or E-V2500-3IA), 72-44-10 to add the new part.

(5) The V2500 Engine Manual (E-V2500-1IA or E-V2500-3IA), 72-44-10 and 72-44-00, Assembly.

2. Material Information

A. Kit 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 V2522-A5, V2524-A5, V2527-A5, V2527E-A5, V2527M-A5, V2530-A5, V2533-A5, V2525-D5, and V2528-D5 Engine to incorporate this Service Bulletin					
2A3367 (72-44-10)	1		Support Assy Stage 1 HPT	2A2703 (01-010)	(S1)(A)(B)
2A3328 (72-44-10)	1	1715.00	.Seal-HPT, Stage 1	2A0170 (01-060)	(A)(B)(C)
Applicability: For each V2500-A1 Engine to incorporate this Service Bulletin					
2A3360 (72-44-10)	1	31420.00	Support Assy Stage 1 HPT	2A1358 (01-010)	(S1)(A)(B)
2A1359-001 (72-44-10	1		.Support-Stage 1 HPT	2A1359 (01-015)	(D)(E)
2A3328 (72-44-10)	1	1715.00	.Seal-HPT, Stage 1	2A0170 (01-060)	(A)(B)(C)
2A2591-002 (72-44-20)	20		.Vane Cluster Class 21 to 51	2A2591 (01-250)	(A)(B)
			OR		
2A2591-003 (72-44-20)	20		.Vane Cluster Class 21 to 51	2A2591-001 (01-250)	(A)(B)

C. Consumable Materials

D. Instructions/Disposition Code Statements:

(S1)Old and New Parts are freely and fully interchangeable
(A)The new part is currently available.
(B)The old part will continue to be supplied until stock is exhausted.
(C)It is recommended that the seal be replaced at every HPT disassembly.
(D)The new part can only be obtained by modification of a non procurable part.
(E)The old part will no longer be supplied.

NOTE: The estimated unit prices, if 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.

3. Accomplishment Instructions

A. Rework Instructions

(1) Do a modification of the 2A1359 Stage 1 HPT Vane Support (1 off). See Reference (1), Chapter/Section 72-44-50, Figure/Item No. 01-010. See Figures 1 and 3.

Procedure	Supplementary Information
(a) Machine the non procurable 2A1359 Stage 1 HPT Vane Support as shown in in the referenced figure.	Refer to Figure 3.
(b) Coat the enclosed areas as specified in the procedure given in CONTROL NO./TASK NO. 70-34-03-340-501-002 and the referenced figures. Use the procedure given in specification 53-15.	Refer to the procedure given in Reference (4) Chapter/Section 70-34-03, Plasma Spray Application Coating. Refer to Figure 3.
(c) Mark the new part number adjacent to the existing part number. Use the vibration peen method.	Existing: 2A1359 — New Part Number: 2A1359-001 Use the procedure specified in Reference (4), Chapter/Section 70-09-00, Marking of Parts. See Figure 3 (Sheet 1).

(2) Do an inspection and modification (if necessary) of the 2A2591 or 2A2591-001 Stage 1 HPT Vane Cluster (20 off). See Reference (1), Chapter/Section 72-44-20, Figure/Item No. 01-240A or 01-250. See Figures 4.

Procedure	Supplementary Information
(a) .Do a check of Dimension A and proceed as follows: 1 If Dimension A is less than 1.450 Inch (36,83 mm) no modification is necessary. 2 If Dimension A is more than 1.450 Inch (36,83 mm) machine to the dimensions specified in the referenced figure.	Refer to Figure 4.

Procedure	Supplementary Information
(c) Mark the new part number adjacent to the existing part number. Use the vibration peen method.	Existing / New Part Number: 2A2591 / 2A2591-002; 2A2591-001 / 2A2591-003
	Use the procedure specified in Reference (4), Chapter/Section 70-09-00, Marking of Parts. See Figure 3 (Sheet 1).

B. Install the 2A3328 Stage 1 High Pressure Turbine Seal by the procedure specified in Reference (3) or (4) Engine Manual, Chapter/Section 72-44-10, Assembly when you assemble the Stage 1 High Pressure Turbine Support Assembly. See Figures 1 and 2.

