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DATE: Jun. 6/06

V2500-A5/D5 SERIES PROPULSION SYSTEM SERVICE BULLETIN

This document transmits Revision 1 to Service Bulletin EV2500-72-0489 and Revision 1 to the Supplement

Document History

Service Bulletin Revision Status		Supplement Revision Status	
Initial Issue	Mar.10/05	Initial Issue	Mar.10/05

Bulletin Revision 1

Remove	Incorporate	Reason for change
All pages of the Summary	Page 1 and 2 of the Summary	To revise the Material Information and to update the Accomplishment Instruction.
All pages of the Service Bulletin	Pages 1 to 13 of the Service Bulletin	To revise the Material Information and to update the Accomplishment Instruction.
All pages of Appendix 1	Pages 1 to 4 of Appendix 1	To revise the Material Information and to update the Accomplishment Instruction.

Supplement Revision 1

Remove	Incorporate	Reason for change

All pages	Page 1	To revise the Material Information and to update the Accomplishment Instruction.

Printed in Great Britain

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.6/06
R	2	1	Jun.6/06
	Bulletin		
R	1	1	Jun.6/06
R	2	1	Jun.6/06
R	3	1	Jun.6/06
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R	10	1	Jun.6/06
R	11	1	Jun.6/06
R	12	1	Jun.6/06
R	13	1	Jun.6/06
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	Supplement		
R	1	1	Jun.6/06

International Aero Engines

SERVICE BULLETIN

ENGINE - ALLOW FOR THE USE OF REOPERATED 2ND STAGE HPT VANES IN NEWER DELIVERED CONFIGURATIONS

SUMMARY

1. PLANNING

A. EFFECTIVITY

Engine V2500-A5 Any engine as applicable

Engine V2500-D5 Any engine as applicable

B. CONCURRENT REQUIREMENTS

Incorporate Service Bulletin 72-0236 prior to or concurrently with this Service Bulletin.

It is recommended to use the Trenched Sealing Ring configuration wherever possible. See Service Bulletin 72-0365.

C. REASON/PROBLEM

Problem:

Superseded High Pressure Turbine (HPT) Second Stage Vane Assemblies inadvertently omitted in past modifications have been evaluated and found equivalent to current configurations.

Background:

In-service HPT Second Stage Vanes were superseded by vanes with a different material. The in-service Vane numbers were inadvertently omitted from the service bulletins. Evaluation has shown these vanes are suitable for modification and use in new configurations.

Objective:

Authorize modification and re-identification of in-service HPT Second Stage Vanes to allow use in various newer configurations.

R Substantiation:

R Structures, materials, design and durability analysis showed the in-service
R HPT Second Stage Vane configurations are equivalent to the newer Second
R Stage Vane configurations listed in service bulletins 72-0237 and 72-0365.

D. DESCRIPTION

Provide reoperation instructions for old 2nd Stage HPT Vanes.

E. COMPLIANCE

Category 8

Accomplish based upon experience with the prior configuration.

F. MANPOWER

(1)In Service

Not Applicable.

(2)At Overhaul

(1) To incorporate Section I - Rework HPT Stage 2 Vanes

21.2 Hrs.

(2) To incorporate Section II - Assembly

5.2 Hrs.

(3) To incorporate Section III - Assembly

2.0 Hrs.

G. Total Necessary Man-hours

28 Hours 24 Minutes.

R H. INTERCHANGEABILITY OF PARTS

R Old and new parts are directly interchangeable in complete sets.

2. MATERIAL INFORMATION

Part Prices

A. There is no new material cost to do this Service Bulletin when the part modification procedure is used.

International Aero Engines

SERVICE BULLETIN

ENGINE - ALLOW FOR THE USE OF REOPERATED 2ND STAGE HPT VANES IN NEWER DELIVERED CONFIGURATIONS

Printed in Great Britain

1. Planning Information

A. Effectivity Data

(1) (For Airbus A319)

Engine Models Applicable

V2522-A5, V2524-A5, V2527M-A5

Engine Serial Nos. - Any engine as applicable

(2) (For Airbus A320)

Engine Models Applicable

V2527-A5, V2527E-A5

Engine Serial Nos. - Any engine as applicable

(3) (For Airbus A321)

Engine Models Applicable

V2530-A5, V2533-A5

Engine Serial Nos. - Any engine as applicable

(4) (For Boeing MD-90)

Engine Models Applicable

V2525-D5, V2528-D5

Engine Serial Nos. - Any engine as applicable

B. Concurrent Requirements

Incorporate Service Bulletin 72-0236 prior to or concurrently with this Service Bulletin.

It is recommended to use the Trenched Sealing Ring configuration wherever possible. See Service Bulletin 72-0365.

C. Reason

(1) Problem: Superseded High Pressure Turbine (HPT) Second Stage Vane Assemblies inadvertently omitted in past modifications have been evaluated and found equivalent to current configurations.

(2) Background: In-service HPT Second Stage Vanes were superseded by vanes with a different material. The in-service Vane numbers were inadvertently omitted from the service bulletins. Evaluation has shown these vanes are suitable for modification and use in new configurations.

(3) Objective: Authorize modification and re-identification of in-service HPT Second Stage Vanes to allow use in various newer configurations.

(4) Substantiation: Structures, materials, design and durability analysis showed the in-service HPT Second Stage Vane configurations are equivalent to the newer Second Stage Vane configurations listed in service bulletins 72-0237 and 72-0365.

(5) Effects of Bulletin on:

Removal/Installation: Not affected.

Disassembly/Assembly: Not affected.

