International Aero Engines

SERVICE BULLETIN

ENGINE - HP COMPRESSOR RING CASES - STAGES 7, 9 AND 10 INNER CASES- SPACERS AT HEAT SHIELD RETAINER ATTACHMENT POINTS WITH REDUCED SPIGOT LENGTH - CATEGORY CODE 6 - MOD.ENG-72-0182

See Vendor Bulletin N

1. Planning Information

A. Effectivity

(1) Aircraft : Airbus A320

(2) Engine : V2500 A1 Engines prior to Serial No.V0362

B. Concurrent Requirements

Service Bulletin V2500-ENG-72-0154 to be incorporated prior to, or concurrently with this Bulletin.

C. Reason

(1) Condition

Frettage has occured on the spacers and washers at the bolting locations by which the heat shield retainers are attached to the HP compressor inner casing flanges at stages 7, 9 and 10.

(2) Background

The heat shield retainers are half rings bolted to the inner casing fanges at 5 circumferential positions. The center position is firmly fixed but the spacer spigot length at the other 4 positions is such that firm clamping is not obtained. Thus allows the heat shield retainers to move relative to the spacers and washers and results in frettage.

(3) Objective

To eliminate frettage of the spacers and washers at the heat shield retention locations and maintain engine reliability.

(4) Substantiation

The mechanical integrity of the modified design has been proven by extensive problem-free engine running on A5 and D5 models.

(5) Effect 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

This Service Bulletin introduces stage 7, 9 and 10 rear inner case assemblies, incorporating spacers having a reduced spigot length. This ensures that a clearance will exist between the spacer spigot and washer when the bolts are tightened and will eliminate movement of the heat shield retainers.

Existing inner case assemblies can be reworked by removing the existing spacers and fitting the modified spacers.

E. Approval

The part number changes and/or part modifications described in Section 2 and 3 of the 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 Code 6

Accomplish when the subassembly (i.e. Module, 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	Estmated Manhours
(1) In Service	Not applicable
(2) At Overhaul	1 hour 5 minutes
TOTAL:	1 hour 5 minutes

H. Material - Price and Availability

(1) Modification Kit is not required.

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

I. Tooling - Price and Availability

Special tools are not required.

J. Weight and Balance

(1)	Weight change	Minus 0.1 lbs (0,045kg)
(2)	Moment arm	22 in. (558,8mm) rearward of datum
(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) Internal Reference No.

EC90VR027

(2) Other References

V2500 Engine Illustrated Parts Catalog (S-V2500-1IA), Chapter/Section 72-41-21.

V2500 Overhaul Processes and Consumable Index (PCI-V2500-1IA).

V2500 Standard Practices/Processes Manual (SSP-V2500-1IA), TASK 70-23-01-230-501 and TASK 70-09-00-400-501, SUBTASK 70-09-00-400-001.

V2500 Engine Manual (E-V2500-1IA)

