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DATE **Jun.30/03****V2500-A1/A5/D5 SERIES PROPULSION SYSTEMS SERVICE BULLETIN**

Printed in Great Britain

This document transmits Revision 4 to Service Bulletin EV2500-72-0220

Document History

Service Bulletin Revision Status

Initial Issue Jul.30/96

Revision 1 Feb.20/97

Revision 2 Aug.5/97

Revision 3 Jul.29/99

Supplement Revision Status

Bulletin Revision 4

Remove

All pages of the
Service Bulletin

Incorporate

Pages 1 to 13 of the
Service Bulletin

Reason for change

Update Effectivity, revise
References and Family
Trees. To incorporate
intent of SB ENG-72-0267
into this SB.All pages of
Appendix 1Pages 1 to 6 of
Appendix 1Update Effectivity, revise
References and Family
Trees. To incorporate
intent of SB ENG-72-0267
into this SB.**V2500-ENG-72-0220**

Transmittal - Page 1 of 2

CHECK THAT ALL PREVIOUS TRANSMITTALS HAVE BEEN INCORPORATED

If any have not been received please advise Publication Services, Rolls-Royce plc, Derby, England

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LIST OF EFFECTIVE PAGES

The effective pages to this Service Bulletin following incorporation of Revision 4 are as follows:

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ENGINE – HP TURBINE ROTOR AND STATOR ASSEMBLY – INTRODUCE NEW FIRST AND SECOND STAGE
TURBINE BLADES WITH MORE DURABLE TIPS AND IMPROVED REPAIRABILITY

1. Planning Information

A. Effectivity

(1) Airbus A319

Engine Models Applicable For Stage 1 High Pressure Turbine Blades (2A8701)

V2522-A5, V2524-A5, V2527M-A5 Engine Serial Nos. V10001 thru V10197

(2) Airbus A320

Engine Models Applicable For Stage 1 High Pressure Turbine Blades (2A8701)

V2500-A1 Engine Serial Nos. V0001 thru V0361

V2527-A5, V2527E-A5 Engine Serial Nos. V10001 thru V10197

(3) Airbus A321

Engine Models Applicable For Stage 1 High Pressure Turbine Blades (2A8701)

V2530-A5, V2533-A5** Engine Serial Nos. V10001 thru V10197

NOTE: ** V2533-A5 Base Line Serial Number is V10198

(4) Boeing MD-90

Engine Models Applicable For Stage 1 High Pressure Turbine Blades (2A8701)

V2525-D5, V2528-D5 Engine Serial Nos. V20001 thru V20072

(5) Airbus A319

Engine Models Applicable For Stage 2 High Pressure Turbine Blades (2A8702)

V2522-A5, V2524-A5, V2527M-A5 Engine Serial Nos. V10001 thru V10211*

* The Serial Number listed represents a tolerance band of 10. This estimate of engine serial numbers will be revised, if necessary, when parts are installed in engines at Pratt and Whitney.

(6) Airbus A320

Engine Models Applicable For Stage 2 High Pressure Turbine Blades (2A8702)

V2500-A1 Engine Serial Nos. V0001 thru V0361

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R V2527-A5, V2527E-A5 Engine Serial Nos. V10001 thru V10211*

R * The Serial Number Listed represents a tolerance band of 10. This
R estimate of engine serial numbers will be revised, if necessary, when
R parts are installed in engines at Pratt and Whitney.

(7) Airbus A321

Engine Models Applicable For Stage 2 High Pressure Turbine Blades (2A8702)

R V2530-A5, V2533-A5 Engine Serial Nos. V10001 thru V10211*

R * The Serial Number Listed represents a tolerance band of 10. This
R estimate of engine serial numbers will be revised, if necessary, when
R parts are installed in engines at Pratt and Whitney.

R NOTE: ** V2533-A5 Base Line Serial Number is V10198

(8) Boeing MD-90

Engine Models Applicable For Stage 2 High Pressure Turbine Blades (2A8702)

R V2525-D5, V2528-D5 Engine Serial Nos. V20001 thru V20073*

R * The Serial Number Listed represents a tolerance band of 10. This
R estimate of engine serial numbers will be revised, if necessary, when
R parts are installed in engines at Pratt and Whitney.

B. Concurrent Requirements

R NOTE: All data that was contained in Service Bulletin V2500-ENG-72-0267 has
R been incorporated into this Bulletin Revision.