C. Installation Instructions (V2500-A1 Engines)

(1) Modify the assembly as follows by replacement of detail parts, when you assemble the Stage 1 High Pressure Turbine Support Assembly by the procedure specified in Reference (3) Engine Manual, Chapter/Section 72-44-10 Assembly.

(a) Replace the non procurable 2A1359 Stage 1 High Pressure Turbine Support with the modified 2A1359-001 Stage 1 High Pressure Turbine Support (1 off)

(b) Replace the 2A0170 Stage 1 High Pressure Turbine Seal with the 2A3328 Stage 1 High Pressure Turbine Seal (1 off) introduced by V2500-ENG-72-0341.

(c) Identify the new Stage 1 High Pressure Turbine Support Assembly as 2A3360. Use the procedure specified in Reference (4), Chapter/Section 70-09-00 Marking of Parts. Use the vibration peen method.

(2) Replace the 2A1358 Stage 1 High Pressure Turbine Support Assembly with the 2A3360 Stage 1 High Pressure Turbine Support Assembly by the procedure specified in Reference (3) Engine Manual, Chapter/Section 72-44-00 Assembly. See Figure 3.

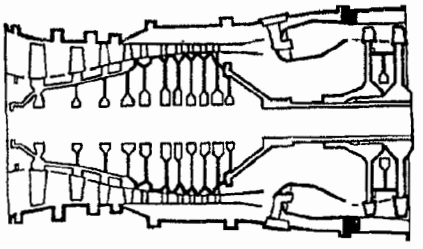
NOTE: The new Stage 1 High Pressure Turbine Support Assembly can be purchased as a new part or obtained by modification (replacement of details).

D. Installation Instructions (V2500-A5 and V2500-D5 Engines)

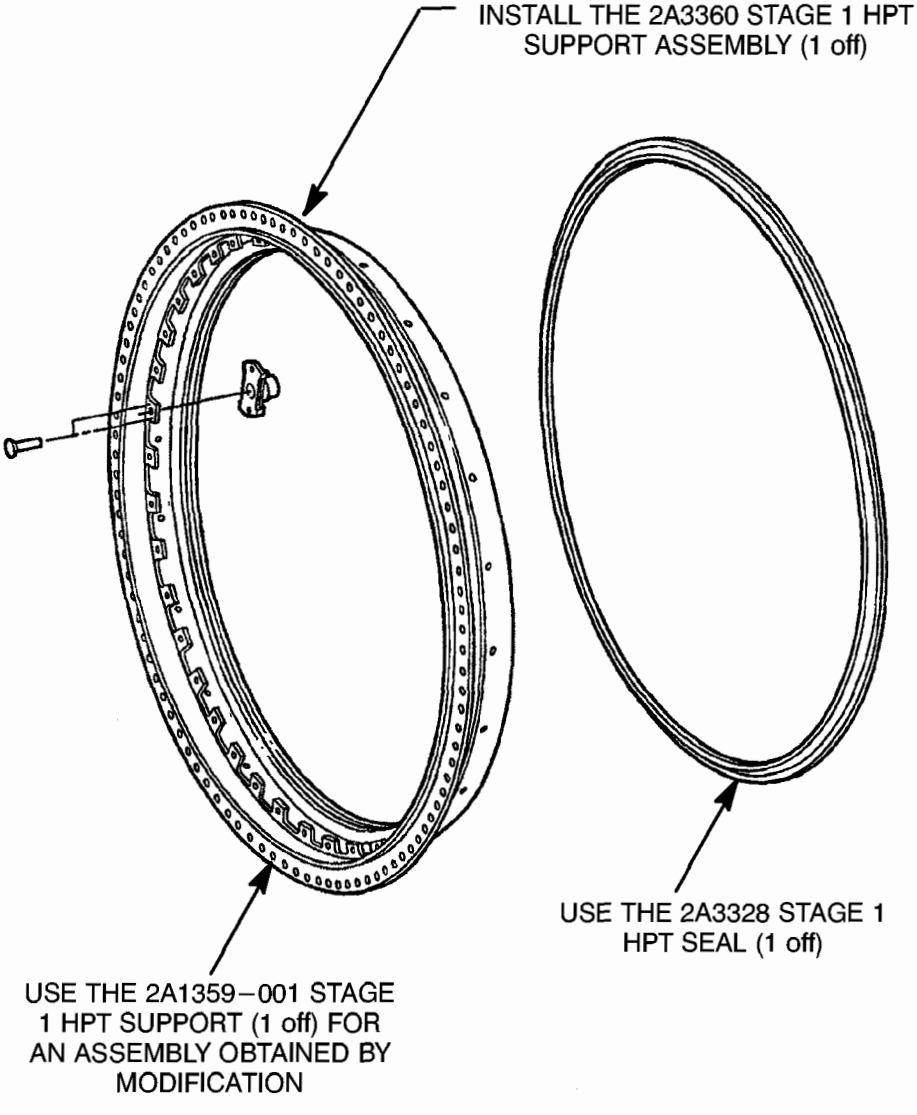
(1) Replace the 2A2703 Stage 1 High Pressure Turbine Support Assembly with the 2A3367 Stage 1 High Pressure Turbine Support Assembly by the procedure specified in Reference (3) or (4), Engine Manual, Chapter/Section 72-44-00 Assembly. See Figure 2.