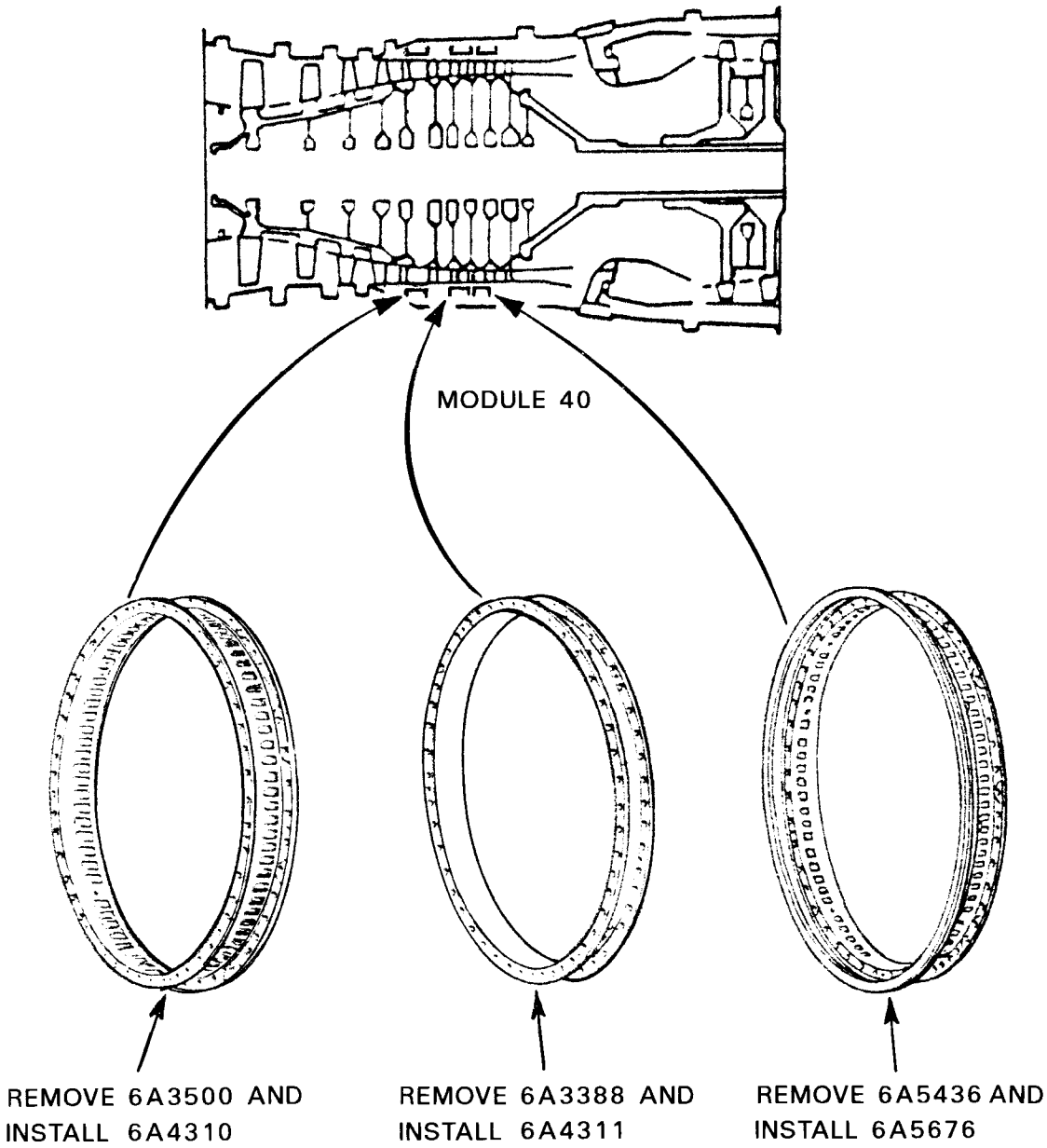
M. Other Publications Affected

(1) V2500 Engine Illustrated Parts Catalog (S-V2500-1IA), Chapter/Section 72-41-21.

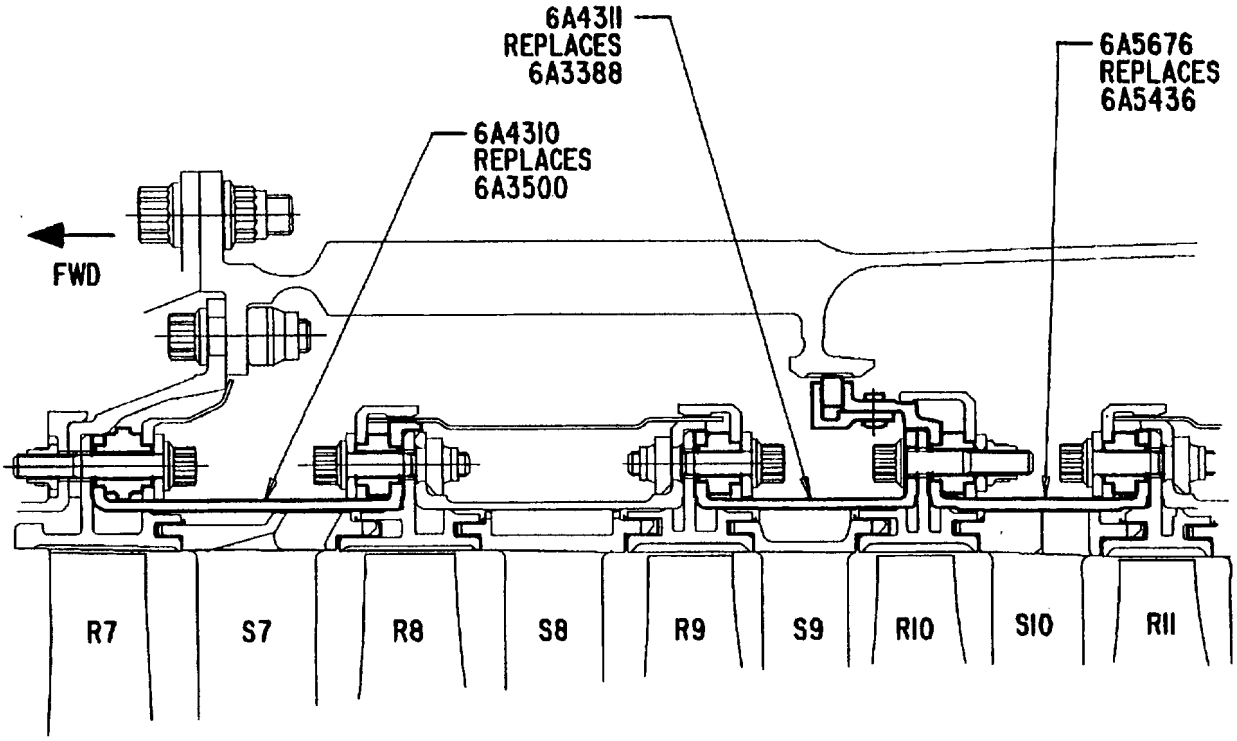
(2) V2500 Engine Manual (E-V2500-1IA), 72-41-21, Cleaning -01, -04 and -12, Inspection/Check -04, -10 and -11 and Rework.