Cleaning: Not affected.

Inspection/Check: Not affected.

Repair: Not affected.

Testing: Not affected.

(6) Supplemental Information

(a) Incorporation Requirement: Vane Assemblies and Ring Segment and Vane Cluster Assemblies modified per the service bulletin instructions will be reidentified to part numbers provided. The modified Ring Segment and Vane Cluster Assembly part numbers are applicable to existing Ring/Case Assemblies as indicated by this Service Bulletin.

(b) All part numbers provided by this Service Bulletin are considered 33K parts but may be used to replace various non-33K parts in the affected Ring/Case Assemblies listed.

(c) Reidentified Ring Segment and Vane Cluster Assemblies 2A2272-003 and 2A2372-003 incorporate the increased air flow Vane Assembly and the Trenched Seal Ring. These assemblies must also meet intent of Service Bulletin 72-0365.

(d) Reidentified Ring Segment and Vane Cluster Assemblies 2A2272-004 and 2A2372-004 incorporate the increased air flow Vane Assembly. These assemblies must also meet intent of Service Bulletin 72-0365.

(e) It is recommended to use the Trenched Sealing Ring configuration wherever possible. See Service Bulletin 72-0365.

(f) This Service Bulletin is for Delivered Engines only.

D. Description

Provide reoperation instructions for old 2nd Stage HPT Vanes.

E. Compliance

Category 8

Accomplish based upon experience with the prior configuration.

F. Approval Data

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.

The compliance statement and the procedures described in 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

(a) To incorporate Section I - Rework HPT Stage 2 Vanes

21.2 Hrs

(b) To incorporate Section II - Assembly

5.2 Hrs

(c) To incorporate Section III - Assembly

2.0 Hrs

(3) Total Necessary Man-hours

28 Hours 24 Minutes

H. Weight and Balance

(1) Weight Change

None.

(2) Moment Arm

No Effect.

(3) Datum

Engine Front Mount Centerline (Power Plant Station (PPS) 100)

I. Electrical Load Data

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

J. Software Accomplishment Summary

Not Applicable.

K. References

1. IAE V2500 Service Bulletin V2500-ENG-70-0428 (Information - Engine - HP Turbine Rotor And Stator Assembly - To Announce The Availability Of New Stage 2 HP Turbine Vanes).

2. IAE V2500 Service Bulletin V2500-ENG-72-0236 (Engine - HP Turbine Rotor And Stator Assembly - Provide New Orifice Plate With An Increased Opening Size).

3. IAE V2500 Service Bulletin V2500-ENG-72-0237 (Engine - HP Turbine Rotor And Stator Assembly - Provide New Stage 2 HPT Vanes).

4. IAE V2500 Service Bulletin V2500-ENG-72-0259 (Engine - HP Turbine Rotor And Stator Assembly - Provide New Stage 2 HPT Vanes).

5. IAE V2500 Service Bulletin V2500-ENG-72-0266 (Engine - HP Turbine Rotor And Stator Assembly - Provide New Stage 2 HPT Vanes Which Have Increased Cooling Airflow).

6. IAE V2500 Service Bulletin V2500-ENG-72-0365 (Engine - Provide Pretrenched Second Stage HPT Air Sealing Ring Segments).

7. IAE V2500 Service Bulletin V2500-ENG-72-0368 (Engine - Provide New Second Stage High Pressure Turbine (HPT) Vanes).

8. V2500 Engine Illustrated Parts Catalogs (S-V2500-2IA, S-V2500-2IB, S-V2500-3IA, S-V2500-3IB, S-V2500-5IA, S-V2500-5IB, S-V2500-6IA, S-V2500-6IB, S-V2500-7IA, and S-V2500-71B), Chapter/Section 72-45-20 and 72-45-24.

9. V2500 Engine Manual (E-V2500-1IA), Chapter/Section 72-45-00.

10. V2500 Engine Manual (E-V2500-3IA), Chapter/Section 72-45-00.

11. V2500 Standard Practices/Processes Manual (E-V2500-3IA), Chapter/Section 70-09-00, Marking of Parts and 70-32-03, Finish by Electrochemical or Electrodischarge Metal Removal.

R 12. Internal Reference No. 04VC046 and 04VC046A.

R 13. ATA Locator - 72-45-24.

L. Other Publications Affected

1. V2500 Engine Illustrated Parts Catalogs (S-V2500-2IA, S-V2500-2IB, S-V2500-3IA, S-V2500-3IB, S-V2500-5IA, S-V2500-5IB, S-V2500-6IA, S-V2500-6IB, S-V2500-7IA, and S-V2500-7IB), Chapter/Section 72-45-20 and 72-45-24 to add the new parts.

2. V2500 Engine Manuals (E-V2500-1IA and E-V2500-3IA), Chapter/Section 72-45-24 Cleaning, Inspection and Repair, to add the new part.

M. Interchangeability of Parts

Old and new parts are directly interchangeable in complete sets.

N. Information in the Appendix

Alternate Accomplishment Instructions (No)

Progression Charts (Yes)

Added Data (Yes)

Revision to Table of Limits (No)

Inspection Procedures (No)

2. Material Information

A. Industry Support Program

Not Applicable.

