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V2500-A1 SERIES PROPULSION SYSTEMS SERVICE BULLETIN

Printed in Great Britain

This document transmits Revision 3 to Service Bulletin V2500-ENG-72-0027

Document History

Service Bulletin Revision Status

Initial Issue	Jul. 5/93
Revision 1	Jul.15/94
Revision 2	Nov.22/96

Bulletin Revision 3

Remove	Incorporate	Reason for change
All pages of the Service Bulletin	Pages 1 to 18 of the Service Bulletin	To amend the Instruction Disposition Codes and to incorporate editorial changes.

V2500-ENG-72-0027

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

International Aero Engines

SERVICE BULLETIN

ENGINE - HIGH PRESSURE COMPRESSOR - INTRODUCTION OF REDUCED WEIGHT FRONT COMPRESSOR CASING

1. Planning Information

A. Effectivity

(1) Airbus A320

(a) V2500-A1 Engines prior to Serial No.V0289.

B. Concurrent Requirements

None.

C. Reason

(1) Condition:

As part of the V2500-A1 engine weight reduction programme, this Service Bulletin introduces a front compressor casing and associated changes which provide a weight reduction of 20 lb.

(2) Background:

R A review of the front compressor casings showed that various locations of
R the casing could be reprofiled to reduce overall casing weight. In addition, this review also highlighted the possibility of selected borescope ports being relocated to improve accessability.

(3) Objective:

To reduce engine weight.

(4) Substantiation:

Extensive engine tests have been carried out succesfully.

Stress analysis and rig testing confirmed satisfactory structural integrity and rigidity. Adequate containment capability was also demonstrated.

(5) Effects of Bulletin on:

(a) Removal/Installation

Not affected.

(b) Disassembly/Assembly

Affected (Refer to 1.B.(6) Supplemental Information).

(c) Cleaning

Affected (Refer to 1.B.(6) Supplemental Information).

(d) Inspection/Check

Affected (Refer to 1.B.(6) Supplemental Information).

(e) Repair

Affected (Refer to 1.B.(6) Supplemental Information).

(f) Testing

Not affected.

(6) Supplemental Information:

(a) The Disassembly/Assembly will be revised to add new configuration of this Service Bulletin.

(b) Cleaning, Inspection/Check and Repair will be revised to add new configuration of this Service Bulletin.

D. Description

The changes introduced by this Service Bulletin are:

(1) A new compressor front casing of reduced weight. This has been achieved by:

(a) Deleting the separate stages 3 and 4 rotor path liners and substituting abradable lining sprayed directly onto the casing. This allows the casing outer surface to be reprofiled to follow the annulus line more closely.

(b) Reducing the heights of the running tracks for the unison ring compensating blocks and centralising pads.

(c) Applying a general reduction in casing thickness in the regions below the unison rings.

(d) Deleting a number of obsolete bosses.

(2) Revisions to the borescope ports.

(a) Circumferential relocation of the stage 5/6 borescope access from 66.7 degrees below the RH split line to 33.5 degrees below the LH split line and the blanking plug is now a two-piece arrangement. New stage 6 rotor path segments are necessary with the repositioned borescope.

(b) An additional borescope point in front of the stage 3 rotors at 40.9 degrees below the LH split line which allows greater inspection capability.

(3) Rotor path segment linings at stages 5 and 6 with chamfered ends.

(4) Revised setting procedures together with alterations to the V.S.V. mechanism to suit the reprofiled casing.

R (a) The unison rings are unchanged but new compensating blocks and centralising pad assemblies are introduced. The 'C' section stage 4 centralising mountings are reversed to bring them in line with the orientation at other stages.

(b) Modified stages 4 and 5 unison ring connector assemblies, which are formed from two end sections welded to a hollow centre piece of square section tube, replace the existing two-piece welded assemblies. New compensating pad housing assemblies are required with the modified
R connector assemblies together with a new range of compensating pad adjusting spacers.

R (c) New vane operating lever assemblies are required at stages 4 and 5, which feature a longer pin to suit the increased radial thickness of the connector end sections.

R (d) To avoid a foul between the new connector assemblies at the engine LH side, a new fuel servo tube, from the 4 way connector to the LPC bleed
R master actuator, is required, which is routed over instead of under raceway 6A2153. Minor changes to the two existing Clipping Points 5747
R and 6058 are made to suit the revised routing.

E. Compliance

Category Code 7

Accomplish when supply of superseded parts has been depleted.

F. 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.

G. Manpower

(1) In Service

Not Applicable.

(2) At Overhaul

Applicable (Hours not affected).

H. Material - Price and Availability

(1) Modification kit not required.

R (2) Refer to section 2. Material Information for availability of future spares.

R (3) Refer to IAE Spares and/or current price catalogue for current prices.

I. Tooling - Price and Availability

Special tools are not required.

J. Industry Support Information

Not applicable.

K. Weight and Balance

(1) Weight change

Minus 20 lb (9,07 kg).

(2) Moment arm

6.7 in. (170 mm) rearward.

