PUBLICATION TRANSMITTAL

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V2500-A1/A5/D5 SERIES PROPULSION SYSTEMS SERVICE BULLETIN

This document transmits the Revision 2 of Service Bulletin V2500-ENG-72-0418

Document History

Service Bulletin Revision Status	
Initial Issue	Sep.16/02
Revision 1	Mar.19/09

Service Bulletin Revision 2

Remove	Incorporate	Reason for change
All pages of the Service Bulletin.	Pages 1 to 60 of the Service Bulletin.	To revise Figure 9 and 11.

V2500-ENG-72-0418

International Aero Engines

SERVICE BULLETIN

ENGINE – ACTUATING MECHANISM HP COMPRESSOR VARIABLE VANES – INTRODUCTION OF UNISON RING ASSEMBLIES AND BRIDGE PIECE ASSEMBLIES WITH REVISED ONE PIECE LEVER PIN BUSHES

1. Planning Information

A. Effectivity

(1) Airbus A319

V2522-A5, V2524-A5, V2527M-A5 Engines prior to Serial No.V11400

(2) Airbus A320

V2500-A1 Engines

V2527-A5, V2527E-A5 Engines prior to Serial No.V11400

(3) Airbus A321

V2530-A5, V2533-A5 Engines prior to Serial No.V11400

(4) Boeing Longbeach Division MD-90

V2525-D5, V2528-D5 Engines prior to Serial No.20286

B. Concurrent Requirements

(1) The following IAE V2500 Service Bulletins must be fitted prior to or concurrently with this Service Bulletin:

ENG-72-0385 or ENG-72-0416 (see 1.N. References).

C. Reason

(1) Problem

Premature deterioration of the HP Compressor VSV unison ring lever arm bushes may occur, which can result in mal-scheduling of the variable vanes.

The problem is attributed to a concentration of stress near the undercut of the retaining feature of the bush.

(2) Background

The problem has been experienced on engines in service.

(3) Objective

Incorporation of this Service Bulletin (Modification) is designed to maintain reliability.

(4) Substantiation

The changes introduced by this Service Bulletin have been the subject of extensive engineering analysis and have been successfully used on other engine projects.

(5) Effect of Bulletin on:

(a) Operation

Not affected.

(b) Maintenance

Affected.

(c) Overhaul

Affected.

(d) Repair Schemes

Affected.

(e) Interchangeability

Affected (see 1.P. Interchangeability of Parts).

(f) Fits and Clearances

Not affected.

D. Description

(1) This Service Bulletin introduces a revised longer lever arm bush replacing each existing pair of bushes. The revised bush eliminates the retaining feature and is used at all lever positions where the existing parts are used, the revised bushes are inserted from the outside of the unison rings and from the inside of the stage 4 and 5 bridge pieces.

The changes introduced are:

(a) Revised unison ring assemblies for VIGV, Stage 3 (lower), Stage 4 (upper) and Stage 5 are introduced similar to the existing items except for the following:

(i) The existing paired bushes are replaced by one longer piece bush per lever pin position.

(ii) The chamfer on the inner hole of the unison ring is deleted.

(b) A revised Stage 3 upper unison ring assembly is introduced similar to the existing item except for the following:

(i) The existing paired bushes are replaced by one longer piece bush per lever pin position.

(ii) The chamfer on the inner hole of the unison ring is deleted.

(iii) A revised rigging pin bracket is introduced similar to the existing item except for an increase in the hole diameters to suit the revised one piece bush.

(c) A revised Stage 4 lower unison ring assembly is introduced similar to the existing item except for the following:

(i) The existing paired bushes are replaced by one longer piece bush per lever pin position.

(ii) The chamfer on the inner hole of the unison ring is deleted.

(iii) A revised connector bracket is introduced similar to the existing item except for an increase in the hole diameters to suit the revised one piece bush.

(d) Revised Stage 4 and 5 bridge piece assemblies are introduced similar to the existing items except for the following:

(i) The existing paired bushes are replaced by one longer piece bush per lever pin position.

(ii) The chamfer on the outer hole of the bridge piece is deleted.

(2) Existing parts may be reworked.

(3) This Service Bulletin is in five parts as follows:

Part 1 - Covers full embodiment of HP Compressor VIGV, stage 3, stage 4 and stage 5.

Part 2 - Embodiment of HP Compressor VIGV.

Part 3 - Embodiment of HP Compressor stage 3.

Part 4 - Embodiment of HP Compressor stage 4.

Part 5 - Embodiment of HP Compressor stage 5.

NOTE: New production engines fully embodying this Service Bulletin will not be annotated with a mod part and can be considered equivalent to mod Part 1.

E. Compliance

Category Code 7

Accomplish when the supply of superseded parts has been depleted.

F. 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(s) listed.

G. Manpower

(1) In service

Not applicable.

(2) At overhaul

Not affected.

NOTE: The parts affected by this Service Bulletin are accessible at overhaul.

H. Material Price and Availability

Modification kit not required; parts supplied as single line items.

For prices and availability of future spares see 2. Material Information.

I. Tooling Price and Availability

Special tools are not required.

J. Industry Support Information

None.

K. Weight and Balance

(1) Weight Change

Plus 0.2 lb. (0,09 kg.).

(2) Moment Arm

9.2in. (234 mm.) rearwards of datum.

(3) Datum

Engine front mount centreline (Power Plant Station (PPS) 100).

L. Electrical Load Data

The aircraft electrical load is not affected by this Service Bulletin.

M. Software Accomplishment Summary

Not applicable.

N. References

(1) IAE V2500 Service Bulletins:

(a) ENG-72-0385

Engine - Actuating mechanism HP Compressor variable vanes - Introduction of revised bridge piece assemblies and unison ring assemblies with increased dowel location (new production).

(b) ENG-72-0416

Engine - Actuating mechanism HP Compressor variable vanes - Introduction of revised bridge piece assemblies and unison ring assemblies with increased dowel location (rework).

(2) Engineering Change number 01VR015

(3) Engine Manual, 72-41-00, Disassembly and Assembly.

(4) Aircraft Maintenance Manual (1IA), 75-32-42, Removal/Installation.

(5) Aircraft Maintenance Manual (3IA), 75-31-02, Removal/Installation.

(6) ATA Locator - 72-41-34.

O. Other Publications Affected

(1) Illustrated Parts Catalogue (IPC), 1IA, 2IA, 2IB, 3IA, 3IB, 5IA, 5IB, 6IA, 6IB, 7IA, 7IB, Chapter/Section 72-41-34 will be revised.

(2) Engine Manual, 72-41-00, Disassembly and Assembly.

(3) Engine Manual, 72-41-30, Disassembly and Assembly.

(4) Engine Manual, 72-41-34, Cleaning, Inspection and Repair.

(5) Aircraft Maintenance Manual (1IA), 75-32-42, Removal/Installation.

(6) Aircraft Maintenance Manual (3IA), 75-31-02, Removal/Installation.

P. Interchangeability of Parts

(1) It is recommended that the parts introduced by this Service Bulletin are fitted as a complete engine set, however parts may be fitted in stages as detailed in 1.D.

2. Material Information

A. The kit required consists of the following parts:

72-41-34

All Engines

Mod Part 1 or Part 2

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
02460	BRR12496	16	..Bushing, sleeve	-	UP11069	(A)(S1)(1D)
02560	BRR12496	16	..Bushing, sleeve	-	UP11069	(A)(S1)(1D)

Mod Part 1 or Part 3

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
03460	BRR12496	12	..Bushing, sleeve	-	UP11069	(A)(S1)(2D)
03560	BRR12496	12	..Bushing, sleeve	-	UP11069	(A)(S1)(2D)

Mod Part 1 and Part 4

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
04220	UP12206	4	..Bushing, sleeve	-	UP10815	(B)(S1)(4D)
04460	UP12206	21	..Bushing, sleeve	-	UP10815	(B)(S1)(3D)
04560	UP12206	21	..Bushing, sleeve	-	UP10815	(B)(S1)(3D)

Mod Part 1 or Part 5

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
05220	UP12206	6	..Bushing, sleeve	-	UP10815	(B)(S1)(5D)

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
05460	UP12206	26	..Bushing, sleeve	-	UP10815	(B)(S1) (6D)
05560	UP12206	26	..Bushing, sleeve	-	UP10815	(B)(S1)(6D)

B. Parts to be reworked:

72-41-34

Mod Part 1 or Part 2

For Engines incorporating ENG-72-0385

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
02440	6A7899	1	.Ring assembly - VIGV, upper unison	-	6A7580	(B)(S3) (7D)

For Engines incorporating ENG-72-0416

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
02440	6A8075	1	.Ring assembly - VIGV, upper unison	-	6A7849	(B)(S3) (7D)

For Engines incorporating ENG-72-0385

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
02540	6A7901	1	.Ring assembly - VIGV, lower unison	-	6A7584	(B)(S3) (7D)

For Engines incorporating ENG-72-0416

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
02540	6A8077	1	.Ring assembly - VIGV, lower unison	-	6A7851	(B)(S3) (7D)

Mod Part 1 or Part 3

For All Engines incorporating ENG-72-0385 or ENG-72-0416

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
03440	6A7903	1	.Ring assembly - Stage 3, upper unison	-	6A7588	(B)(S3) (7D)

For V2500-A1 Engines Only incorporating ENG-72-0416

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
03440	6A8115	1	.Ring assembly - Stage 3, upper unison	-	6A7861	(B)(S3) (7D)
03440	6A8117	1	.Ring assembly - Stage 3, upper unison	-	6A7863	(B)(S3) (7D)

For All Engines incorporating ENG-72-0385 or ENG-72-0416

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
03520	6A7905	1	..Bracket, assembly	-	6A3678	(B)(S2) (7D)(8D)
03540	6A7906	1	.Ring assembly - Stage 3, lower unison	-	6A7590	(B)(S3) (7D)

For V2500-A1 Engines Only incorporating ENG-72-0416

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
03540	6A8119	1	.Ring assembly - Stage 3, lower unison	-	6A7865	(B)(S3) (7D)

Mod Part 1 or Part 4

For All Engines incorporating ENG-72-0385 or ENG-72-0416

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
04200	6A7893	2	.Bridge, piece assembly - Stage 4	-	6A7603	(B)(S2) (7D)

For All Engines incorporating ENG-72-0416

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
04200	6A8079	2	.Bridge, piece assembly - Stage 4	-	6A7858	(B)(S2) (7D)

For V2500-A1 Engines Only incorporating ENG-72-0416

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
04200	6A8123	2	.Bridge, piece assembly - Stage 4	-	6A7866	(B)(S2) (7D)

For All Engines incorporating ENG-72-0385 or ENG-72-0416

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
04440	6A7888	1	.Ring assembly - Stage 4, upper unison	-	6A7596	(B)(S3) (7D)

For V2500-A1 Engines Only incorporating ENG-72-0416

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
04440	6A8121	1	.Ring assembly - Stage 4, upper unison	-	6A7868	(B)(S3) (7D)

For All Engines incorporating ENG-72-0385 or ENG-72-0416

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
04540	6A7890	1	.Ring assembly - Stage 4, lower unison	-	6A7599	(B)(S3) (7D)
04580	6A7892	1	..Bracket, assembly - Stage-4, lower		6A3685	(B)(S2) (7D)

Mod Part 1 or Part 5

For All Engines incorporating ENG-72-0385 or ENG-72-0416

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
05200	6A7898	2	.Bridge, piece assembly - Stage 5	-	6A7611	(B)(S2) (7D)

For All Engines incorporating ENG-72-0416

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
05200	6A8080	2	.Bridge, piece assembly - Stage 5	-	6A7860	(B)(S2) (7D)

For V2500-A1 Engines Only incorporating ENG-72-0416

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
05200	6A8124	2	.Bridge, piece assembly - Stage 5	-	6A7869	(B)(S2) (7D)

For All Engines incorporating ENG-72-0385 or ENG-72-0416

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
05440	6A7894	1	.Ring assembly - Stage 5, upper unison	-	6A7605	(B)(S3) (7D)

For V2500-A1 Engines Only incorporating ENG-72-0416

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
05440	6A8088	1	.Ring assembly - Stage 5, upper unison	-	6A8086	(B)(S3) (7D)

For All Engines incorporating ENG-72-0385 or ENG-72-0416

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
05540	6A7896	1	.Ring assembly - Stage 5, lower unison	-	6A7607	(B)(S3) (7D)

C. New production parts:

None.

D. Instruction disposition codes:

(A) New part is currently available.

(B) New part will be made available from August 2002.

(S1) Old and new parts are not interchangeable.

(S2) Old and new parts are freely and fully interchangeable.

(S3) Upper and lower unison ring assemblies are freely and fully interchangeable as a set per stage only.

(1D) Quantity reduced from 32 to 16.

(2D) Quantity reduced from 24 to 12.

(3D) Quantity reduced from 42 to 21.

(4D) Quantity reduced from 8 to 4.

(5D) Quantity reduced from 12 to 6.

(6D) Quantity reduced from 52 to 26.

(7D) Old part may be reworked and re-identified to the new part number.

(8D) Part of 6A7903, 6A8115 and 6A8117 Ring Assemblies.

3. Accomplishment Instructions

A. Rework Instructions

(1) Rework the following parts:

6A7580, Ring Assembly - VIGV, upper unison

6A7849, Ring Assembly - VIGV, upper unison

6A7584, Ring Assembly - VIGV, lower unison

6A7851, Ring Assembly - VIGV, lower unison

Standard Equipment

Drilling Machine

Drill 0.346in. (8,8 mm.) diameter

Standard workshop equipment

Vibro-engraving tool

Repair Parts

BRR12496 - Bushing, sleeve - 16 off

CAUTION: TITANIUM COMPONENT - YOU MUST USE SILICON CARBIDE TYPE ABRASIVE WHEELS, STONES AND PAPERS TO DRESS, BLEND AND POLISH THIS COMPONENT.

CAUTION: TITANIUM COMPONENT - AVOID BUILD UP OF HEAT BY APPLYING ONLY GENTLE PRESSURE AND KEEPING THE TOOL SPEED AS LOW AS POSSIBLE.

CAUTION: TITANIUM COMPONENT - YOU MUST MAKE SURE THAT WHEN YOU DRESS MATERIAL, BLEND AND POLISH, TO MAKE SMOOTH, THAT NO SPARKS ARE PRODUCED.

CAUTION: TITANIUM COMPONENT - IF THE MATERIAL SHOWS A CHANGE IN COLOUR, TO DARKER THAN A LIGHT STRAW COLOUR, THE COMPONENT IS TO BE REJECTED.

CAUTION: DO NOT DAMAGE THE BUSH LOCATION HOLES IN THE RING ASSEMBLY.

(a) Remove the bushes

PROCEDURE	RELATED DATA
(i) Drill the head of the bush (UP11069 - 32 off) until the head is released	See Figure 1 and Figure 2. Use a drilling machine with a 0.346in. (8,8 mm.) diameter drill.
(ii) Push the bush from the hole	Use a round bar.
(iii) Remove the bush from the channel.	
(b) Clean the bush location holes in the ring	See Figure 2. Use a soft clean cloth and air blast, remove the sharp edges around the holes. Use standard workshop equipment.
(c) Visually examine and measure the dimensions of the bush location holes	See Figures 2, 3 and 14. Examine the interference on the diameter. Reject if the location hole is oversize.
(d) Install the new bushes into the holes	
(i) Push the bush fully into position in the hole	See Figures 3 and 14. Use bushes BRR12496 - 16 off.
(ii) Visually inspect the bush location	See Figure 14.