(3) V2500 Engine Maintenance Manual (M-V2500-1IA), 72-00-00, Inspection/Check.

(4) Repair Schemes VRS6093, VRS6097, VRS6099, VRS6162, VRS6163, VRS6167, VRS6169, VRS6251, VRS6252, VRS6253, VRS6266 and VRS6331 will be affected by this Service Bulletin.



Location of stage 7, 9 and 10 HP compressor rear inner case assemblies
Fig.1



SECTION THROUGH H.P. COMPRESSOR SHOWING STAGE 7, 9 AND 10 CASE ASSEMBLIES.
BEFORE AND AFTER ALTERATION.

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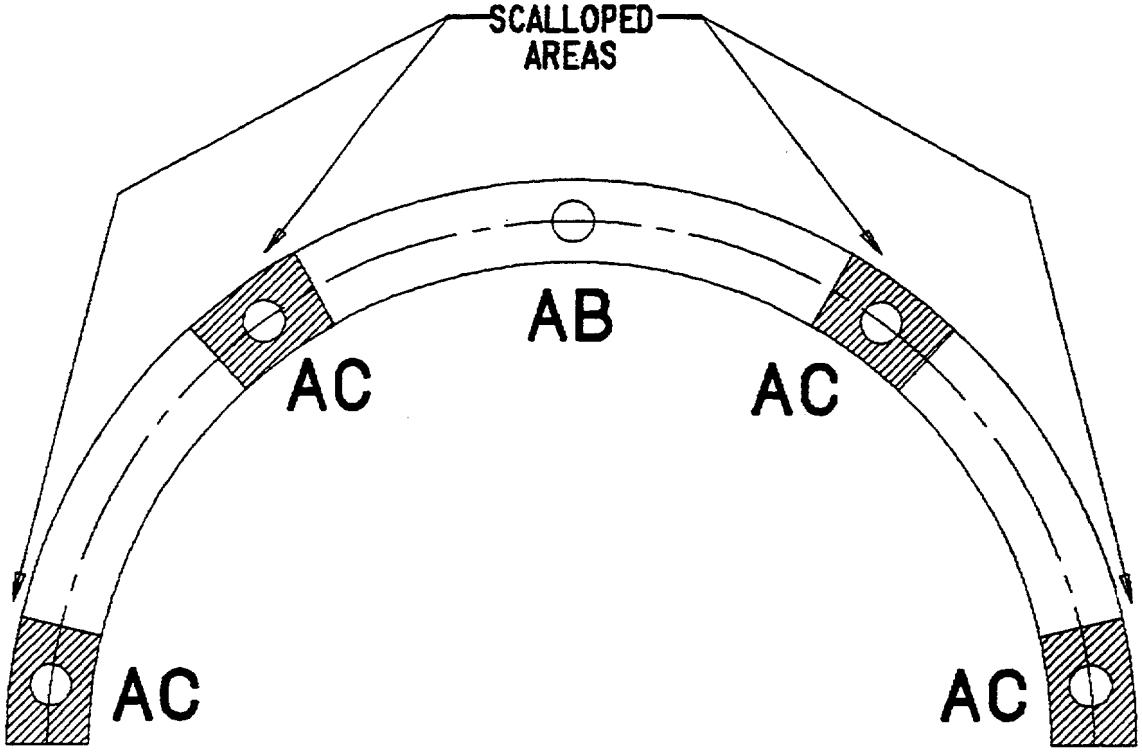
Section through HP compressor showing stage 7, 9 and 10 case assemblies - Before and after alteration
Fig.2



