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DATE: Sep. 19/13

## V2500-A5 SERIES PROPULSION SYSTEM SERVICE BULLETIN

This document transmits the Revision 1 of Service Bulletin V2500-ENG-72-0562.

# **Document History**

Service Bulletin Revision Status

Initial Issue Sep.22/08

# Service Bulletin Revision 1

Remove	Incorporate	Reason for change
All Pages of the Service Bulletin.	Pages 1 to 42 of the Service Bulletin	To update the Accomplishment Instructions.
		To attach the FAA AMOC letter.
All Pages of the	Pages 1 to 34 of the	To revise the Family Tree
Supplement.	Supplement	Charts.
	(Parts Progression	
	Charts)	
All Pages of the	Page 1 of the	No change.
Supplement.	Supplement	
	(Revision to Table of	
	Limits)	

All Pages of the Page 1 and 2 of the No change.

Supplement. Supplement

(Prices and Availability)

All Pages of the Page 1 of the No change.

Supplement. Supplement (Added Data)

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V2500-ENG-72-0562
Transmittal - Page 2



# <u>ENGINE - HIGH PRESSURE TURBINE (HPT) - V2500 SELECTONE PRODUCTION AND RETROFIT - HPT UPGRADE</u>

## 1. Planning Information

## A. Effectivity

- (1) Airbus A319
  - (a) V2522-A5, V2524-A5, V2527M-A5 Engines prior to Serial No. V15002 (A5 Standard, SelectOne Retrofit Standard).
  - (b) V2522-A5, V2524-A5, V2527M-A5 Engines from Serial No. V15002 onwards (SelectOne Production Standard).
- (2) Airbus A320
  - (a) V2524-A5, V2527-A5, V2527E-A5 Engines prior to Serial No. V15002 (A5 Standard, SelectOne Retrofit Standard).
  - (b) V2524-A5, V2527-A5, V2527E-A5 Engines from Serial No. V15002 onwards (SelectOne Production Standard).

## (3) Airbus A321

- (a) V2530-A5, V2533-A5 Engines prior to Serial No. V15002 (A5 Standard, SelectOne Retrofit Standard).
- (b) V2530-A5, V2533-A5 Engines from Serial No. V15002 onwards (SelectOne Production Standard).

## B. Concurrent Requirements

(1) The Service Bulletins that follow must be done before this one (Baseline/Minimum Standard for SelectOne HP turbine Modification):

Reference 1, Service Bulletin No. V2500-ENG-72-0145;

Reference 2, Service Bulletin No. V2500-ENG-72-0238;

Reference 3, Service Bulletin No. V2500-ENG-72-0239;

Reference 4, Service Bulletin No. V2500-ENG-72-0327 (2nd Stage Retaining Plate Only);

Reference 5, Service Bulletin No. V2500-ENG-72-0364;

Reference 6, Service Bulletin No. V2500-ENG-72-0399;

Reference 7, Service Bulletin No. V2500-ENG-72-0511;



Reference 8, Service Bulletin No. V2500-ENG-72-0522 and Reference 9, Service Bulletin No. V2500-ENG-72-0534.

- (2) The Service Bulletins that follow must be done at the same time as this one:
  - (a) For A5 Standard, SelectOne Retrofit Standard engines:

Reference 10, Service Bulletin No. V2500-ENG-72-0560;

Reference 14, Service Bulletin No. V2500-ENG-72-0565;

Reference 17, Service Bulletin No. V2500-ENG-73-0203 and

Reference 18, Service Bulletin No. V2500-ENG-73-0207.

<u>NOTE</u>: The EEC software SCN2OA/Z is the required standard for SelectOne Retrofit and Production engines and is planned for fleetwide incorporation in Q4 2008.

For customers receiving SelectOne engines prior incorporation of EEC software SCN2OA/Z, the interim EEC software SCN2O/Y, introduced by Service Bulletin ENG-73-0203, is the provided EEC software standard for these engines.

(b) For SelectOne Production Standard engines:

Reference 10, Service Bulletin No. V2500-ENG-72-0560;

Reference 11, Service Bulletin No. V2500-ENG-72-0561;

Reference 12, Service Bulletin No. V2500-ENG-72-0563;

Reference 13, Service Bulletin No. V2500-ENG-72-0564;

Reference 17, Service Bulletin No. V2500-ENG-73-0203 and

Reference 18, Service Bulletin No. V2500-ENG-73-0207.

## C. Reason

(1) Condition

For Delivered V2500-A5 Engines converted to V2500-A5 SelectOne:

This Service Bulletin allows retrofit of V2500-A5 Engines and introduces V2500-A5 SelectOne High Pressure Turbine (HPT) Kit, PN 2A4243.

Provide an upgraded High Pressure Turbine (HPT) relative to the V2500-A5 for the V2500 SelectOne upgrade that meets the following requirements.

Sep.22/08

R

V2500-ENG-72-0562

Sep. 19/13 Revision 1



Increases HPT refurbishment interval by 20% for the 27K engine.

Achieves production scrap rate requirement.

Decreases outer diameter leakage by 1.0% relative to V12556.

## (2) Background

The V2500 SelectOne is a committed programme to enhance the V2500 engine for improved time on wing, efficiency and durability. The package features consist of enhancements and modifications on the HPC, HPT, LPT modules and complementary EEC software.

## (3) Objective

Redesign the V2500-A5 HPT to achieve the SelectOne upgrade requirements as follows:

1st vane with re-distributed cooling.

2nd vane with modified internal cooling and additional platform cooling.

1st blade with advanced coating and revised film cooling.

2nd blade re-staggered.

Improved outer diameter static hardware sealing.

Improved durability of 1st Stage Blade Outer Air Seal (BOAS)

#### (4) Substantiation

The changes introduced by this Service Bulletin were the subject of satisfactory engineering analysis, extensive engine testing and flight test. This Service Bulletin complies with the applicable engine certification basis.

## (5) Effects of Bulletin on:

Removal/Installation: None.

Disassembly/Assembly: None.

Cleaning: None.

Inspection/Check: None.

Repair: None.

Testing: None.



(6) Supplemental Information

None.

## D. <u>Description</u>

Introduce the V2500-A5 SelectOne upgrade with new High Pressure Turbine (HPT) with improved features.

## 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.

The authorising IAE documents are ECs O7SELO1P and O7SELO2P.

Revision 1 of this Service Bulletin has been FAA approved as an Alternate Means Of Compliance (AMOC) to Airworthiness Directive (AD) 2011-25-08.

#### G. Manpower

(1) In Service

Not Applicable.

(2) At Overhaul

<u>NOTE</u>: The parts affected by this Service Bulletin are accessible at overhaul.

- (a) To accomplish Modification Instructions using new parts:
  - (i) To remove existing Nozzle Group Assembly and Rotor and Stator Assembly

3 hrs 10 mins

(ii) To accomplish Modification Instructions using new parts

15 hrs 22 mins

(iii) To install modified Nozzle Group Assembly and Rotor and Stator Assembly

6 hrs 35 mins

(iv) To test engine

5 hrs 0 mins

(v) Total Manhours using new parts

30 hrs 7 mins

- (b) To accomplish Modification Instructions using re-worked parts:
  - (i) To remove existing Nozzle Group Assembly and Rotor and Stator Assembly

3 hrs 10 mins

- (ii) To accomplish Modification Instructions using re-worked parts
  - 30 hrs 8 mins
- (iii) To install modified Nozzle Group Assembly and Rotor and Stator Assembly

6 hrs 35 mins

(iv) To test engine

5 hrs 0 mins

(v) Total Manhours using re-worked parts

44 hrs 53 mins

## H. Weight and Balance

(1) Weight Change

+ 2.9 lb (+ 1.32 kg)

(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-72-0145 (Engine HP Turbine Rotor And Stator Assembly Provide New Stage 2 Turbine Rotor Hub With Increased Front Snap Diameter Category Code 7 Mod.ENG-72-0145).
- (2) IAE V2500 Service Bulletin V2500-ENG-72-0238 (Engine HP Turbine Rotor And Stator Assembly - Provide A New Stage 1 Turbine Hub - Category Code 8 - Mod.ENG-72-0238).
- (3) IAE V2500 Service Bulletin V2500-ENG-72-0239 (Engine Diffuser And Combustor Group Provide New Diffuser Group Adapters And Tube Assemblies Category Code 8 Mod.ENG-72-0239).
- (4) IAE V2500 Service Bulletin V2500-ENG-72-0327 (Engine High Pressure Turbine Rotor And Stator Assembly Introduce New Rotating Parts With Potential For Increased Cyclic Life).
- (5) IAE V2500 Service Bulletin V2500-ENG-72-0364 (Engine High Pressure Turbine Provide New Stage 2 High Pressure Turbine Duct Segments).
- (6) IAE V2500 Service Bulletin V2500-ENG-72-0399 (Engine Provide A New 2nd Stage Turbine Rotor Blade Retention Configuration).
- (7) IAE V2500 Service Bulletin V2500-ENG-72-0483 (Engine New First Stage Duct Segments And HPT Vane Support).
- (8) IAE V2500 Service Bulletin V2500-ENG-72-0511 (Engine New 1st Stage Rotor Assembly With Metering Plugs Removed And New 1st Stage HPT Seal).
- (9) IAE V2500 Service Bulletin V2500-ENG-72-0522 (Engine Provide New Second Stage Vane With Increased Cooling Air).
- (10) IAE V2500 Service Bulletin V2500-ENG-72-0534 (Engine Provide New Second Stage Turbine Air Seal).
- (11) IAE V2500 Service Bulletin V2500-ENG-72-0560 (Engine High Pressure (HP) Compressor - V2500 SelectOne Retrofit and Production - HP Compressor Upgrade).

Sep.22/08 Sep. 19/13 Revision 1



- (12) IAE V2500 Service Bulletin V2500-ENG-72-0561 (Engine High Pressure (HP) Compressor V2500 SelectOne Production HP Compressor Upgrade).
- (13) IAE V2500 Service Bulletin V2500-ENG-72-0563 (Engine LP Turbine Introduction Of Turbine Vanes Stage 3).
- (14) IAE V2500 Service Bulletin V2500-ENG-72-0564 (Engine High Pressure (HP) Compressor - V2500 SelectOne Production - Introduction Of Redesigned Variable Stator Vane (VSV) System).
- (15) IAE V2500 Service Bulletin V2500-ENG-72-0565 (Engine Provide The Requirements For Modification To The V2500 SelectOne Retrofit Standard)
- (16) IAE V2500 Service Bulletin V2500-ENG-72-0575 (Engine Rotor And Stator Assembly - Provide New 2nd Stage High Pressure Turbine (HPT) Restaggered Blades).
- (17) IAE V2500 Service Bulletin V2500-ENG-72-0576 (Engine Turbine Nozzle Provide A New High Pressure Turbine (HPT) 1st Stage Vane Assembly).
- (18) IAE V2500 Service Bulletin V2500-ENG-73-0203 (Engine Fuel And Control Provide A New Electronic Engine Control (EEC) With SCN20/Y Software).
- R (19) IAE V2500 Service Bulletin V2500-ENG-73-0207 (Engine Fuel And Control Provide A New Data Entry Plug Kit Assembly With New Variants For The EEC R SCN20/Y Software).
- R (20) IAE V2500 Engine Manual (E-V2500-1IA), Chapter/Section 72-00-44, 72-00-45, R 72-44-00 and 72-45-00 series.
- R (21) 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 R 72-44-00 and 72-45-00.
- R (22) IAE V2500 Illustrated Parts Catalogues (S-V2500-2SA, S-V2500-2SB, S-V2500-5SA, S-V2500-5SB, S-V2500-6SA, S-V2500-6SB, S-V2500-7SA, S-V2500-7SB), Chapter/Section 72-44-00 and 72-45-00.
- R (23) IAE Standard Practices/Procedures Manual, Chapter/Section 70-09-00 and 70-10-00.
- R (24) Airbus Aircraft Modifications No. 37868 and 38554.
- R (25) Internal Reference No. EC 07SEL01P, EC 07SEL02P, EC 09VA007, EC 09VA027, R IEN 09VC017 and EA13VC056.
- R (26) ATA Locator 72-40-00.



## L. Other Publications Affected

- (1) V2500 Engine Manual (E-V2500-1IA), Chapter/Section 72-45-24 Cleaning, Inspection and Repair, to add the new parts.
- (2) V2500 Engine Illustrated Parts Catalog (S-V2500-2SA, S-V2500-2SB, S-V2500-5SA, S-V2500-5SB, S-V2500-6SA, S-V2500-6SB, S-V2500-7SA, S-V2500-7SB), Chapter/Section 72-44-00 and 72-45-00 series, to add the new parts.
- (3) V2500 Engine Illustrated Parts Catalog (S-V2500-2IA, S-V2500-2IB, S-V2500-5IA, S-V2500-5IB, S-V2500-6IA, S-V2500-6IB, S-V2500-7IA, S-V2500-7IB), Chapter/Section 72-44-00 and 72-45-00 series, to add the new parts.