B. The material data that follows is for each engine.

72-45-24

For V2522-A5, V2524-A5, V2527-A5, V2527E-A5, V2527M-A5, V2530-A5, V2533-A5, V2525-D5, V2528-D5 Engines:

	FIG- ITEM NUMBER	NEW PART NUMBER	QTY	PART TITLE	MAT	OLD PN	INSTR - DISP
R	02-050	2A2272-004	17	.Ring Segment and Vane Cluster Assy Of	-	2A2272	(1) (C) (M) (W)
				OR			
R	02-050	2A2272-004	17	.Ring Segment and Vane Cluster Assy Of	-	2A2272-001	(1) (M) (N) (W)
				OR			
R	02-050	2A2272-003	17	.Ring Segment and Vane Cluster Assy Of	-	2A2272-002	(1) (M) (N) (W)
R							
R	02-130	2A2052-001	2	.Vane Assy Of, HPT, 2 Stage	-	2A2052	(1) (M) (N) (W) (I)
R	02-260	2A2372-004	2	.Ring Segment and Vane Cluster Assy Of	-	2A2372	(1) (M) (N) (W)
				OR			
R	02-260	2A2372-004	2	.Ring Segment and Vane Cluster Assy Of	-	2A2372-001	(1) (M) (N) (W)
				OR			
R	02-260	2A2372-003	2	.Ring Segment and Vane Cluster Assy Of	-	2A2372-002	(1) (M) (N) (W)
R	02-350	2A2052-001	1	.Vane Assy Of, HPT, 2 Stage	-	2A2052	(1) (C) (M) (W) (I)
R	02-420	2A2152-001	1	.Vane Assy Of, HPT, 2 Stage	-	2A2152	(1) (C) (M) (W) (I)

C. Instructions/Disposition Code Statements:

Parts Modification Conditions

(1) The new part can be obtained by modification of the old part as specified in the Accomplishment Instructions.

Spare Parts Availability

(C) The old part will continue to be supplied.
(M) It is possible to get the new part only by modification.
(N) The old part is not available.
(W) The new part is not available.

Cleaning, Inspection and Repair Information

(I) The cleaning, inspection and repair requirements are the same for the old and new part. The applicable engine manuals will be revised.

D. Tooling - Price and Availability

Special tools are not required to accomplish this Service Bulletin.

E. Reidentified Parts

Reidentified Parts Data

	New PN	Keyword	Old PN
R	2A2052-001	Vane Assembly	2A2052
R	2A2152-001	Vane Assembly	2A2152
R	2A2272-003	Ring Segment and Vane Cluster Assembly	2A2272-002
R	2A2272-004	Ring Segment and Vane Cluster Assembly	2A2272
R	2A2272-004	Ring Segment and Vane Cluster Assembly	2A2272-001
R	2A2372-004	Ring Segment and Vane Cluster Assembly	2A2372
R	2A2372-003	Ring Segment and Vane Cluster Assembly	2A2372-002
R	2A2372-004	Ring Segment and Vane Cluster Assembly	2A2372-001

F. Other Material Information Data

Not Applicable.

3. Accomplishment Instructions

A. Section I, Rework Instructions for HPT Stage 2 Vane Assembly PN 2A2052 and 2A2152

(1) Do a modification of the Stage 2 HPT Vane Assembly PN 2A2052 and 2A2152 (See Reference (8), 72-45-24 Figure/Item No. 02-130, 02-350 and 02-420 respectively).

NOTE: Each engine has 17 Ring Segment and Vane Cluster Assemblies (ATA Figure/Item Number 72-45-24-02-050). Each segment uses two Stage 2 HPT Vane Assemblies (ATA Figure/Item Number 72-45-24-02-130). Also, each engine has two Ring Segment and Vane Cluster Assemblies (ATA Figure/Item Number 72-45-24-02-260), which use one Stage 2 HPT Vane Assembly (ATA Figure/Item Number 72-45-24-02-350) and one Stage 2 HPT Vane Assembly (ATA Figure/Item Number 72-45-24-02-420).

(a) Set-up and machine one Hole to 0.075-0.081 in. (1.905-2.057 mm) diameter.

The Electrodischarge method given in Task 70-32-03-320-501 may be used. See Reference (3), and Engine Manual Chapter/Section 70-32-03, Finish by Electrochemical or Electrodischarge Metal Removal. See Figure 1 Sheets 1 and 2.

(b) Flow test passage EY in direction shown with area EZ and leading edge shower head (4 rows total) holes blocked by the procedure specified.

Refer to Reference (9) or (10). See Figure 1 Sheets 1 and 2.

R (c) After modification identify old Vane Assembly PN 2A2052 as 2A2052-001 and old PN 2A2152 as 2A2152-001.

Mark the new part number adjacent to the existing part number. Use the vibration peen method.

Refer to Reference (11), Control No./Task No. 70-09-00-400-501.

R (2) Assemble the Ring Segment and Vane Cluster Assembly PN 2A2272, 2A2272-001,
R 2A2272-002 or 2A2372, 2A2372-001, 2A2372-002 using the modified parts by the procedure specified in Reference (9) or (10), Chapter/Section 72-45-24, repair-18 (VRS 3391).

R (a) Identify the new Ring Segment and Vane Cluster Assemblies in
R accordance with the Reidentified Parts section of this Service
R Bulletin.

(b) Mark the new part number adjacent to the existing part number.

(c) Use the vibration peen method specified in Reference (11), Chapter/Section 70-09-00, Marking of Parts.

(3) Recording Instructions

(a) A record of accomplishment is required.

R B. Section II Instructions for Ring Segment, Vane Cluster PN 2A2272, 2A2272-001,
R 2A2372 or 2A2372-001

R (1) For parts in service disassemble Ring Segment and Vane Clusters PN 2A2272,
R 2A2272-001, 2A2372 or 2A2372-001 per repair VRS 3218 Task 72-45-24-00-001 in the Engine Manual.