(e) Cancel the existing part number and re-identify with the new part number	Use vibro-engraving equipment. Refer to SPM, TASK 70-09-00-400-501, SUBTASK 70-09-00-400-001.	
	Existing	Re-number
	6A7580	6A7899
	6A7849	6A8075
	6A7584	6A7901
	6A7851	6A8077

(2) Rework the following parts:

6A7588, Ring Assembly - Stage 3, upper unison

6A7861, Ring Assembly - Stage 3, upper unison

6A7863, Ring Assembly - Stage 3, upper unison

6A7590, Ring Assembly - Stage 3, lower unison

6A7865, Ring Assembly - Stage 3, lower unison

6A3678, Bracket Assembly

Consumable Materials

CoMat 06-022 - Fluorescent penetrant

CoMat 03-366 - Weld filler material

Standard Equipment

Drilling Machine

Drill 0.346in. (8,8 mm.) diameter

Drill 0.394in. (10,0 mm.) diameter

Milling machine

Standard workshop equipment

Vibro-engraving tool

Manual welding equipment

Penetrant crack test equipment

Portable grinding equipment

Repair Parts

BRR12496 - Bushing, sleeve - 12 off

UP11019 - Pin - 2 off

CAUTION: TITANIUM COMPONENT - YOU MUST USE SILICON CARBIDE TYPE ABRASIVE WHEELS, STONES AND PAPERS TO DRESS, BLEND AND POLISH THIS COMPONENT.

CAUTION: TITANIUM COMPONENT - AVOID BUILD UP OF HEAT BY APPLYING ONLY GENTLE PRESSURE AND KEEPING THE TOOL SPEED AS LOW AS POSSIBLE.

CAUTION: TITANIUM COMPONENT - YOU MUST MAKE SURE THAT WHEN YOU DRESS MATERIAL, BLEND AND POLISH, TO MAKE SMOOTH, THAT NO SPARKS ARE PRODUCED.

CAUTION: TITANIUM COMPONENT - IF THE MATERIAL SHOWS A CHANGE IN COLOUR, TO DARKER THAN A LIGHT STRAW COLOUR, THE COMPONENT IS TO BE REJECTED.

CAUTION: DO NOT DAMAGE THE BUSH LOCATION HOLES IN THE RING ASSEMBLY.

PROCEDURE	RELATED DATA
(a) Remove pin (UP11019 - 2 off) at positions identified AF	See Figures 1, 4 and 5. Use portable grinding equipment to remove welds.
(b) Remove and retain dowels (6A7583 - 2 off)	See Figures 4 and 5.
(c) Remove the bushes and brackets	
(i) Drill the head of the bush (UP11069 - 24 off) until the head is released	See Figure 4 Use a drilling machine with a 0.346in. (8,8 mm.) diameter drill.
(ii) Push the bush from the hole	Use a round bar.
(iii) Remove the bushes and brackets from the channel and retain the brackets.	

(d) Clean the bush location holes in the unison ring	See Figure 4. Use a soft clean cloth and air blast, remove the sharp edges around the holes. Use standard workshop equipment.
(e) Visually examine and measure the dimensions of the bush location holes	See Figures 4, 8 and 14. Examine the interference on the diameter. Reject if the location hole is oversize.
(f) Drill oversize dowel holes in bracket 6A3678	See Figures 4 and 5. Use a drilling machine with a 0.394in. (10,0 mm.) diameter drill. Holes to be positioned on centre of existing holes.
(g) Remove sharp edges	Use standard workshop equipment.
(h) Do a local penetrant crack test of the reworked areas	Refer to SPM TASK 70-23-05-230-501. Use CoMat 06-022 fluorescent penetrant with penetrant crack test equipment. Cracks are not permitted.
(i) Visually examine and measure the dimensions of the reworked areas.	See Figure 5. Use workshop inspection equipment.
(j) Cancel the existing bracket part number and re-identify with the new part number	Use vibro-engraving equipment. Refer to SPM, TASK 70-09-00-400-501, SUBTASK 70-09-00-400-001. Existing — Re-number 6A3678 — 6A7905
(k) Counter-bore the location pin holes identified AF	See Figures 4 and 6. Use a milling machine, with standard workshop equipment.
(l) Remove sharp edges	Use standard workshop equipment.
(m) Do a local penetrant crack test of the reworked areas	Refer to SPM TASK 70-23-05-230-501. Use CoMat 06-022 fluorescent penetrant with penetrant crack test equipment. Cracks are not permitted.

(n) Visually examine and measure the dimensions of the reworked areas.	See Figures 4 and 6. Use workshop inspection equipment.	
(o) Install brackets into position	See Figure 8. Use hand tightened No.10 (0.190in. (4,82 mm.)) diameter UNF bolts and (0.250in. (6,35 mm.)) diameter UNF bolts, as necessary, to hold the brackets in position.	
(p) Install the dowels in the unison ring		
(i) Install the dowels in the unison ring	See Figures 4 and 6. Use Dowel Assembly 6A7583 - 2 off. Position the inboard dowel Assembly first.	
(ii) Install the location pins	See Figures 4, 6 and 7. Use UP11019 location pin - 2 off. Use standard workshop equipment.	
(iii) Tack weld location pins	See Figure 7. Refer to SPM TASK 70-31-02-310-501. Use 2 equispaced tacks per pin. Use CoMat 03-366 filler material if required.	
(q) Do a visual inspection of the welds	Use workshop inspection equipment. Cracks are not permitted.	
(r) Install the new bushings in the unison ring		
(i) Push the bushings fully into position in the holes	See Figures 8 and 14. Use BRR12496 bush - 12 off. Use standard workshop equipment.	
(ii) Visually inspect the bushings	See Figure 14	
(s) Remove the bolts used in operation (o) above		

(t) Cancel the existing part number and re-identify with the new part number	Use vibro-engraving equipment. Refer to SPM, TASK 70-09-00-400-501, SUBTASK 70-09-00-400-001.	
	Existing	Re-number
	6A7588	6A7903
	6A7861	6A8115
	6A7863	6A8117
	6A7590	6A7906
	6A7865	6A8119

(3) Rework the following parts:

6A7603, Bridge, piece - Stage 4

6A7858, Bridge, piece - Stage 4

6A7866, Bridge, piece - Stage 4

Standard Equipment

Drilling Machine

Drill 0.310in. (7,8 mm.) diameter

Standard workshop equipment

Vibro-engraving tool

Repair Parts

UP12206 - Bushing, sleeve - 4 off

CAUTION: TITANIUM COMPONENT - YOU MUST USE SILICON CARBIDE TYPE ABRASIVE WHEELS, STONES AND PAPERS TO DRESS, BLEND AND POLISH THIS COMPONENT.

CAUTION: TITANIUM COMPONENT - AVOID BUILD UP OF HEAT BY APPLYING ONLY GENTLE PRESSURE AND KEEPING THE TOOL SPEED AS LOW AS POSSIBLE.

CAUTION: TITANIUM COMPONENT - YOU MUST MAKE SURE THAT WHEN YOU DRESS MATERIAL, BLEND AND POLISH, TO MAKE SMOOTH, THAT NO SPARKS ARE PRODUCED.

CAUTION: TITANIUM COMPONENT - IF THE MATERIAL SHOWS A CHANGE IN COLOUR, TO DARKER THAN A LIGHT STRAW COLOUR, THE COMPONENT IS TO BE REJECTED.

CAUTION: DO NOT DAMAGE THE HOLES IN THE BRIDGE PIECE.

PROCEDURE	RELATED DATA
(a) Drill the head of the bush (UP10815 - 8 off) until the head is released	See Figure 1 and Figure 9. Use a drilling machine with a 0.310in. (7,8 mm.) diameter drill.
(b) Push the bush from the hole	Use a round bar.
(c) Remove the bush from the channel.	
(d) Clean the holes in the bridge piece	See Figure 9. Use a soft clean cloth and air blast, remove the sharp edges around the holes. Use standard workshop equipment.
(e) Visually examine and measure the dimensions of the bush location holes	See Figures 9, 11 and 14. Examine the interference on the diameter. Reject if the location hole is oversize.
(f) Install the new bushings in the bridge piece	
(i) Push the bushings fully into position in the holes	See Figures 11 and 14. Use bushes UP12206 - 4 off.
(ii) Visually inspect the bushings	See Figure 14.

(g) Cancel the existing part number and re-identify with the new part number	Use vibro-engraving equipment. Refer to SPM, TASK 70-09-00-400-501, SUBTASK 70-09-00-400-001.	
	Existing	Re-number
	6A7603	6A7893
	6A7858	6A8079
	6A7866	6A8123

(4) Rework the following parts:

6A7596, Ring Assembly - Stage 4, upper unison

6A7868, Ring Assembly - Stage 4, upper unison

6A7599, Ring Assembly - Stage 4, lower unison

6A3685, Bracket Assembly

Consumable Materials

CoMat 06-022 - Fluorescent penetrant

CoMat 03-366 - Weld filler material

Standard Equipment

Drilling Machine

Drill 0.310in. (7,8 mm.) diameter

Drill 0.394in. (10,0 mm.) diameter

Milling machine

Standard workshop equipment

Vibro-engraving tool

Manual welding equipment

Penetrant crack test equipment

Portable grinding equipment

Repair Parts

UP12206 - Bushing, sleeve - 21 off

UP11019 - Pin - 2 off

CAUTION: TITANIUM COMPONENT - YOU MUST USE SILICON CARBIDE TYPE ABRASIVE WHEELS, STONES AND PAPERS TO DRESS, BLEND AND POLISH THIS COMPONENT.

CAUTION: TITANIUM COMPONENT - AVOID BUILD UP OF HEAT BY APPLYING ONLY GENTLE PRESSURE AND KEEPING THE TOOL SPEED AS LOW AS POSSIBLE.

CAUTION: TITANIUM COMPONENT - YOU MUST MAKE SURE THAT WHEN YOU DRESS MATERIAL, BLEND AND POLISH, TO MAKE SMOOTH, THAT NO SPARKS ARE PRODUCED.

CAUTION: TITANIUM COMPONENT - IF THE MATERIAL SHOWS A CHANGE IN COLOUR, TO DARKER THAN A LIGHT STRAW COLOUR, THE COMPONENT IS TO BE REJECTED.

CAUTION: DO NOT DAMAGE THE BUSH LOCATION HOLES IN THE RING ASSEMBLY.

PROCEDURE	RELATED DATA
(a) Remove pin (UP11019 - 2 off) at positions identified AJ	See Figures 1, 9 and 10. Use portable grinding equipment to remove welds.
(b) Remove and retain dowels (6A7598 - 2 off)	See Figures 9 and 10.
(c) Remove the bushes and brackets	
(i) Drill the head of the bush (UP10815 - 42 off) until the head is released	See Figure 9 Use a drilling machine with a 0.310in. (7,8 mm.) diameter drill.
(ii) Push the bush from the hole	Use a round bar.
(iii) Remove the bushes and brackets from the channel and retain the brackets.	
(d) Clean the bush location holes in the unison ring	See Figure 9. Use a soft clean cloth and air blast, remove the sharp edges around the holes. Use standard workshop equipment.

(e) Visually examine and measure the dimensions of the bush location holes	See Figures 9, 11 and 14. Examine the interference on the diameter. Reject if the location hole is oversize.
(f) Drill oversize dowel holes in bracket 6A3685	See Figures 9 and 10. Use a drilling machine with a 0.394in. (10,0 mm.) diameter drill. Holes to be positioned on centre of existing holes.
(g) Remove sharp edges	Use standard workshop equipment.
(h) Do a local penetrant crack test of the reworked areas	Refer to SPM TASK 70-23-05-230-501. Use CoMat 06-022 fluorescent penetrant with penetrant crack test equipment. Cracks are not permitted.
(i) Visually examine and measure the dimensions of the reworked areas.	See Figure 10. Use workshop inspection equipment.
(j) Cancel the existing bracket part number and re-identify with the new part number	Use vibro-engraving equipment. Refer to SPM, TASK 70-09-00-400-501, SUBTASK 70-09-00-400-001. Existing 6A3685 — Re-number 6A7892
(k) Install brackets into position	See Figure 11. Use hand tightened No.10 (0.190in. (4,82 mm.)) diameter UNF bolts and (0.250in. (6,35 mm.)) diameter UNF bolts, as necessary, to hold the brackets in position.
(l) Install the dowels in the unison ring	
(i) Install the dowels in the unison ring at location AJ	See Figures 9 and 10. Use Dowel Assembly 6A7598 - 2 off. Position the inboard dowel Assembly first.
(ii) Install the location pins	See Figures 9 and 10. Use UP11019 location pin - 2 off. Use standard workshop equipment.

(iii) Tack weld location pins	See Figure 10. Refer to SPM TASK 70-31-02-310-501. Use 2 equispaced tacks per pin. Use CoMat 03-366 filler material if required.	
(m) Do a visual inspection of the welds	Use workshop inspection equipment. Cracks are not permitted.	
(n) Install the new bushings in the unison ring		
(i) Push the bushings fully into position in the holes	See Figures 11 and 14. Use UP12206 bush - 21 off. Use standard workshop equipment.	
(ii) Visually inspect the bushings	See Figure 14	
(o) Remove the bolts used in operation (k) above		
(p) Cancel the existing part number and re-identify with the new part number	Use vibro-engraving equipment. Refer to SPM, TASK 70-09-00-400-501, SUBTASK 70-09-00-400-001.	
	Existing	Re-number
	6A7596	6A7888
	6A7868	6A8121
	6A7599	6A7890

(5) Rework the following parts:

6A7611, Bridge, piece - Stage 5

6A7860, Bridge, piece - Stage 5

6A7869, Bridge, piece - Stage 5

Standard Equipment

Drilling Machine

Drill 0.310in. (7,8 mm.) diameter

Standard workshop equipment

Vibro-engraving tool

Repair Parts

UP12206 - Bushing, sleeve - 6 off

CAUTION: TITANIUM COMPONENT - YOU MUST USE SILICON CARBIDE TYPE ABRASIVE WHEELS, STONES AND PAPERS TO DRESS, BLEND AND POLISH THIS COMPONENT.

CAUTION: TITANIUM COMPONENT - AVOID BUILD UP OF HEAT BY APPLYING ONLY GENTLE PRESSURE AND KEEPING THE TOOL SPEED AS LOW AS POSSIBLE.

CAUTION: TITANIUM COMPONENT - YOU MUST MAKE SURE THAT WHEN YOU DRESS MATERIAL, BLEND AND POLISH, TO MAKE SMOOTH, THAT NO SPARKS ARE PRODUCED.

CAUTION: TITANIUM COMPONENT - IF THE MATERIAL SHOWS A CHANGE IN COLOUR, TO DARKER THAN A LIGHT STRAW COLOUR, THE COMPONENT IS TO BE REJECTED.

CAUTION: DO NOT DAMAGE THE HOLES IN THE BRIDGE PIECE.

