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DATE: Jun.20/05

V2500-A5/D5 SERIES PROPULSION SYSTEM SERVICE BULLETIN

This document transmits Revision 1 to Service Bulletin EV2500-72-0486 and Revision 1 to the Supplement

Document History

Service Bulletin Revision Status		Supplement Revision Status	
Initial Issue	Apr.22/05	Initial Issue	Apr.22/05

Bulletin Revision 1

Remove	Incorporate	Reason for change
All pages of the Summary	Page 1 and 2 of the Summary	To revise engine incorporation information.
All pages of the Service Bulletin	Pages 1 to 15 of the Service Bulletin	To revise engine incorporation information.

Supplement Revision 1

Remove	Incorporate	Reason for change
All pages	Page 1	To revise engine incorporation information.

V2500-ENG-72-0486

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

LIST OF EFFECTIVE PAGES

The effective pages to this Service Bulletin following incorporation of Revision 1 to the Bulletin and Revision 1 to the Supplement are as follows:

	Page	Revision Number	Revision Date
	Summary		
R	1	1	Jun.20/05
R	2	1	Jun.20/05
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R	1	1	Jun.20/05
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R	12	1	Jun.20/05
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R	14	1	Jun.20/05
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	Supplement		
R	1	1	Jun.20/05

International Aero Engines

SERVICE BULLETIN

ENGINE - HP COMPRESSOR VARIABLE VANES - INTRODUCTION OF A REVISED VIGV WITH AN OPTIMISED SPINDLE - MOD 72-0486

SUMMARY

Printed in Great Britain

1. PLANNING

A. EFFECTIVITY

	Engine	Serial No.
R	V2500-A5	Prior to V11870 and Engine Serial No.s V11871, V11873.
R		V11874, V11887 and V11941.
	V2500-D5	Prior to V20286

B. CONCURRENT REQUIREMENTS

None.

C. REASON/PROBLEM

Problem

The design review of the HP Compressor has indicated that manufacture of the Variable Inlet Guide Vanes (VIGV) may be optimised.

Evidence

See problem.

Substantiation

The changes introduced by this modification have been subject of extensive engineering analysis.

Objective

Incorporation of this modification is designed to simplify manufacture.

D. DESCRIPTION

This modification introduces revised arrangement for attaching the lever arms to the top of the VIGV spindles from the existing stud and nut to a bolt and helicoil configuration.

E. COMPLIANCE

Category Code 7

Accomplish when the supply of superseded parts has been depleted.

F. MANPOWER

In service - Not applicable.

At overhaul - Not affected.

G. INTERCHANGEABILITY OF PARTS

Not affected.

2. MATERIAL INFORMATION

A. PARTS PRICES

Part No.	Description	Unit Price US Dollars
6A8405	Vane, assy - VIGV Long Spindle	854.00
6A8407	Vane, assy - VIGV Short Spindle	854.00
4W0409	Bolt	10.50

International Aero Engines

SERVICE BULLETIN

ENGINE - HP COMPRESSOR VARIABLE VANES - INTRODUCTION OF A REVISED VIGV WITH AN OPTIMISED SPINDLE - MOD 72-0486

Printed in Great Britain

1. Planning Information

A. Effectivity

(1) Airbus A319

R (a) V2522-A5, V2524-A5, V2527M-A5, Engines prior to Serial No. V11870 and
R Engine Serial No.s V11871, V11873. V11874, V11887 and V11941.

(2) Airbus A320

R (a) V2527-A5, V2527E-A5, Engines prior to Serial No. V11870 and Engine
R Serial No.s V11871, V11873. V11874, V11887 and V11941.

(3) Airbus A321

R (a) V2530-A5, V2533-A5, Engines prior to Serial No. V11870 and Engine
R Serial No.s V11871, V11873. V11874, V11887 and V11941.

(4) Boeing - Longbeach Division MD-90

(a) V2525-D5, V2528-D5, Engines prior to V20286.

B. Concurrent Requirements

None.

C. Reason

(1) Problem

A design review of the HP Compressor has indicated that manufacture of the Variable Inlet Guide Vanes (VIGV) may be optimised.

(2) Evidence

See problem.

Substantiation

The changes introduced by this modification have been the subject of extensive engineering analysis.

(3) Objective

Incorporation of this modification is designed to simplify manufacture.

(4) Effect of Bulletin on:

(a) Operation

Not affected.

(b) Maintenance

Not affected.

(c) Overhaul

Affected.