(3) Datum

Engine Front Mount Centreline (Power Plant Station (PPS) 100).

L. Electrical Load Data

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

M. Software Accomplishment Summary

Not Applicable.

N. References

(1) Internal Reference No.:

Engineering Change No. 87VR117, 87VR117A, 87VR117B, 88VR125, 88VR162,
R 92VR042, 92VR042A and 92VR042-04.

(2) Service Bulletin V2500-ENG-72-0132 (Deletion of L.P. compressor bearing buffer air supply tubes).

O. Other Publication Affected

(1) V2500 Engine Illustrated Parts Catalog, 72-41-31 and 72-41-34.

(2) V2500 Engine Manual, 72-00-00 Inspection-02.

(3) V2500 Engine Manual, 72-41-00 Assembly-02.

(4) V2500 Engine Manual, 72-41-30 Disassembly, Assembly-01, Assembly-02, Assembly-08 and Assembly-09.

(5) V2500 Engine Manual, 72-41-31 Cleaning-00, Cleaning-01, Cleaning-05, Cleaning-08, Inspection-00, Inspection-02, Inspection-06 and Inspection-07.

(6) V2500 Engine Manual, 72-41-34 Cleaning-00, Cleaning-03, Cleaning-04, Cleaning-08, Inspection-00, Inspection-15, Inspection-16, Inspection-17, Inspection-19 and Inspection-21.

(7) Airbus A320 Aircraft Maintenance Manual, 72-00-00 Inspection/Check.

(8) Airbus A320 Aircraft Maintenance Manual, 75-32-42 Removal/Installation and Inspection/Check.

(9) Repair Schemes VRS6242, VRS6243 and VRS6313 are affected.

2. Material Information

A. The kit required consists of the following parts:

None.

B. Parts to be reworked:

None.

C. New production parts:

Applicability: For all V2500-A1 Engines

	FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	OLD PART NO.	INSTR DISP
	72-41-31					
	01-105	6A3855	1	Plug, blanking - Stage 3 borescope	-	(A)(C)
	01-107	AS21011	2	Bolt, blanking plug retaining	-	(A)(C)
	01-135	6A3986	1	Plug, borescope - Stage 5 and 6	-	(A)(C)
	01-140	6A3852	1	Plate, retaining - Borescope plug	6A3119	(S1)(A)(E)
	01-400	6A5470	1	Case assy, front	6A3462	(S1)(A)(B)
	01-695	6A3976	4	Ring, segment, Stage 5 rotor path	6A3025	(S1)(A)(E)
	01-700	6A3977	4	Ring, segment, Stage 6 rotor path	6A3466	(S1)(A)(E)
	72-41-34					
	02-680	6A3943	4	Housing assy, centralising - V.I.G.V. stage	6A2917	(S1)(A)(E)
	02-682	BLT5410	8	Bolt	AS20922	(S1)(A)(E)
R	02-730	6A3946	2	Housing assy, L.H. - V.I.G.V. stage	6A2920	(S1)(A)(E)
	02-732	BLT5412	2	Bolt	AS21017	(S1)(A)(E)

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	FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	OLD PART NO.	INSTR DISP
	02-733	BLT5411	2	Bolt	AS21022	(S1)(A)(E)
	02-750	6A3949	2	Housing assy, R.H. - V.I.G.V. stage	6A2923	(S1)(A)(E)
	02-752	BLT5412	2	Bolt	AS21017	(S1)(A)(E)
	02-753	BLT5411	2	Bolt	AS21022	(S1)(A)(E)
	03-680	6A3957	4	Pad assy, centralising - Stage 3	6A2467	(S1)(A)(E)
	03-730	6A3988	4	Housing assy - Stage 3	6A2925	(S1)(A)(E)
	03-732	BLT5412	8	Bolt	AS21018	(S1)(A)(E)
R	04-120	6A4345	8	Lever assy, stage 4 variable stator vanes	6A3331	(S2)(A)(E)
	04-200	6A4340	2	Connector assy, unison ring - Stage 4	6A2528	(S1)(A)(E)
	04-680	6A3958	4	Pad assy, centralising - Stage 4	6A2468	(S1)(A)(E)
	04-704	6A4342C01	A/R	Spacer, adjusting - Stage 4	6A262C01	(S1)(A)(E)
	04-705	6A4342C02	A/R	Spacer, adjusting - Stage 4	6A262C02	(S1)(A)(E)
	04-706	6A4342C03	A/R	Spacer, adjusting - Stage 4	6A262C03	(S1)(A)(E)
	04-707	6A4342C04	A/R	Spacer, adjusting - Stage 4	6A262C04	(S1)(A)(E)
	04-708	6A4342C05	A/R	Spacer, adjusting - Stage 4	6A262C05	(S1)(A)(E)
	04-709	6A4342C06	A/R	Spacer, adjusting - Stage 4	6A262C06	(S1)(A)(E)
	04-710	6A4342C07	A/R	Spacer, adjusting - Stage 4	6A262C07	(S1)(A)(E)
	04-711	6A4342C08	A/R	Spacer, adjusting - Stage 4	6A262C08	(S1)(A)(E)
	04-712	6A4342C09	A/R	Spacer, adjusting - Stage 4	6A262C09	(S1)(A)(E)
	04-713	6A4342C10	A/R	Spacer, adjusting - Stage 4	6A262C10	(S1)(A)(E)
	04-714	6A4342C11	A/R	Spacer, adjusting - Stage 4	6A262C11	(S1)(A)(E)