PROCEDURE	RELATED DATA
(a) Drill the head of the bush (UP10815 - 12 off) until the head is released	See Figure 1 and Figure 12. Use a drilling machine with a 0.310in. (7,8 mm.) diameter drill.
(b) Push the bush from the hole	Use a round bar.
(c) Remove the bush from the channel.	
(d) Clean the holes in the bridge piece	See Figure 12. Use a soft clean cloth and air blast, remove the sharp edges around the holes. Use standard workshop equipment.
(e) Visually examine and measure the dimensions of the bush location holes	See Figures 12, 13 and 14. Examine the interference on the diameter. Reject if the location hole is oversize.
(f) Install the new bushings in the bridge piece	
(i) Push the bushings fully into position in the holes	See Figures 13 and 14. Use bushes UP12206 - 6 off.
(ii) Visually inspect the bushings	See Figure 14.

(g) Cancel the existing part number and re-identify with the new part number	Use vibro-engraving equipment. Refer to SPM, TASK 70-09-00-400-501, SUBTASK 70-09-00-400-001.	
	Existing	Re-number
	6A7611	6A7898
	6A7860	6A8080
	6A7869	6A8124

(6) Rework the following parts:

6A7605, Ring Assembly - Stage 5, upper unison

6A8086, Ring Assembly - Stage 5, upper unison

6A7607, Ring Assembly - Stage 5, lower unison

Consumable Materials

CoMat 06-022 - Fluorescent penetrant

CoMat 03-366 - Weld filler material

Standard Equipment

Drilling Machine

Drill 0.310in. (7,8 mm.) diameter

Drill 0.394in. (10,0 mm.) diameter

Milling machine

Standard workshop equipment

Vibro-engraving tool

Manual welding equipment

Penetrant crack test equipment

Portable grinding equipment

Repair Parts

UP12206 - Bushing, sleeve - 26 off

UP11019 - Pin - 2 off

CAUTION: TITANIUM COMPONENT - YOU MUST USE SILICON CARBIDE TYPE ABRASIVE WHEELS, STONES AND PAPERS TO DRESS, BLEND AND POLISH THIS COMPONENT.

CAUTION: TITANIUM COMPONENT - AVOID BUILD UP OF HEAT BY APPLYING ONLY GENTLE PRESSURE AND KEEPING THE TOOL SPEED AS LOW AS POSSIBLE.

CAUTION: TITANIUM COMPONENT - YOU MUST MAKE SURE THAT WHEN YOU DRESS MATERIAL, BLEND AND POLISH, TO MAKE SMOOTH, THAT NO SPARKS ARE PRODUCED.

CAUTION: TITANIUM COMPONENT - IF THE MATERIAL SHOWS A CHANGE IN COLOUR, TO DARKER THAN A LIGHT STRAW COLOUR, THE COMPONENT IS TO BE REJECTED.

CAUTION: DO NOT DAMAGE THE BUSH LOCATION HOLES IN THE RING ASSEMBLY.

PROCEDURE	RELATED DATA
(a) Remove pin (UP11019 - 2 off) as required	See Figures 1, 12 and 15. Use portable grinding equipment to remove welds.
(b) Remove and retain dowels (6A7598 - 2 off)	See Figures 12 and 15.
(c) Remove the bushes and brackets	
(i) Drill the head of the bush (UP10815 - 52 off) until the head is released	See Figure 12. Use a drilling machine with a 0.310in. (7,8 mm.) diameter drill.
(ii) Push the bush from the hole	Use a round bar.
(iii) Remove the bushes and brackets from the channel and retain the brackets.	
(d) Clean the holes in the unison ring	See Figure 12. Use a soft clean cloth and air blast, remove the sharp edges around the holes. Use standard workshop equipment.
(e) Visually examine and measure the dimensions of the bush location holes	See Figures 1, 12, 13 and 14. Examine the interference on the diameter. Reject if the location hole is oversize.

(f) Install brackets into position	See Figure 13. Use hand tightened No.10 (0.190in. (4,82 mm.)) diameter UNF bolts and (0.250in. (6,35 mm.)) diameter UNF bolts, as necessary, to hold the brackets in position.	
(g) Install the dowels in the unison ring		
(i) Install the dowels in the unison ring	See Figures 12 and 15. Use Dowel Assembly 6A7583 - 2 off. Position the inboard dowel Assembly first.	
(ii) Install the location pins	See Figures 12 and 16. Use UP11019 location pin - 2 off. Use standard workshop equipment.	
(iii) Tack weld location pins	See Figure 16. Refer to SPM TASK 70-31-02-310-501. Use 2 equispaced tacks per pin. Use CoMat 03-366 filler material if required.	
(h) Do a visual inspection of the welds	Use workshop inspection equipment. Cracks are not permitted.	
(i) Install the new bushings in the unison ring		
(i) Push the bushings fully into position in the holes	See Figures 13 and 14. Use UP12206 bush - 26 off. Use standard workshop equipment.	
(ii) Visually inspect the bushings	See Figure 14	
(j) Remove the bolts used in operation (f) above		
(k) Cancel the existing part number and re-identify with the new part number	Use vibro-engraving equipment. Refer to SPM, TASK 70-09-00-400-501, SUBTASK 70-09-00-400-001.	

Existing	Re-number
6A7605	6A7894
6A8086	6A8088
6A7607	6A7896

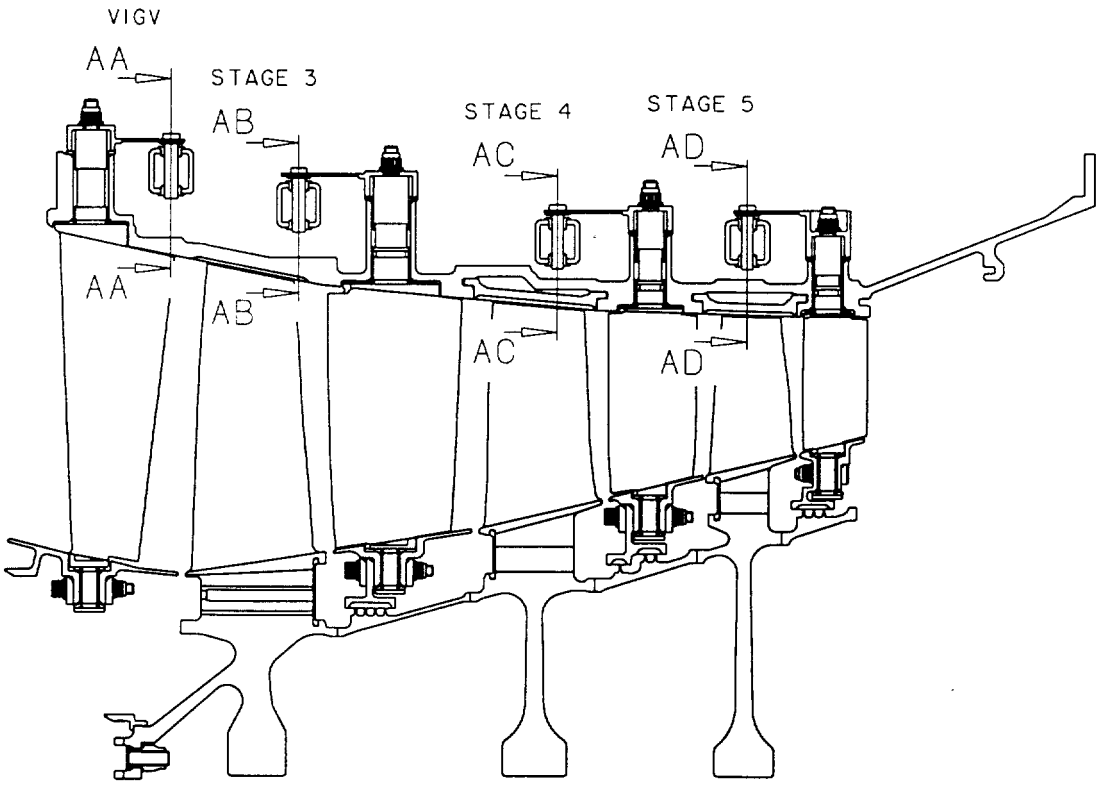
B. Assembly Instructions

It is recommended that the parts introduced by this Service Bulletin are fitted as a complete engine set, however, parts may be fitted in stages as detailed in 1.D.

Install in accordance with current procedures (Engine Manual, 72-41-00, Disassembly and Assembly or Aircraft Maintenance Manual (1IA), 75-32-42, Removal/Installation (A1/A5), Aircraft Maintenance Manual (3IA), 75-31-02, Removal/Installation (D5)).

C. Recording Instructions

A record of accomplishment is necessary.

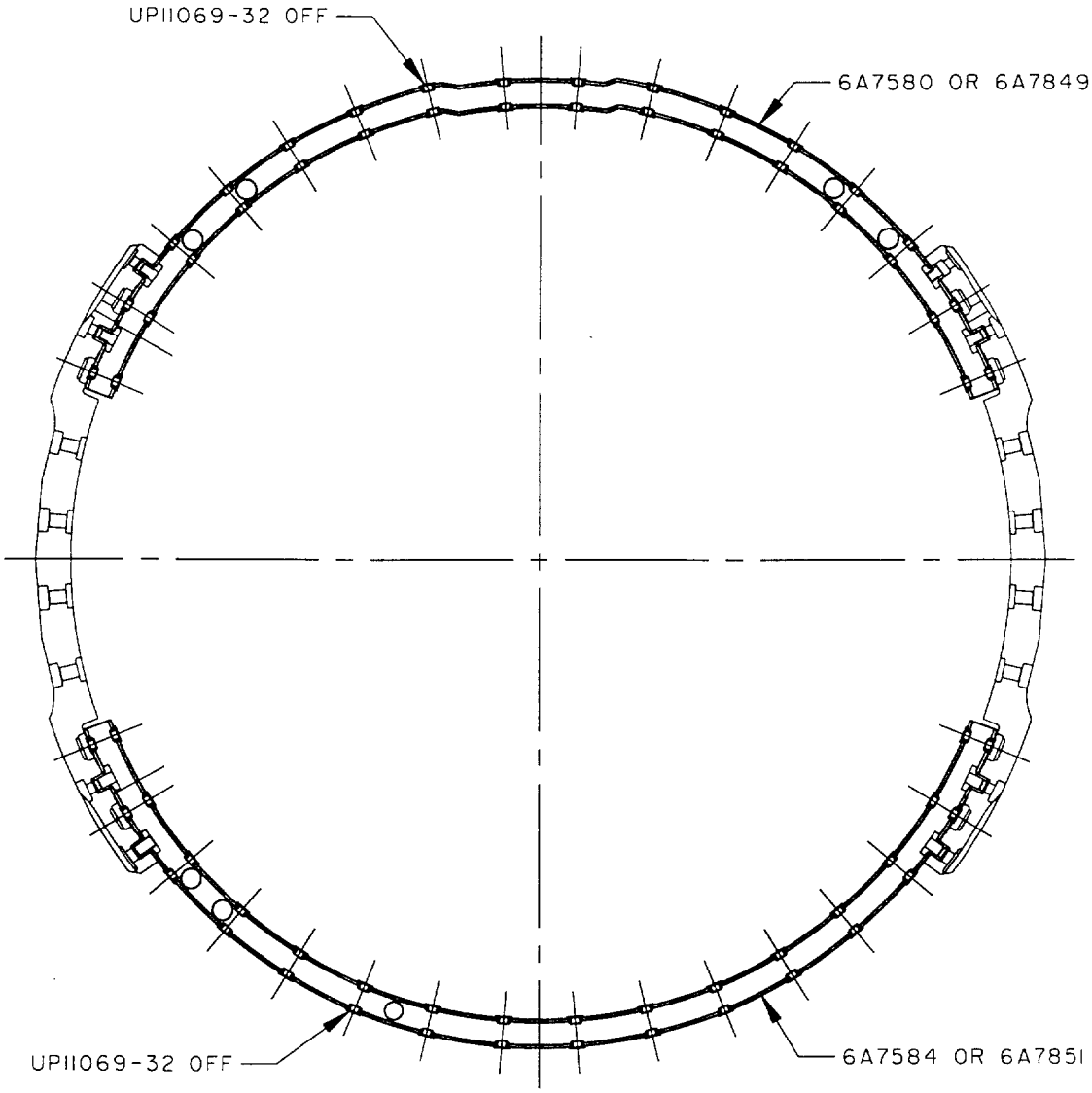


TYPICAL SECTION THRU H.P. COMPRESSOR

MACHINE WHERE MARKED ☑
REMOVE SHARP EDGES 0.012±0.008in (0,30±0,20mm)UNLESS
OTHERWISE SPECIFIED.
MACHINED SURFACE FINISH TO BE 63 MICROINCHES (1,6 MICROMETRES).
THE GEOMETRIC SYMBOLS ARE AS GIVEN IN THE I.S.O. MANUAL (1101).

dem0000902

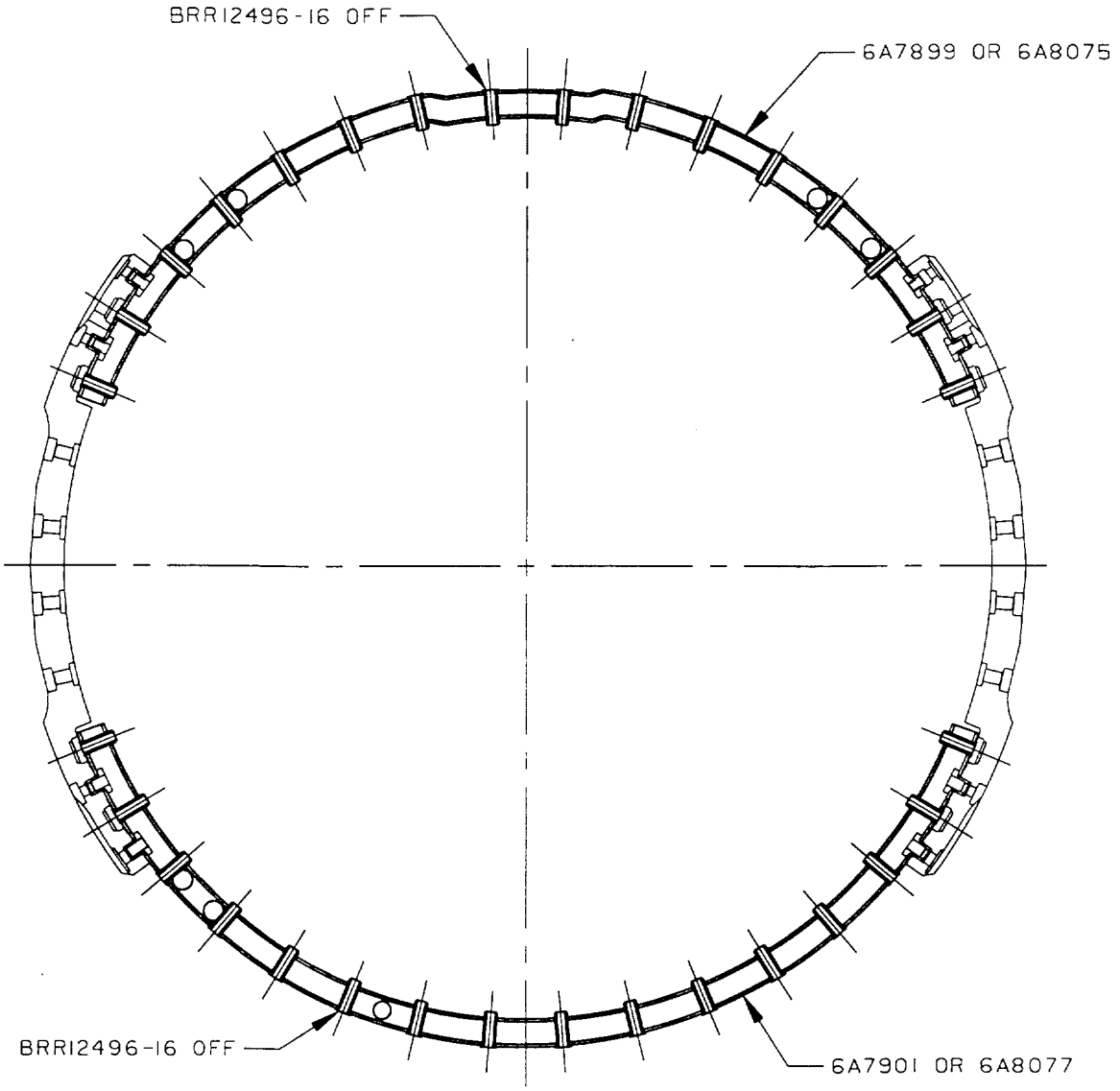
Figure 1



SECTION AA (V.I.G.V.)
REMOVAL OF REDUNDANT BUSHES
(BEFORE ALTERATION)