(d) Repair Schemes

Affected.

(e) Interchangeability

Not affected.

(f) Fits and Clearances

Not affected.

D. Description

(1) This modification introduces revised arrangement for attaching the lever arms to the top of the VIGV spindles from the existing stud and nut to a bolt and helicoil configuration. The changes introduced are:

(a) Revised HP Compressor VIGV long and short spindle assemblies are introduced, similar to the existing items except for:

(b) The stud in the top of the vane outer spindle is deleted and replaced by a helicoil insert.

(i) The existing thread size is reduced from 0.3125 UNJF to 0.2964 UNJF.

(ii) The depth of the outer spindle hole has been increased.

(iii) The counter bore diameter has been reduced from 8,68mm. to 7,80mm.

(iv) The weight relief areas on the long spindle are removed.

(c) The nut which was previously used to attach the lever arms to the top of the vane spindles is deleted and replaced by a standard type bolt.

E. Compliance

Category 7.

Accomplish when the supply of superseded parts has been depleted.

F. Approval

The part number changes and/or part modifications specified in the Accomplishment Instructions and Material Information sections of this Service Bulletin have been shown to comply with the applicable Federal Aviation Regulations and are FAA-APPROVED for the engine model(s) given.

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 supplement to this bulletin.

I. Tooling Price and Availability

Special tools are not required

J. Industry Support Information

Not applicable.

K. Weight and Balance

(1) Weight Change

Plus 0.1lb (0,05 kg)

(2) Moment Arm

0.10 in (3,00 mm) rearwards

(3) Datum

Engine Front Mount Centreline (Power Plant Station PPS100).

L. Electrical Load Data

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

M. Software Accomplishment Summary

Not applicable.

N. References

(1) Engine Manual, Chapter/Section 72-41-30, Assembly.

(2) Engineering Change No. 04VR010.

(3) ATA Locator - 72-41-30.

O. Other Publications Affected

(1) Illustrated Parts Catalogue (IPC) will be revised

(2) Engine Manual Chapter/Section 72-41-30, Assembly/Disassembly.

(3) Engine Manual Chapter/Section 72-41-32 and 72-41-34, Cleaning, Inspection/Check and Repair.

P. Interchangeability of Parts

It is permissable to interchange a new vane assy and bolt for an old vane and nut on a one for one basis.

2. Material Information

A. The kit required consists of the following parts:

None.

B. Parts to be reworked:

None.

C. New production parts:

72-41-32

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
01-500	6A8405	38	.Vane,assy VIGV Long Spindle	-	6A7723	(A)(B)(S1)
01-600	6A8407	2	.Vane,assy VIGV Short Spindle	-	6A7725	(A)(B)(S1)

72-41-34

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
02-102	4W0409	30	.Bolt, (See Appendix 5)	-	-	(A)
02-122	4W0409	8	.Bolt, (See Appendix 5)	-	-	(A)
02-142	4W0409	2	.Bolt, (See Appendix 5)	-	-	(A)

D. Redundant Parts:

72-41-32

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
01-515	-	1AR	..Stud	-	UP11066	(E)
01-615	-	1AR	..Stud	-	UP11066	(E)

72-41-34

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
02-103	-	30	.Nut	-	4W0002	(C)

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
02-123	-	8	.Nut	-	4W0002	(C)
02-143	-	2	.Nut	-	4W0002	(C)

E. Reference Instructions:

72-41-00

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
99-201	6A8422	Ref	.Instruction, build	-	6A5561	

72-41-21

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
99-201	6A8422	Ref	.Instruction, build	-	6A5561	

72-41-32

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
99-201	6A8422	Ref	.Instruction, build	-	6A5561	

72-41-34

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
99-201	6A8422	Ref	.Instruction, build	-	6A5561	

F. Instruction Disposition Codes:

(A) New part will be available from November 2004.