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	OLD PART NO.	INSTR DISP
04-715	6A4342C12	A/R	Spacer, adjusting - Stage 4	6A262C12	(S1)(A)(E)
04-716	6A4342C13	A/R	Spacer, adjusting - Stage 4	6A262C13	(S1)(A)(E)
04-717	6A4342C14	A/R	Spacer, adjusting - Stage 4	6A262C14	(S1)(A)(E)
04-718	6A4342C15	A/R	Spacer, adjusting - Stage 4	6A262C15	(S1)(A)(E)
04-719	6A4342C16	A/R	Spacer, adjusting - Stage 4	6A262C16	(S1)(A)(E)
04-720	6A4342C17	A/R	Spacer, adjusting - Stage 4	6A262C17	(S1)(A)(E)
04-730	6A4810	4	Housing assy, compensating block - Stage 4	6A2927	(S1)(A)(E)
04-732	AS20927	8	Bolt, bihex head	AS20912	(S1)(A)(E)
04-733	4W2621	8	Washer	-	(A)(C)
05-120	6A4346	8	Lever assy, stage 5 variable stator vanes	6A3325	(S1)(A)(E)
05-140	6A4347	4	Lever assy, stage 5 variable stator vanes	6A3326	(S1)(A)(E)
05-200	6A4333	2	Connector assy, unison ring - Stage 5	6A2534	(S1)(A)(E)
05-704	6A4339C01	A/R	Spacer, adjusting - Stage 5	6A2627C01	(S1)(A)(E)
05-705	6A4339C02	A/R	Spacer, adjusting - Stage 5	6A2627C02	(S1)(A)(E)
05-706	6A4339C03	A/R	Spacer, adjusting Stage 5	6A2627C03	(S1)(A)(E)
05-707	6A4339C04	A/R	Spacer, adjusting - Stage 5	6A2627C04	(S1)(A)(E)
05-708	6A4339C05	A/R	Spacer, adjusting - Stage 5	6A2627C05	(S1)(A)(E)
05-709	6A4339C06	A/R	Spacer, adjusting - Stage 5	6A2627C06	(S1)(A)(E)
05-710	6A4339C07	A/R	Spacer, adjusting - Stage 5	6A2627C07	(S1)(A)(E)
05-711	6A4339C08	A/R	Spacer, Adjusting - Stage 5	6A2627C08	(S1)(A)(E)
05-712	6A4339C09	A/R	Spacer, adjusting - Stage 5	6A2627C09	(S1)(A)(E)

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	OLD PART NO.	INSTR DISP
05-713	6A4339C10	A/R	Spacer, adjusting - Stage 5	6A2627C10	(S1)(A)(E)
05-714	6A4339C11	A/R	Spacer, adjusting - Stage 5	6A2627C11	(S1)(A)(E)
05-715	6A4339C12	A/R	Spacer, adjusting - Stage 5	6A2627C12	(S1)(A)(E)
05-716	6A4339C13	A/R	Spacer, adjusting - Stage 5	6A2627C13	(S1)(A)(E)
05-717	6A4339C14	A/R	Spacer, adjusting - Stage 5	6A2627C14	(S1)(A)(E)
05-718	6A4339C15	A/R	Spacer, adjusting - Stage 5	6A2627C15	(S1)(A)(E)
05-719	6A4339C16	A/R	Spacer, adjusting - Stage 5	6A2627C16	(S1)(A)(E)
05-720	6A4339C17	A/R	Spacer, adjusting - Stage 5	6A2627C17	(S1)(A)(E)
05-730	6A4335	4	Housing assy, compensating block - Stage 5	6A2930	(S1)(A)(E)
05-732	AS20923	8	Bolt, bihex head	AS20912	(S1)(A)(E)
05-733	4W2621	8	Washer	-	(A)(C)
06-680	6A3959	4	Pad assy, centralising - Stage 6	6A2470	(S1)(A)(E)
06-728	AS50912	4	Screw	AS50909	(S1)(A)(E)
06-730	6A3960	2	Housing assy, L.H. - Stage 6	6A3817	(S1)(A)(E)
06-732	BLT5409	4	Bolt	AS20918	(S1)(A)(E)
06-750	6A3962	2	Housing Assy, R.H. - Stage 6	6A3819	(S1)(A)(E)
06-752	BLT5409	4	Bolt	AS20918	(S1)(A)(E)
73-11-49					
12-100	6A5305	1	Tube	6A2146	(S1)(A)(B)
12-165	4W0109	1	Bolt	4W0102	(S1)(A)(E)
12-170	UP10479	1	Spacer	-	(A)(C)
12-173	4W0118	1	Bolt	4W0105	(S1)(A)(E)
12-178	UP10482	1	Spacer	UP10478	(S1)(A)(E)