R There are no concurrent requirements.

C. Reason

(1) Problem: Blade tip repairability can be improved.

(2) Background: The Stage 1 and 2 Turbine Blades now in use have sprayed
R abradable tips. Replace these blades with blades that have Turbotip™
tips.

(3) Objective: To improve blade tip repairability.

(4) Substantiation: Endurance testing and performance testing on various
engines.



(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

None.

D. Description

R Replace the Stage 1 HPT Blades and Stage 2 HPT Blade Assemblies with new Blades and Blade Assemblies that have Turbotip™ tips.

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

Estimated man-hours to incorporate the full intent of this Bulletin:

Venue	Estimated Manhours
In Service	Not Applicable
At Overhaul	Not Applicable

H. Weight and Balance

Weight Change	None
Moment	No Effect
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

- R NOTE: All data from Service Bulletin V2500-ENG-72-0267 has been included in
R this Service Bulletin.
- R 1. IAE V2500 Service Bulletin V2500-ENG-72-0267 (Engine - HP Turbine Rotor And
R Stator Assembly - Introduce New Second Turbine Blades with More Durable Tips
R and Improve Repairability).
 2. IAE V2500 Service Bulletin V2500-ENG-70-0154 (Information - HP Turbine Rotor
And Stator Assembly - Introduce Revised Material Stage 2 Blade Assemblies).
 - R 3. IAE V2500 Service Bulletin V2500-ENG-70-0429 (Information - HP Turbine Rotor
R And Stator Assembly - To Announce the Availability of a New Stage 1 HP Turbine
R Rotor Blade).
 4. IAE V2500 Service Bulletin V2500-ENG-70-0379 (Information - Engine - HP
Turbine Rotor And Stator Assembly - To Announce The Availability Of A New
Stage 1 HPT Blade With Improved Durability).
 5. IAE V2500 Service Bulletin V2500-ENG-72-0046 (Engine - HP Turbine Rotor And
Stator Assembly - Provide A New First Stage HPT Cooling Duct Assembly).
 6. IAE V2500 Service Bulletin V2500-ENG-72-0146 (Engine - HP Turbine Rotor And
Stator Assembly - Provide A New Stage 1 HPT Blade).
 7. IAE V2500 Service Bulletin V2500-ENG-72-0187 (Engine - HP Turbine Rotor And
Stator Assembly - Provide A New Stage 2 Turbine Blade For Various Parts
Commonality).
 8. V2500 Engine Illustrated Parts Catalogs (S-V2500-1IA, 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 72-45-14 and
72-45-32.

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9. V2500 Standard Practices/Processes Manual (E-V2500-1IA or E-V2500-3IA), Chapter/Section 70-09-00 Marking of parts.
10. V2500 Engine Manual (E-V2500-1IA), Chapter/Section 72-45-14 and 72-45-32.
11. V2500 Engine Manual (E-V2500-3IA), Chapter/Section 72-45-14 and 72-45-32.
12. Internal Reference No. - 93VA039, 93VA039A, 93VA039B, 93VA039F.
13. ATA Locator - 72-45-00.

L. Other Publications Affected

1. V2500 Engine Illustrated Parts Catalogs (S-V2500-1IA, 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 72-45-14 and 72-45-32 to add the new parts.
2. V2500 Engine Manuals (E-V2500-1IA and E-V2500-3IA), Chapter/Section 72-45-14 and 72-45-32 Cleaning, Inspection and Repair, to add the new parts.

M. Interchangeability of Parts

Old and new parts are directly interchangeable.

N. Information in the Appendix

Alternate Accomplishment Instructions (No)

Progression Charts (Yes)

Added Data (No)

Revision to Table of Limits (No)

Inspection Procedures (No)



2. Material Information

A. Material – Price and Availability

1. There is no new material cost to do this Service Bulletin when the part modification procedure is used.
2. There is no kit provided to do this Service Bulletin.
3. Part availability information is provided in material data Instructions – Disposition.

B. Industry Support Program

Not Applicable.

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

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.