## M. Interchangeability of Parts

Old and new parts are not interchangeable.

Old and new parts must be replaced in complete sets only.

## N. <u>Information in the Appendix</u>

Alternate Accomplishment Instructions (No)

Progression Charts (Yes)

Revision to Table of Limits (Yes)

Inspection Procedures (No)

Supplement (Yes)

Added Data (Yes)



# 2. Material Information

# A. Material - Price and Availability

- 1. Part prices were not available at the time of Service Bulletin publication. Contact IAE's Spare Parts Sales Department for firm quotations.
- R 2. There is a kit, PN 2A4243 to do this Service Bulletin. Contact IAE's Spare Parts Sales Department for firm quotations.
  - 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.

For V2522-A5, V2524-A5, V2527-A5, V2527E-A5, V2527M-A5, V2530-A5, V2533-A5 SelectOne Production Standard Engines:

FIG- ITEM NUMBER	NEW PART NUMBER	QTY	PART TITLE	MAT	OLD PN	INSTR - DISP
01-001	72-44-00 2A4210	1	Turbine Nozzle Group	-	2A3915	(1)(E)(N)(R)
01-010	72-44-10 2A4085	1	Support Assy - HPT Stg 1	-	2A3896	(2)(B)(C)(R)
01-025	2A4088-01	1	Seal Assy - Brush Stg 1	n –		(D)(R)
01-033	2A4161	3	Lock - Support Seal Stg 1	-		(D)
01-035	NAS1398C3A4	6	Rivet - Blind Sto	g –		(D)
	72-44-20					
01-240	2A4081	40	Vane Assy - HPT Stg 1	-	2A4201	(2)(C)(N)(P)(R)
	OR					
01-240	2A4271	40	Vane Assy - HPT Stg 1	-	2A4201	(2)(B)(C)(R)
01-485	2A4126 72-44-50	40	Seal - HPT Stg 1	-		(2)(B)(R)
01-010	2A4086	1	TOBI Duct Assy - HPT Stg 1	-	2A3914-01	(1)(B)(C)(R)
	72-45-00		J			
01-001	2A4220	1	Rotor and Stator Assy	-	2A4310	(2)(C)(N)(P)(R)

Sep.22/08

V2500-ENG-72-0562

Sep. 19/13 Revision 1



FIG- ITEM NUMBER	NEW PART NUMBER	QTY	PART TITLE	MAT	OLD PN	INSTR - DISP
	OR					
01-001	2A4250	1	Rotor and Stator Assy	-	2A4310	(1)(C)(F)(R)
	72-45-10					
01–010	2A9921	1	Turbine Rotor - HPT Stg 1	_	2A9421	(1)(C)(F)(I)
	72-45-14					
01-010	2A9721	64	Blade - HPT Stg 1	_	2A9321	(2)(B)(C)(R)
01-005	72-45-20 2A4087	1	Case and Vane	-	2A4050	(1)(C)(F)(I)
	72-45-22		Assy - HPT Stg 1			
01-010	2A4130	19	Support - HPT Stg 1	<b>,</b> –	2A1706	(2)(B)(C)(I)
01-060	2A4129 72-45-23	19	Seal - HPT Stg 1	-	2A1705	(2)(B)(C)(R)
01-010	2A4136	1	Gasket	_	2A3155	(2)(B)(C)(I)
01-010		1	Gasket	_		(G)
01-010		1	Gasket	_		(G)
01-020	2A4131	2	Band Segment	_		(2)(B)(C)(I)
01-040	2A4133	1	Band Segment	_		(2)(B)(C)(I)
01-060	2A4169	38	Duct Segment	_		(2)(B)(C)(I)
01-062		1	Cover	_		(C)
01-080	2A4106 72-45-24	38	Seal	_		(2)(B)(C)(R)
02-050	2A4262	17	Ring Segment - HPT Stg 2 Vane Cluster	-	2A6102	(2)(B)(C)(I)
02-115	2A4127	1	Seal - HPT Stg 2	_	2A2335-01	(2)(B)(C)(I)
02-130	2A4182	2	Vane Assy - HPT Stg 2	-	2A4272	(2)(C)(D)(I)
02-190	2A4127	19	Seal - HPT Stg 2	-	2A2335-01	(2)(B)(C)(I)
02-197	2A4145	38	Seal - Feather - HPT Stg 2	-		(2)(B)(I)
02-200	2A4128	19	Seal - HPT Stg 2	-		(2)(B)(I)
02-200		17	Seal - HPT Stg 2	-	2A2336	(C)
02-205	2A4163	1	Gasket	-		(2)(B)(I)
02-260	2A4162	2	Ring Segment, 2nd Vane Cluster (Boro)	i –	2A4072	(2)(B)(C)(R)
02-265	2A4128	1	Seal - HPT Stg 2	_		(2)(B)(R)
02-312	2A4127	1	Seal - HPT Stg 2	_	2A2335-01	(2)(B)(C)(I)
02-350	2A4182	1	Vane - HPT Stg 2	_	0 - / 0 = 0	(2)(C)(D)(R)
02-420	2A4282	1	Vane Assy - HPT Stg 2	-	2A4082	(2)(C)(D)(R)
04 045	72-45-30	4			0.4076	(0) (0) (0) (0)
01–010	2A4222	1	Turbine Rotor - HPT Stg 2	-	2A4232	(2)(C)(N)(P)(I)

Sep.22/08

Sep. 19/13 Revision 1

V2500-ENG-72-0562



FIG- ITEM NUMBER	NEW PART NUMBER	QTY	PART TITLE	MAT	OLD PN	INSTR - DISP
	OR					
01-010	2A4522-001	1	Turbine Rotor - HPT Stg 2	-	2A4232	(1)(C)(N)(I)
	OR					
01-010	2A4522	1	Turbine Rotor - HPT Stg 2	-	2A4222	(2)(E)(F)(I)
	OR					
01-010	2A4522-001	1	Turbine Rotor - HPT Stg 2	-	2A2822-001	(1)(E)(N)(I)
	OR		-			
01-010	2A4522-001	1	Turbine Rotor - HPT Stg 2	-	2A2522-001	(1)(E)(N)(I)
	72-45-32		-			
01-010	2A4122	72	Blade Assy - HPT Stg 2	-	2A9002	(2)(C)(N)(P)(R)
	OR		-			
01-010	2A4422	72	Blade Assy - HPT Stg 2	-	2A9002	(2)(B)(C)(R)

## D. The material data that follows is for each engine.

For Modification of V2522-A5, V2524-A5, V2527-A5, V2527E-A5, V2527M-A5, V2530-A5, V2533-A5 Delivered Engines And SelectOne Retrofit Standard Engines:

FIG- NUMB	ITEM BER	NEW PART NUMBER	QTY	PART TITLE	MAT	OLD PN	INSTR - DISP
01-0	01	72-44-00 2A4210	1	Turbine Nozzle Group	-	2A3915	(1)(E)(N)(R)
01-0	01	OR 2A4210-001	1	Turbine Nozzle Group	-	2A3915	(1)(E)(N)(R)
01-0	01	OR 2A4210-001	1	Turbine Nozzle Group	-	2A8600	(1)(E)(N)(R)
01-0	01	OR 2A4210-001	1	Turbine Nozzle Group	-	2A8600-005	(1)(E)(N)(R)
01-0	01	OR 2A4210-001	1	Turbine Nozzle Group	-	2A8600-006	(1)(E)(N)(R)
01-0	01	OR 2A4210-001	1	Turbine Nozzle Group	-	2A8600-007	(1)(E)(N)(R)
01-0	10	72-44-10 2A4085	1	Support Assy - HPT Stg 1	-	2A3896	(2)(B)(C)(R)

Sep.22/08

V2500-ENG-72-0562

Sep. 19/13 Revision 1



FIG- ITEM NUMBER	NEW PART NUMBER	QTY	PART TITLE	MAT	OLD PN	INSTR - DISP
01-025	2A4088-01	1	Seal Assy - Brush Stg 1	n –		(D)(R)
01-033	2A4161	3	Lock - Support Seal Stg 1	_		(D)
01-035	NAS1398C3A4	6	Rivet - Blind Sto	g –		(D)
01-240	72-44-20 2A4081 OR	40	Vane Assy - HPT Stg 1	-	2A4201	(2)(C)(N)(P)(R)
01-240	2A4271	40	Vane Assy - HPT Stg 1	-	2A4201	(2)(B)(C)(R)
01-485	2A4126 72-44-50	40	Seal - HPT Stg 1	-		(2)(B)(I)
01-010	2A4086	1	TOBI Duct Assy - HPT Stg 1	-	2A3914-01	(1)(B)(C)(R)
01-010	OR 2A3914-001 OR	1	TOBI Duct Assy	-	2A3914-01	(1)(C)(N)(R)
01-010	2A3487-001 72-45-00	1	TOBI Duct Assy	-	2A3487-01	(1)(E)(N)(R)
01-001	2A4220	1	Rotor and Stator Assy	-	2A4310	(2)(C)(N)(P)(R)
01-001	OR 2A4250	1	Rotor and Stator Assy	_	2A4310	(1)(C)(F)(R)
01-001	OR 2A4250-001	1	Rotor and Stator Assy	-	2A4200-014	(1)(E)(N)(R)
01-001	or 2A4250-001	1	Rotor and Stator Assy	-	2A4200-015	(1)(E)(N)(R)
01-001	OR 2A4250-001	1	Rotor and Stator Assy	-	2A4200-016	(1)(E)(N)(R)
01-001	OR 2A4250-001	1	Rotor and Stator Assy	-	2A7000-016	(1)(E)(N)(R)
01-001	OR 2A4250-001	1	Rotor and Stator Assy	-	2A7000-017	(1)(E)(N)(R)
01-001	OR 2A4250-001	1	Rotor and Stator Assy	-	2A7000-018	(1)(E)(N)(R)
01-001	OR 2A4250-001	1	Rotor and Stator Assy	_	2A7000-019	(1)(E)(N)(R)
	OR					

Sep.22/08

Sep. 19/13 Revision 1



FIG- ITEM NUMBER	NEW PART NUMBER	QTY	PART TITLE	MAT	OLD PN	INSTR - DISP
01-001	2A4250-001	1	Rotor and Stator Assy	-	2A7000-020	(1)(E)(N)(R)
01-001	or 2A4250-001	1	Rotor and Stator Assy	-	2A9300-005	(1)(E)(N)(R)
01-001	OR 2A4250-001	1	Rotor and Stator Assy	-	2A9300-006	(1)(E)(N)(R)
01-001	OR 2A4250-001	1	Rotor and Stator Assy	-	2A9300-007	(1)(E)(N)(R)
01-001	OR 2A4250-001	1	Rotor and Stator Assy	-	2A9800-001	(1)(E)(N)(R)
01-010	72-45-10 2A9921	1	Turbine Rotor - HPT Stg 1	-	2A9421	(1)(C)(F)(I)
01-010	0R 2A9921-001	1	Turbine Rotor -	_	2A9421	(1)(C)(N)(I)
01-010	OR 2A9921-001	1	HPT Stg 1  Turbine Rotor -	-	2A9031-011	(1)(E)(N)(I)
01-010	or 2A9921-001	1	HPT Stg 1 Turbine Rotor -	_	2A9521-004	(1)(E)(N)(I)
01-010	OR 2A9921-001	1	HPT Stg 1 Turbine Rotor -	_	2A9521-005	(1)(E)(N)(I)
01-010	OR 2A9921-001	1	HPT Stg 1 Turbine Rotor -	_	2A9521-006	(1)(E)(N)(I)
01-010	or 2A9921-001	1	HPT Stg 1 Turbine Rotor -	_	2A9621-003	(1)(E)(N)(I)
01-010	OR 2A9921-001	1	HPT Stg 1 Turbine Rotor -		2A9621-004	(1)(E)(N)(I)
	OR		HPT Stg 1			
01-010	2A9921-001 72-45-14	1	Turbine Rotor - HPT Stg 1	-	2A9621-005	(1)(E)(N)(I)
01-010	2A9721 72-45-20	64	Blade - HPT Stg ′	1 –	2A9321	(2)(B)(C)(R)
01-005	2A4087	1	Case and Vane Assy - HPT Stg 1	-	2A4050	(1)(C)(F)(I)
	OR					