D. Redundant parts:

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	OLD PART NO.	INSTR DISP
72-41-31					
01-350	-	2	Plate, blanking - Stage 6 air off-takes	6A3457	(1D)
01-352	-	4	Bolt, blanking plate retaining	AS21011	(2D)
01-677	-	4	Strip, sealing - Stage 3	6A3759	(E)
01-678	-	4	Strip, sealing - Stage 4	6A2328	(E)
01-685	-	4	Ring, segment, Stage 3 rotor path	6A3758	(E)
01-690	-	4	Ring, segment, Stage 4 rotor path	6A3531	(E)
72-41-34					
06-730	-	2	Housing assy, L.H. - Stage 6	6A3782	(B)
06-750	-	2	Housing assy, R.H. - Stage 6	6A3784	(B)

E. Instruction disposition codes:

(A) New parts are currently available.

(B) Old parts are no longer available.

(C) Additional part.

(E) Old part can be used up on other applications.

R (S1) Old and new parts are interchangeable as a set only, new for old, together
R with all other new parts of this Service Bulletin.

R (S2) Old and new parts are interchangeable as a set only, new for old. A set of
R new parts can be installed to the engine independantly from the other parts of
R this Service Bulletin.

(1D) Quantity decreased from 4 to 2.

(2D) Qunatity decreased from 8 to 4.

3. Accomplishment Instructions

A. Rework Instructions

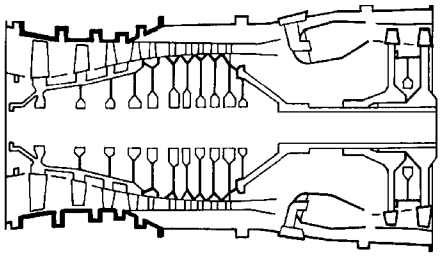
(1) None.

B. Assembly Instructions

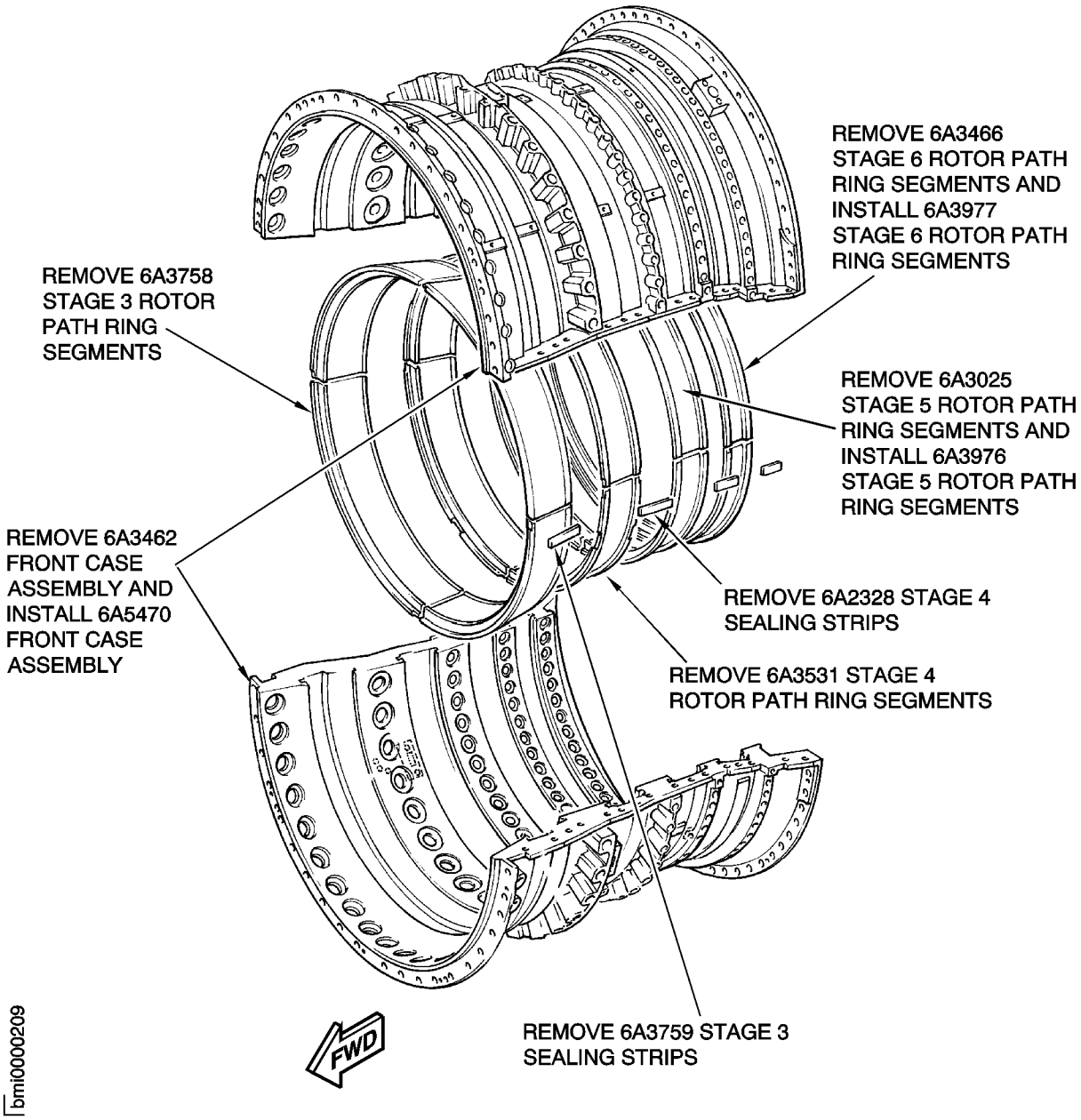
(1) Assemble new 6A5470 front case assembly and associated items by use of approved procedures in Engine Manual, 72-41-30 Assembly-01 to -10 and 72-41-00 Assembly-02.