For each V2500-A1 Engine that incorporates Service Bulletin V2500-ENG-72-0046:

New PN	Qty	Estimate of Unit Price (\$)	Keyword	Old PN (ATA/Figure/Item)	Insts – Disp
2A3001-001	64		Blade – HPT, Stage 1	2A3001 (72-45-14-01-010)	(A)(B)

For each V2500-A1 Engine (having Blades without Platform Cooling Holes) that does not incorporate Service Bulletin V2500-ENG-72-0046 and V2500-ENG-70-0429:

New PN	Qty	Estimate of Unit Price (\$)	Keyword	Old PN (ATA/Figure/Item)	Insts – Disp
2A1221-001	64		Blade – HPT, Stage 1	2A1221 (72-45-14-01-010)	(S1)(A)(B)

For each V2500-A1 Engine (having Blades with Platform Cooling Holes) that does not incorporate Service Bulletin V2500-ENG-72-0046 and V2500-ENG-70-0429:

New PN	Qty	Estimate of Unit Price (\$)	Keyword	Old PN (ATA/Figure/Item)	Insts – Disp
2A1721-001	64		Blade – HPT, Stage 1	2A1721 (72-45-14-01-010)	(S1)(A)(B)



For each V2500-A1 Engine that incorporates Service Bulletin V2500-ENG-72-0046 but does not incorporate Service Bulletin V2500-ENG-70-0429:

New PN	Qty	Estimate of Unit Price (\$)	Keyword	Old PN (ATA/Figure/Item)	Insts - Disp
2A2421-001	64		Blade - HPT, Stage 1	2A2421 (72-45-14-01-010)	(S1)(A)(E)

For each V2522-A5, V2500-24, V2500-27, V2500-27E, V2500-27M, V2530-A5, V2525-D5, and V2528-D5 Engine that incorporates Service Bulletin V2500-ENG-70-0379:

New PN	Qty	Estimate of Unit Price (\$)	Keyword	Old PN (ATA/Figure/Item)	Insts - Disp
2A8701	64	3,899.00	Blade - HPT, Stage 1	2A8521 (72-45-14-01-010)	(S1)(D)(E)

For each V2522-A5, V2500-24, V2500-27, V2500-27E, V2500-27M, V2530-A5, V2525-D5, and V2528-D5 Engine that incorporates Service Bulletin V2500-ENG-72-0146 but does not incorporate Service Bulletin V2500-70-0379:

New PN	Qty	Estimate of Unit Price (\$)	Keyword	Old PN (ATA/Figure/Item)	Insts - Disp
2A8321-001	64		Blade - HPT, Stage 1	2A8321 (72-45-14-01-010)	(S1)(A)(B)

For each V2522-A5, V2500-24, V2500-27, V2500-27E, V2500-27M, and V2530-A5, Engine that does not incorporate Service Bulletin V2500-ENG-72-0146 and V2500-ENG-70-0379:

New PN	Qty	Estimate of Unit Price (\$)	Keyword	Old PN (ATA/Figure/Item)	Insts - Disp
2A2621-001	64		Blade - HPT, Stage 1	2A2621 (72-45-14-01-010)	(S1)(A)(B)

For each V2500-A1 Engine that incorporates Service Bulletin V2500-ENG-70-0154:

New PN	Qty	Estimate of Unit Price (\$)	Keyword	Old PN (ATA/Figure/Item)	Insts - Disp
2A1102-001	72		Blade Assy - Stage 2, HPT	2A1102 (72-45-32-01-010)	(S1)(B)(C)



For each V2500-A1 Engine that does not incorporate Service Bulletin V2500-ENG-70-0154:

New PN	Qty	Estimate of Unit Price (\$)	Keyword	Old PN (ATA/Figure/Item)	Insts - Disp
2A0402-001	72		Blade Assy - Stage 2, HPT	2A0402 (72-45-32-01-010)	(S1)(A)(B)

For each V2522-A5, V2524-A5, V2527-A5, V2527E-A5, V2527M-A5, V2530-A5, V2525-D5, and V2528-D5 Engine that does not incorporate Service Bulletin V2500-ENG-72-0187:

New PN	Qty	Estimate of Unit Price (\$)	Keyword	Old PN (ATA/Figure/Item)	Insts - Disp
2A2202-001	72		Blade Assy - Stage 2, HPT	2A2202 (72-45-32-01-010)	(S1)(A)(B)

For each V2522-A5, V2524-A5, V2527-A5, V2527E-A5, V2527M-A5, V2530-A5, V2533-A5, V2525-D5, and V2528-D5 Engine that incorporates Service Bulletin V2500-ENG-72-0187:

New PN	Qty	Estimate of Unit Price (\$)	Keyword	Old PN (ATA/Figure/Item)	Insts - Disp
2A8702	72	3,027.00	Blade Assy - Stage 2, HPT	2A2702 (72-45-32-01-010)	(S1)(D)(E)

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D. Instructions/Disposition Code Statements:

- (S1) Old and New Parts are freely and fully interchangeable.
- (A) The old part will no longer be supplied.
- (B) The new part can only be obtained by modification. A modification or an approved source of modification will be provided when available.
- (C) The old part is currently being supplied.
- (D) The new part is currently available.
- (E) The old part will continue to be supplied until stock is exhausted.