Sep.22/08

Sep. 19/13 Revision 1



FIG- ITEM NUMBER	NEW PART	QTY	PART TITLE	MAT	OLD PN	INSTR - DISP
01-005	2A4087-001	1	Case and Vane Assy - HPT Stg 1	_	2A4050	(1)(C)(N)(I)
01-005	0R 2A4087-001	1	Case and Vane	_	2A3219-003	(1)(E)(N)(I)
01-005	or 2A4087-001	1	Assy - HPT Stg 1 Case and Vane	_	2A3416-005	(1)(E)(N)(I)
	OR		Assy - HPT Stg 1			
01-005	2A4087-001 OR	1	Case and Vane Assy - HPT Stg 1	_	2A3469-003	(1)(E)(N)(I)
01-005	2A4087-001	1	Case and Vane Assy - HPT Stg 1	-	2A3469-004	(1)(E)(N)(I)
01-005	OR 2A4087-001	1	Case and Vane Assy - HPT Stg 1	-	2A3475-002	(1)(E)(N)(I)
01-010	72-45-22 2A4130	19	Support - HPT Stg	<b>,</b> –	2A1706	(2)(B)(C)(R)
01-060	2A4129 72-45-23	19	Seal - HPT Stg 1	-	2A1705	(2)(B)(C)(R)
01-010 01-010 01-010	2A4136	1 1 1	Gasket Gasket Gasket	- - -	2A3155 2A2275 2A3156	(2)(B)(C)(I) (G) (G)
01-010 01-020 01-040	2A4131 2A4133	2	Band Segment Band Segment	_	2A1707 2A1708	(2)(B)(C)(I) (2)(B)(C)(I)
01-060 01-062 01-080	2A4169	38 1	Duct Segment Cover	_	2A3886-01 2A3888	(2)(B)(C)(I) (C)
02-050	2A4106 72-45-24 2A4262	38 17	Seal Ring Segment -	- -	2A1701 2A6102	(2)(B)(C)(I) (2)(B)(C)(I)
02 445	24/427	4	HPT Stg 2 Vane Cluster		242775 04	(2)(D)(6)(T)
02-115 02-130	2A4127 2A4182	1 2	Seal - HPT Stg 2 Vane Assy - HPT Stg 2	_	2A2335-01 2A4272	(2)(B)(C)(I) (2)(C)(D)(I)
02-190 02-197	2A4127 2A4145	19 38	Seal - HPT Stg 2 Seal - Feather -	_	2A2335-01	(2)(B)(C)(I) (2)(B)(I)
02-200 02-200	2A4128	19 38	HPT Stg 2 Seal - HPT Stg 2 Seal - HPT Stg 2	_	2A2336	(2)(B)(I) (C)
02-205 02-260	2A4163 2A4162	1 2	Gasket Ring Segment, 2nd	- 1 -		(B) (2)(B)(C)(R)
02-265 02-312	2A4128 2A4127	1 1	Vane Cluster Seal - HPT Stg 2 Seal - HPT Stg 2	_	2A2335-01	(2)(B) (2)(B)(C)(I)
02-350	2A4182	1	Vane - HPT Stg 2	_	2A4272	(2)(C)(D)(I)

Sep.22/08

Sep. 19/13 Revision 1



FIG- ITEM NUMBER	NEW PART NUMBER	QTY	PART TITLE	MAT	OLD PN	INSTR - DISP
02-420	2A4282	1	Vane Assy - HPT Stg 2	-	2A4082	(2)(C)(D)(R)
	72-45-30					
01-010	2A4222	1	Turbine Rotor - HPT Stg 2	-	2A4232	(2)(C)(N)(P)(I)
	OR					
01-010	2A4522-001	1	Turbine Rotor - HPT Stg 2	-	2A4232	(1)(C)(N)(I)
	OR					
01-010	2A4522-001	1	Turbine Rotor - HPT Stg 2	-	2A2822-001	(1)(E)(N)(I)
	OR					
01-010	2A4522-001	1	Turbine Rotor - HPT Stg 2	-	2A2522-001	(1)(E)(N)(I)
	72-45-32		_			
01-010	2A4122	72	Blade Assy - HPT Stg 2	-	2A9002	(2)(C)(N)(P)(R)
	OR					
01-010	2A4422	72	Blade Assy - HPT Stg 2	-	2A9002	(2)(B)(C)(R)

## E. <u>Instructions/Disposition Code Statements:</u>

#### Parts Modification Conditions

- (1) The new part can be obtained by modification of the old part as specified in the Accomplishment Instructions.
- (2) The new part is a replacement part only, and cannot be obtained by modification of the old part.

#### Spare Parts Availability

- (A) The new part is available.
- (B) The new part will be available approximately September 2008.
- (C) The old part will continue to be supplied.
- (D) The new part will be available approximately February 2009.
- (E) The old part is not available.
- (F) The new part will be supplied on a full manufacturing lead time quotation basis only.
- (G) The old part is an option of PN 2A3155.
- (N) The new part is not available.
- (P) The new part is applicable to Engine Serial Nos. V15001 and 15002 only.

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.
- (R) The cleaning, inspection and repair requirements are different for the old and new part. The applicable engine manuals will be revised to include the new requirements.

# F. Tooling - Price and Availability

Special tools are required to accomplish this Service Bulletin.

Tool No.	Name	Manufacturer	
1P16549	Orientation Adapter	P&W	
1P16563	Holding Plate	P&W	

## G. Reidentified Parts

Reidentified Parts New PN	Data Keyword	Old PN
NEW IN	Reyword	ota in
2A4210-001	Turbine Nozzle Group	2A3915
2A4210-001	Turbine Nozzle Group	2A8600
2A4210-001	Turbine Nozzle Group	
2A4210-001	Turbine Nozzle Group	2A8600-006
2A4210-001	Turbine Nozzle Group	2A8600-007
2A3914-001	TOBI Duct Assy	2A3914-01
2A3487-001	TOBI Duct Assy	2A3487-01
2A4250-001	Rotor and Stator Assy	2A4310
2A4250-001	Rotor and Stator Assy	2A4200-014
2A4250-001	Rotor and Stator Assy	2A4200-015
2A4250-001	Rotor and Stator Assy	2A4200-016
2A4250-001	Rotor and Stator Assy	2A7000-016
2A4250-001	Rotor and Stator Assy	2A7000-017
2A4250-001	Rotor and Stator Assy	2A7000-018
2A4250-001	Rotor and Stator Assy	2A7000-019
2A4250-001	Rotor and Stator Assy	2A7000-020
2A4250-001	Rotor and Stator Assy	2A9300-005
2A4250-001	Rotor and Stator Assy	2A9300-006



New PN	Keyword	Old PN
2A4250-001	Rotor and Stator	2A9300-007
2A4250-001	Assy Rotor and Stator Assy	2A9800-001
2A9921-001	Turbine Rotor - HPT Stg 1	2A9421
2A9921-001	Turbine Rotor - HPT Stg 1	2A9031-011
2A9921-001	Turbine Rotor - HPT Stg 1	2A9521-004
2A9921-001	Turbine Rotor - HPT Stg 1	2A9521-005
2A9921-001	Turbine Rotor - HPT Stg 1	2A9521-006
2A9921-001	Turbine Rotor - HPT Stg 1	2A9621-003
2A9921-001	Turbine Rotor - HPT Stg 1	2A9621-004
2A9921-001	Turbine Rotor - HPT Stg 1	2A9621-005
2A4087-001	Case and Vane Assy - HPT Stg 1	· 2A4050
2A4087-001	Case and Vane Assy - HPT Stg 1	2A3219-003
2A4087-001	Case and Vane Assy - HPT Stg 1	2A3416-005
2A4087-001	Case and Vane Assy - HPT Stg 1	2A3469-003
2A4087-001	Case and Vane Assy - HPT Stg 1	2A3469-004
2A4087-001	Case and Vane Assy - HPT Stg 1	· 2A3475-002

# H. Other Material Information Data

Not Applicable.



## 3. Accomplishment Instructions

A. Modification of High Pressure Turbine (HPT) To Provide New And Improved Features For A5 Engines

NOTE: The following Service Bulletins must be completed prior to incorporating this Service Bulletin: Reference 1, Service Bulletin No. V2500-ENG-72-0145; Reference 2, Service Bulletin No. V2500-ENG-72-0238; Reference 3, Service Bulletin No. V2500-ENG-72-039; Reference 4, Service Bulletin No. V2500-ENG-72-0327; Reference 5, Service Bulletin No. V2500-ENG-72-0364; Reference 6, Service Bulletin No. V2500-ENG-72-0399; Reference 7, Service Bulletin No. V2500-ENG-72-0511; Reference 8, Service Bulletin No. V2500-ENG-72-0522 and Reference 9, Service Bulletin No. V2500-ENG-72-0534.

This Service Bulletin must be done at the same time as Reference 10, Service Bulletin No. V2500-ENG-72-0560, Reference 14, Service Bulletin No. V2500-ENG-73-0203 and Reference 15, Service Bulletin No. V2500-ENG-73-0207.

NOTE: The EEC software Standard SCN2OA/Z or later is required for V2500-A5 SelectOne Retrofit and V2500-A5 SelectOne Production Engines.

NOTE: Later approved parts are only those IAE OEM released later parts that are fully interchangeable with the part specified in this Service Bulletin or one way forward interchangeable with the part specified in this Service Bulletin. Later approved parts must also meet the requirements of their issuing SB.

## (1) Prerequisites

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- (a) Recommended sequence of modification for A5 Delivered Engines
  - (i) IAE V2500 Service Bulletin V2500-ENG-72-0145 (Engine HP Turbine Rotor And Stator Assembly Provide New Stage 2 Turbine Rotor Hub With Increased Front Snap Diameter Category Code 7 Mod. ENG-72-0145).
  - (ii) IAE V2500 Service Bulletin V2500-ENG-72-0238 (Engine HP Turbine Rotor And Stator Assembly Provide A New Stage 1 Turbine Hub Category Code 8 Mod. ENG-72-0238).
  - (iii) IAE V2500 Service Bulletin V2500-ENG-72-0239 (Engine Diffuser And Combustor Group - Provide New Diffuser Group Adapters And Tube Assemblies - Category Code 8 - Mod. ENG-72-0239).



(iv) IAE V2500 Service Bulletin V2500-ENG-72-0327 (Engine - High Pressure Turbine Rotor And Stator Assembly - Introduce New Rotating Parts With Potential For Increased Cyclic Life).

NOTE: 2nd Stage Retaining Plate only.

- (v) IAE V2500 Service Bulletin V2500-ENG-72-0364 (Engine High Pressure Turbine - Provide New Stage 2 High Pressure Turbine Duct Segments).
- (vi) IAE V2500 Service Bulletin V2500-ENG-72-0399 (Engine Provide A New 2nd Stage Turbine Rotor Blade Retention Configuration).
- (vii) IAE V2500 Service Bulletin V2500-ENG-72-0511 (Engine New 1st Stage Rotor Assembly With Metering Plugs Removed And New 1st Stage Hpt Seal).
- (viii) IAE V2500 Service Bulletin V2500-ENG-72-0522 (Engine Provide New Second Stage Vane With Increased Cooling Air).
- (ix) IAE V2500 Service Bulletin V2500-ENG-72-0534 (Engine Provide New Second Stage Turbine Air Seal).
- (b) Clean, repair and inspect in accordance with Reference 20, Engine Manual, Task 72-45-24-100 and/or Reference 23, Standard Practices Manual, Chapter/Section 70-10-00.
- (2) Disassembly Instructions
- R (a) Remove the Nozzle Group Assembly in accordance with Reference 20, Engine Manual, Task 72-44-00-01-001 and replace with the new Nozzle Group Assembly, PN 2A4210 or modify in accordance with Section 4.A, Modification Instructions.
  - (b) Remove the Rotor and Stator Assembly in accordance with Reference 20, Engine Manual, Task 72-45-00-030-001 and replace with the new Rotor and Stator Assembly, PN 2A4250 or modify in accordance with Section 4.B, Modification Instructions.
    - (3) Assembly Instructions
- R (a) Assemble the Nozzle Group Assembly in accordance with Reference 20, Engine Manual, Task 72-00-44-420-001-001 or Task 72-00-44-420-001-002.
  - (b) Assemble the Rotor and Stator Assembly in accordance with Reference 20, Engine Manual, Task 72-00-45-420-001-B01 or Task 72-00-45-420-001-B02.

V2500-ENG-72-0562

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(4) Modification Instructions

NOTE: The Stage 1 HPT Cooling Duct Assembly PN 2A4086 has new air flow requirements. Overhaul and Repair shops which will be air flowing the 2A4086 HPT Cooling Duct need to have the IAE 2P16021 Airflow Master calibrated to the 2A4086 standards. Contact the following for quotation and instructions for re-calibration of the IAE 2P16021 Airflow Master:

Pratt and Whitney
New Business Office M/S 165-09
400 Main Street
East Hartford, CT 06108
U.S.A.