DIAGRAMMATIC VIEW ON HEAT SHIELD
RETAINING HALF-RING
(SEE FIGS 4 AND 5)

NOTE :- WITH SPACER (UP111144) THE HALF-RING WAS FIRMLY LOCATED AT POSITION **AB** ONLY. AT POSITIONS MARKED **AC** THE SPACER SPIGOT EXTENDED THROUGH THE HALF-RING TO GIVE AXIAL RELIEF.
WITH SPACER (UP60487) THE HALF-RING IS LOCATED FIRMLY AT ALL MOUNTING POSITIONS.

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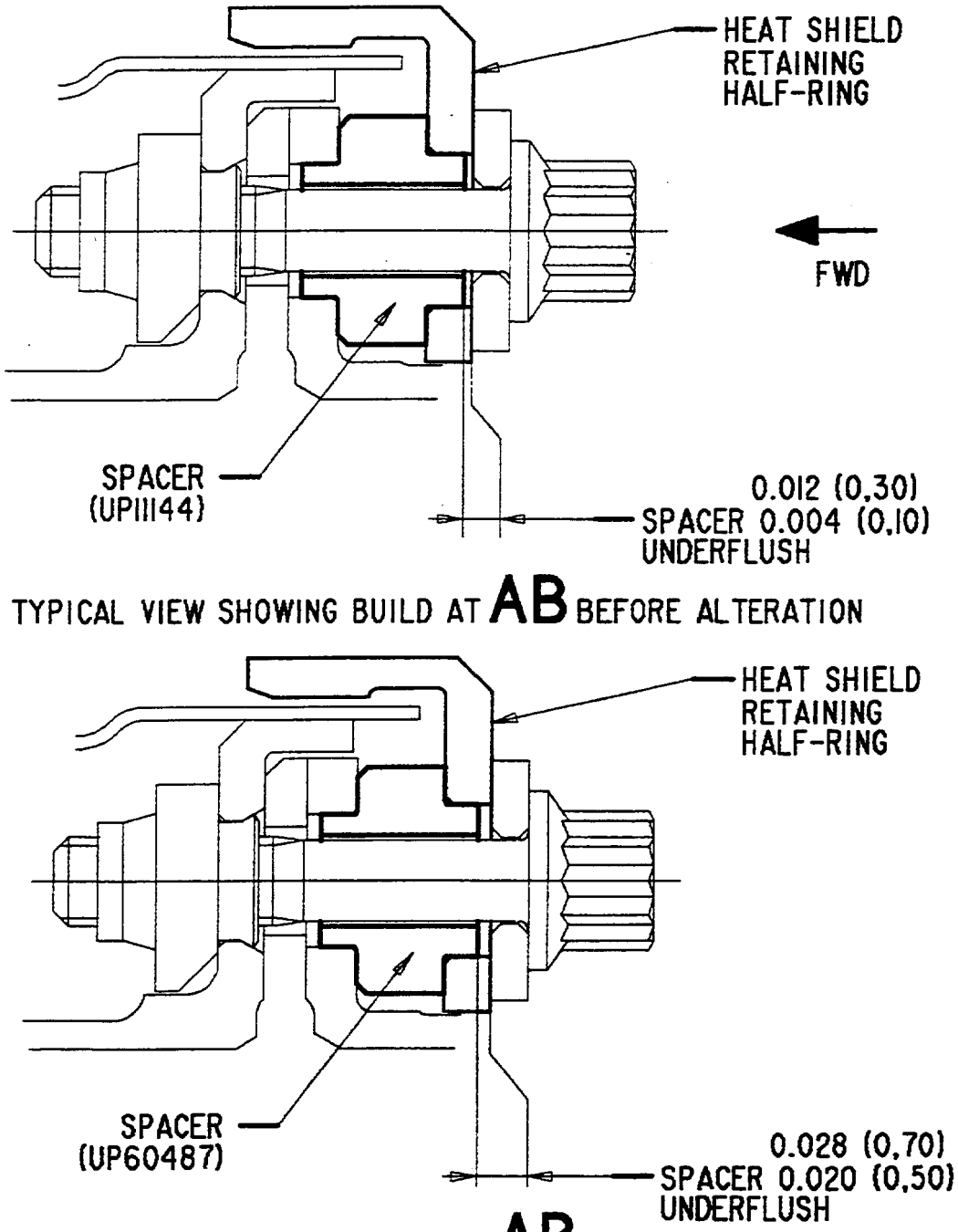
Diagrammatic view on heat shield retaining half ring
Fig.3