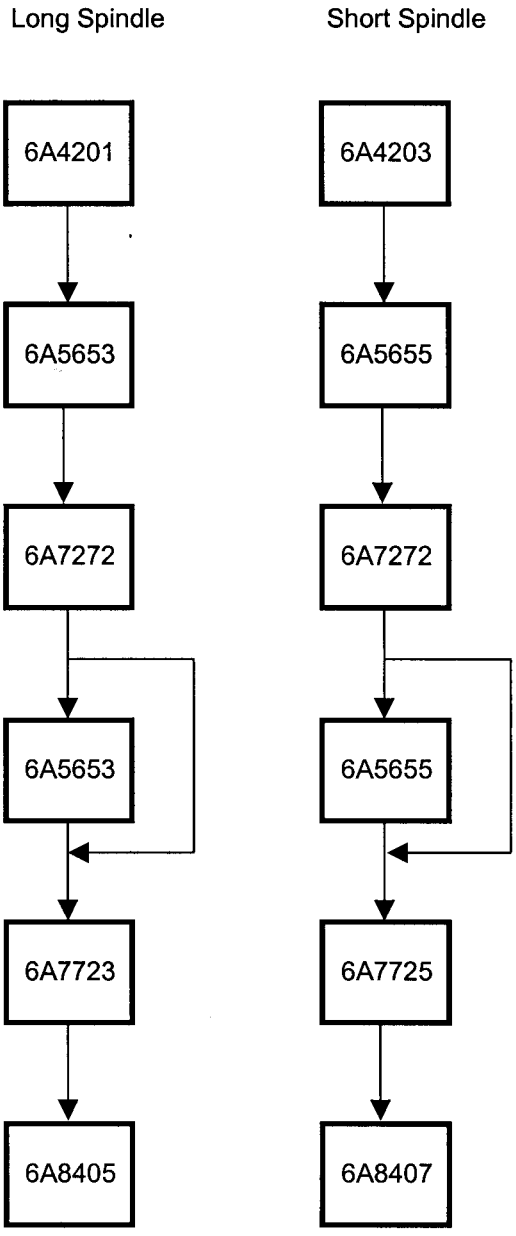
(B) Part becomes redundant upon embodiment of this modification.

(C) Part may be used up on other applications.

(E) Part introduced by VRS6259 not required following embodiment of this modification.

(S1) Old and new parts are not interchangeable.

HP Compressor VIGV Vane Assembly Family Tree



Baseline

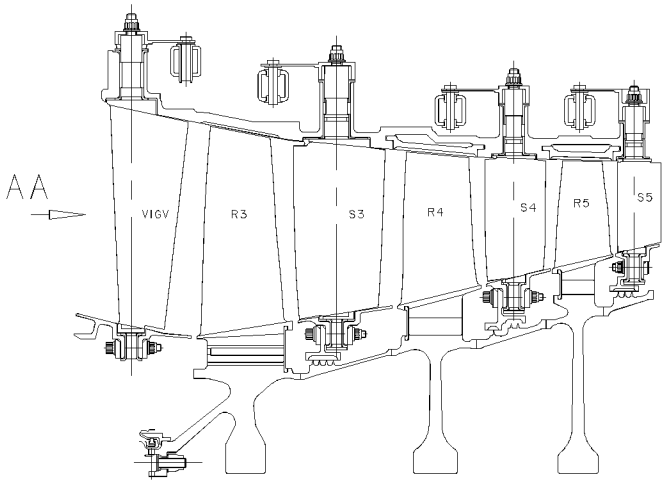
V2500-ENG-72-0186
Engine - HP Compressor New Variable Inlet Guide Vanes and Stage 3 and Stage 4 Variable Stator Vanes With Increased Angular Movement.

V2500-ENG-70-0714
Information - Announcement of Super Polished HP Compressor Blades and Vanes.

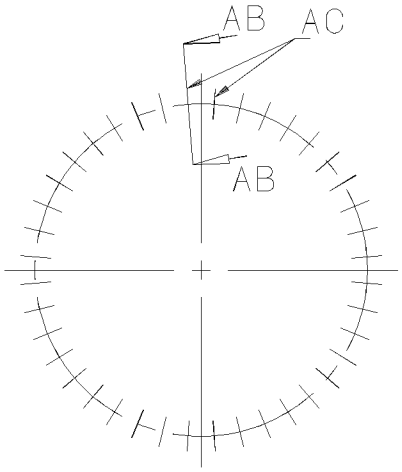
V2500-ENG-70-0726
Information - Announcement of HP Compressor Blades & Vanes without Super Polished Finish.

V2500-ENG-72-0410
Engine - HP Compressor Variable Vane Inner Shrouds - Introduction of Revised One Piece Bushes.

V2500-ENG-72-0486
Engine - HP Compressor Variable Vanes - Introduction Of A Revised VIGV with an Optimised Spindle.