- (a) Modify the Turbine Nozzle Group Assembly as follows:
  - (i) Remove and discard the HPT Support in accordance with Reference 20, Engine Manual, Task 72-44-00-01-001. See Figure 2.
  - (ii) Replace the HPT Support Assembly with PN 2A4085, or later approved parts.
  - (iii) Remove and discard the 1st Stage Vane Assembly (40) in accordance with Reference 20, Engine Manual, Task 72-44-20-01-240.
  - (iv) Replace the 1st Stage Vane Assembly with PN 2A4271.
    - (1) Add 40 Seals, PN 2A4126 in accordance with Reference 20, Engine Manual, Task 72-44-20-01-485.
  - (v) Remove the Duct (TOBI) in accordance with Reference 20, Engine Manual, Task 72-44-50-01-010.
  - (vi) Replace the Duct (TOBI) with PN 2A4086 or modifiy the Duct (TOBI) as follows:
    - (1) Clean in accordance with Reference 20, Engine Manual, Task 72-44-50-100.
    - (2) Inspect in accordance with Reference 20, Engine Manual, Task 72-44-50-200.
    - (3) Repair in accordance with Reference 20, Engine Manual, Task 72-44-50-300.
    - (4) For PN 2A3487-01, add 3 machine holes 0.213 to 0.223 in. (5,41 to 5,66 mm) at Location AV as shown in Figure 3.

Sep.22/08 Sep. 19/13 Revision 1

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## SERVICE BULLETIN

(5) Flow test passages collectively in direction shown in Figure 5 and in accordance with Reference 20, Engine Manual, Task 72-44-50-300-010 with:

Flow = 1.108 and Minimum Pressure Ratio = 1.519 Maximum Pressure Ratio = 1.558

To achieve the required flow, it is permissible to cut back trailing edges of all vanes as shown in Figure 5, View N, or add plugs as necessary as shown in Figure 5, Sect M-M. Dimension AZ in Figure 5, between trailing edge of adjacent cutback vanes must be alike within 0.060 in. (1,524 mm). Refer to 72-44-50 Repair, VRS3177.

(6) Mark the 1st Stage HPT Duct Assy with the new part number in accordance with Reference 23, V2500-A5 Standard Practices Manual, Chapter/Section 70-09-00-400-501, Vibration Peen Manual or Mechanical 0.006 in. (0,152 mm) max.

See Figure 3 for the area to mark the part. Reidentify the part as shown in Table I.

Table I: Reidentified Parts Data				
New PN	Keyword	Old PN		
2A3914-001	TOBI Duct Assy	2A3914-01		
2A3487-001	TOBI Duct Assy	2A3487-01		

(vii) Assemble the Stage 1 Turbine Nozzle Assembly in accordance with Reference 20, Engine Manual, Task 72-44-00-440-001-C00 or Task 72-44-00-440-001-B00 except for the following:

#### Replace:

SBE 72-0159, New Combustion Chamber Assemblies

SBE 72-0151, New Stage 1 HPT Vane Seals

With:

SBE 72-0562

V2500-ENG-72-0562

Sep.22/08

Sep. 19/13 Revision 1



- (viii) Install the Stage 1 HPT Vane Seals in the slots of the Stage 1 Vane Assemblies (72-44-00-0-990-029, Figure 1002A).
  - (1) Install the 1st Stage HPT Vane Seal in the slots that are located on the left side of the Stage 1 HPT Vane Assemblies (72-44-20, 01-240).
    - A Install Stage 1 HPT Vane Seal (01-485).
      - Use COMAT 01-573 Paraffin Wax to hold the seals in position.
    - B Make sure all seals are installed.
- (ix) Install the Stage 1 HPT Vane Assemblies in the Stage 1 HPT Support Assembly (72-44-00-990-018, Figure 1002) or (72-44-00-990-028, Figure 1002A).
  - (1) Install Stage 1 HPT Vane Assembly from the vane set.

NOTE: When installing the Vane Assembly into the HPT Support, be careful not to damage the brush seal.

- $\underline{\mathbf{A}}$  Install this Vane Assembly in the Stage 1 HPT Support Assembly with the leading edge up.
- (x) Mark the Nozzle Group Assembly in accordance with Reference 23, V2500-A5 Standard Practices Manual, Chapter/Section 70-09-00-400-501, Vibration Peen Manual or Mechanical 0.006 in. (0,152 mm) max.

See Figure 2 for the area to mark the part. Reidentify the part as shown in Table II.

Table II: Reidentified Parts Data

New PN	Keyword	Old PN
2A4210-001	Nozzle Group Assy	2A3915
2A4210-001	Nozzle Group Assy	2A8600
2A4210-001	Nozzle Group Assy	2A8600-005
2A4210-001	Nozzle Group Assy	2A8600-006
2A4210-001	Nozzle Group Assy	2A8600-007

- (b) Modify the HPT Rotor and Stator Assembly in accordance with Reference 20, Engine Manual, Task 72-45-00-01-001. See Figure 6A.
  - (i) Remove and discard the Case and Vane Assembly in accordance with Reference 20, Engine Manual, Task 72-45-20-01-005.
  - (ii) Replace the Case and Vane Assembly with PN 2A4087.

V2500-ENG-72-0562

Sep.22/08



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## SERVICE BULLETIN

- (iii) Remove and discard the 1st Stage Rotor Assembly in accordance with Reference 20, Engine Manual, Task 72-45-10-01-010.
- (iv) Replace the 1st Stage Rotor Assembly with PN 2A9921 or modify as follows:
  - (1) Remove and discard the 1st Stage Blade (64) in accordance with Reference 20, Engine Manual, Task 72-45-14-01-010.
  - (2) Replace the 1st Stage Blade (64) with PN 2A9721.
    - A 1st Stage Hub, PN 2A2801 or PN 2A5001 is required to do this modification. Reference ATA 72-45-11-01-011.
    - $\underline{\mathbf{B}}$  1st Stage Hub, PN 2A2201 is not permitted for SelectOne engine models.
    - <u>C</u> 1st Air Seal, PN 2A3923 is required to do this modification. Reference ATA 72-45-12-01-020.
    - <u>D</u> 1st Air Seal, PN 2A1350 or PN 2A3423 is required to do this modification. Reference ATA 72-45-12-01-040.
  - (3) Assemble the 1st Stage Rotor Assembly in accordance with Reference 20, Engine Manual, Task 72-45-10-440-001-D00 or Task 72-45-10-440-001-C00.
    - NOTE: SB 72-0238, 1st Hub and up, and SB 72-0511 must be incorporated.
    - NOTE: Engines that have incorporated SB 72-0511 do not have metering plugs in the Stage 1 HP Turbine Hub.
  - (4) Mark the 1st Stage Rotor Assembly in accordance with Reference 23, V2500-A5 Standard Practices Manual, Chapter/Section 70-09-00-400-501, Vibration Peen Manual or Mechanical 0.006 in. (0,152 mm) max.

See Figure 8 for the area to mark the part. Reidentify the part as shown in Table III.

Table III: Reidentified Parts Data

New PN	Keyword	Old PN	
2A9921-001	Rotor Assy, 1st	2A9031-011	
2A9921-001	Stage Rotor Assy, 1st Stage	2A9521-004	
2A9921-001	Rotor Assy, 1st Stage	2A9521-005	

Sep.22/08

Sep. 19/13 Revision 1

V2500-ENG-72-0562

Page 23



## **SERVICE BULLETIN**

New PN	Keyword	Old PN
2A9921-001	Rotor Assy, 1st	2A9521-006
	Stage	
2A9921-001	Rotor Assy, 1st	2A9621-003
	Stage	
2A9921-001	Rotor Assy, 1st	2A9621-004
	Stage	
2A9921-001	Rotor Assy, 1st	2A9621-005
	Stage	
2A9921-001	Rotor Assy, 1st	2A9421
	Stage	

- (v) Remove and discard the 2nd Stage Rotor Assembly in accordance with Reference 20, Engine Manual, Task 72-45-30-01-010.
- (vi) Replace the 2nd Stage Rotor Assembly with PN 2A4522 or modify as follows:
  - (1) Remove and discard the 2nd Stage Blade (72) in accordance with Reference 20, Engine Manual, Task 72-45-32-01-010.
  - (2) Replace the 2nd Stage Blade (72) with PN 2A4422.
    - $\underline{\mathbf{A}}$  2nd Hub, PN 2A3002 or PN 2A4802 are required for this modification.
    - B 2nd Hub, PN 2A2302 is not permitted for SelectOne engine models.
    - C 2nd Stage Retaining Plate, PN 2A3426 or PN 2A3437 are required for this modification.
    - <u>D</u> 2nd Stage Retaining Plate, PN 2A2097 is not permitted for SelectOne engine models.
  - (3) Assemble the 2nd Stage Rotor Assembly in accordance with Reference 20, Engine Manual, Task 72-45-30-440-001-D00 or Task 72-45-30-440-001-C00 except for the following:

SBE 72-0562, New Stage 2 HPT Blade SelectOne

NOTE: SB 72-0145 or SB 72-0327 must be incorporated.

Moment Weight the Stage 2 HPT Blades (72-45-32, 01-010). Reference 72-45-30-990-054 (Figure 1010).

A Check blades for correct configuration SelectOne. Blades must have mistake proof tab on shelves (pressure side) below platform.

Sep.22/08 Sep. 19/13 Revision 1



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#### SERVICE BULLETIN

- B Install and attach IAE 1P16016 Moment Weight Blade Adapter 1 off to the lever arm on the moment weighing equipment.
- C Zero the moment weight equipment.
- <u>D</u> Install the blade root on the dowel pin in the locator assembly. Lift the clamp and move the blade root to the side of the blade adapter.

<u>NOTE</u>: The blade must touch the dowel pin and the root must be seated on the pin.

- Release the pressure on the clamp and adust the slide support so the blade will locate square on the face of the locator and tighten the cap screw.
- F Moment weigh the blade.
- <u>G</u> Remove the blade from the blade adapter.
- Mark the moment weight on the concave side of the blade airfoil. Use COMAT 06-073 ink in accordance with Reference 23, Standard Practices Manual, Task 70-09-01-400-501.
- <u>I</u> Repeat the moment weight procedure for each of the blades in the assembly.
- (4) Mark the 2nd Stage Rotor Assembly in accordance with Reference 23, V2500-A5 Standard Practices Manual, Chapter/Section 70-09-00-400-501, Vibration Peen Manual or Mechanical 0.006 in. (0,152 mm) max.

See Figure 9 for the area to mark the part. Reidentify the part as shown in Table IV.

Table IV: Reidentified Parts Data

New PN	Keyword	Old PN
2A4522-001	Rotor Assy, 2nd Stage	2A2822-001
2A4522-001	Rotor Assy, 2nd Stage	2A2522-001
2A4522-001	Rotor Assy, 2nd Stage	2A4232

(vii) 1-2 Seal, PN 2A4157 is required to do this modification. Replace as required per SB 72-0534.

Sep.22/08

Sep. 19/13 Revision 1

V2500-ENG-72-0562

Page 25

R

## SERVICE BULLETIN

(viii) Assemble the HPT Rotor and Stator Assembly in accordance with Reference 20, Engine Manual, Task 72-45-00-430-001-D00 or Task 72-45-00-430-001-C00.

SBE 72-0562: New HPT Hardware SelectOne

Note Chapter 5 HPT Parts Must Include The Following: HPT Stage 1 Hub incorporates SB 72-0238 or Post SB HPT Stage 1 Air Seal Inner incorporates SB 72-0511 or Post SB HPT Stage 2 Air Seal incorporates SB 72-0534 or Post SB HPT Stage 2 Hub incorporates SB 72-0145 or Post SB HPT Stage 2 Retaining Plate incorporates SB 72-0237 (For Stage 2 Retaining Plates Only)

(ix) Mark the HPT Rotor and Stator Assembly in accordance with Reference 23, V2500-A5 Standard Practices Manual, Chapter/Section 70-09-00-400-501, Vibration Peen Manual or Mechanical 0.006 in. (0,152 mm) max.

See Figure 6B for the area to mark the part. Reidentify the part as shown in Table V.