R (a) If any Vane Assemblies need replacement it is permissable to use
R modified Vane Assembly 2A2052-001 to replace 2A2052 or use 2A2152-001
R to replace 2A2152. Both vanes per segment assembly must be replaced.

R (b) Assemble the Ring Segment and Vane Clusters PN 2A2272, 2A2272-001,
R 2A2372, 2A2372-001 using the modified Vane Assemblies.

R (c) Identify the Ring Segment and Vane Cluster Assemblies in accordance
R with the Reidentified Parts section of this Service Bulletin.

(d) Mark the new part number adjacent to the existing part number.

(e) Use the vibration peen method specified in Reference (11), Chapter/Section 70-09-00, Marking of Parts.

(2) Recording Instructions

(a) A record of accomplishment is required.

R C. Section III Instructions for Ring Segment, Vane Cluster PN 2A2272-002 or
R 2A2273-002

(1) For parts in service disassemble Ring Segment and Vane Clusters PN
R 2A2272-002 or 2A2273-002 per repair VRS 3218 Task 72-45-24-00-001 in the Engine Manual.

R (a) If any Vane Assemblies need replacement it is permissible to use
R modified Vane Assembly 2A2052-001 to replace 2A2052 or 2A2152-001 to
R replace 2A2152. Both vanes per segment assembly must be replaced.

R (b) Assemble the Ring Segment and Vane Clusters PN 2A2272-002, 2A2273-002 using the modified Vane Assemblies.

(i) When using Seal PN 2A1106-01 machine per Figure 1 Sheet 3

(ii) When using Seal PN 2A3431-01 machining is not required.

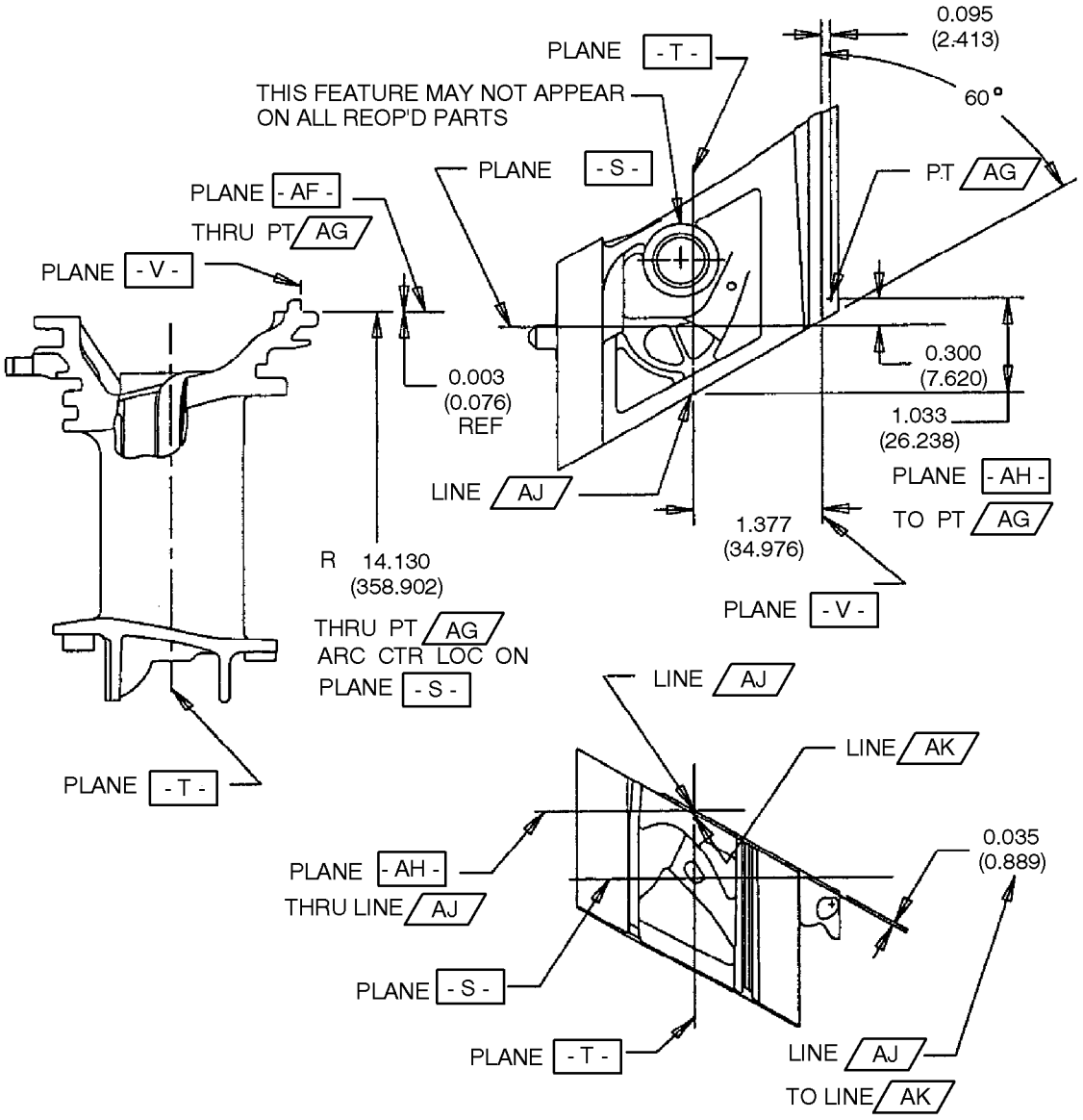
R (c) Identify the Ring Segment and Vane Cluster Assemblies in accordance
R with the Reidentified Parts section of this Service Bulletin.