C. Recording Instructions

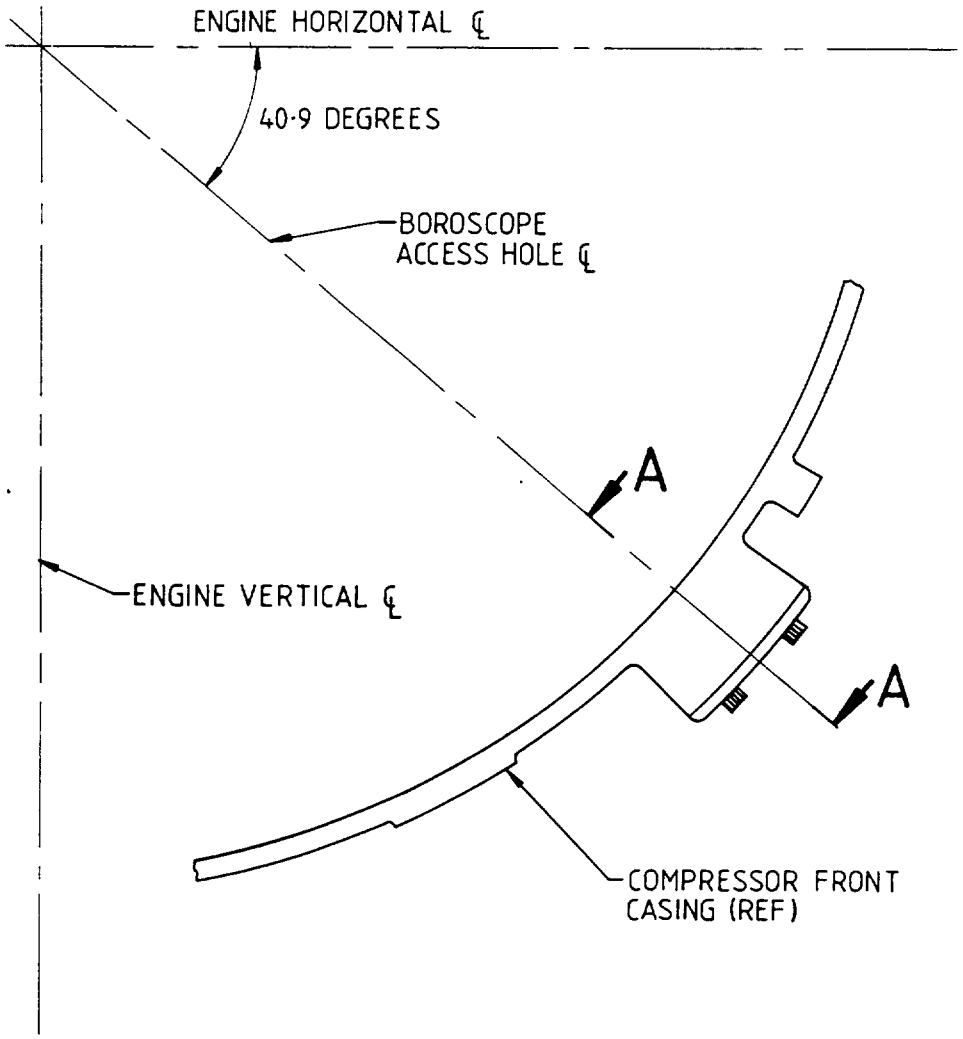
(1) A record of accomplishment is required.