E. Recording Instructions

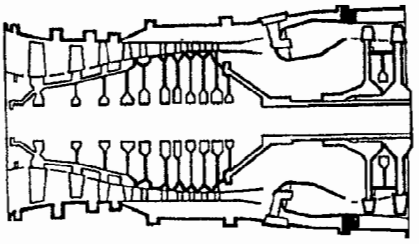
(1) A record of accomplishment is necessary.



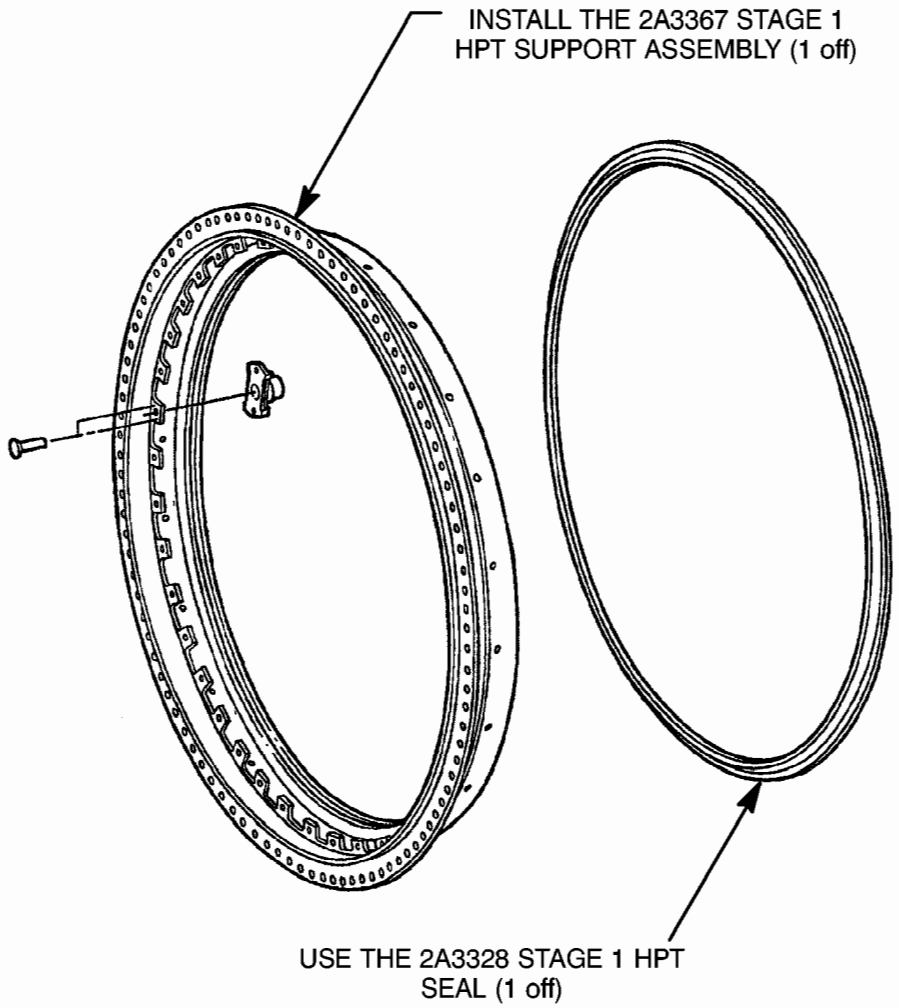
MODULE 40



Location of the Stage 1 High Pressure Turbine Support Assembly (V2500-A1 Engines)
Figure 1