Table V: Reidentified Parts Data

New PN	Keyword Old PN
2A4250-001	HPT Rotor and Stator 2A4200-014
	Assy
2A4250-001	HPT Rotor and Stator 2A4200-015
	Assy
2A4250-001	HPT Rotor and Stator 2A4200-016
	Assy
2A4250-001	HPT Rotor and Stator 2A7000-016
	Assy
2A4250-001	HPT Rotor and Stator 2A7000-017
	Assy
2A4250-001	HPT Rotor and Stator 2A7000-018
	Assy
2A4250-001	HPT Rotor and Stator 2A7000-019
0.4050 004	Assy
2A4250-001	HPT Rotor and Stator 2A7000-020
24/250 004	Assy
2A4250-001	HPT Rotor and Stator 2A9300-005
24/250 004	Assy
2A4250-001	HPT Rotor and Stator 2A9300-006
2A4250-001	Assy HPT Rotor and Stator 2A9300-007
ZA4Z3U-UU I	
2A4250-001	Assy HPT Rotor and Stator 2A9800-001
2842JU-UU I	
	Assy

Sep.22/08

V2500-ENG-72-0562

Page 26



			New F	PN	Keyword	Old PN
			2A425	50-001	HPT Rotor and Stat Assy	or 2A4310
R	(c)	Modify	the H	IPT Case and Va	ane Assembly (ATA 7	2-45-20-01-005):
R		(i)		semble the HP7 5-20-040-001-c0	Γ Case and Vane Ass OO).	embly (ATA
		(ii)	Remov	e, discard and	d replace the Ring	Segment and Vane Cluster.
			(1)		ne Cluster and Ring -02–050) and replac	Segments (17) Standard e with PN 2A4262.
			(2)	Remove 2nd Var		72-45-24-02-260) and
		(iii)		ve and discard 5-22-01-010.	the Duct Support (	19). Reference ATA
		(iv)	Repla	ice Duct Suppor	rt (19) with PN 2A4	130.
		(v)		ve and discard 5-23-01-060.	the HPT Seal (38).	Reference ATA
R R		(vi)	Repla parts		al (38) with PN 2A4	169 or later approved
		(vii)	Remov	ve and discard	the Gasket. Refere	nce ATA 72-45-24-02-010.
		(viii)	Repla	ice the Gasket	with PN 2A4136.	
		(ix)	Remov	ve and discard	the Band Segment.	
		(x)	Repla 2A413		egment 2 (ATA 72-45	-23-01-020) with PN
		(xi)	Repla 2A413		egment 1 (ATA 72-45	-23-01-040) with PN
		(xii)		ve and discard 5-22-01-060.	the HPT Seal (19).	Reference ATA
		(xiii)	Repla	ice the HPT Sea	al (19) with PN 2A4	129.
		(xiv)		ve and discard 5-23-01-080.	the HPT Seal (38).	Reference ATA
		(xv)	Repla	ice the HPT Sea	al (38) with PN 2A4	106.

V2500-ENG-72-0562

Sep.22/08



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## **SERVICE BULLETIN**

- (xvi) Remove and discard the HPT Seal (19). Reference ATA 72-45-24-02-200.
- (xvii) Replace the HPT Seal (19) with PN 2A4128.
- (xviii) Add the HPT Gasket, Reference ATA 72-45-24-02-205, PN 2A4163.
- (xix) Discard the HPT Seal (19). Reference ATA 72-45-24-02-190.
- (xx) Add the HPT Seal (19). Reference ATA 72-45-24-02-190, PN 2A4127.
- (xxi) Add the HPT Seal (38). Reference ATA 72-45-24-02-197, PN 2A4145.
- (xxii) Assemble the HPT Case and Vane Assembly in accordance with Reference 20, Engine Manual, Task 72-45-20-440-002-C00 or Task 72-45-20-440-002-B00 except for the following:
  - (1) Install the seals in the Stage 2 HPT Ring Segment and Vane Cluster Assembly slots, Reference 72-45-20-990-071 (Fig 1003).
    - A Install the seals in accordance with the following procedures. Use COMAT 01-573 Paraffin Wax to hold seals in position. Remove excess wax at all locations.
      - Install seal (72-45-24, 02-190) into the slot with the longer leg parallel to the outer vane platform and the short leg in the slot adjacent to the anti-rotation lug on the vane, on the right side of the vane.
      - Install seal (72-45-24, 02-200) into the slot that remains on the outer vane platform, opposite seal (72-45-24, 02-190), on the right side of the vane.
      - Install seal (72-45-24, 02-197) 19 off in between clustered vanes. Install remaining 19 seals into the slot parallel to outer vane platform on right side of the vane.
      - 4 Install seal (72-45-24, 02-220) into the slot of the ring segment.
      - $\underline{5}$  Install seal (72-45-24, 02-180) into the slot of the outer vane platform with the short leg of the seal to the ring segment.
      - 5 Turn over the Case and Vane Assembly.

Sep.22/08 Sep. 19/13 Revision 1



- Support front of I.D. of Stage 2 Vane Platform with wood blocks or fixture IAE 1P16568.
- 8 Remove fixture IAE 1P16026.
- (2) Install 2nd Stage Duct Segments and Supports, Start with Reference 72-45-20-440-101.
- (3) Turn over case supporting the rear of "N" Flange being careful not to damage the air seal (72-45-27-01-060).
- (4) Install the Stage 1 HPT Band Segments, Stage 1 HPT Duct Segment Assemblies and Stage 1 HPT Duct Supports, Reference 72-45-20-990-077 (Figure 1009) and Reference 72-45-20-990-078 (Figure 1010).
  - A Install the Gasket (72-45-24, 02-010) in the inner groove of the Stage 2 Ring Segment and Vane Cluster Assemblies, Reference 72-45-20-990-007 (Figure 1009).
  - B Install IAE 1P16563 on Front Inner Flange of Stage 2 HPT Vane Assembly.
    - Install the Stage 1 HPT Band Segment (72-45-23, 01-040) in the groove of the vane assemblies with the large outer diameter down.
    - Align and position the center of the band segment with the first bolt hole to the right side of the top vertical centerline and align with the anti-rotation lug on the vane assembly.
    - Install the two Stage 1 HPT Band Segments (72-45-23, 01-020) in the groove of the vane assemblies. Make sure the band segments do not go over each other.
- (5) Install the Stage 1 HPT Duct Segment Assemblies (72-45-23, 01-060).
  - A Install Duct Segment Number 1 in the groove of the vane assembly on the innerdiameter of the band segment.
  - Position this Duct Segment to the first bolt hole to the right side of the top vertical centerline.
  - <u>C</u> Install Duct Segment Number 2 in a clockwise direction adjacent to the Number 1 Duct Segment.



- <u>D</u> Install one IAE 1P16549 Orientation Adapter 19 off on the inner flange of the case assembly adjacent to the Number 1 and 2 Duct Segments.
  - $\underline{1}$  Put the locator of the adapter in the bolt hole.

NOTE: The Orientation Adapter shows the relative position of the Duct Segments to the bolt hole in the case.

- If necessary, align the two installed Duct Segments with the adapter.
- <u>E</u> Repeat the above procedures to Install the Duct Segments that remain, by number, in a clockwise direction.
- <u>F</u> Install and position a 0.018 in. (0,457 Nm) Feeler Gage in the lower one-quarter area between each of the Duct Segments. This will keep the minimum requirement of Dimension C.
- (6) Install Stage 1 HPT Duct Seal (72-45-23, 01-080) between each of the duct segments.
- (7) Install Seal (72-45-24-02-205) in front of Stage 1 Duct Segment.
- (8) Install Stage 1 HPT Duct Support Seal (72-45-22, 01-060) in the recess slot located on the right side of each duct support. Put the short side of the seal in the slot, Reference 72-45-20-990-078 (Figure 1010).
  - $\underline{A}$  Use COMAT 01-573 Praffin Wax to hold the seal in position.
  - B Remove excess wax at all locations.
- (9) Install Stage 1 HPT Duct Supports (72-45-22, 01-010).
  - Apply COMAT 10-094 Anti-seize Compound to the threads of Bolts (72-45-22, 01-100).

Sep.22/08 Sep. 19/13 Revision 1

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V2500-ENG-72-0562

Page 30

- Remove on adapter IAE 1P16549 at top vertical centerline. Install the Number 1 Duct Support in the inner flange of the case assembly and position the support at the top vertical centerline.
  - Align the counterbore hole in the support with the hole in the inner diameter flange of the case assembly located to the right side of the top vertical centerline.
  - Engage the lug of the Number 1 and 2 Duct Segments and the Band Segment in the slot of the support. Engage the support outer diameter lug in the inner flange slot ofthe case assembly.
  - <u>3</u> If necessary, hit the support lightly on the flat surface to seat the support.
  - 4 Install the bolt in the support finger tight.
- C Remove Adapter IAE 1P16549 one at a time.
  - Repeat the above procedure to install the duct supports that remain, by number, in clockwise direction.
  - Align and carefully engage the Stage 1 HPT Duct Support Seal on the last installed support with the seal slot on the support you install.
- $\underline{D}$  Torque the bolts 180 degrees apart 62.0 to 72.0 lbfin (7,005 to 8,135 Nm). Use the IAE 1P17772 Socket 1 off.
- E Measure the distance at Dimension D.
  - NOTE: This is the distance from the front flange of the case assembly to the inner diameter front surface of each Stage 1 Duct Support.
  - Measure the distance at Dimension D at 19 locations. Use the IAE 1P17756 Parallel Measuring Bar 1 off and a depth micrometer.
  - Subtract the depth gage measurement from the dimension given on the Parallel Measuring Bar.
  - $\underline{3}$  The distance at all locations must be between 2.335 to 2.369 in. (59,31 to 60,17 Nm).
- F Remove all Feeler Gages.

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- $\underline{G}$  Check the clearance at Dimension C. This dimension must be 0.016 in. (0.406 Nm) minimum at 38 positions.
- H Remove IP 16563 Holding Plate.

(xxiii)Mark the HPT Case and Vane Assembly in accordance with Reference 23, V2500-A5 Standard Practices Manual, Chapter/Section 70-09-00-400-501, Vibration Peen Manual or Mechanical 0.006 in. (0,152 mm) max.

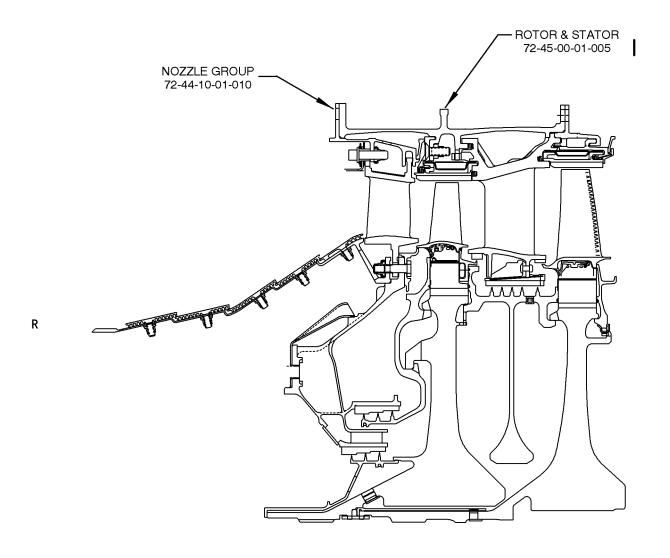
See Figure 7 for the area to mark the part. Reidentify the part as shown in Table VI.

TableVI: Reidentified Parts Data

New PN	Keyword	Old PN
		1
2A4087-001	HPT Case and Vane	2A3219-003
	Assy	l
2A4087-001	HPT Case and Vane	2A3469-005
	Assy	
2A4087-001	HPT Case and Vane	2A3469-003
	Assy	
2A4087-001	HPT Case and Vane	2A3469-004
2717001 001	Assy	2/10/10/ 00 !
24/007 004	•	2.7/75 000
2A4087-001	HPT Case and Vane	2A3475-002
	Assy	
2A4087-001	HPT Case and Vane	2A4050
	Assy	

- (5) Test Instructions
  - (a) Test
- (6) Recording Instructions
  - (a) A record of accomplishment is required.