MODULE 40



Location of front compressor casing
Figure 1



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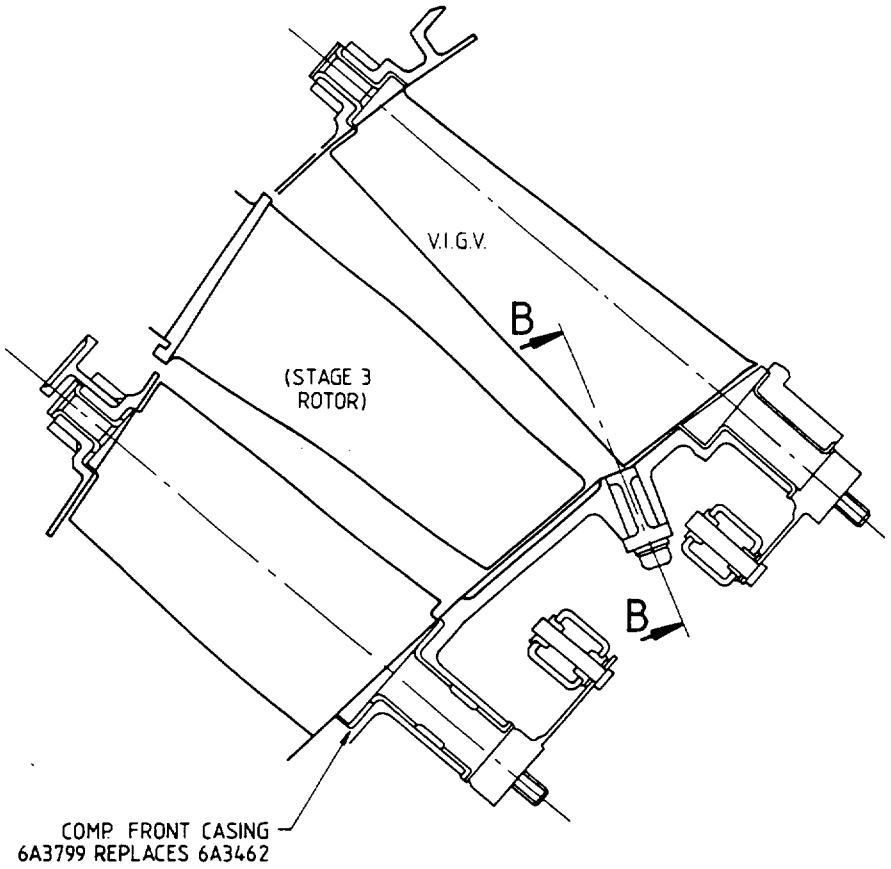
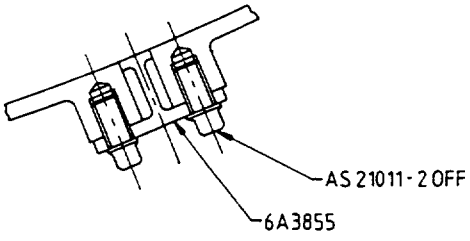
View showing radial position of additional borescope access hole at stage 3
Figure 2



SECTION A-A



SECTION B-B

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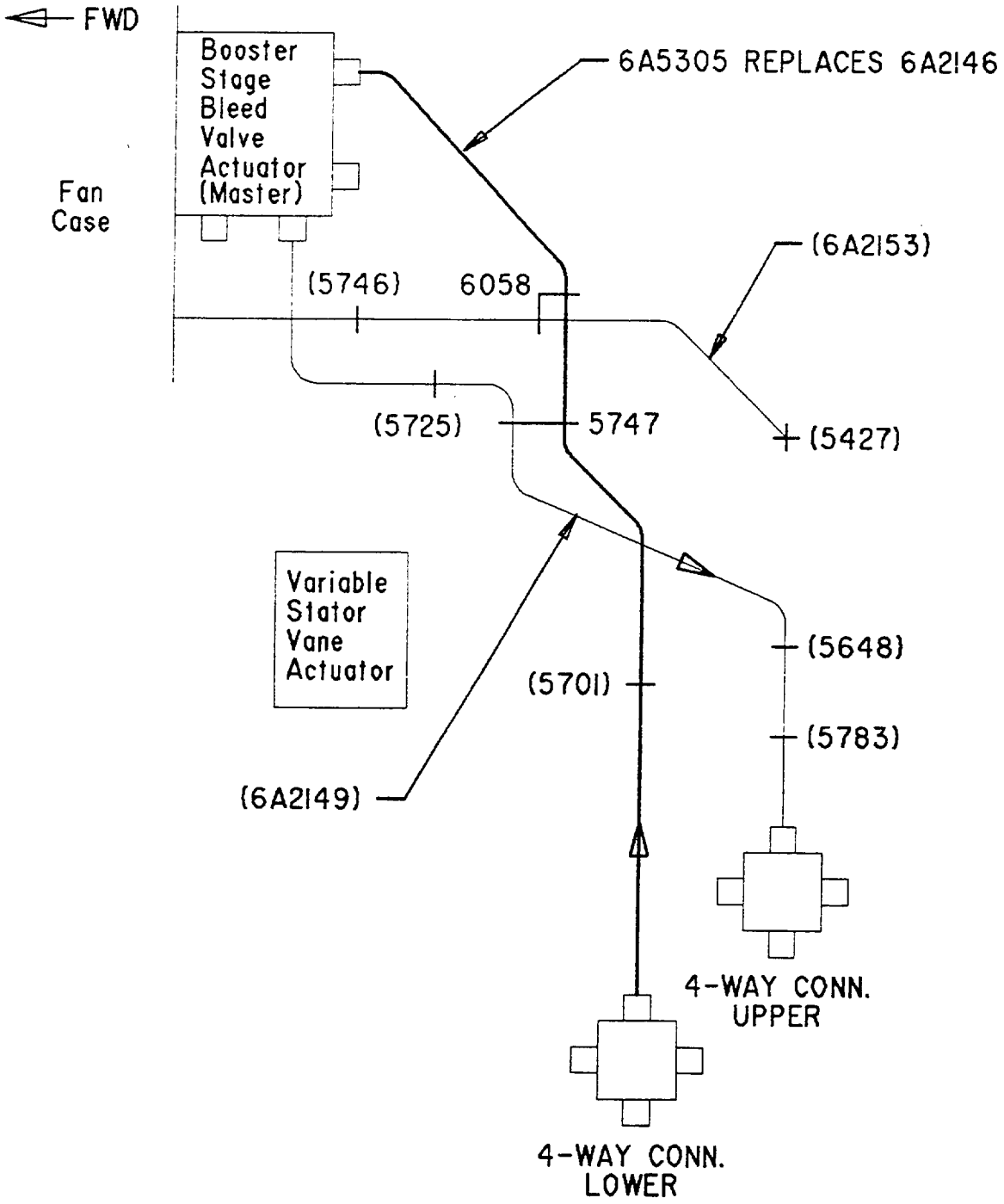
View showing section A-A (see Figure 2) and section B-B
Figure 3