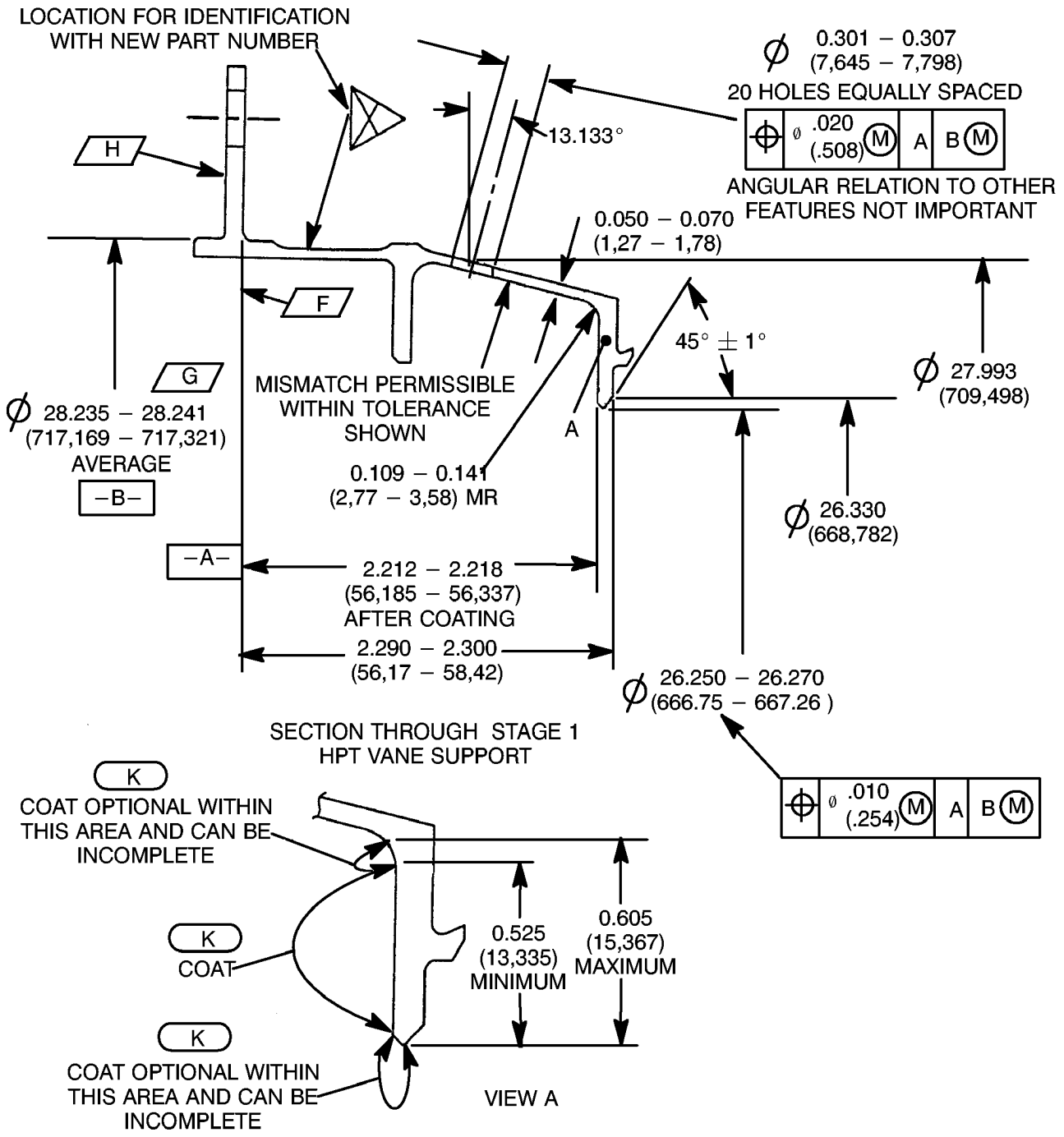


MODULE 40



E8075

Location of the Stage 1 High Pressure Turbine Support Assembly (V2500-A5 and V2500-D5 Engines)
Figure 2



E8076

Modification of the Stage 1 High Pressure Turbine Vane Support
Figure 3 (Sheet 1)

UNLESS DIFFERENTLY SPECIFIED BREAK SHARP EDGES 0.003 – 0.015 (0,08 – 0,38).