dem0000903

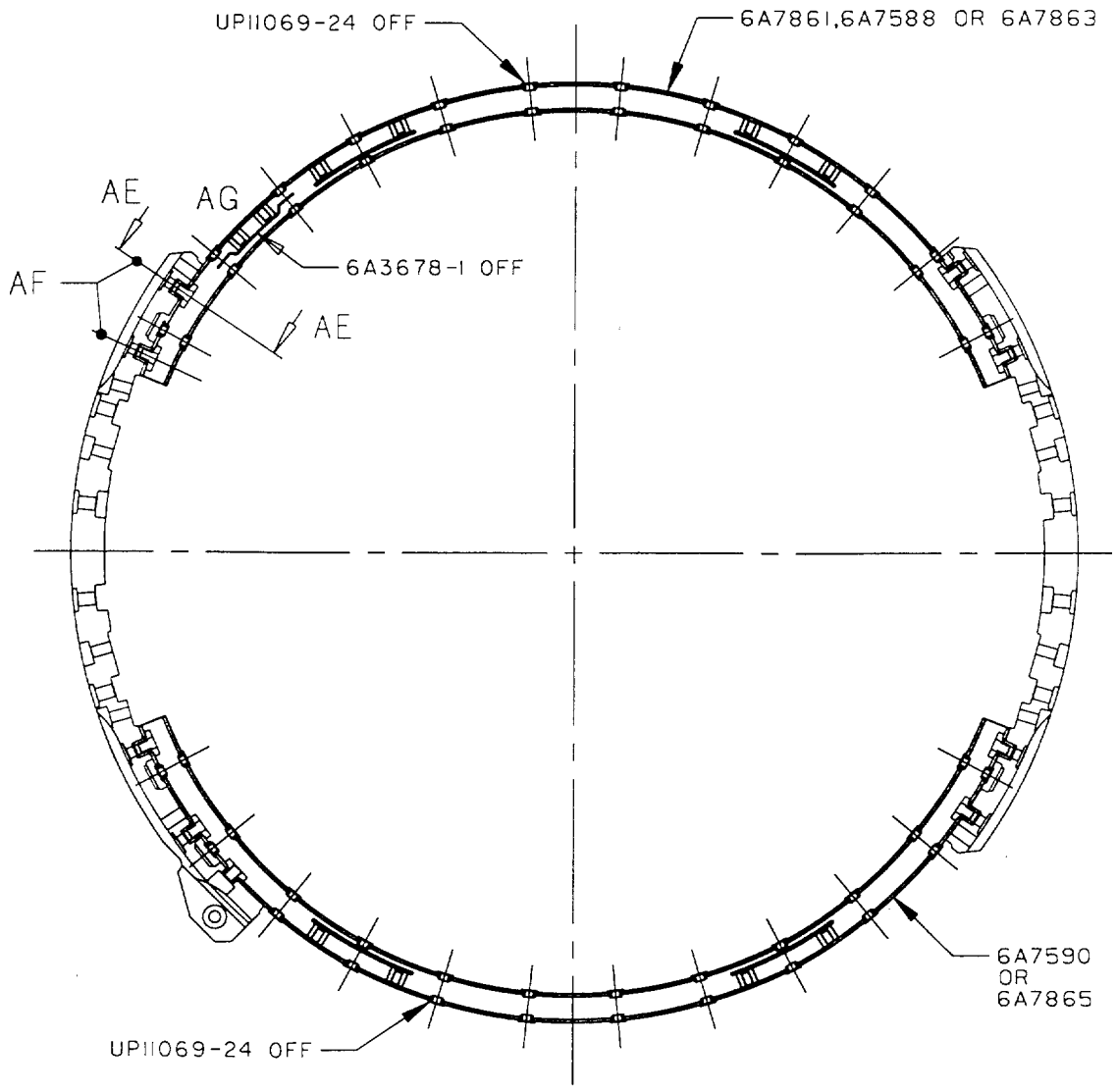
Figure 2



REPEAT SECTION AA (V.I.G.V.)
INSTALLATION OF NEW BUSHES
(AFTER ALTERATION)

dem0000904

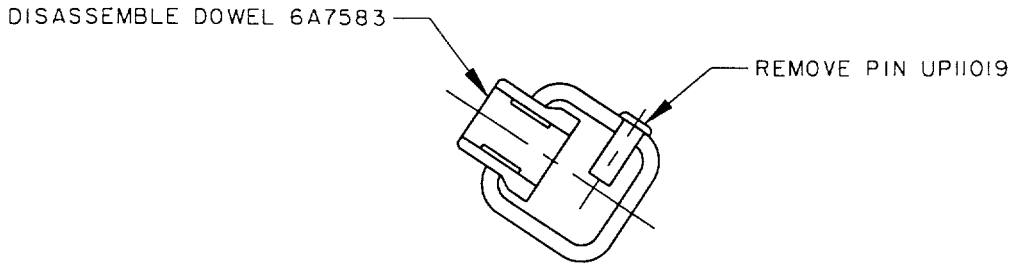
Figure 3



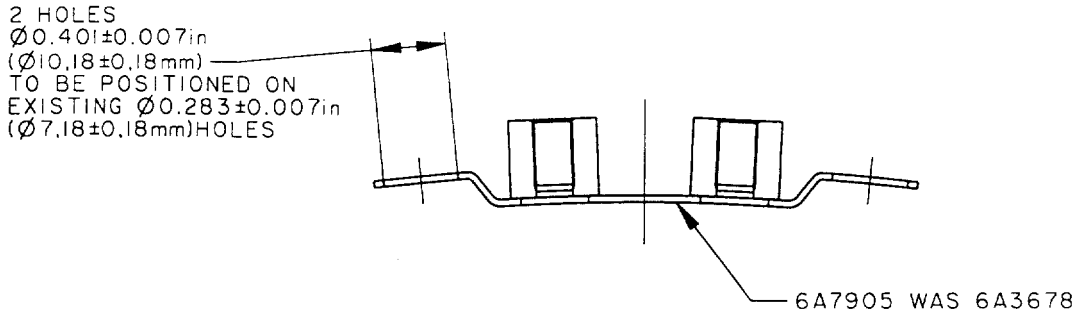
SECTION AB (STAGE 3)
REMOVAL OF REDUNDANT BUSHES
AND BRACKET
(BEFORE ALTERATION)

dem0000905

Figure 4



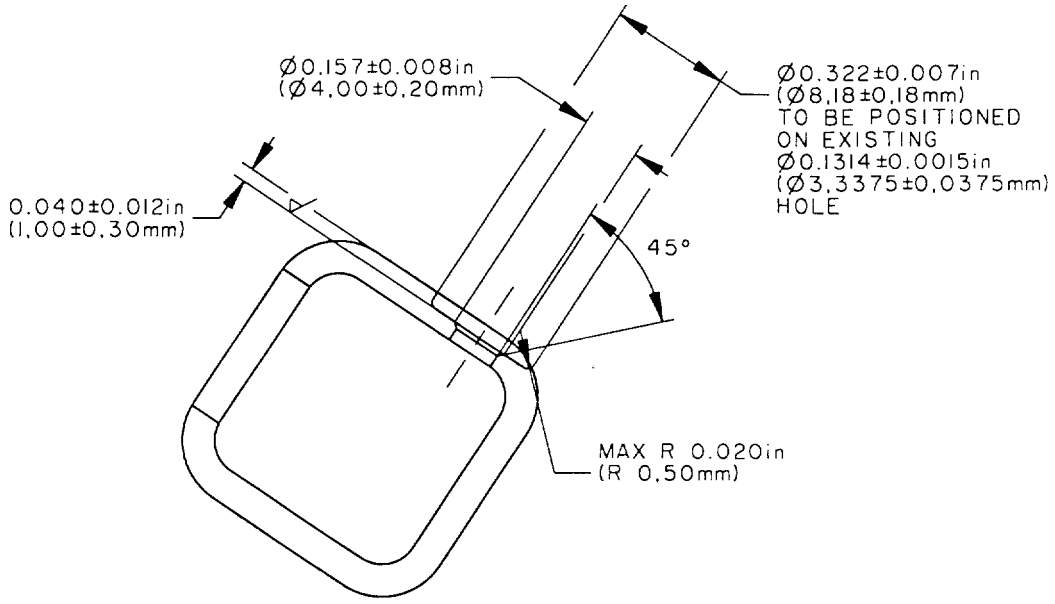
SECTION AE
SHOWING DISASSEMBLY OF DOWEL
AND REMOVAL OF PIN
TYPICAL 2 POSITIONS DESIGNATED AF



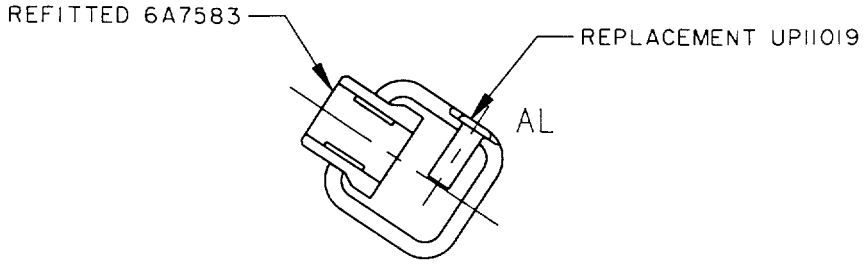
VIEW AT AG
SHOWING REWORK OF BRACKET 6A3678
AFTER REMOVAL FROM UNISON RING ASSEMBLY

dem0000906

Figure 5



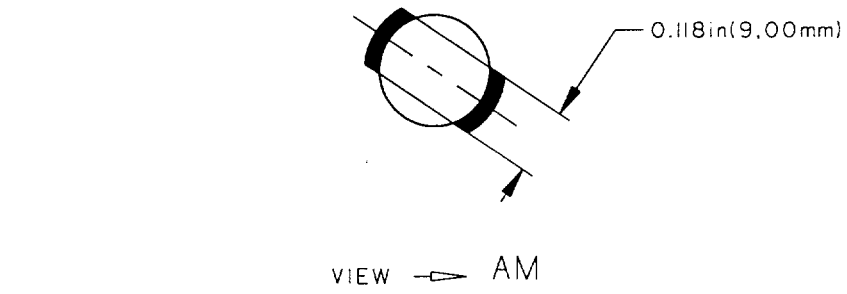
REPEAT SECTION AE
SHOWING REWORKING OF UNISON RING
TYPICAL 2 POSITIONS DESIGNATED AT AF