E. Tooling - Price and Availability

Special tools are not required to accomplish this Service Bulletin.

F. Reidentified Parts

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Reidentified Parts		Data	
New PN		Keyword	Old PN
R	2A3001-001*	Blade - HPT, Stage 1	2A3001*
R	2A1221-001*	Blade - HPT, Stage 1	2A1221*
R	2A1721-001*	Blade - HPT, Stage 1	2A1721*
R	2A2421-001*	Blade - HPT, Stage 1	2A2421*
R	2A8321-001*	Blade - HPT, Stage 1	2A8321*
R	2A2621-001*	Blade - HPT, Stage 1	2A2621*
R	2A8701*	Blade - HPT, Stage 1	2A8521*
R	2A1102-001*	Blade Assy - Stage 2, HPT	2A1102*
R	2A0402-001*	Blade Assy - Stage 2, HPT	2A0402*
R	2A2202-001*	Blade Assy - Stage 2, HPT	2A2202*
	2A8702	Blade Assy - Stage 2, HPT	2A2702

R NOTE: * Do Not use in V2533-A5 EngineG. Other Material Information Data

Not Applicable.



3. Accomplishment Instructions

(1) Source Demonstration

- (a) The Source Demonstration requirements of this rework means that any facility not authorized to accomplish this rework either utilize the Authorized Vendors listed below or contact IAE Manager Maintenance Operations to determine if a qualification program can be initiated at their facility.

IAE-INTERNATIONAL AERO ENGINES AG 400 Main Street M/S 121-10 East
Hartford, CT 06108 USA

- (b) Authorized Rework Vendors for this bulletin are listed below.

Pratt and Whitney Overhaul and Repair Center Airfoil Repair Technology
415 Washington Ave. North Haven, CT 06473 USA

- (c) The designation by IAE of an authorized rework vendor indicates that the vendor has demonstrated the necessary capability to enable it to carry out the rework. However, IAE makes no warranties or representations concerning the qualifications or quality standards of the vendors to carry out the rework, and accepts no responsibility whatsoever for any work that may be carried out by a rework vendor, other than when IAE is listed as the vendor. Authorized rework vendors do not act as agents or representatives of IAE.

(2) Modification Procedure

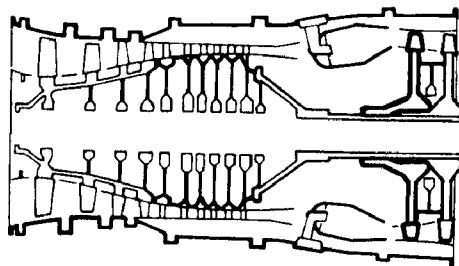
- (a) Send the 2A3001, 2A1221, 2A1721, 2A2421, 2A8321, 2A8521 and 2A2621 Stage 1 HPT Blades and the 2A1102, 2A0402, 2A2202 and 2A2702 Stage 2 HPT Blades to the approved vendor for modification and identification to the applicable new part number listed. See Reidentified Parts Data for old verses new part numbers.
 - (i) Identify as the new part number by the procedure specified in Reference (3), Chapter/Section 70-09-00 Marking of Parts (Control No./Task No. 70-09-00-400-501)

(3) Assembly Procedure

- (a) Replace the Stage 1 HPT Blades (64 off) by the approved procedure given in Reference (4), Chapter/Section 72-45-10, Assembly-01 and Figure 1 for V2500-A1, V2522-A5, V2524-A5, V2527-A5 and V2530-A5 Engines.
- (b) Replace the Stage 1 HPT Blades (64 off) by the approved procedure given in Reference (5), Chapter/Section 72-45-10, Assembly-01 and Figure 1 for V2525-D5 and V2528-D5 Engines.