UNLESS DIFFERENTLY SPECIFIED ALL SURFACE TEXTURES ARE TO BE 125 (3.2 µm).

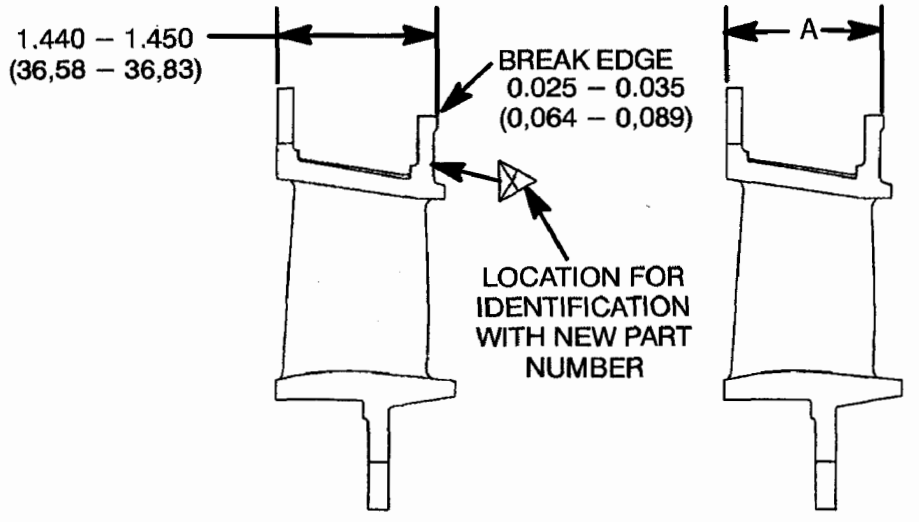
UNLESS DIFFERENTLY SPECIFIED ALL DIMENSIONS APPLY WHEN SURFACE F IS ⏥ .005 (0,127) AND Ø G MAINTAINS A CLEARANCE ENVELOPE OF Ø 28.242 (717,337) IN A FREE STATE OR CONSTRAINED. CONSTRAINT CONTACT ALLOWED ONLY ON SURFACE F AND Ø G.

(K) COAT BY THE PROCEDURE SPECIFIED IN THE TEXT. UNLESS DIFFERENTLY SPECIFIED, DIMENSIONS ARE BEFORE COAT.

IN A FREE STATE SURFACE F IS ⏥ .010 (0,254) AND Ø G IS Ø 28.210 – 28.266 (716,53 – 717,96).

E8070

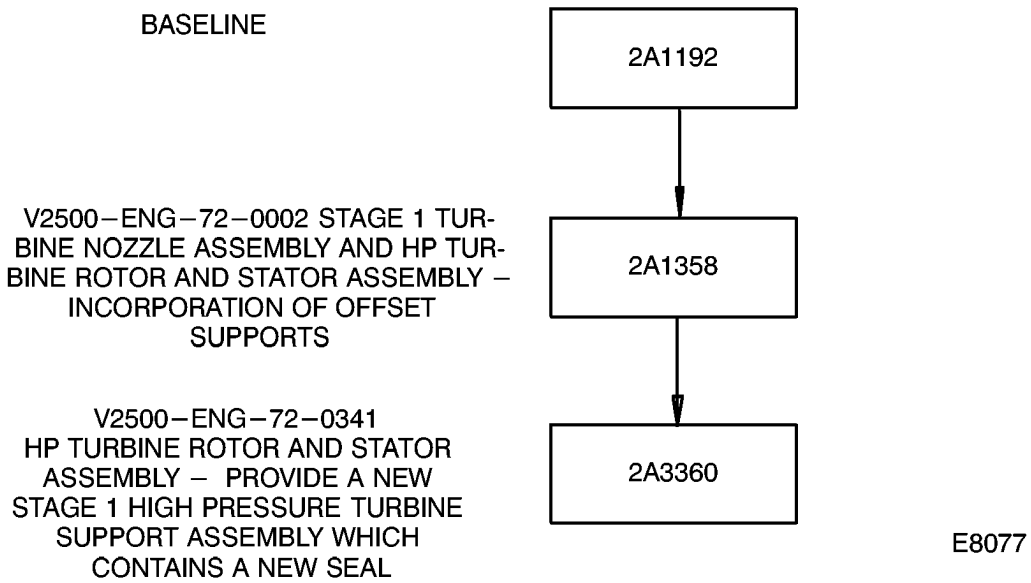
Modification of the Stage 1 High Pressure Turbine Vane Support
Figure 3 (Sheet 2)