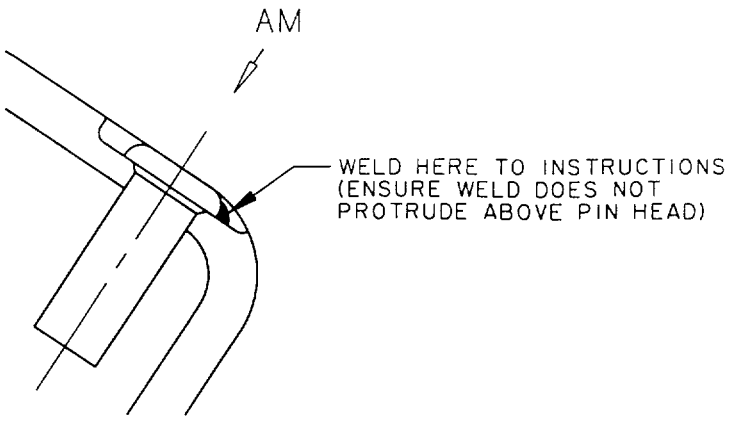


REPEAT SECTION AE
SHOWING REFITTING OF
6A7583 AND UP11019

dem0000907

Figure 6

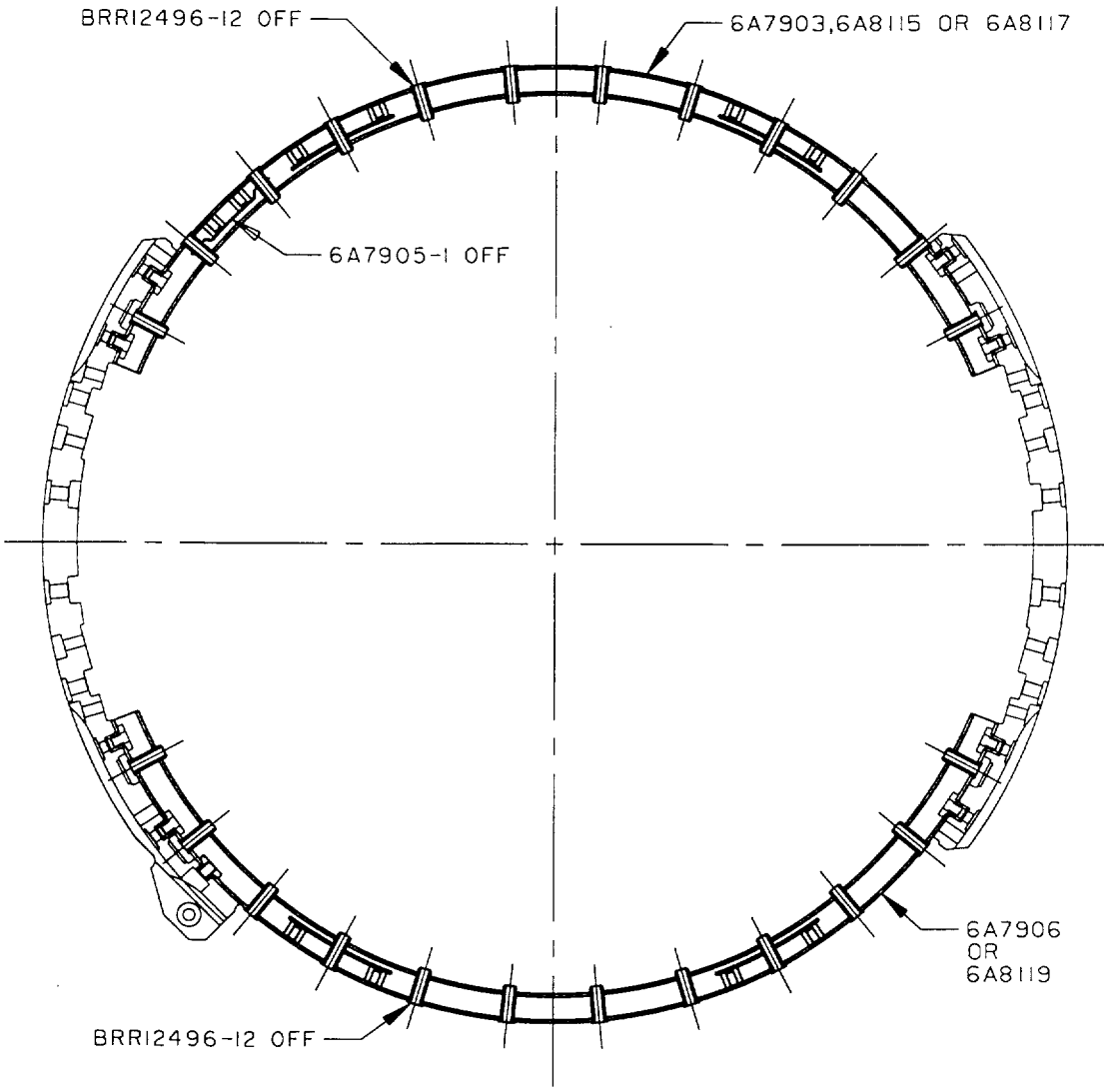




VIEW AT AL
TYPICAL 2 POSITIONS

dem0000908

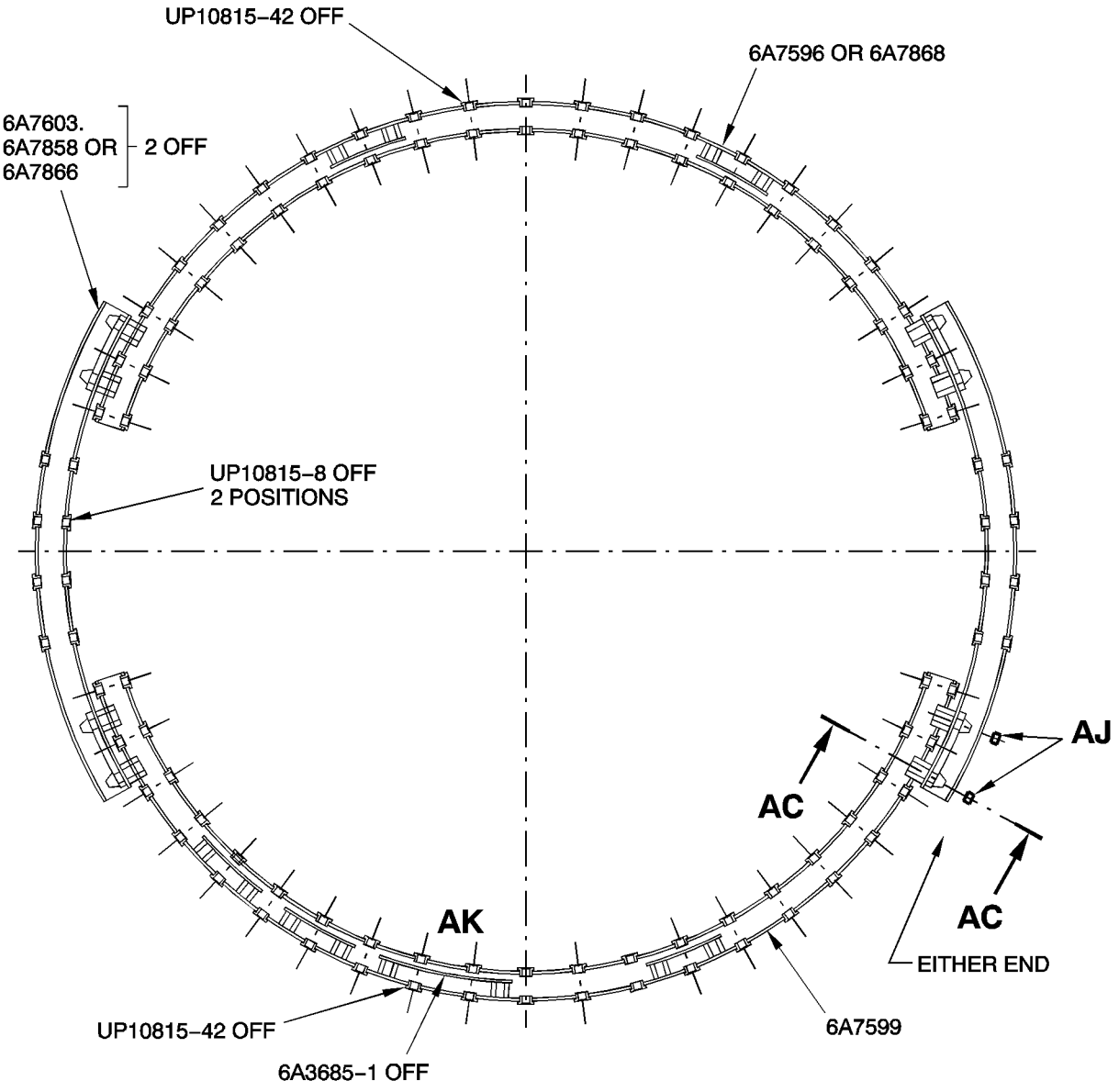
Figure 7



REPEAT SECTION AB (STAGE 3)
INSTALLATION OF NEW BUSHES
AND BRACKET
(AFTER ALTERATION)

dem0000909

Figure 8

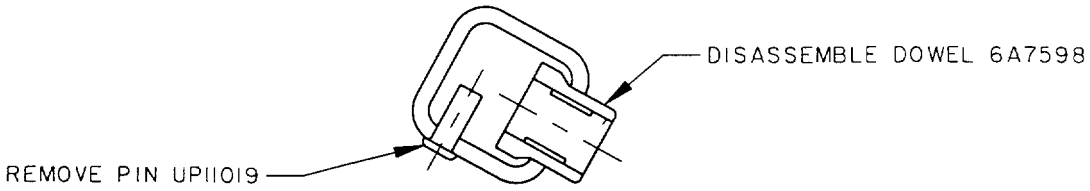


SECTION **AC** (STAGE 4)
REMOVAL OF REDUNDANT BUSHES
AND BRACKET
(BEFORE ALTERATION)

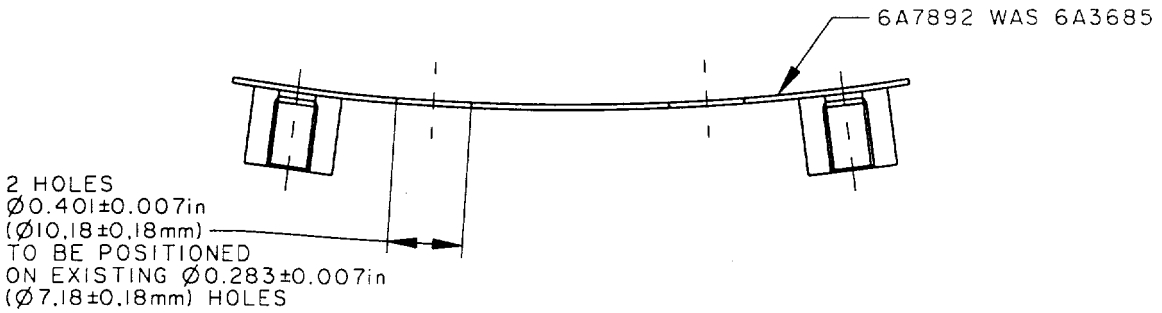
dem0000910a

R

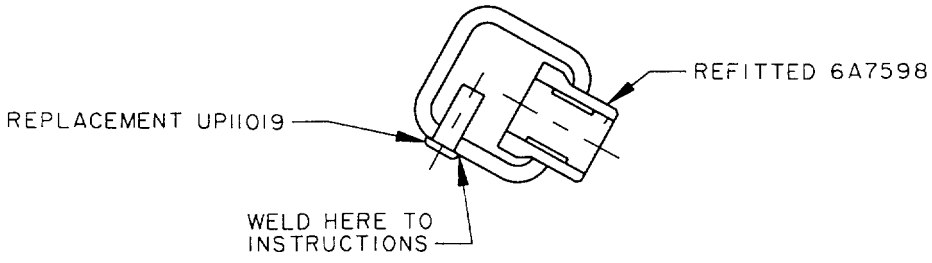
Figure 9



SECTION AH
SHOWING DISASSEMBLY OF DOWEL
AND REMOVAL OF PIN
TYPICAL 2 AT POSITIONS DESIGNATED A J



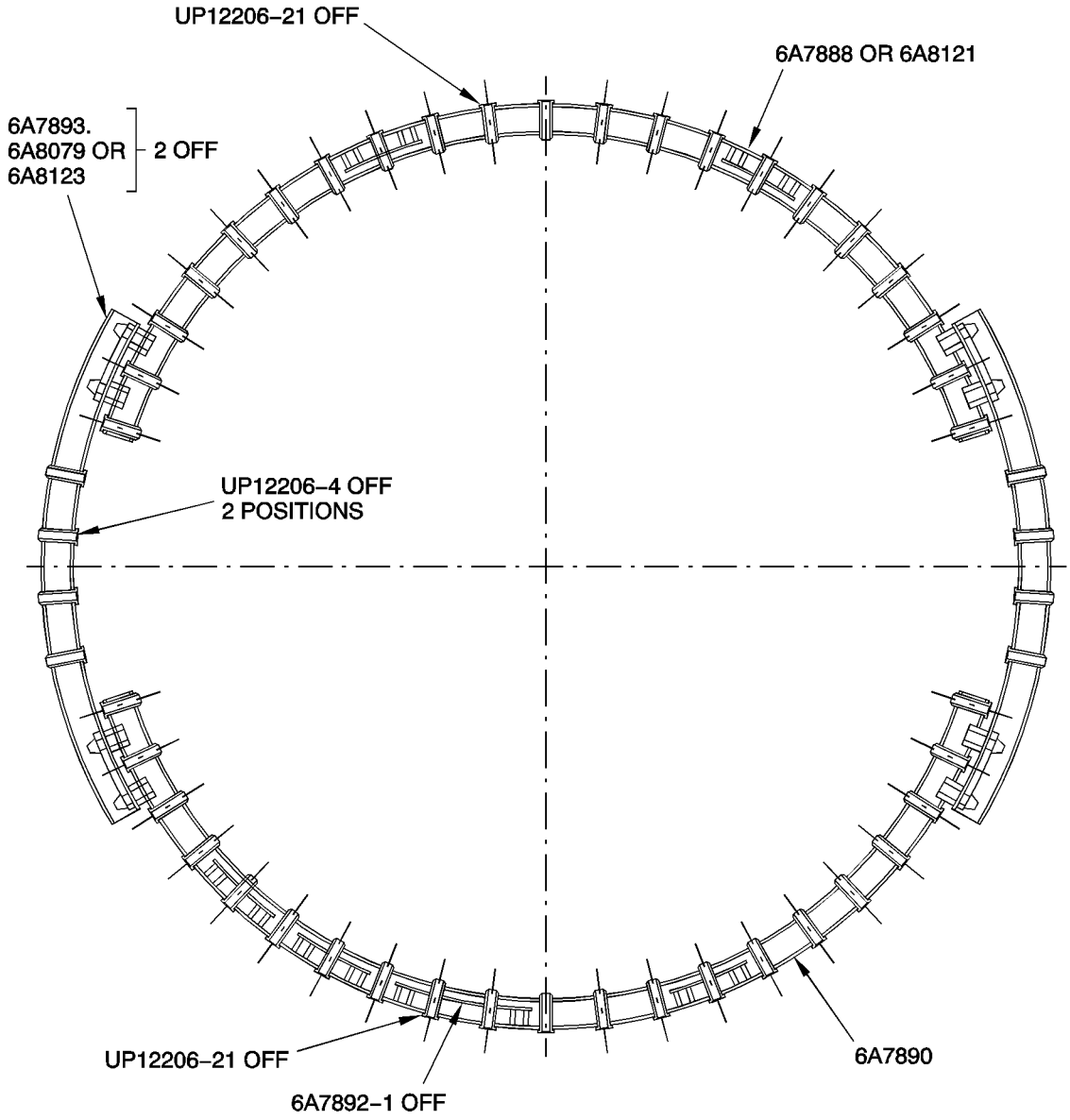
VIEW AT AK
SHOWING REWORK OF BRACKET 6A3685
AFTER REMOVAL FROM UNISON RING ASSEMBLY



REPEAT SECTION AH
SHOWING REFITTING OF
6A7598 AND UPII019

dem0000911

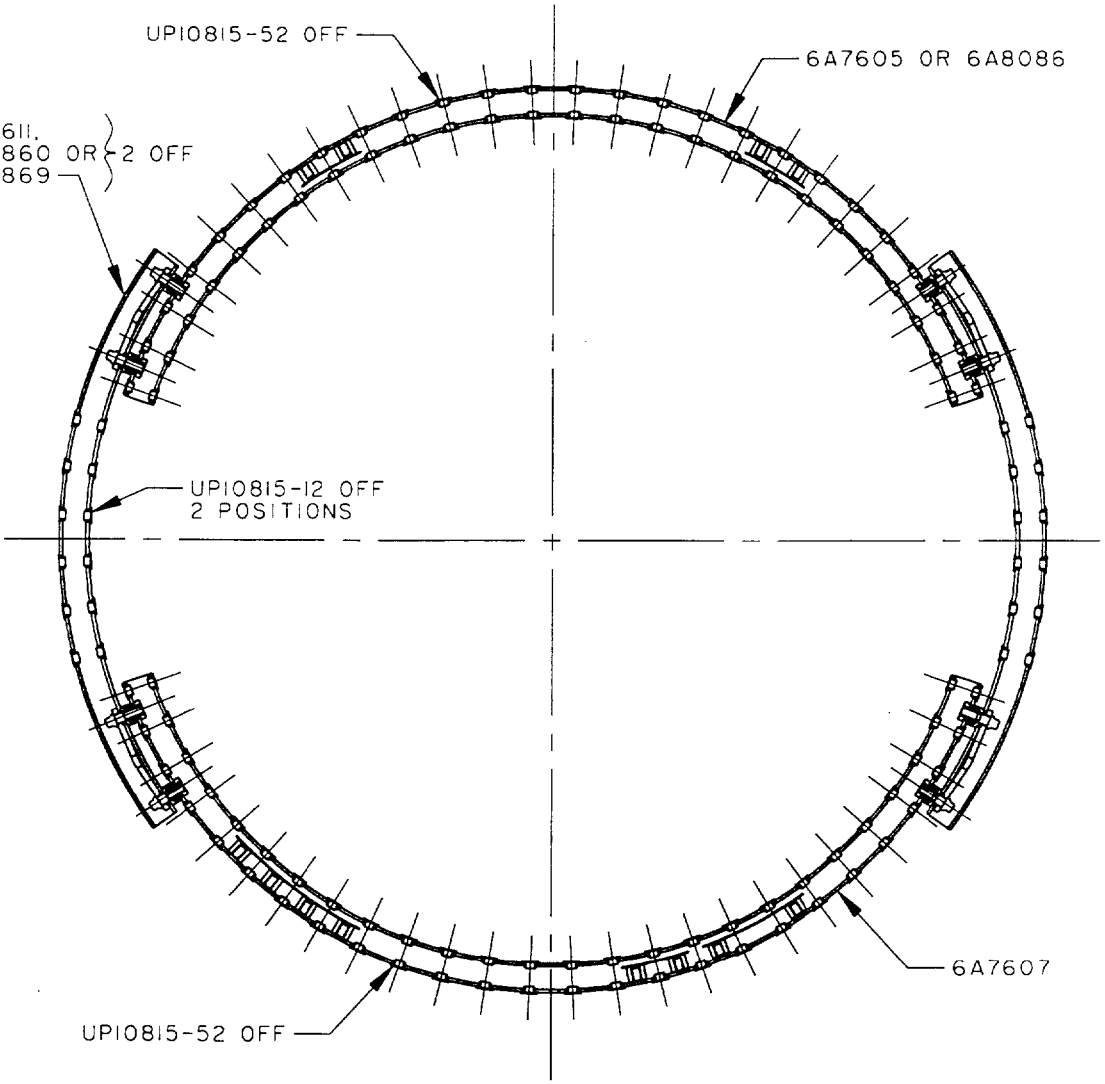
Figure 10



REPEAT SECTION **AC** (STAGE 4)
INSTALLATION OF NEW BUSHES
AND BRACKET
(AFTER ALTERATION)