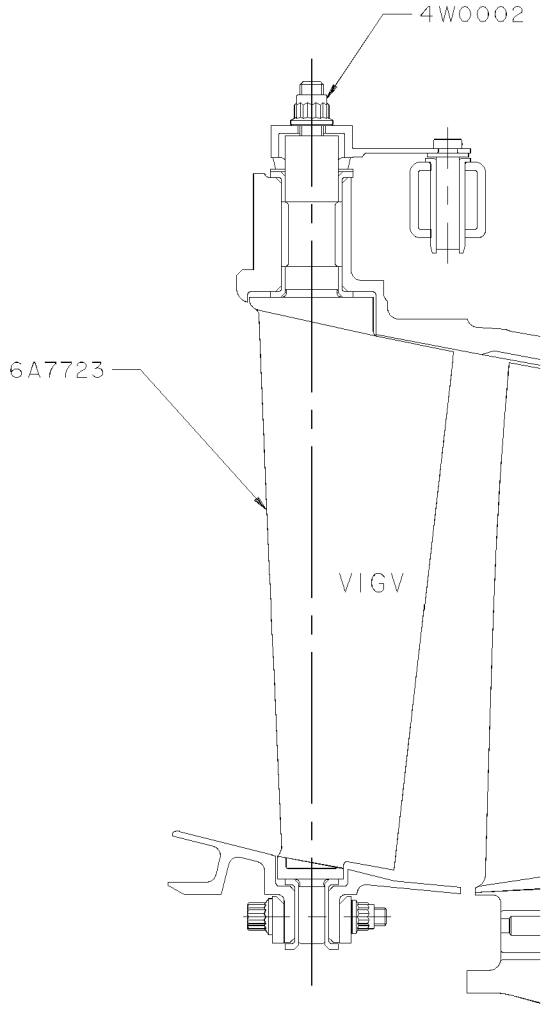


GENERAL SECTION THROUGH HP COMPRESSOR



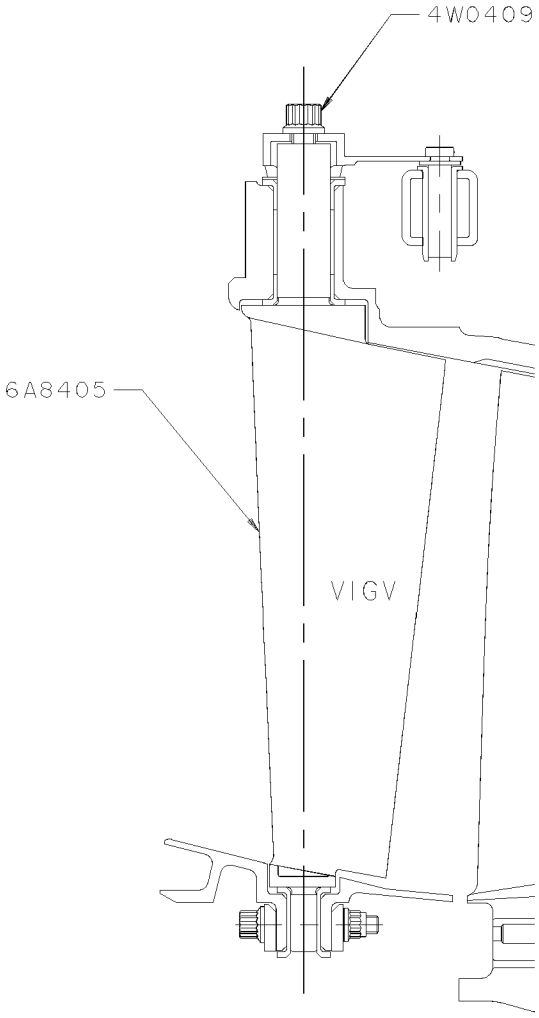
DIAGRAMMATIC VIEW → AA

dem0001943



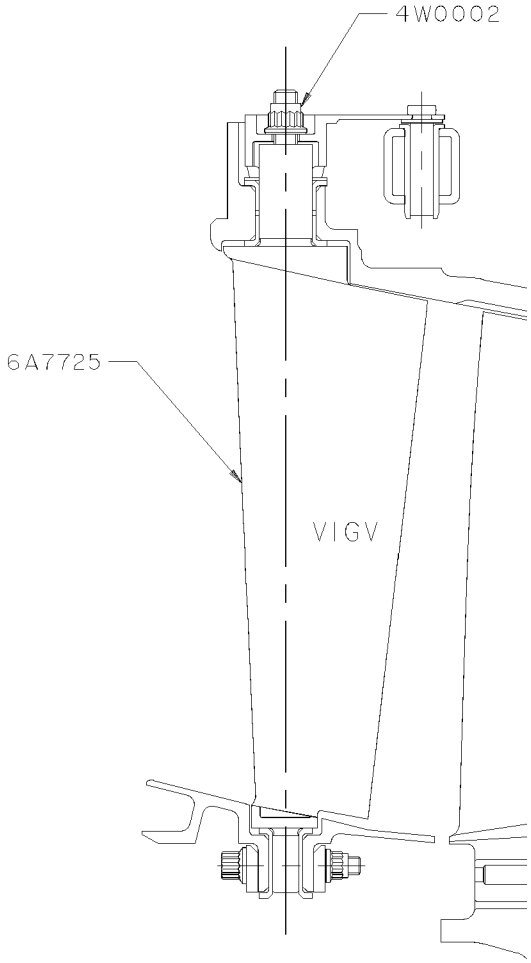
GENERAL SECTION SECTION THROUGH HP COMPRESSOR
BEFORE ALTERATION
TYPICAL 38 POSITIONS
(LONG SPINDLE)

dem0001944



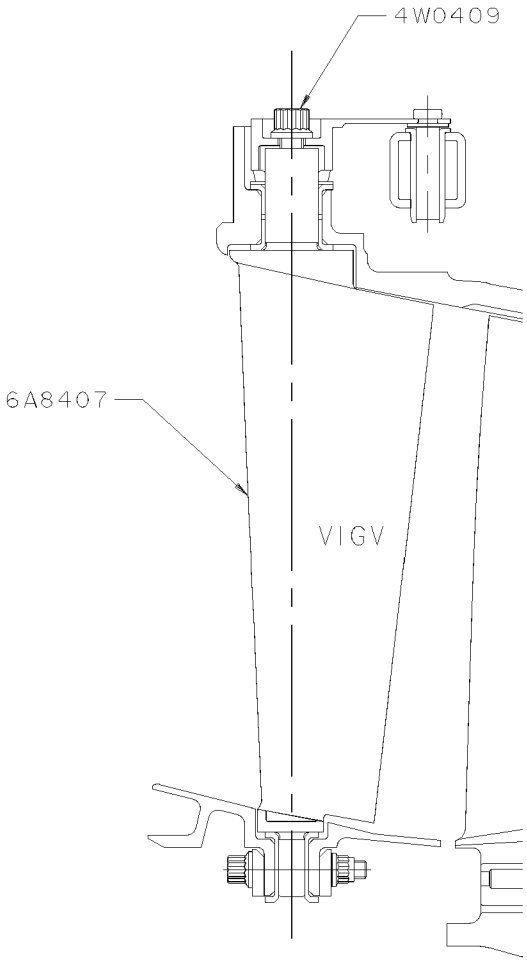
GENERAL SECTION SECTION THROUGH HP COMPRESSOR
AFTER ALTERATION
TYPICAL 38 POSITIONS
(LONG SPINDLE)

dem0001945A



SECTION AB
BEFORE ALTERATION
TYPICAL 2 POSITIONS DESIGNATED AC
(SHORT SPINDLE)

dem0001946



SECTION AB
TYPICAL 2 POSITIONS DESIGNATED AC
(SHORT SPINDLE)

dem0001947A

3. Accomplishment Instructions

A. Rework Instructions

Not applicable.

B. Dis-assembly Instructions

For the correct Dis-assembly Instructions refer to Engine Manual, Chapter/Section 72-41-30, Dis-assembly.

C. Assembly Instructions, Refer to Fig 1.

(1) Install the actuating levers (72-41-34, 02-100 and 02-140). Make sure the correct actuating lever goes on the correct guide vane at positions 3 to 18.

(2) Install the 16 bolts (72-41-34, 02-102 and 02-142) on to the guide vanes at positions 3 to 18.

(3) Install the actuating lever (72-41-34, 02-120). Make sure the correct actuating lever goes on the correct guide vane at positions 1, 2, 19, 20, 21, 22, 39 and 40.