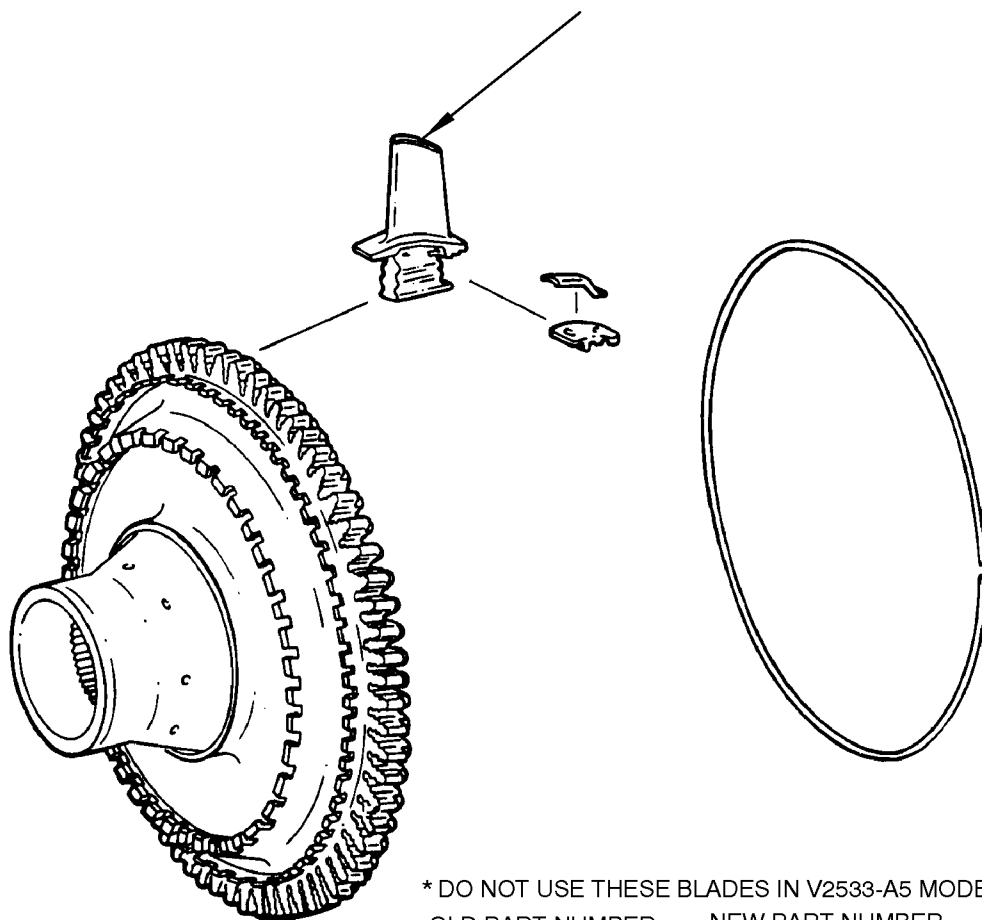


- (c) Replace the Stage 2 HPT Blades (72 off) by the approved procedure given in Reference (4), Chapter/Section 72-45-30, Assembly-01 and Figure 2 for V2500-A1, V2522-A5, V2524-A5, V2527-A5, V2530-A5 and V2533-A5 Engines.
 - (d) Replace the Stage 2 HPT Blades (72 off) by the approved procedure given in Reference (5), Chapter/Section 72-45-30, Assembly-01 and Figure 2 for V2525-D5 and V2528-D5 Engines.
- (4) Recording Instructions
- (a) A record of accomplishment is required.



MODULE 40

REPLACE THE STAGE 1 HPT BLADE
WITH THE APPLICABLE NEW
STAGE 1 HPT BLADE

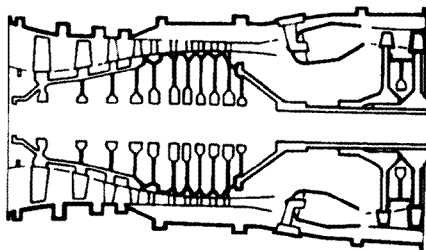


* DO NOT USE THESE BLADES IN V2533-A5 MODELS

OLD PART NUMBER	NEW PART NUMBER
2A3001*	2A3001-001*
2A1221*	2A1221-001*
2A1721*	2A1721-001*
2A2421*	2A2421-001*
2A8521*	2A8701*
2A8321*	2A8321-001*
2A2621*	2A2621-001*