(d) Mark the new part number adjacent to the existing part number.

(e) Use the vibration peen method specified in Reference (11), Chapter/Section 70-09-00, Marking of Parts.

(2) Recording Instructions

(a) A record of accomplishment is required.



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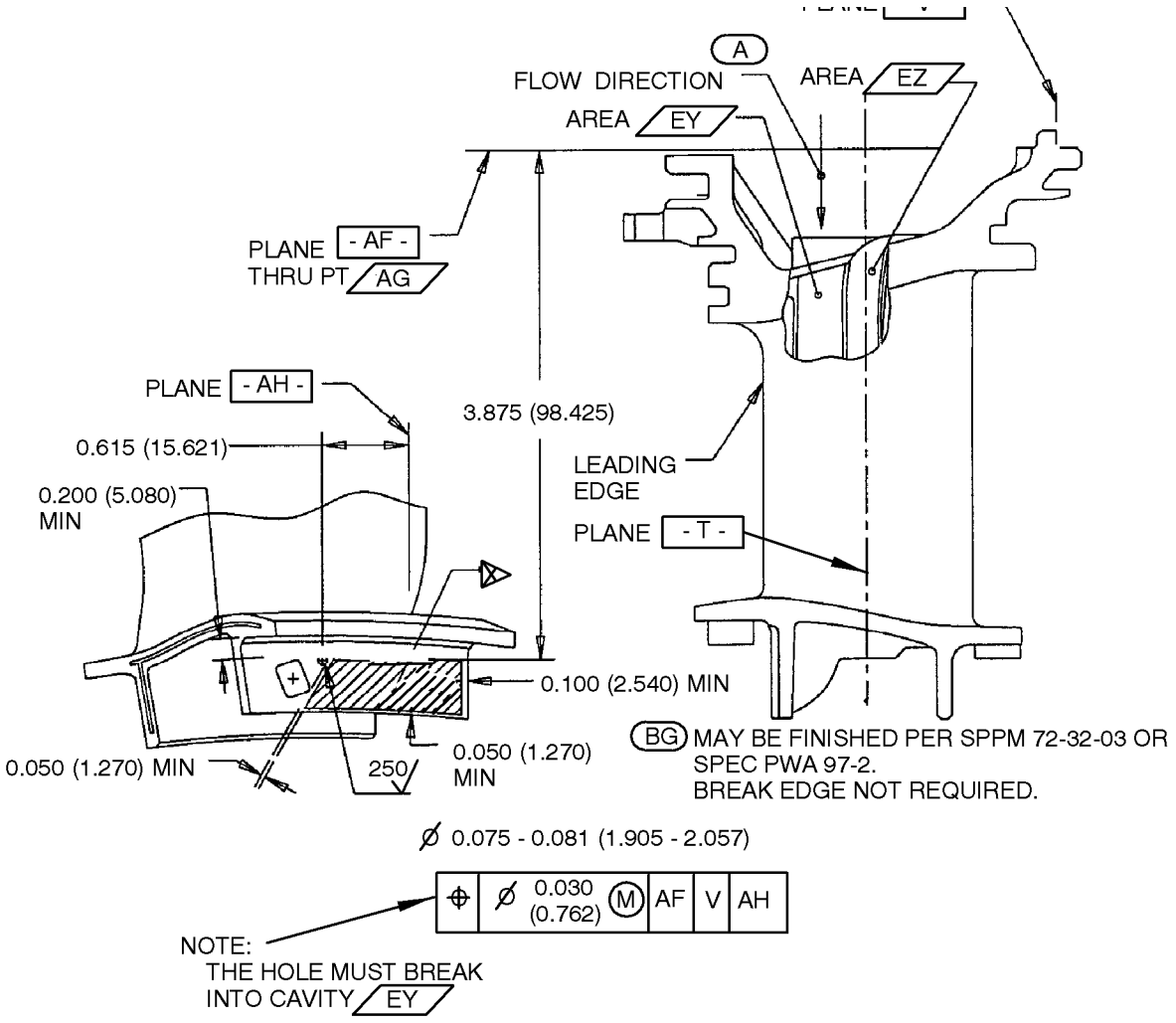
2ND STAGE HPT VANE REOPERATION
FIGURE 1 (SHEET 1 of 3)

R



UOS BREAK EDGES 0.030 (0.762) MAXIMUM.

MARK IDENT PER MANUAL VIBRATION PEEN (0.006 (0.152) MAXIMUN DEPTH)
SURFACE TEXTURE PER IAE 70-35-09 OR SPEC PWA 362. UOS ALL SURF 125√.

(A) FLOW TEST PASSAGE EY IN DIRECTION SHOWN
WITH AREA EZ AND LEADING EDGE & SHOWER HEAD (4 ROWS TOTAL)
HOLES BLOCKED PER IAE 70-72-01 OR SPEC PWA 322 TO OBTAIN AIRFLOW LEVEL OF:

		$\left(\frac{P_3}{P_a}\right)_{MIN}$	$\left(\frac{P_3}{P_a}\right)_{TARGET\ REF}$	$\left(\frac{P_3}{P_a}\right)_{MAX}$
$\frac{W\sqrt{T_3}}{P_a}$ = 0.184 (4.674)	BSC LIMIT	1.412 (35.865)	1.500 (38.100)	1.621 (41.173)