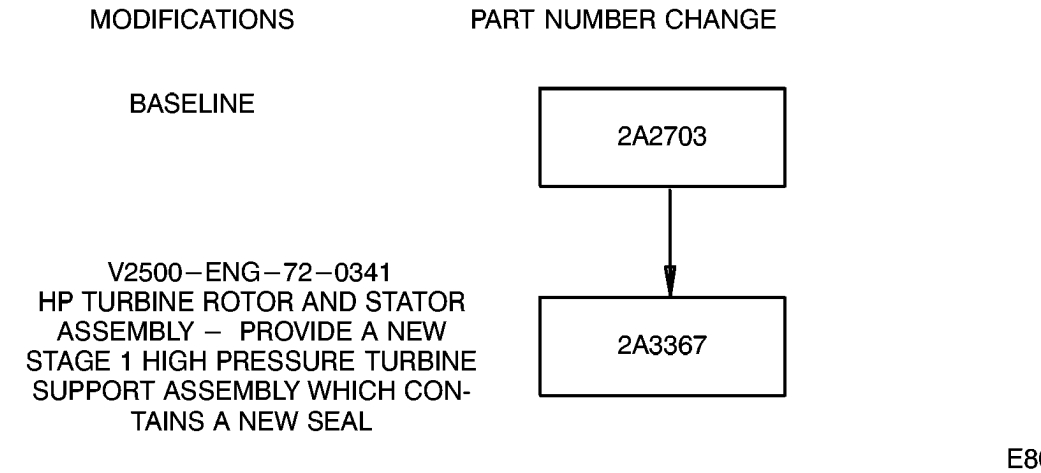
VIEWS OF STAGE 1 HPT VANE

E8071

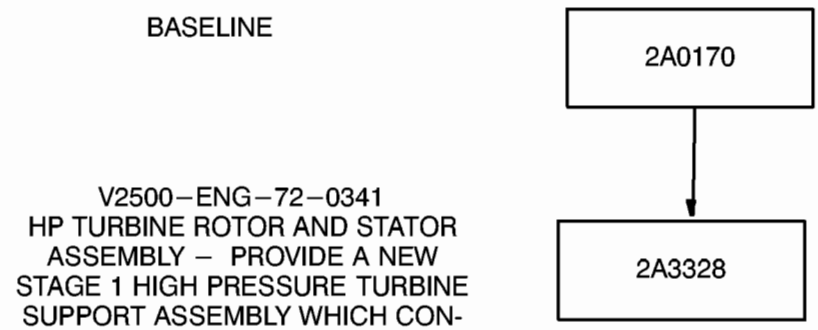
Inspection of the Stage 1 High Pressure Turbine Vane
Figure 4



Family Tree - Stage 1 High Pressure Turbine Support Assembly (V2500-A1 Engines)
Ref. Catalog Sequence No 72-44-10. Fig. 1 Item 010
Figure 5



Family Tree - Stage 1 High Pressure Turbine Support Assembly (V2500-A5 And V2500-D5 Engines)
Ref. Catalog Sequence No 72-44-10. Fig. 1 Item 010
Figure 6



Family Tree - Stage 1 High Pressure Turbine Seal
Ref. Catalog Sequence No 72-44-10. Fig. 1 Item 060
Figure 7