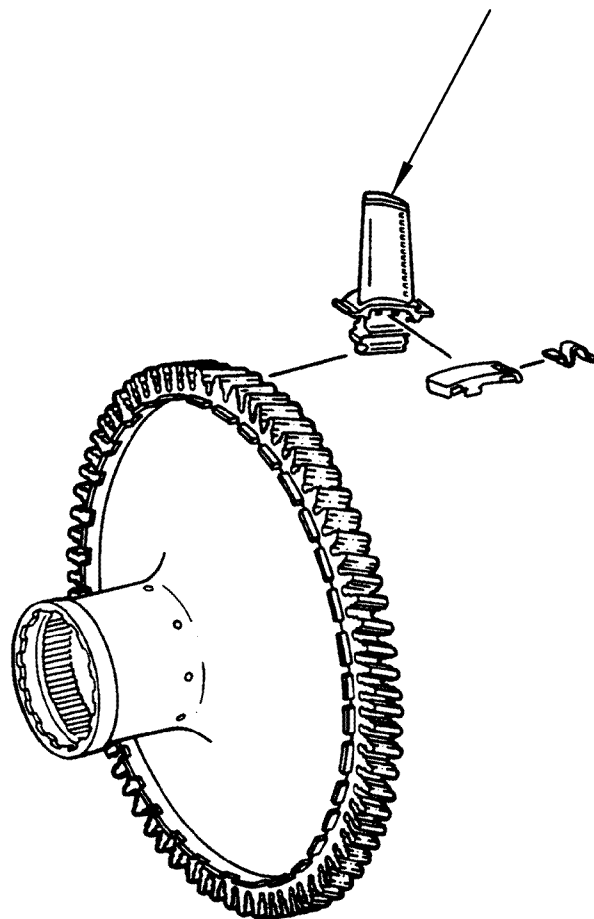
Location of the Stage 1 HPT Blade.
Figure 1