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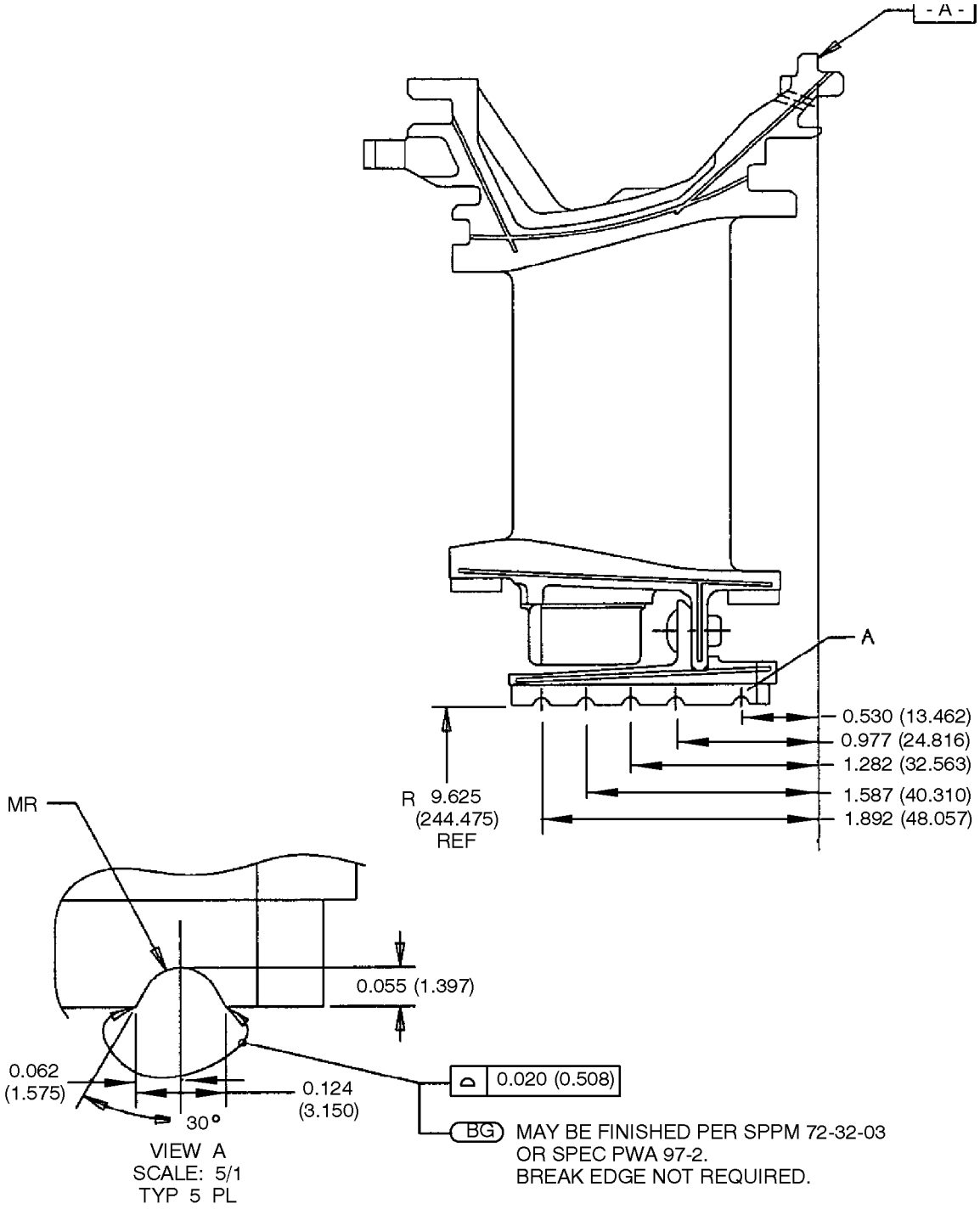
2ND STAGE HPT VANE REOPERATION
FIGURE 1 (SHEET 2 of 3)