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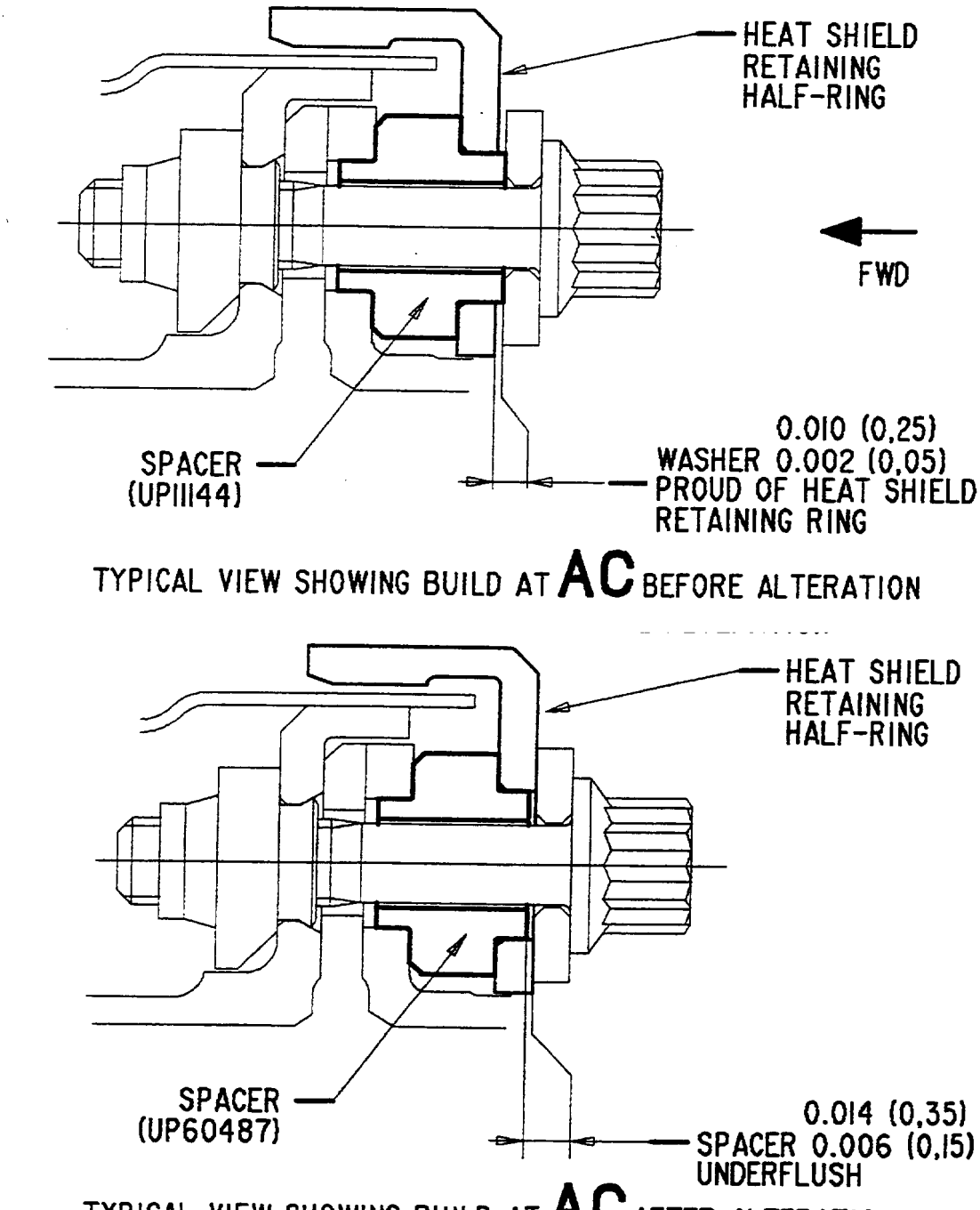
Typical view showing build at AB - Before and after alteration
Fig.4