pw0b511782



MODULE 40

REPLACE THE STAGE 2 HPT BLADE
WITH THE APPLICABLE NEW STAGE 2
HPT BLADE ASSEMBLY



* DO NOT USE THESE BLADES IN V2533-A5 ENGINE

OLD PART NUMBER	NEW PART NUMBER
2A1102*	2A1102-001*
2A0402*	2A0402-001*
2A2202*	2A2202-001*
2A2702	2A8702

pw0b511783

Location of the Stage 2 HPT Blade Assembly.
Figure 2



International Aero Engines

SERVICE BULLETIN

APPENDIX 1

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

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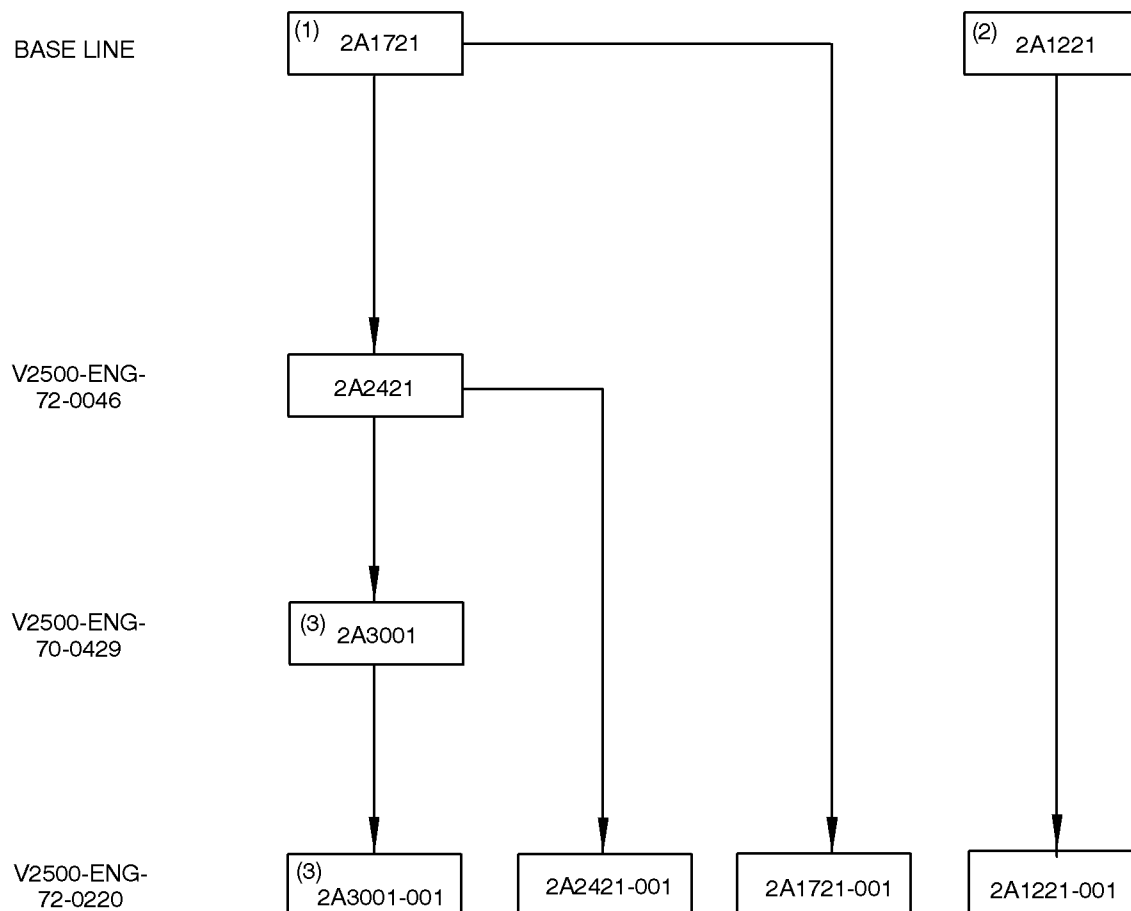
V2500-ENG-72-0220
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MODIFICATIONS

PART NUMBER CHANGE



- (1) DOES NOT HAVE PLATFORM COOLING HOLES.
- (2) HAS PLATFORM COOLING HOLES.
- (3) PROGRESSION FOR RECORD PURPOSES ONLY.
FOR V2500-A1 ENGINE SERIAL NO. V0362 AND SUBSEQUENT.

pw0b511784

Family Tree - Stage 1 HPT Blade (V2500-A1) Ref. Catalogue Sequence No. 72-45-14.
Fig. 01 Item 010.
Figure 3

Jul.30/96
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MODIFICATIONS

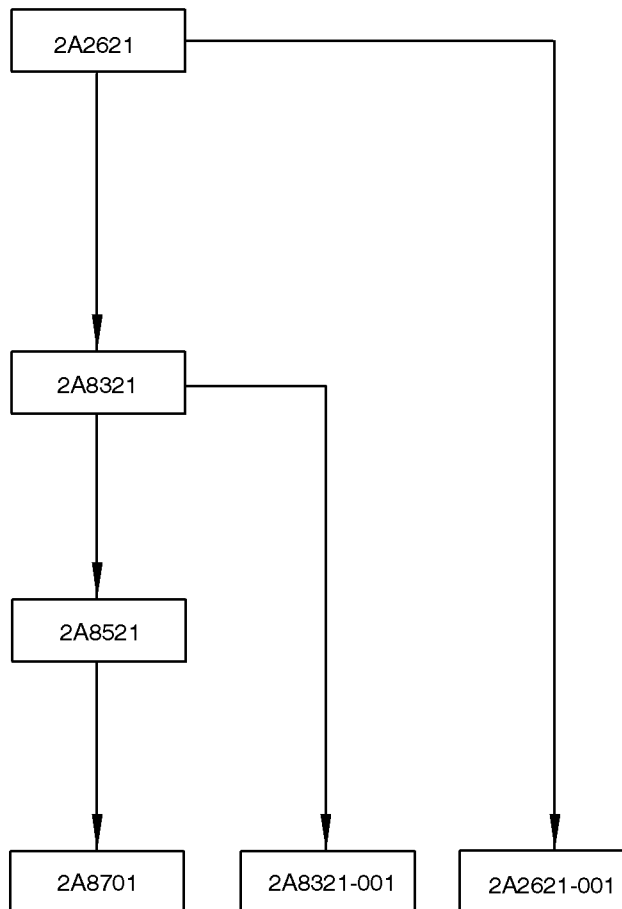
PART NUMBER CHANGE

BASE LINE

V2500-ENG-
72-0146

V2500-ENG-
70-0379

V2500-ENG-
72-0220



pw0b511785

R

Family Tree - Stage 1 HPT Blade (V2527-A5, V2527E-A5, V2527M-A5, V2530-A5, V2525-D5, V2528-D5) Ref. Catalogue Sequence No. 72-45-14. Fig. 01 Item 010.