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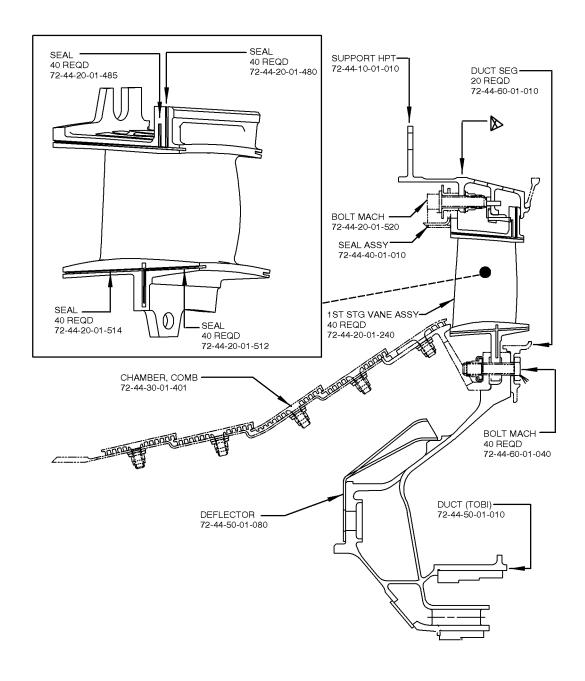
NOZZLE GROUP ASSEMBLY AND ROTOR AND STATOR ASSEMBLY FIGURE 1

Sep.22/08

Sep. 19/13 Revision 1

V2500-ENG-72-0562



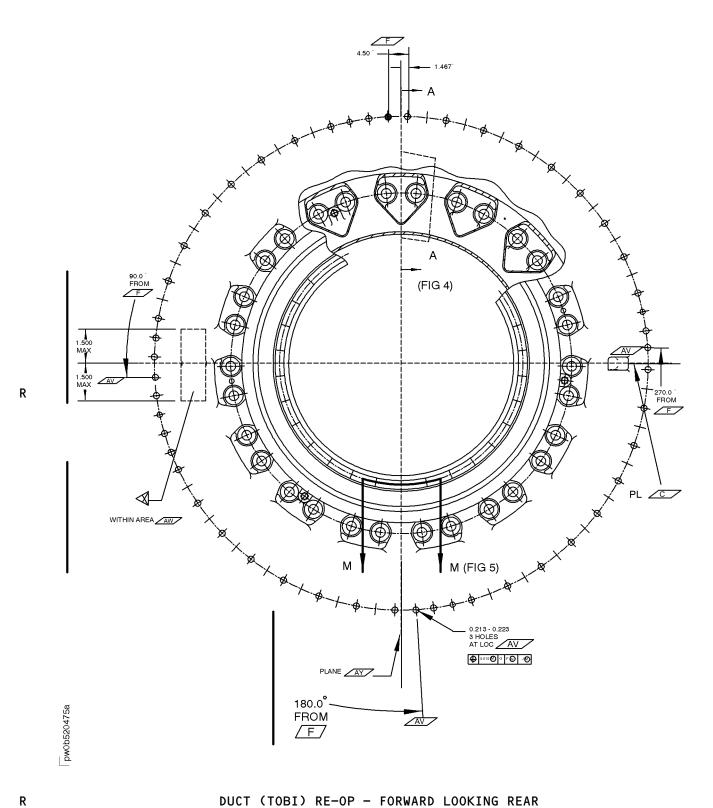


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NOZZLE GROUP FIGURE 2

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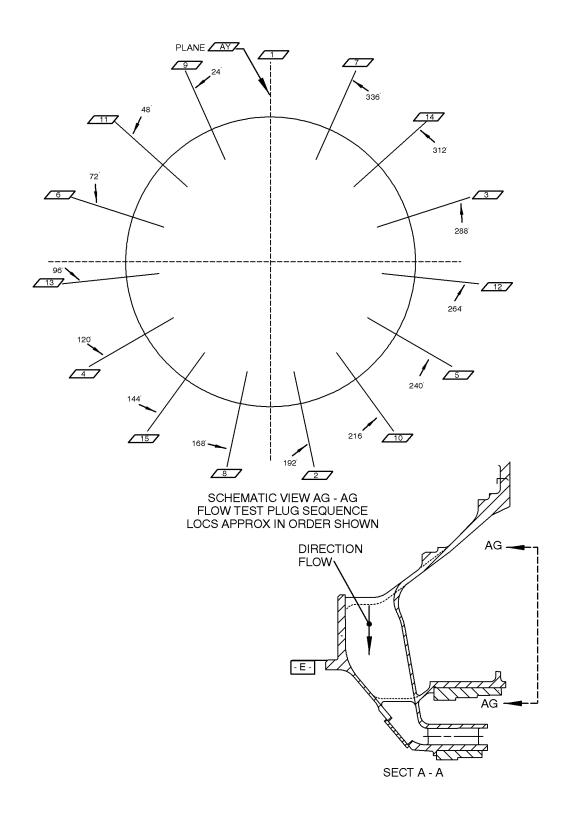
DUCT (TOBI) RE-OP - FORWARD LOOKING REAR FIGURE 3

Sep.22/08

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Sep. 19/13 Revision 1

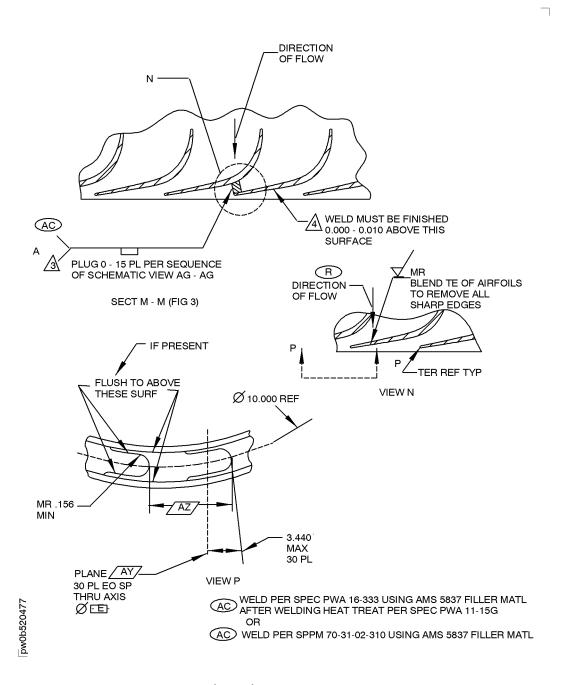




DUCT (TOBI) RE-OP FIGURE 4

Sep.22/08 Sep. 19/13 Revision 1





DUCT (TOBI) RE-OP FIGURE 5

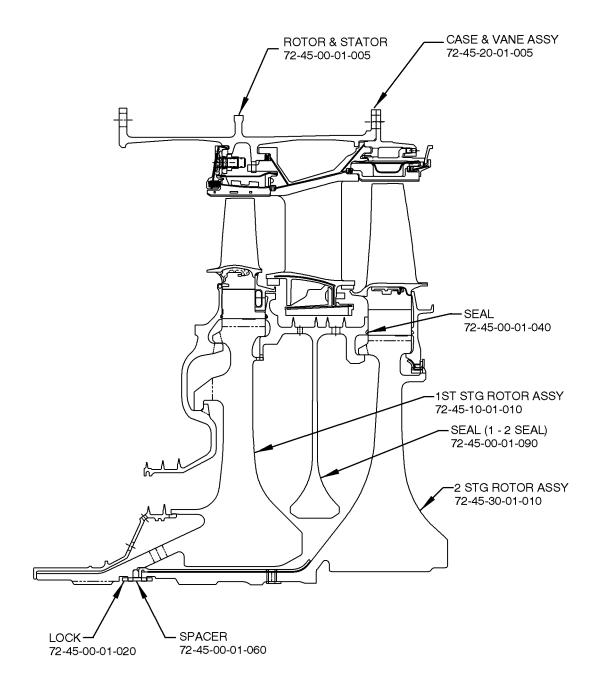
Sep.22/08

Sep. 19/13 Revision 1

V2500-ENG-72-0562

Page 37



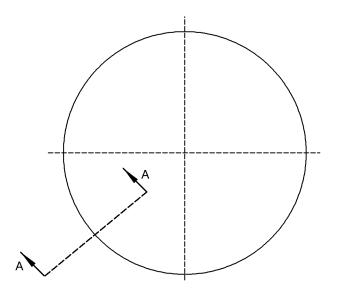


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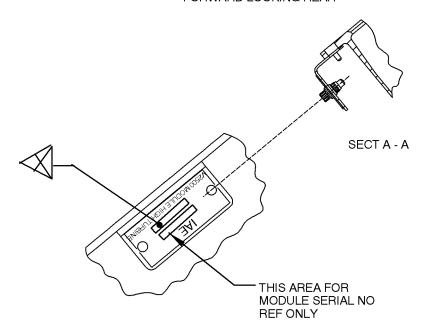
HPT ROTOR AND STATOR FIGURE 6 (SHEET 1 OF 2)

Sep.22/08 Sep. 19/13 Revision 1





**SCHEMATIC** FORWARD LOOKING REAR



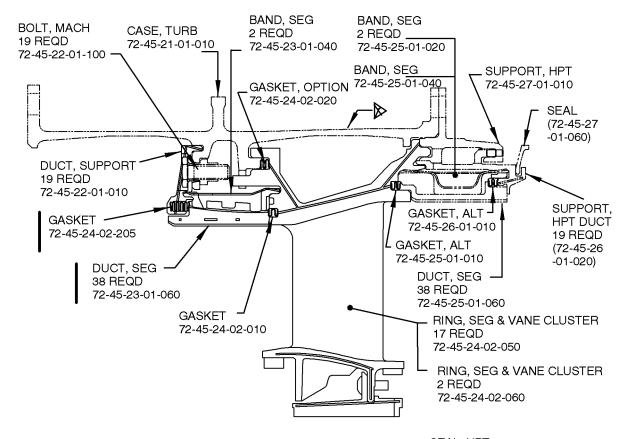
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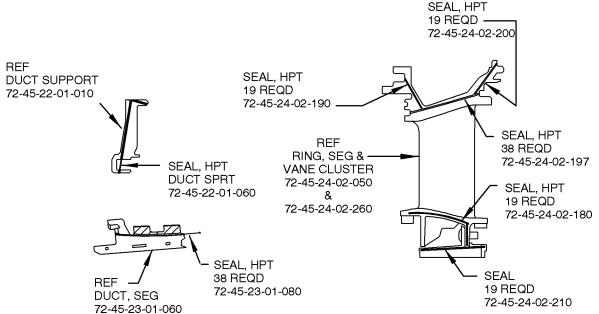
HPT ROTOR AND STATOR FIGURE 6 (SHEET 2 OF 2)

Sep.22/08

Sep. 19/13 Revision 1







HPT CASE AND VANE ASSEMBLY FIGURE 7

Sep.22/08

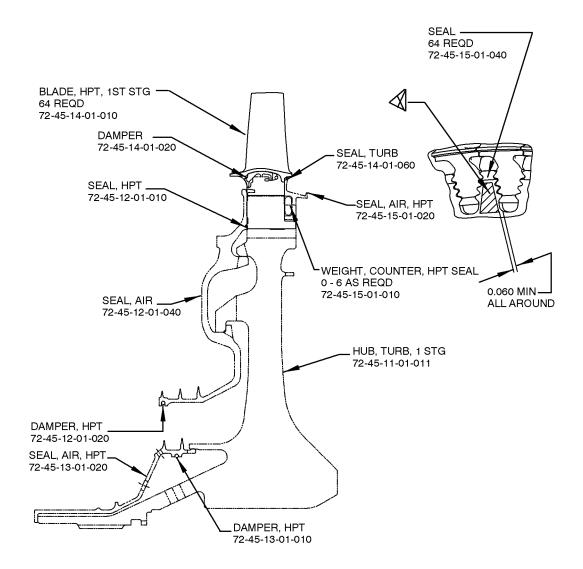
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Sep. 19/13 Revision 1





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# HPT 1ST STAGE TURBINE ROTOR FIGURE 8

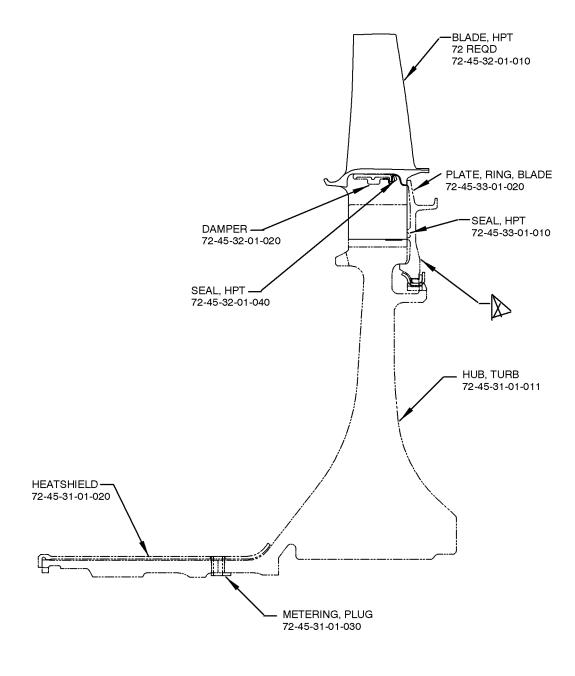
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Sep. 19/13 Revision 1

V2500-ENG-72-0562

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# HPT 2ND STAGE TURBINE ROTOR FIGURE 9

Sep.22/08 Sep. 19/13 Revision 1



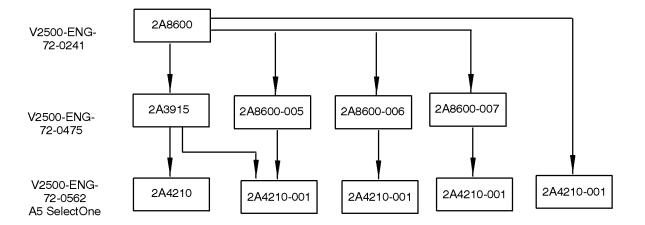
ENGINE - HIGH PRESSURE TURBINE (HPT) - V2500 SELECTONE PRODUCTION AND RETROFIT - HPT **UPGRADE** 