dem0000912a

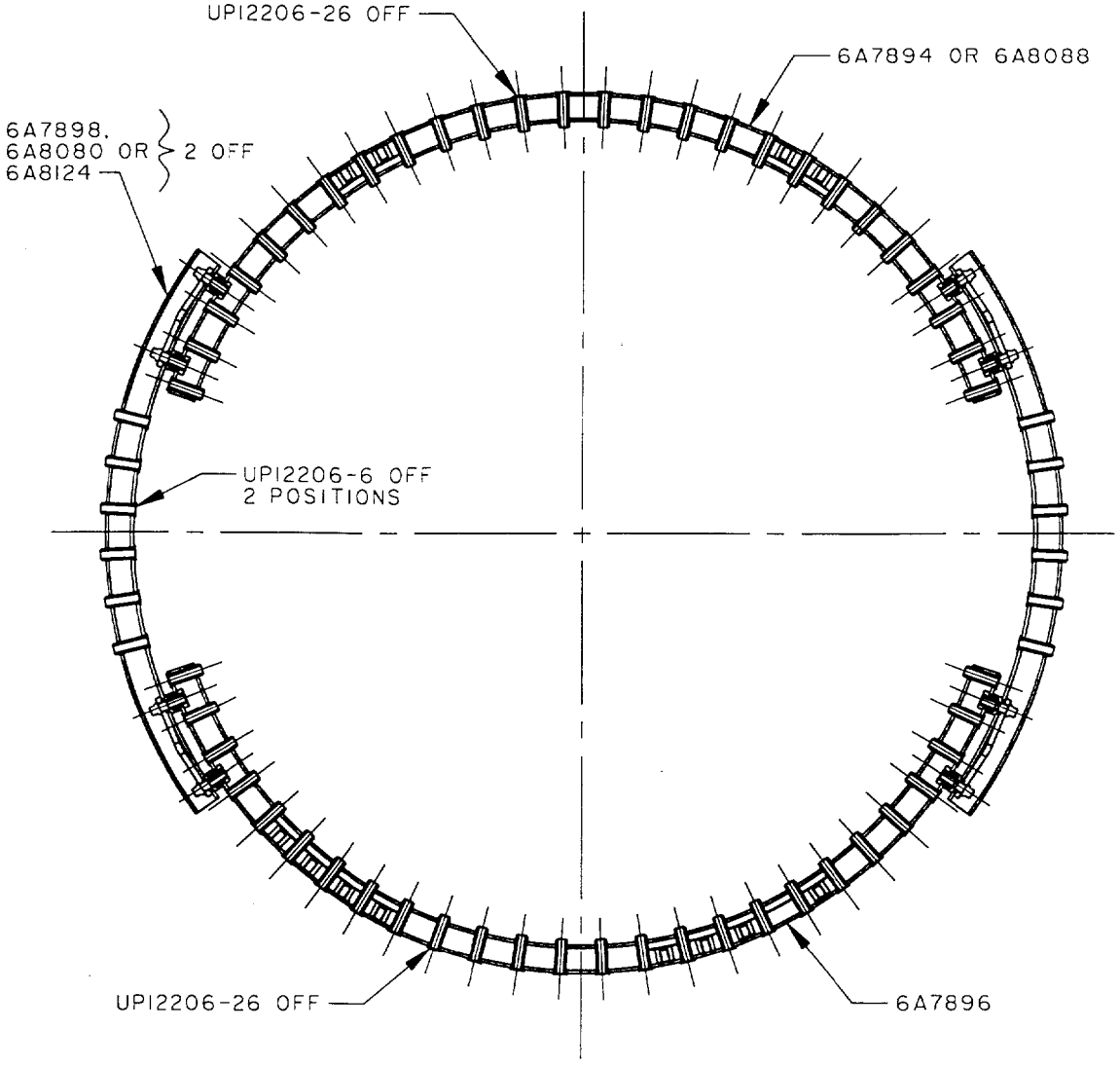
Figure 11



SECTION AD (STAGE 5)
REMOVAL OF REDUNDANT BUSHES
(BEFORE ALTERATION)

dem0000913

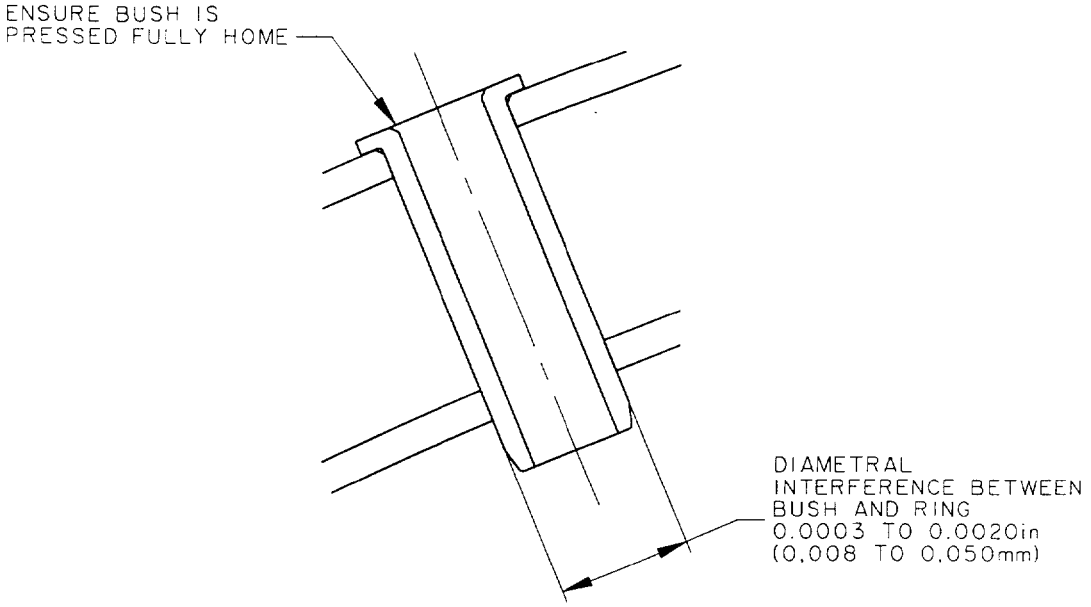
Figure 12



REPEAT SECTION AD (STAGE 5)
INSTALLATION OF NEW BUSHES
(AFTER ALTERATION)

dem0000914

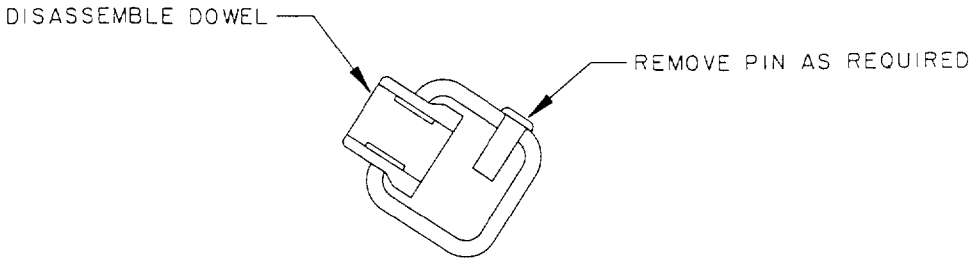
Figure 13



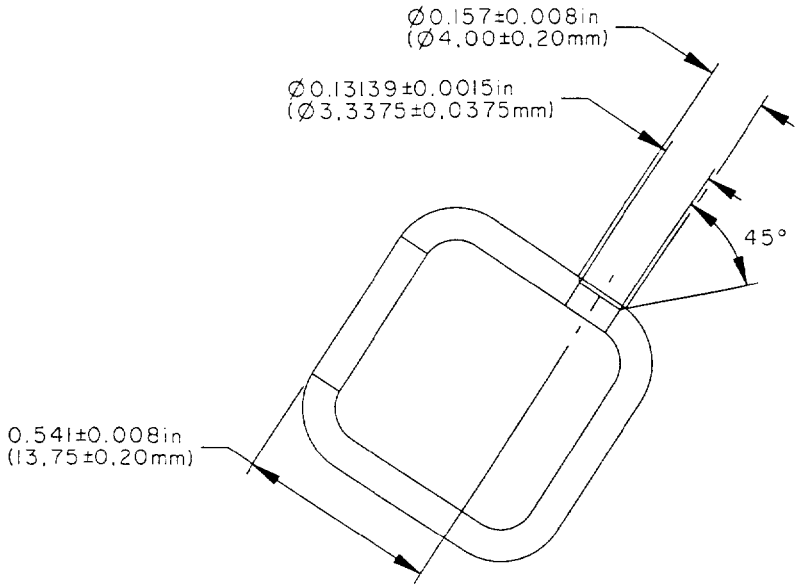
TYPICAL VIEW
SHOWING INSTALLATION OF
NEW SLEEVE BUSHING
TYPICAL ALL STAGES

dem0000915

Figure 14



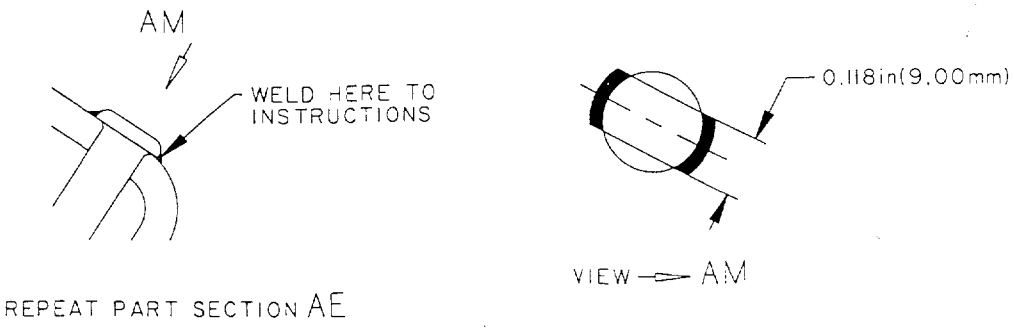
REPEAT SECTION AE
SHOWING DISASSEMBLY OF DOWEL
AND REMOVAL OF PIN AS REQUIRED

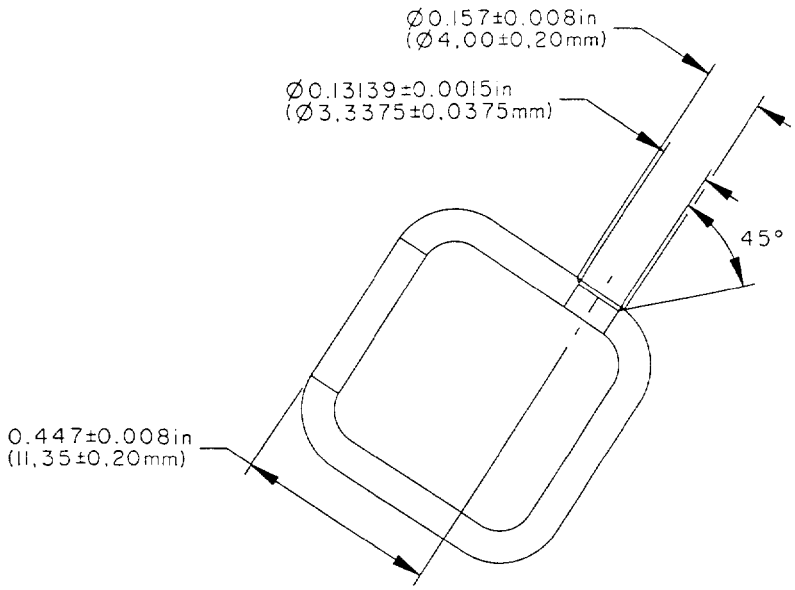


REPEAT SECTION AE
SHOWING REWORKING OF UNISON RING
TYPICAL ON VIGV AS REQUIRED

dem0000945

Figure 15





REPEAT SECTION AE
SHOWING REWORKING OF UNISON RING
TYPICAL ON STAGES 4 AND 5 AS REQUIRED

dem0000946

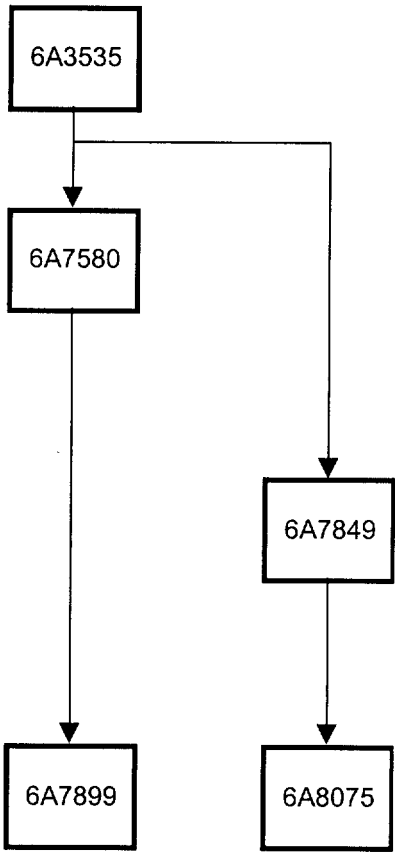
Figure 16

Baseline

V2500-ENG-72-0385
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Revised Bridge Piece Assemblies and Unison Ring Asemblies with Increased Dowel Location (New Production)

V2500-ENG-72-0416
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Revised Bridge Piece Assemblies and Unison Ring Asemblies with Increased Dowel Location (Rework)

V2500-ENG-72-0418
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Unison Ring Assemblies with Revised One Piece Lever Arm Bushes.