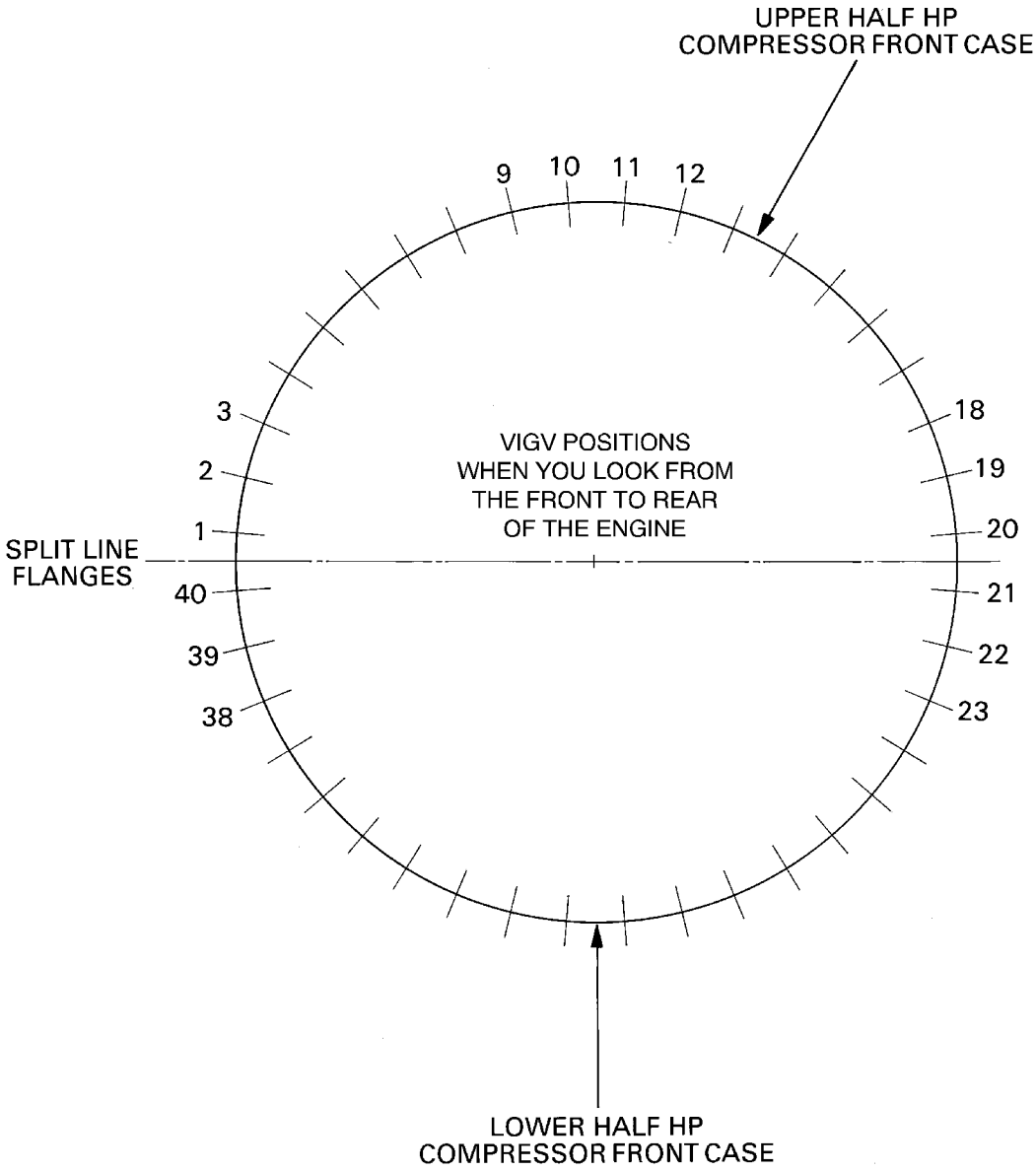
(4) Install the 8 bolts (72-41-34, 02-122) on to the guide vanes at positions 1, 2, 19, 20, 21, 22, 39 and 40.

(5) Remove the rigging pins and set the guide vanes at the null position.

(6) Torque the bolts to 100 lbfin. (11,50 Nm.) plus the run down torque.

D. Recording Instructions

(1) A record of accomplishment is necessary.



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Position for the Variable Inlet Guide Vanes (VIGV) - Fig. 1

International Aero Engines

SERVICE BULLETIN

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SUPPLEMENT - PRICES AND AVAILABILITY

The prices (if shown) are for estimating purposes only and as such are given in good faith, without commercial liability for advanced planning purposes only. Refer to IAE Spares and/or current price catalogue for current prices.

1. Modification Kit:

Not applicable.

2. Parts required:

Part No.	Description	Unit Price US Dollars
6A8405	Vane, assy - VIGV Long Spindle	854.00
6A8407	Vane, assy - VIGV Short Spindle	854.00
4W0409	Bolt	10.50