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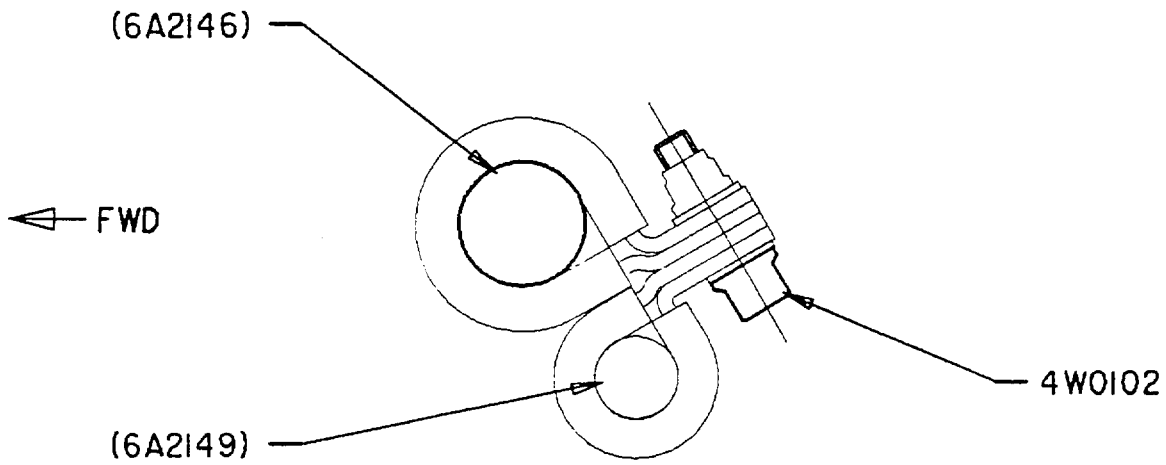
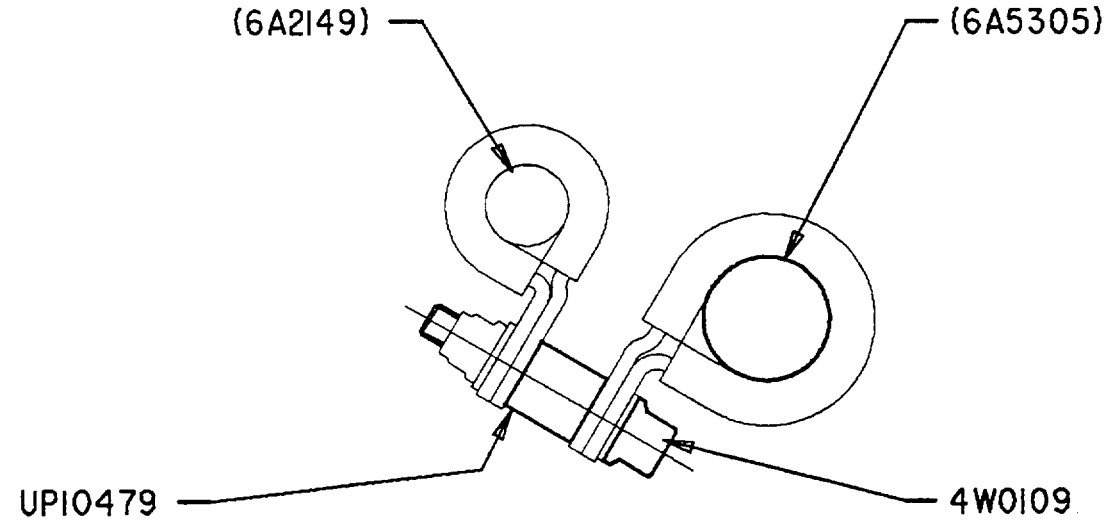
Schematic view of fuel tubes showing clipping point arrangement - Before and after alteration
Figure 4