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



**MODIFICATIONS** 

PART NUMBER CHANGE



W0520396

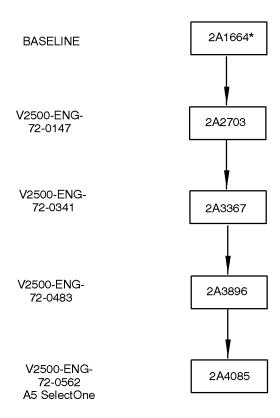
FAMILY TREE - TURBINE NOZZLE GROUP REF. CATALOG SEQUENCE NO. 72-44-00 FIGURE 01 ITEM 001 CHART A

Sep.22/08 Sep. 19/13 Revision 1



**MODIFICATIONS** 

PART NUMBER CHANGE



ow0b520495

FAMILY TREE - FIRST STAGE HPT SUPPORT ASSEMBLY REF. CATALOG SEQUENCE NO. 72-44-10
FIURE 01 ITEM 010
CHART B

Sep.22/08

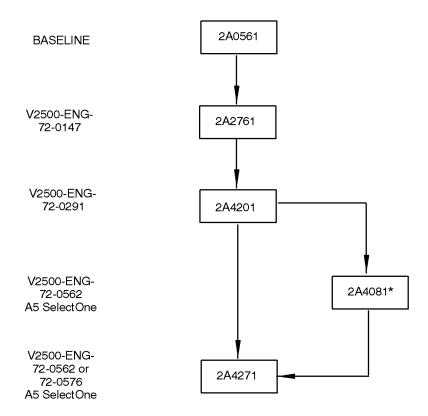
Sep. 19/13 Revision 1

V2500-ENG-72-0562
Supplement Page 3



**MODIFICATIONS** 

PART NUMBER CHANGE



\*Only in Engine V15001 AND V15002 Pre SB 72-0576

w0b520520

FAMILY TREE - STAGE 1 HPT VANE ASSEMBLY REF. CATALOG SEQUENCE NO. 72-44-20 FIGURE O1 ITEM 240

CHART C

Sep.22/08 Sep. 19/13 Revision 1



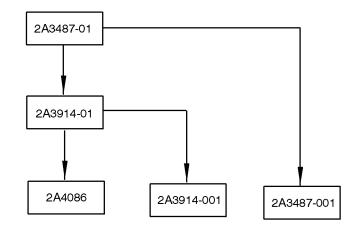
MODIFICATIONS

PART NUMBER CHANGE

V2500-ENG-72-0381

V2500-ENG-72-0475

V2500-ENG-72-0562 A5 SelectOne



pw0b520519

FAMILY TREE - HPT COOLING DUCT ASSEMBLY REF. CATALOG SEQUENCE NO. 72-44-50 FIGURE 01 ITEM 010

CHART D

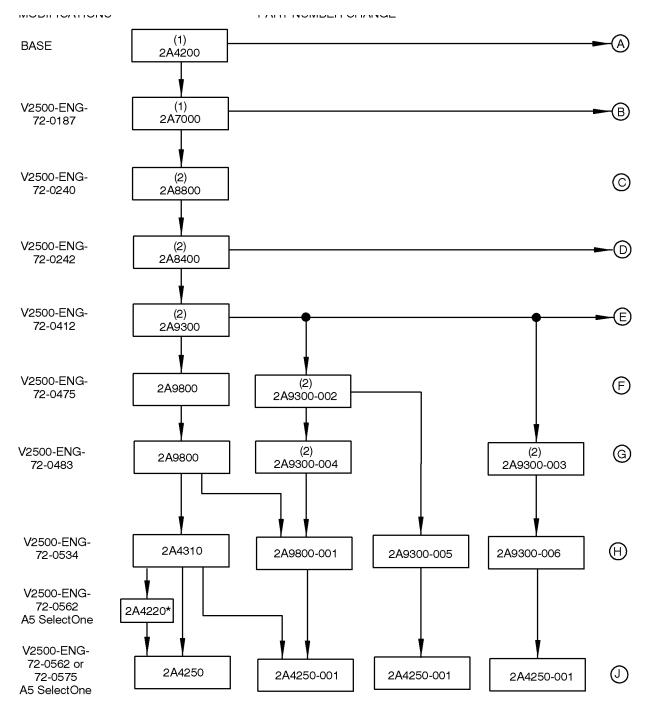
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Sep. 19/13 Revision 1

V2500-ENG-72-0562

IAE PROPRIETARY INFORMATION Supplement Page 5





\*Only in A5 SelectOne Engine V15001 and V15002 Pre SB 72-0575

(1) NOT 33K RATED

pw0b520485

(2) NOT 33K RATED IF THE HPT STAGE 1 ROTOR ASSEMBLY CONTAINS STAGE 1 HUB PN 2A2201 AND/OR ANY STAGE 1 BLADE PN 2A8701-002, 2A8701-001, 2A8521-004, 2A8521-002, 2A8321-004, 2A8321-003, 2A8321-002.

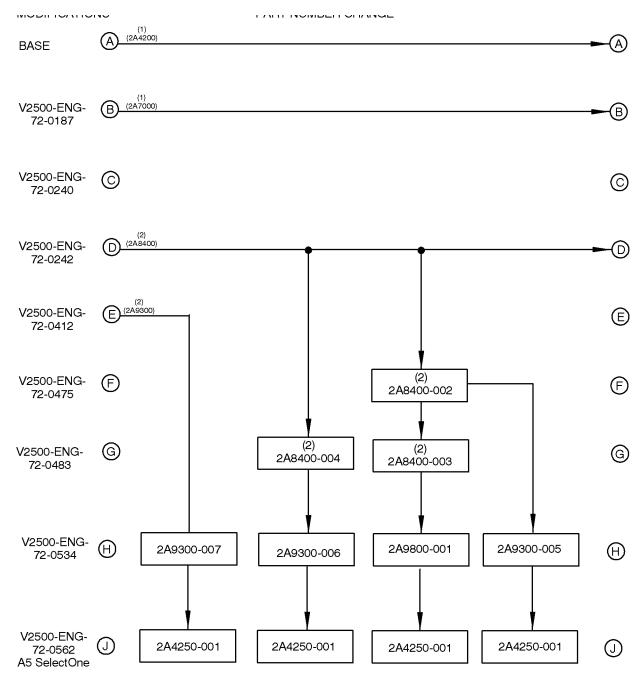
FAMILY TREE - ROTOR AND STATOR ASSEMBLY REF. CATALOG SEQUENCE NO. 72-45-00 FIGURE

O1 ITEM 001

CHART E (SHEET 1 OF 9)

Sep.22/08 Sep. 19/13 Revision 1





(1) NOT 33K RATED.

(2) NOT 33K RATED IF THE HPT STAGE 1 ROTOR ASSEMBLY CONTAINS STAGE 1 HUB PN 2A2201 AND/OR ANY STAGE 1 BLADE PN 2A8701-002, 2A8701-001, 2A8521-004, 2A8521-002, 2A8321-004, 2A8321-003, 2A8321-002.

FAMILY TREE - ROTOR AND STATOR ASSEMBLY REF. CATALOG SEQUENCE NO. 72-45-00 FIGURE 01 ITEM 001

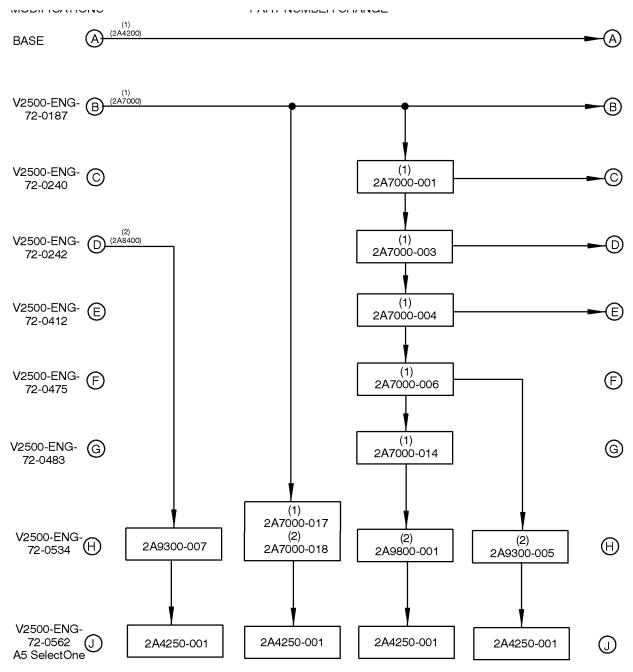
CHART E (SHEET 2 OF 9)

Sep.22/08

pw0b520484

Sep. 19/13 Revision 1





- (1) NOT 33K RATED.
- (2) NOT 33K RATED IF THE HPT STAGE 1 ROTOR ASSEMBLY CONTAINS STAGE 1 HUB PN 2A2201 AND/OR ANY STAGE 1 BLADE PN 2A8701-002, 2A8701-001, 2A8521-004, 2A8521-002, 2A8321-004, 2A8321-003, 2A8321-002.

FAMILY TREE - ROTOR AND STATOR ASSEMBLY REF. CATALOG SEQUENCE NO. 72-45-00 FIGURE

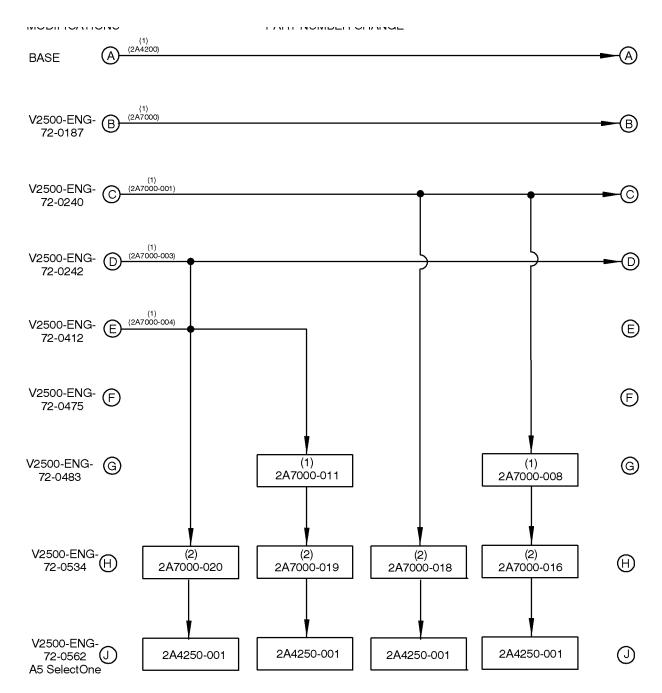
O1 ITEM 001

CHART E (SHEET 3 OF 9)

Sep.22/08 Sep. 19/13 Revision 1

pw0b5120486





(1) NOT 33K RATED.

(2) NOT 33K RATED IF THE HPT STAGE 1 ROTOR ASSEMBLY CONTAINS STAGE 1 HUB PN 2A2201 AND/OR ANY STAGE 1 BLADE PN 2A8701-002, 2A8701-001, 2A8521-004, 2A8521-002, 2A8321-004, 2A8321-003, 2A8321-002.

FAMILY TREE - ROTOR AND STATOR ASSEMBLY REF. CATALOG SEQUENCE NO. 72-45-00 FIGURE

01 ITEM 001

CHART E (SHEET 4 OF 9)

Sep.22/08

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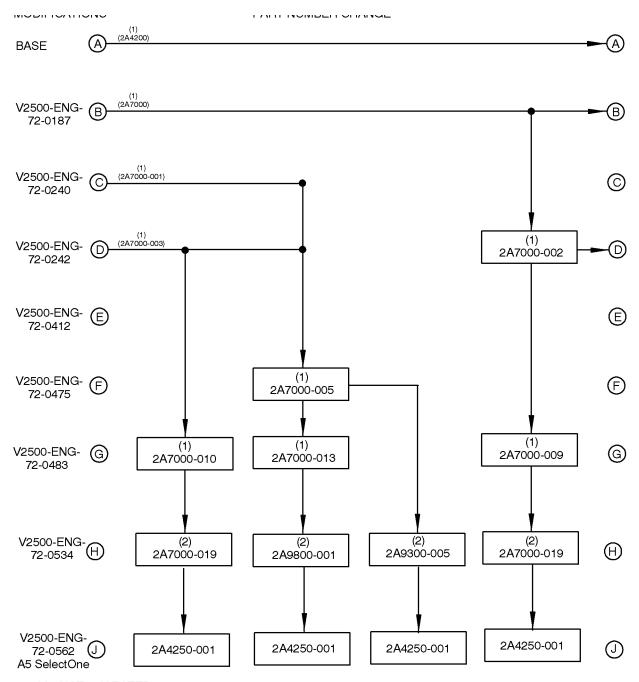
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Supplement Page 9





- (1) NOT 33K RATED.
- (2) NOT 33K RATED IF THE HPT STAGE 1 ROTOR ASSEMBLY CONTAINS STAGE 1 HUB PN 2A2201 AND/OR ANY STAGE 1 BLADE PN 2A8701-002, 2A8701-001, 2A8521-004, 2A8521-002, 2A8321-004, 2A8321-003, 2A8321-002.