R

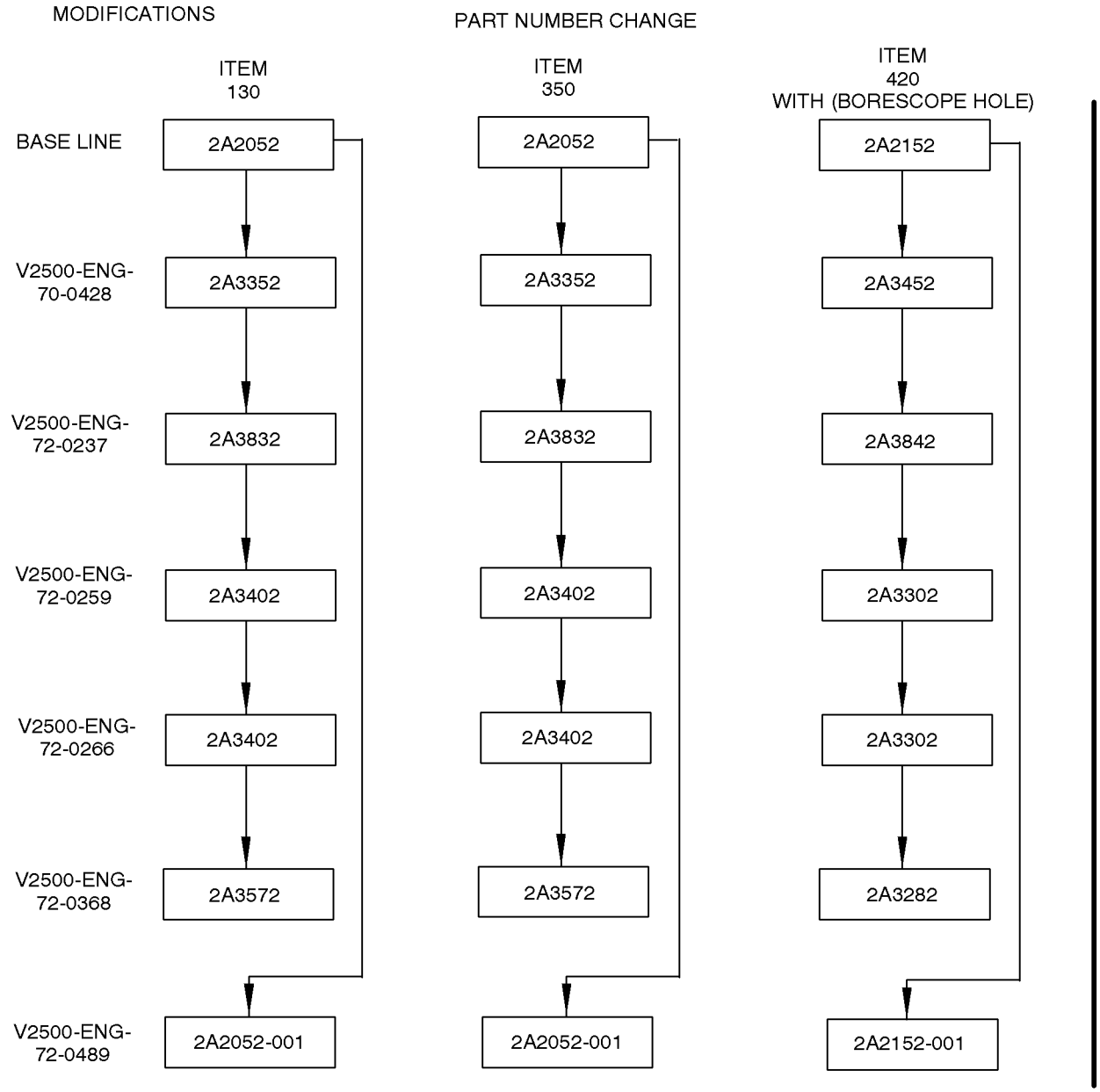


2ND STAGE HPT VANE REOPERATION
FIGURE 1 (SHEET 3 of 3)

R

APPENDIX 1

Parts Progression To Show the Changed Part in Relation to Other Parts



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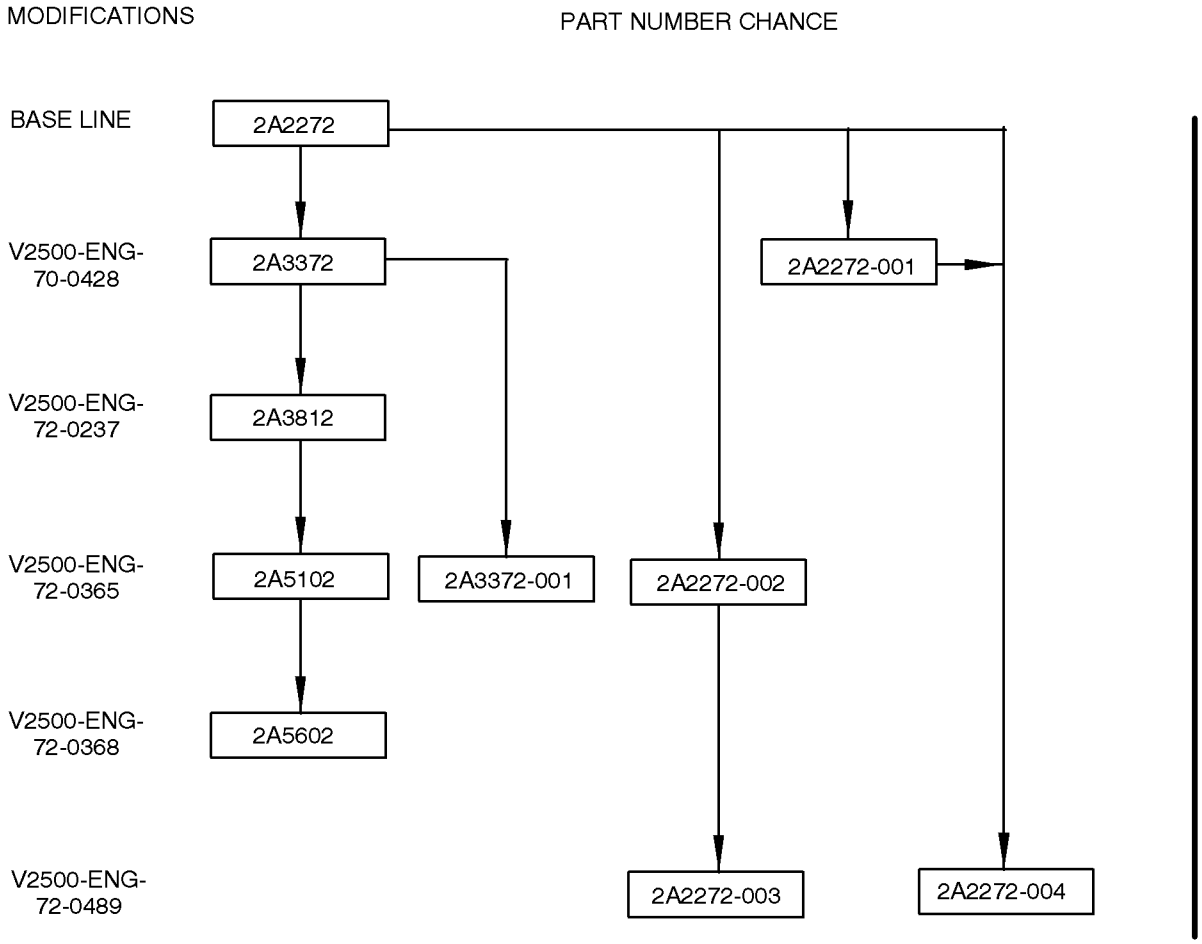
R FAMILY TREE - 2ND STAGE HPT VANE ASSEMBLY REF. CATALOG SEQUENCE NO. 72-45-24 FIGURE 02 ITEMS 130, 360 AND 420.