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Typical view showing build at AC - Before and after alteration
Fig.5

2. Accomplishment Instructions

A. Rework Instructions

(1) Rework the following parts.

6A3500,case assembly-stage 7(Refer to 72-41-21, Fig./Item 03-500),
6A3388,vase assembly-stage 9(Refer to 72-31-21, Fig./Item 03-800) and
6A5436,case assembly-stage 10(Refer to 72-41-21,Fig./Item 04-350).

Consumable Materials

CoMat 03-026 Liquid nitrogen

Standard Equipment

Standard workshop equipment
Penetrant crack test equipment
Heat protective gloves
Vibro-engraving equipment

Procedure	Supplementary Information
(a) Remove the spacers	Refer to Figure 6 Use a drift or a locally made extractor.
(b) Remove the sharp edges front around the location holes	Refer to Figure 6 Use standard workshop equipment
(c) Clean the holes	Use a soft clean cloth
(d) Visually examine and measure the dimensions of the location holes	Refer to Figure 6 Examine the interference on the diameter. Reject if the location hole is oversize
(e) Crack test the affected area	Refer to SPM TASK 70-23-01-230-501 Use penetrant crack test equipment
(f) Freeze the spacers	Use UP60487 spacer-stage 7, (10 off), stage 9, (10 off) and stage 10, (20 off), case assembly. Use CoMat 03-026 liquid nitrogen

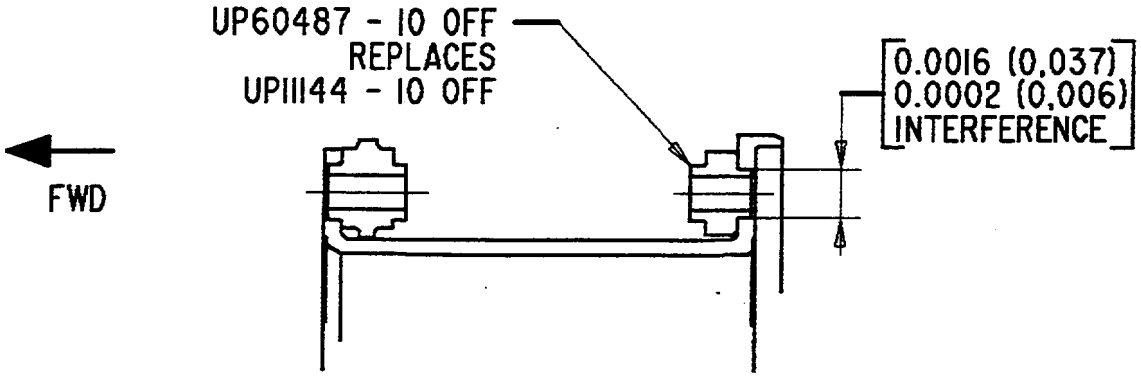
(g) Install the spacers into The flange and make sure the spacers are pushed fully into position before the temperature of the spacer is equal to the flange	Refer to Figure 6 Use an applicable installation tool. Use heat protective gloves	
(h) Cancel the old part number and identify with the new	Old part no. 6A3500 6A3388 6A5436 Refer to SPM TASK 70-09-00-400-501 SUBTASK 70-09-00-400-001 Use vibro-engraving equipment	New part no. 6A4310 6A4311 6A5676