ded0004467

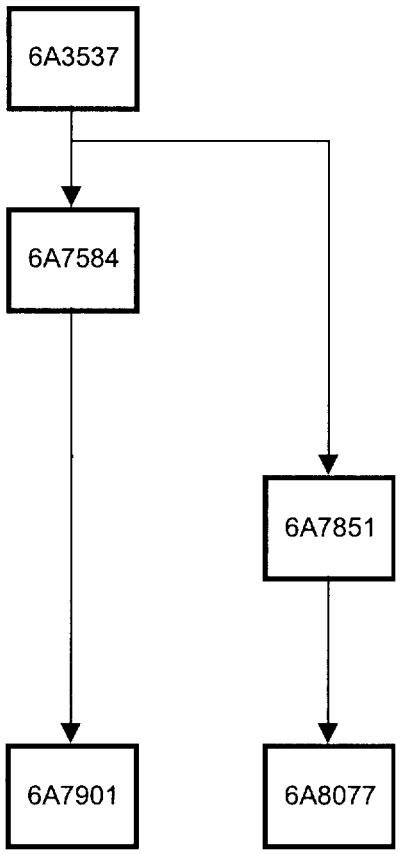
HP Compressor VIGV Upper Unison Ring Assembly Family Tree - All V2500 Engines

Baseline

V2500-ENG-72-0385
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Revised Bridge Piece Assemblies and Unison Ring Asemblies with Increased Dowel Location (New Production)

V2500-ENG-72-0416
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Revised Bridge Piece Assemblies and Unison Ring Asemblies with Increased Dowel Location (Rework)

V2500-ENG-72-0418
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Unison Ring Assemblies with Revised One Piece Lever Arm Bushes.



ded0004468

HP Compressor VIGV Lower Unison Ring Assembly Family Tree - All V2500 Engines

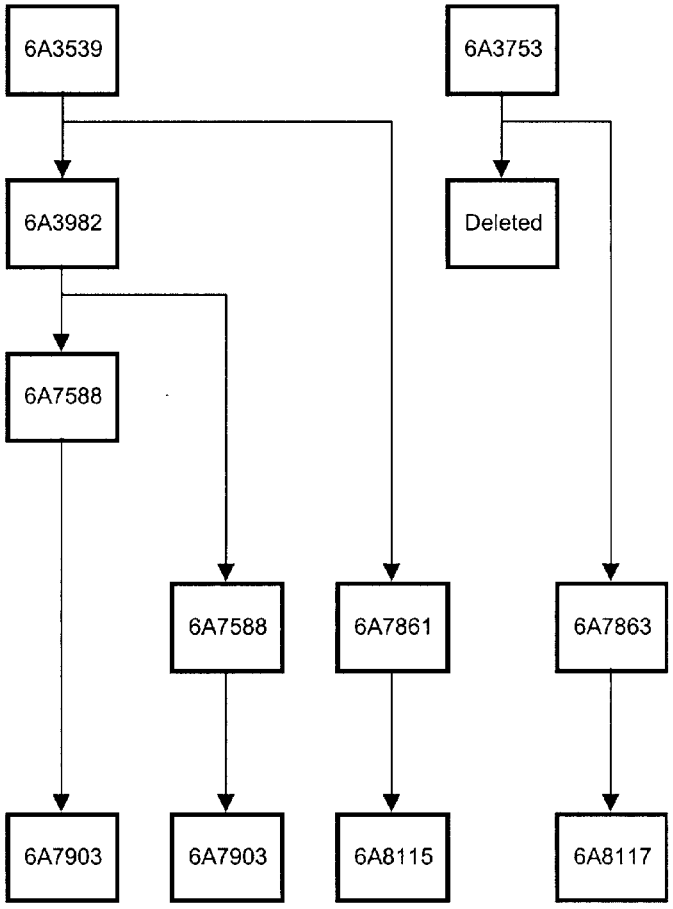
Baseline

V2500-ENG-72-0084
Engine - HP Compressor Variable Stator Vanes - Reduced Number of Rigging Pin Brackets

V2500-ENG-72-0385
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Revised Bridge Piece Assemblies and Unison Ring Asemblies with Increased Dowel Location (New Production)

V2500-ENG-72-0416
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Revised Bridge Piece Assemblies and Unison Ring Asemblies with Increased Dowel Location (Rework)

V2500-ENG-72-0418
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Unison Ring Assemblies with Revised One Piece Lever Arm Bushes.



ded0004469

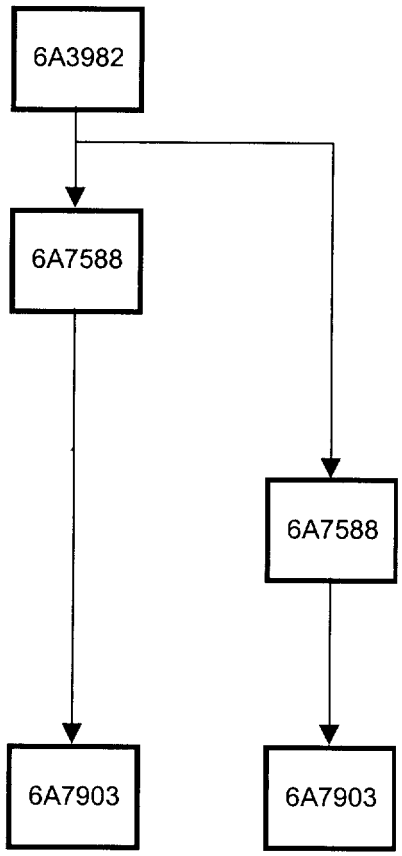
HP Compressor Stage 3 Upper Unison Ring Assembly Family Tree - A1 Engines Only

Baseline

V2500-ENG-72-0385
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Revised Bridge Piece Assemblies and Unison Ring Asemblies with Increased Dowel Location (New Production)

V2500-ENG-72-0416
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Revised Bridge Piece Assemblies and Unison Ring Asemblies with Increased Dowel Location (Rework)

V2500-ENG-72-0418
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Unison Ring Assemblies with Revised One Piece Lever Arm Bushes.



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HP Compressor Stage 3 Upper Unison Ring Assembly Family Tree - A5/D5 Engines Only

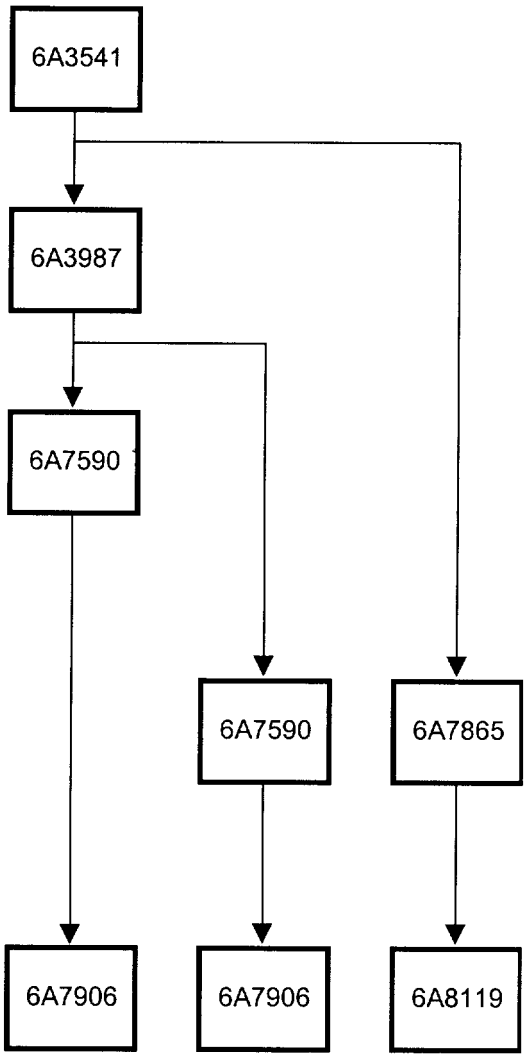
Baseline

V2500-ENG-72-0084
Engine - HP Compressor Variable Stator Vanes - Reduced Number of Rigging Pin Brackets

V2500-ENG-72-0385
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Revised Bridge Piece Assemblies and Unison Ring Asemblies with Increased Dowel Location (New Production)

V2500-ENG-72-0416
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Revised Bridge Piece Assemblies and Unison Ring Asemblies with Increased Dowel Location (Rework)

V2500-ENG-72-0418
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Unison Ring Assemblies with Revised One Piece Lever Arm Bushes.



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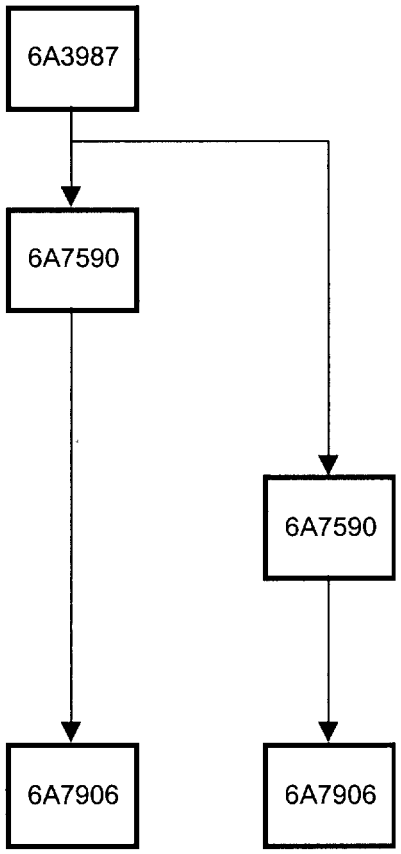
HP Compressor Stage 3 Lower Unison Ring Assembly Family Tree - A1 Engines Only

Baseline

V2500-ENG-72-0385
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Revised Bridge Piece Assemblies and Unison Ring Asemblies with Increased Dowel Location (New Production)

V2500-ENG-72-0416
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Revised Bridge Piece Assemblies and Unison Ring Asemblies with Increased Dowel Location (Rework)

V2500-ENG-72-0418
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Unison Ring Assemblies with Revised One Piece Lever Arm Bushes.



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HP Compressor Stage 3 Lower Unison Ring Assembly Family Tree - A5/D5 Engines Only

Baseline

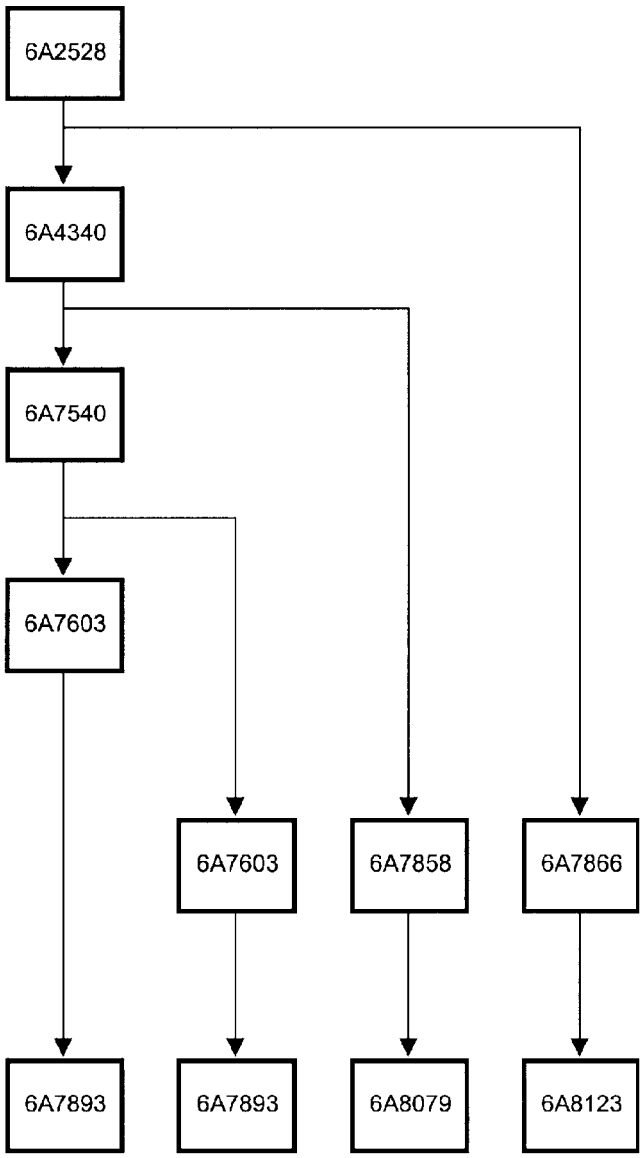
V2500-ENG-72-0027
Engine - HP Compressor - Introduction of Reduced Weight Front Compressor Casing.

V2500-ENG-72-0348
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Stage 4 and Stage 5VSV Bridge Pieces with Revised Method of Manufacture.

V2500-ENG-72-0385
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Revised Bridge Piece Assemblies and Unison Ring Asemblies with Increased Dowel Location (New Production)

V2500-ENG-72-0416
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Revised Bridge Piece Assemblies and Unison Ring Asemblies with Increased Dowel Location (Rework)

V2500-ENG-72-0418
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Unison Ring Assemblies with Revised One Piece Lever Arm Bushes.



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HP Compressor Stage 4 Bridge Piece Assembly Family Tree - A1 Engines Only

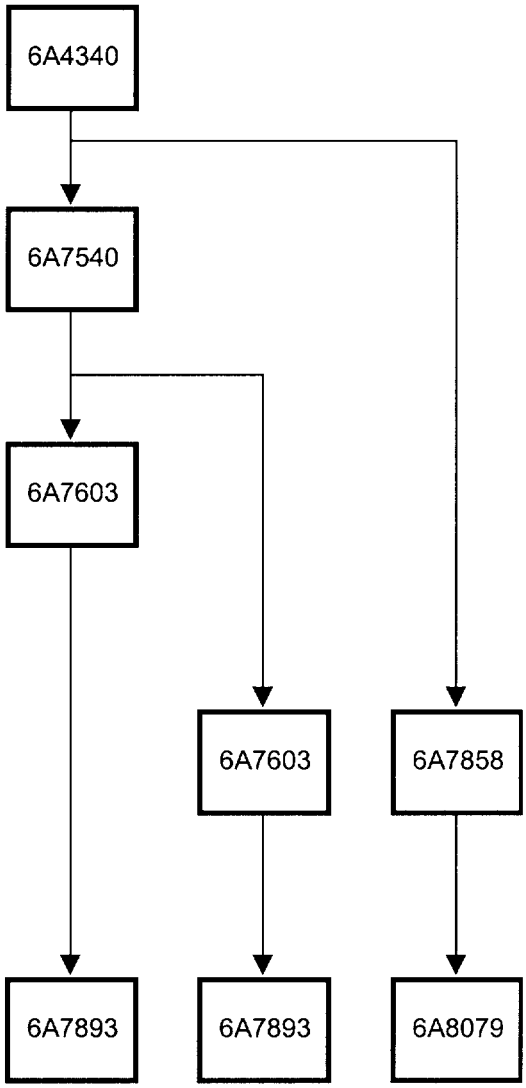
Baseline

V2500-ENG-72-0348
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Stage 4 and Stage 5VSV Bridge Pieces with Revised Method of Manufacture.