R CHART A



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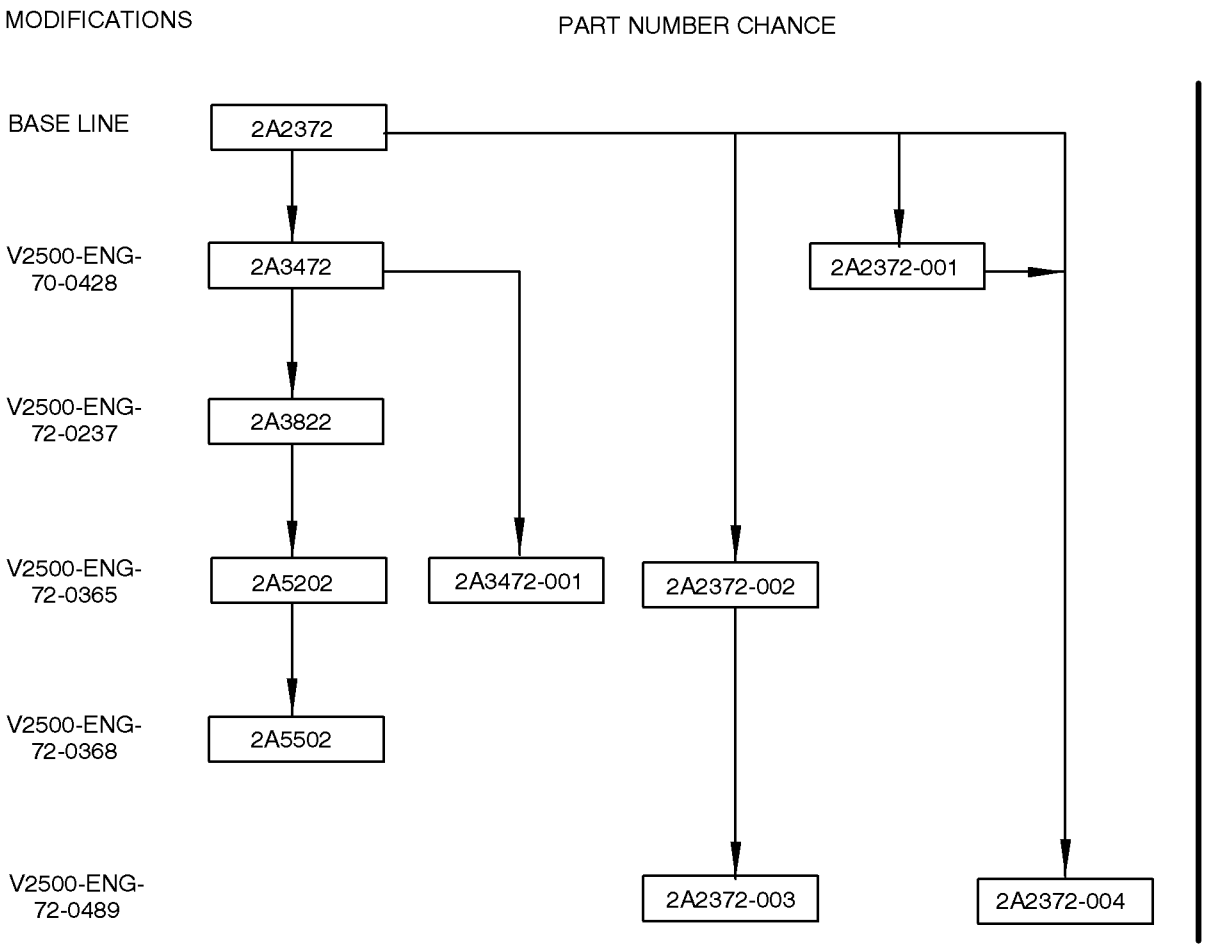
R FAMILY TREE - RING SEGMENT AND VANE CLUSTER ASSEMBLY OF REF. CATALOG SEQUENCE NO. 72-45-24 FIGURE 02 ITEM 050.

R CHART B



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R FAMILY TREE - RING SEGMENT AND VANE CLUSTER ASSEMBLY OF REF. CATALOG SEQUENCE NO. 72-45-24 FIGURE 02 ITEM 260.
R CHART C

International Aero Engines

SERVICE BULLETIN

ENGINE - ALLOW FOR THE USE OF REOPERATED 2ND STAGE HPT VANES IN NEWER DELIVERED CONFIGURATIONS

Supplement

Printed in Great Britain

V2500-A5 and V2500-D5

1. Modification Kit

   A. There is no kit provided to do this Service Bulletin.

2. Material Cost

   NOTE: The prices 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 Catalog for current prices.

   A. There is no new material cost to do this Service Bulletin when the part modification procedure is used.

   B. There is no kit provided to do this Service Bulletin.

3. New Production Parts

   There are no new production parts.