CLIPPING POINT 5747
BEFORE ALTERATION



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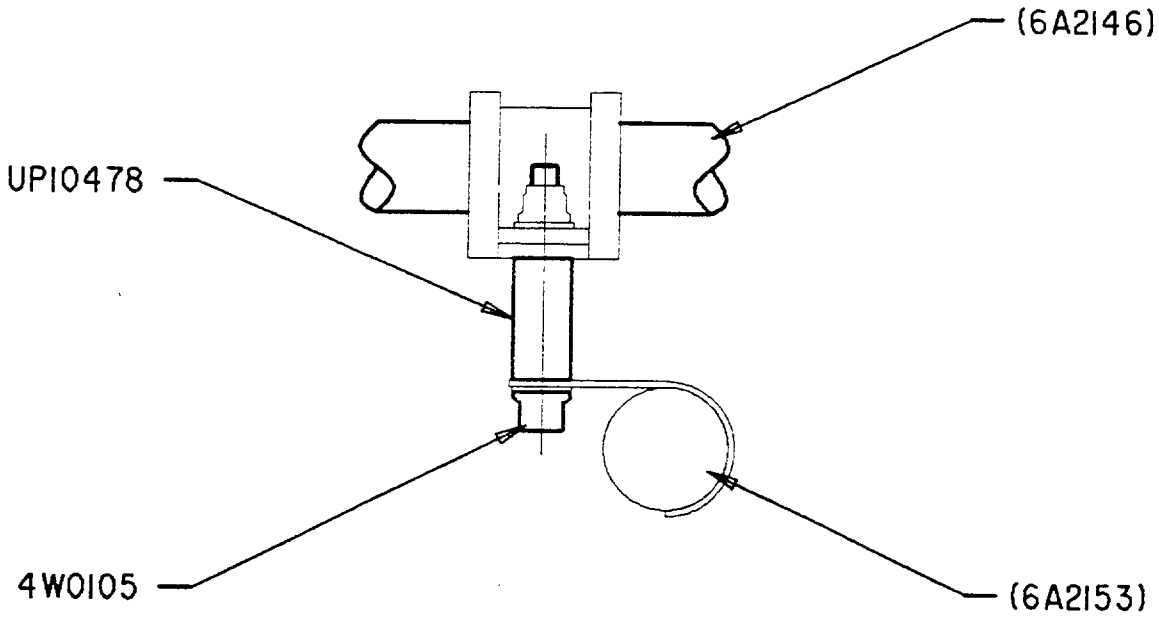
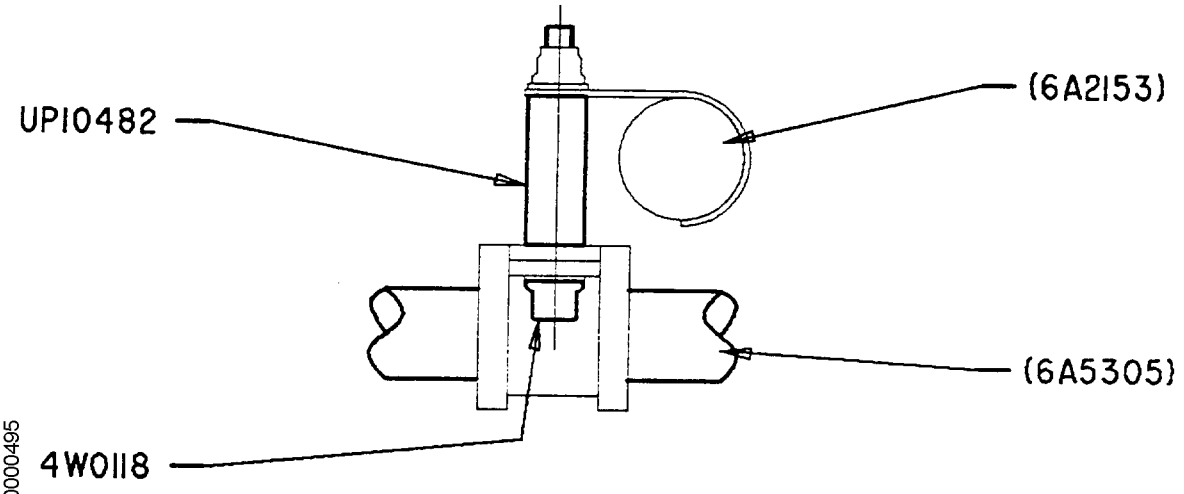
Clipping Point 5747 -
Before and after alteration
Figure 5



CLIPPING POINT 6058
BEFORE ALTERATION
LOOKING FORWARD



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Clipping Point 6058 (looking forward)-
Before and after alteration
Figure 6