V2500-ENG-72-0385
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Revised Bridge Piece Assemblies and Unison Ring Asemblies with Increased Dowel Location (New Production)

V2500-ENG-72-0416
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Revised Bridge Piece Assemblies and Unison Ring Asemblies with Increased Dowel Location (Rework)

V2500-ENG-72-0418
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Unison Ring Assemblies with Revised One Piece Lever Arm Bushes.



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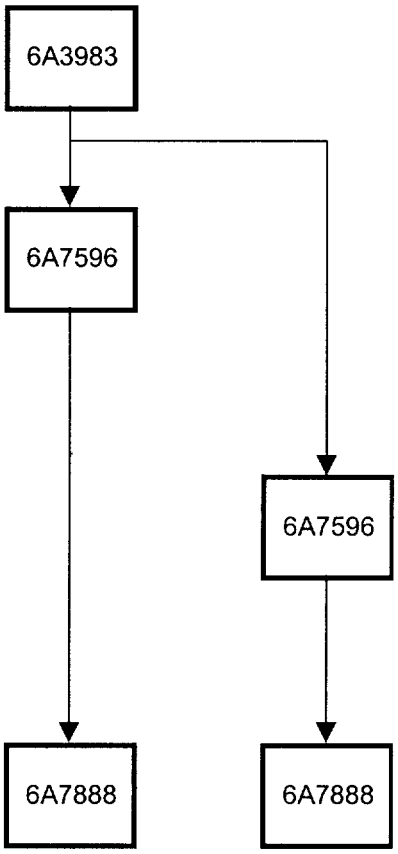
HP Compressor Stage 4 Bridge Piece Assembly Family Tree - A5/D5 Engines Only

Baseline

V2500-ENG-72-0385
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Revised Bridge Piece Assemblies and Unison Ring Asemblies with Increased Dowel Location (New Production)

V2500-ENG-72-0416
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Revised Bridge Piece Assemblies and Unison Ring Asemblies with Increased Dowel Location (Rework)

V2500-ENG-72-0418
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Unison Ring Assemblies with Revised One Piece Lever Arm Bushes.



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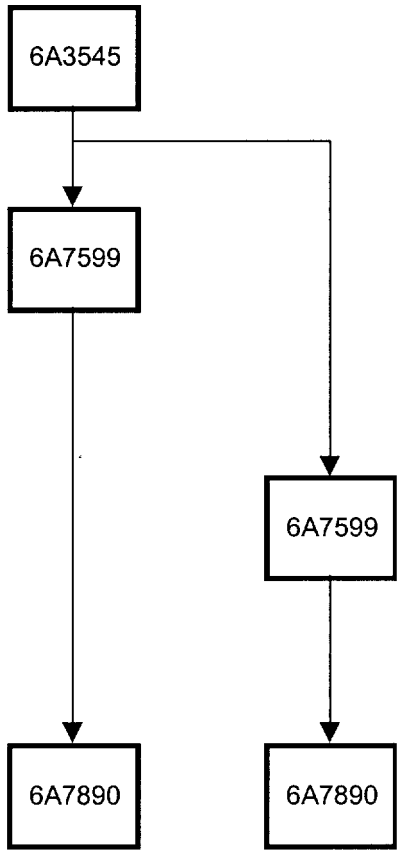
HP Compressor Stage 4 Upper Unison Ring Assembly Family Tree - A5/D5 Engines Only

Baseline

V2500-ENG-72-0385
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Revised Bridge Piece Assemblies and Unison Ring Asemblies with Increased Dowel Location (New Production)

V2500-ENG-72-0416
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Revised Bridge Piece Assemblies and Unison Ring Asemblies with Increased Dowel Location (Rework)

V2500-ENG-72-0418
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Unison Ring Assemblies with Revised One Piece Lever Arm Bushes.



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HP Compressor Stage 4 Lower Unison Ring Assembly Family Tree - All V2500 Engines

Baseline

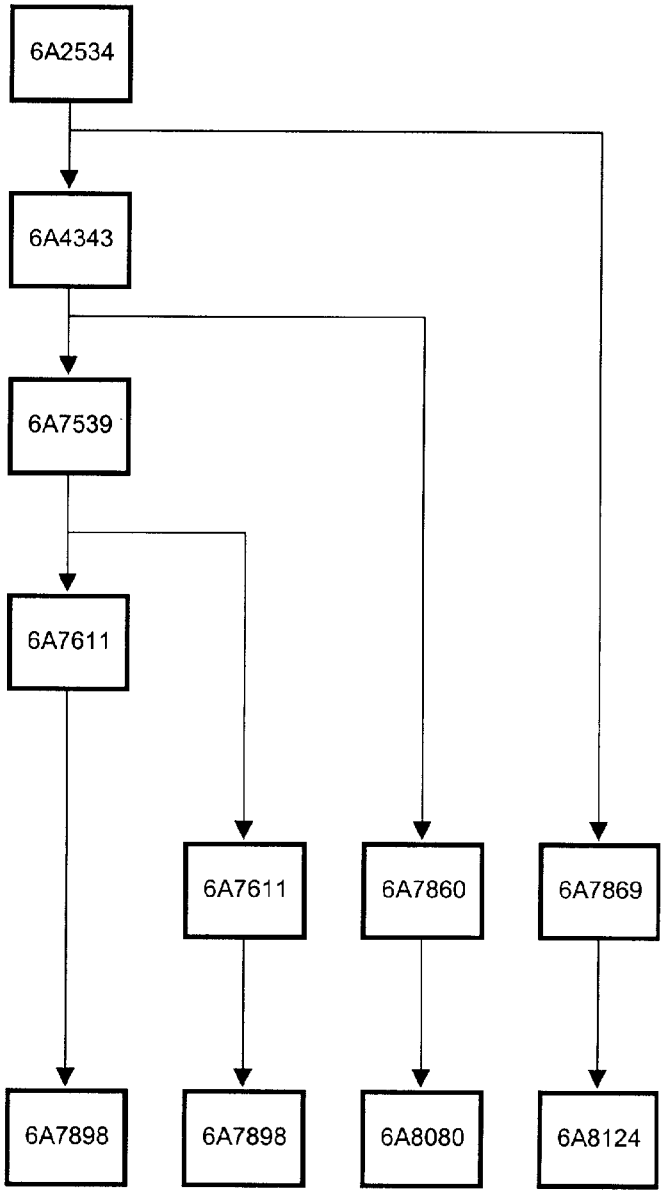
V2500-ENG-72-0027
Engine - HP Compressor - Introduction of Reduced Weight Front Compressor Casing.

V2500-ENG-72-0348
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Stage 4 and Stage 5VSV Bridge Pieces with Revised Method of Manufacture.

V2500-ENG-72-0385
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Revised Bridge Piece Assemblies and Unison Ring Asemblies with Increased Dowel Location (New Production)

V2500-ENG-72-0416
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Revised Bridge Piece Assemblies and Unison Ring Asemblies with Increased Dowel Location (Rework)

V2500-ENG-72-0418
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Unison Ring Assemblies with Revised One Piece Lever Arm Bushes.



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HP Compressor Stage 5 Bridge Piece Assembly Family Tree - A1 Engines Only

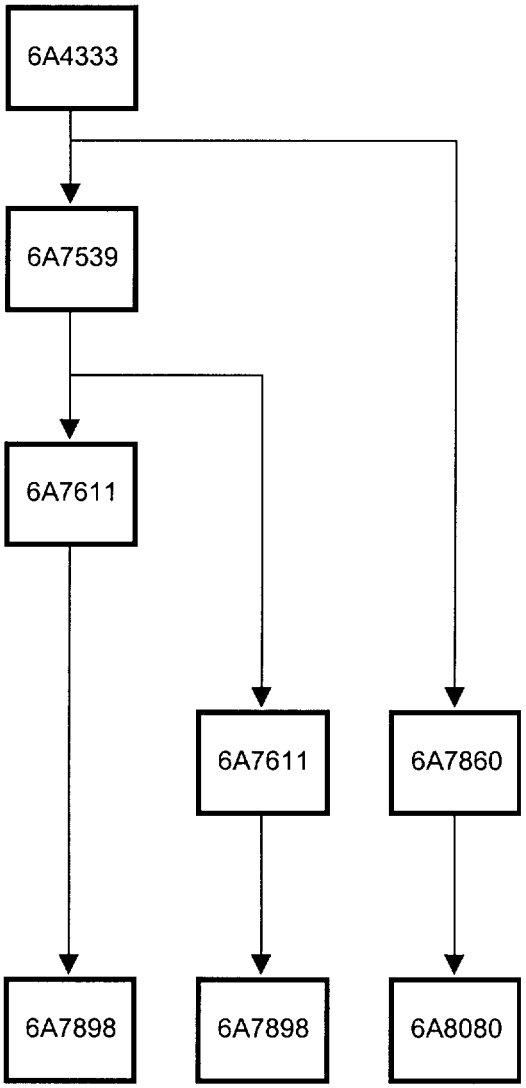
Baseline

V2500-ENG-72-0348
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Stage 4 and Stage 5VSV Bridge Pieces with Revised Method of Manufacture.

V2500-ENG-72-0385
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Revised Bridge Piece Assemblies and Unison Ring Asemblies with Increased Dowel Location (New Production)

V2500-ENG-72-0416
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Revised Bridge Piece Assemblies and Unison Ring Asemblies with Increased Dowel Location (Rework)

V2500-ENG-72-0418
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Unison Ring Assemblies with Revised One Piece Lever Arm Bushes.



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HP Compressor Stage 5 Bridge Piece Assembly Family Tree - A5/D5 Engines Only

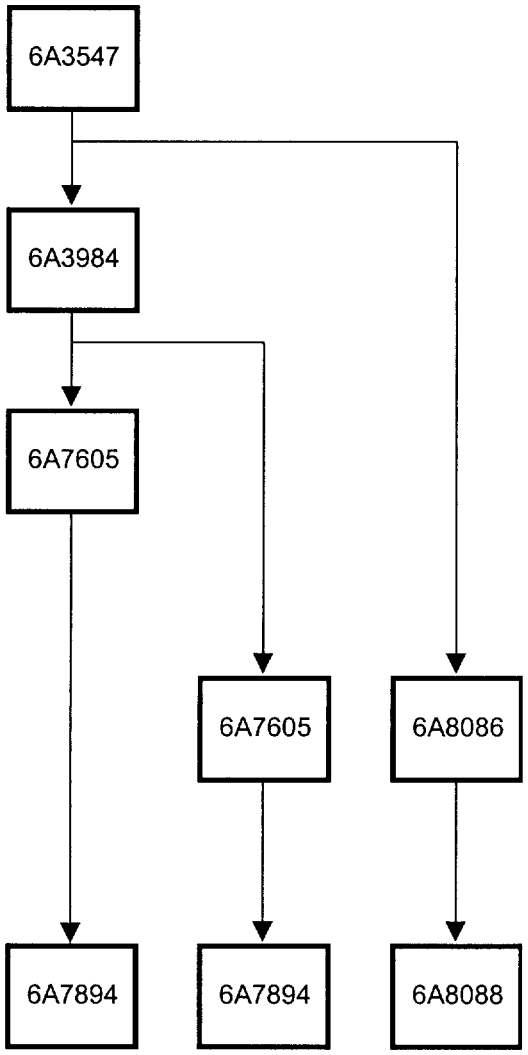
Baseline

V2500-ENG-72-0084
Engine - HP Compressor Variable Stator Vanes - Reduced Number of Rigging Pin Brackets

V2500-ENG-72-0385
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Revised Bridge Piece Assemblies and Unison Ring Asemblies with Increased Dowel Location (New Production)

V2500-ENG-72-0416
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Revised Bridge Piece Assemblies and Unison Ring Asemblies with Increased Dowel Location (Rework)

V2500-ENG-72-0418
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Unison Ring Assemblies with Revised One Piece Lever Arm Bushes.



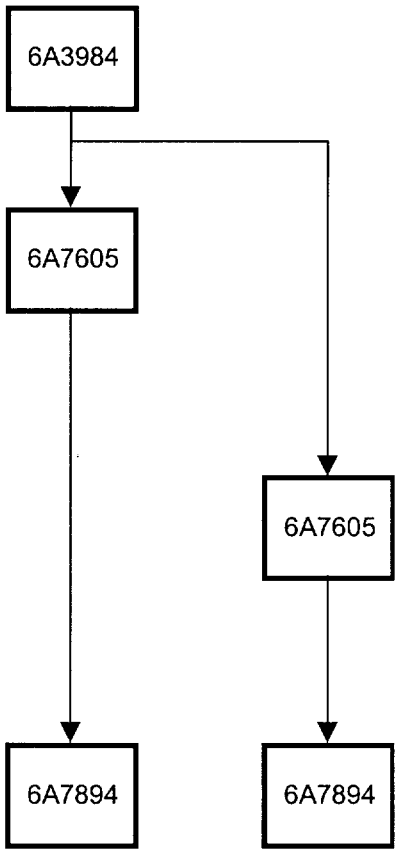
HP Compressor Stage 5 Upper Unison Ring Assembly Family Tree - A1 Engines Only

Baseline

V2500-ENG-72-0385
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Revised Bridge Piece Assemblies and Unison Ring Asemblies with Increased Dowel Location (New Production)

V2500-ENG-72-0416
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Revised Bridge Piece Assemblies and Unison Ring Asemblies with Increased Dowel Location (Rework)

V2500-ENG-72-0418
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Unison Ring Assemblies with Revised One Piece Lever Arm Bushes.



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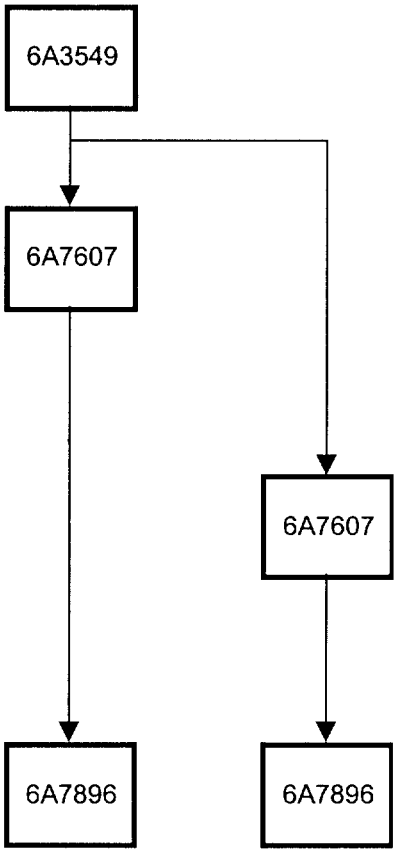
HP Compressor Stage 5 Upper Unison Ring Assembly Family Tree - A5/D5 Engines Only

Baseline

V2500-ENG-72-0385
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Revised Bridge Piece Assemblies and Unison Ring Asemblies with Increased Dowel Location (New Production)

V2500-ENG-72-0416
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Revised Bridge Piece Assemblies and Unison Ring Asemblies with Increased Dowel Location (Rework)

V2500-ENG-72-0418
Engine - Actuating Mechanism HP Compressor Variable Vanes - Introduction of Unison Ring Assemblies with Revised One Piece Lever Arm Bushes.



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HP Compressor Stage 5 Lower Unison Ring Assembly Family Tree - All V2500 Engines