B. Assembly Instructions

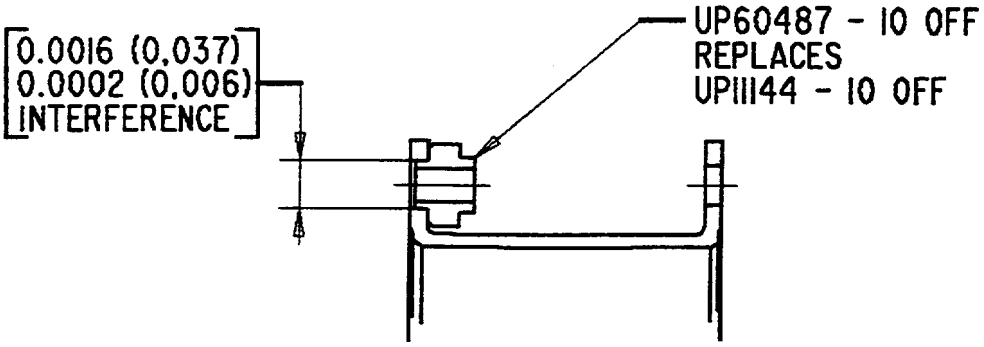
(1) Assemble new or re-identified 6A4310 stage 7 HP compressor case assembly, 6A4311 stage 9 HP compressor case assembly and 6A5676 stage 10 HP compressor case assembly, by use of approved procedures, Engine Manual, 72-41-10, Assembly.

C. Recording Instructions

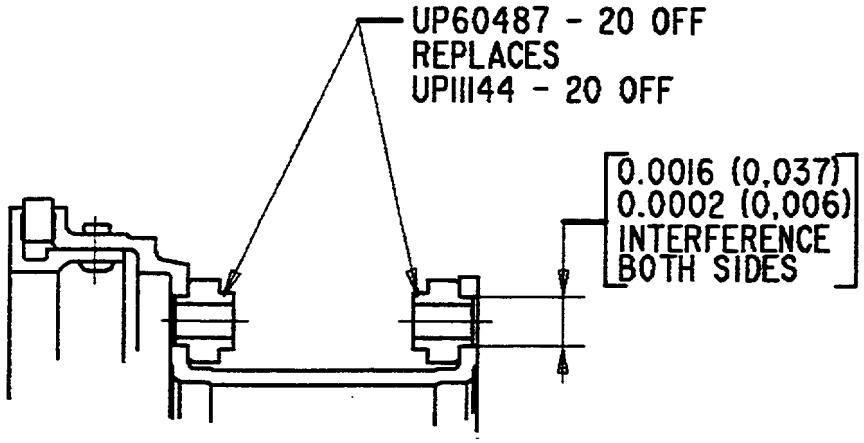
(1) A record of accomplishment is necessary.



REWORKING OF STAGE 7 REAR INNER COMPRESSOR CASE ASSEMBLIES



REWORKING OF STAGE 9 REAR INNER COMPRESSOR CASE ASSEMBLIES



REWORKING OF STAGE 10 REAR INNER COMPRESSOR CASE ASSEMBLIES

ALL DIMENSIONS ARE IN INCHES (MILLIMETRES)

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Rework of stage 7, 9 and 109 rear inner compressor case assemblies
Fig.6

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
6A4310 (72-41-21)	1	6483.00	Case assy, stage 7 HPC	6A3500 (03-500)	(A)(B) (1D)(S1)
UP60487 (72-41-21)	10	42.70	Spacer - Stage 7 case assy HPC	UP11144 (03-514)	(A)(B) (S1)
6A4311 (72-41-21)	1	10310.00	Case assy, stage 9 HPC	6A3388 (03-800)	(A)(B) (1D)(S1)
UP60487 (72-41-21)	10	42.70	Spacer - Stage 9 case assy HPC	UP11144 (03-814)	(A)(B) (S1)
6A5676 (72-41-21)	1	25140.00	Case assy, stage 10 HPC	6A5436 (04-350)	(A)(B) (1D)(S1)
UP60498 (72-41-21)	20	42.70	Spacer - Stage 10 case assy HPC	UP1144 (04-364)	(A)(B) (S1)

C. Instructions/Disposition Code Statements:

(A) New part is currently available for sale.
(B) Old part will be discontinued.
(1D) Old part can be reworked and re-identified to the new part number.
(S1) New parts coded (S1) must replace old parts coded (S1) as a 'COMPLETE SET' per engine.

NOTE: The estimated 1995 unit prices 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.