Figure 4

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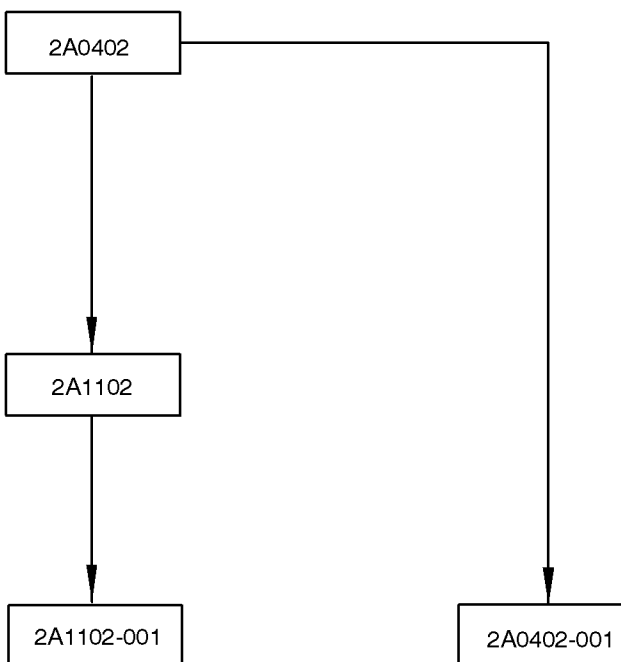
MODIFICATIONS

PART NUMBER CHANGE

BASE LINE

V2500-ENG-
70-0154

V2500-ENG-
72-0220



Family Tree - Stage 2 HPT Blade Assembly (V2500-A1) Ref. Catalogue Sequence No. 72-45-32. Fig. 01 Item 010.
Figure 5

pw0b511786



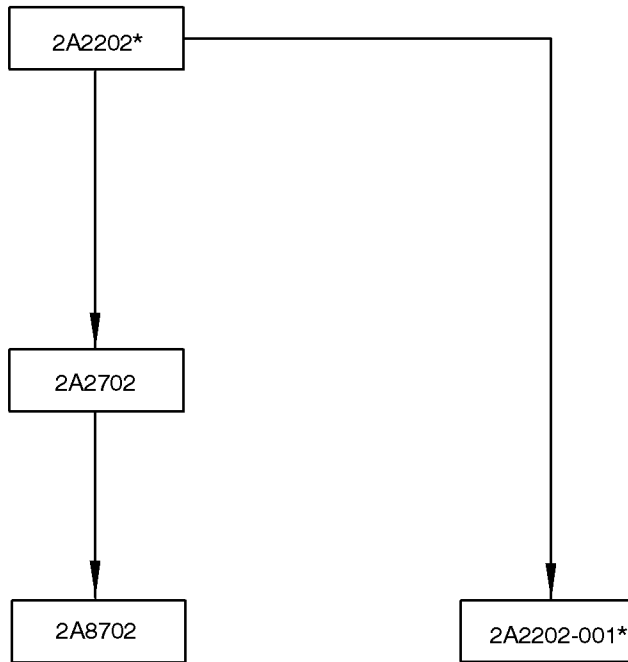
MODIFICATIONS

PART NUMBER CHANGE

BASE LINE

V2500-ENG-
72-187

V2500-ENG-
72-0220



* DO NOT USE IN MODEL V2533-A5.

pw0b511787

Family Tree - Stage 2 HPT Blade Assembly (V2522-A5, V2524-A5, V2527-A5, V2527E-A5, V2527M-A5, V2530-A5, V2533-A5) Ref. Catalogue Sequence No. 72-45-32. Fig. 01 Item 010. Figure 6

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MODIFICATIONS

PART NUMBER CHANGE

BASE LINE

2A2702

V2500-ENG-
72-0220

2A8702

pw0b511788

Family Tree - Stage 2 HPT Blade Assembly (V2525-D5, V2528-D5) Ref. Catalogue
Sequence No. 72-45-32. Fig. 01 Item 010.
Figure 7

V2500-ENG-72-0220

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