FAMILY TREE - ROTOR AND STATOR ASSEMBLY REF. CATALOG SEQUENCE NO. 72-45-00 FIGURE

O1 ITEM O01

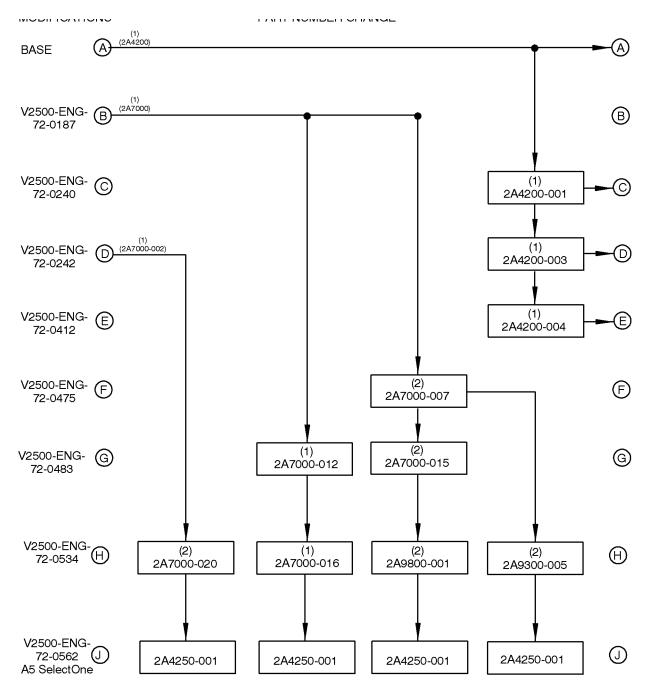
CHART E (SHEET 5 OF 9)

Sep. 22/08 Sep. 19/13 Revision 1

pw0b520487

V2500-ENG-72-0562
Supplement Page 10





(1) NOT 33K RATED.

(2) NOT 33K RATED IF THE HPT STAGE 1 ROTOR ASSEMBLY CONTAINS STAGE 1 HUB PN 2A2201 AND/OR ANY STAGE 1 BLADE PN 2A8701-002, 2A8701-001, 2A8521-004, 2A8521-002, 2A8321-004, 2A8321-003, 2A8321-002.

FAMILY TREE - ROTOR AND STATOR ASSEMBLY REF. CATALOG SEQUENCE NO. 72-45-00 FIGURE

O1 ITEM O01

CHART E (SHEET 6 OF 9)

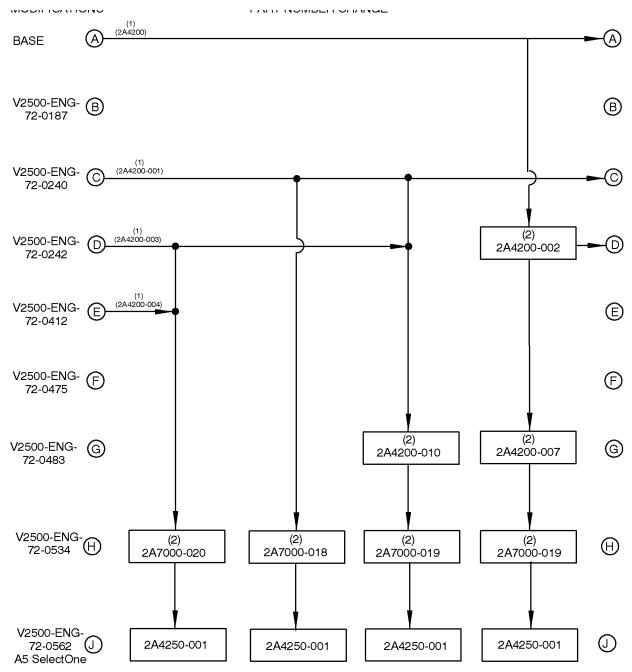
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Sep. 19/13 Revision 1

V2500-ENG-72-0562





- (1) NOT 33K RATED.
- (2) NOT 33K RATED IF THE HPT STAGE 1 ROTOR ASSEMBLY CONTAINS STAGE 1 HUB PN 2A2201 AND/OR ANY STAGE 1 BLADE PN 2A8701-002, 2A8701-001, 2A8521-004, 2A8521-002, 2A8321-004, 2A8321-003, 2A8321-002.

FAMILY TREE - ROTOR AND STATOR ASSEMBLY REF. CATALOG SEQUENCE NO. 72-45-00 FIGURE

01 ITEM 001

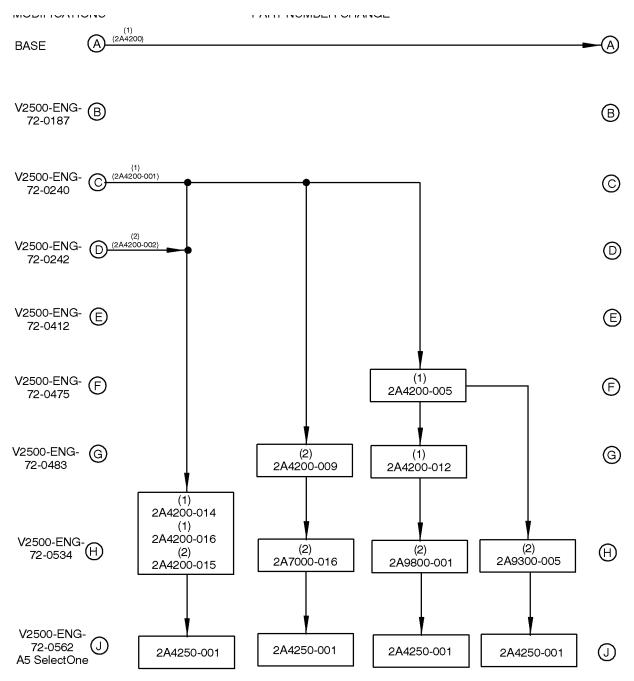
CHART E (SHEET 7 OF 9)

Sep.22/08 Sep. 19/13 Revision 1

pw0b520492

V2500-ENG-72-0562





(1) NOT 33K RATED.

(2) NOT 33K RATED IF THE HPT STAGE 1 ROTOR ASSEMBLY CONTAINS STAGE 1 HUB PN 2A2201 AND/OR ANY STAGE 1 BLADE PN 2A8701-002, 2A8701-001, 2A8521-004, 2A8521-002, 2A8321-004, 2A8321-003, 2A8321-002.

FAMILY TREE - ROTOR AND STATOR ASSEMBLY REF. CATALOG SEQUENCE NO. 72-45-00 FIGURE

O1 ITEM O01

CHART E (SHEET 8 OF 9)

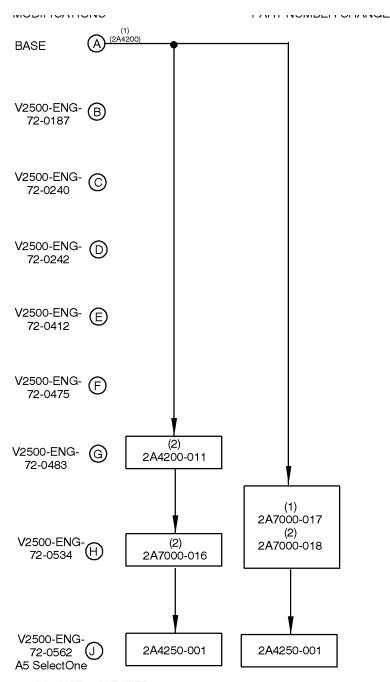
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- (1) NOT 33K RATED.
- (2) NOT 33K RATED IF THE HPT STAGE 1 ROTOR ASSEMBLY CONTAINS STAGE 1 HUB PN 2A2201 AND/OR ANY STAGE 1 BLADE PN 2A8701-002, 2A8701-001, 2A8521-004, 2A8521-002, 2A8321-004, 2A8321-003, 2A8321-002.

FAMILY TREE - ROTOR AND STATOR ASSEMBLY REF. CATALOG SEQUENCE NO. 72-45-00 FIGURE

O1 ITEM O01

CHART E (SHEET 9 OF 9)

Sep.22/08 Sep. 19/13 Revision 1

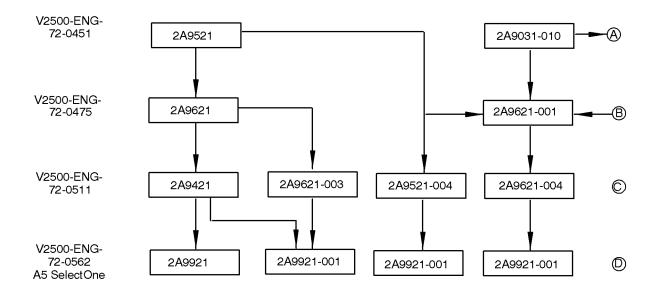
pw0b520493

V2500-ENG-72-0562



**MODIFICATION** 

PART NUMBER CHANGE



pw0b520504

FAMILY TREE - TURBINE ROTOR 1ST STAGE ASSEMBLY REF. CATALOG SEQUENCE NO. 72-45-10
FIGURE 01 ITEM 010
CHART F (SHEET 1 OF 2)

Sep.22/08

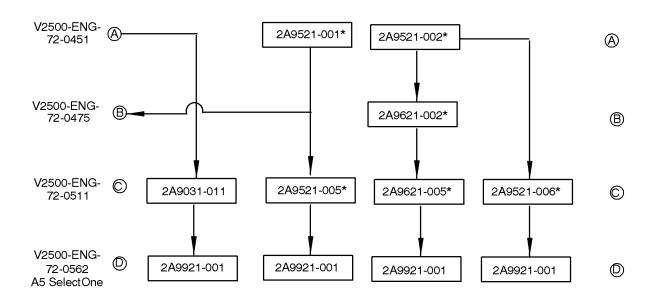
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MODIFICATION

PART NUMBER CHANGE



\*DO NOT USE IN MODEL V2533-A5

pw0b520505

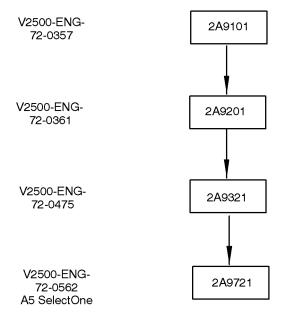
FAMILY TREE - TURBINE ROTOR 1ST STAGE ASSEMBLY REF. CATALOG SEQUENCE NO. 72-45-10
FIGURE 01 ITEM 010
CHART F (SHEET 2 OF 2)

Sep.22/08 Sep. 19/13 Revision 1



**MODIFICATIONS** 

PART NUMBER CHANGE



pw0b520501

FAMILY TREE - HPT BLADE 1ST STAGE REF. CATALOG SEQUENCE NO. 72-45-14 FIGURE 01 ITEM 010 CHART G

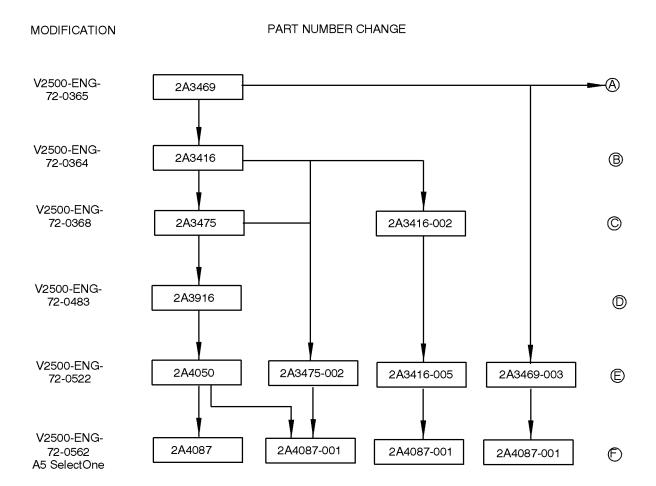
Sep.22/08

Sep. 19/13 Revision 1

V2500-ENG-72-0562

IAE PROPRIETARY INFORMATION Supplement Page 17





pw0b520391

FAMILY TREE - HPT CASE AND VANE ASSEMBLY REF. CATALOG SEQUENCE NO. 72-45-20 FIGURE 01 ITEM 005

CHART H (SHEET 1 OF 5)

Sep.22/08 Sep. 19/13 Revision 1 V2500-ENG-72-0562
Supplement Page 18



PART NUMBER CHANGE MODIFICATION V2500-ENG- (A) (A) 72-0365 V2500-ENG-**B (B)** 2A3364-001 72-0364 V2500-ENG-0 72-0368 0 V2500-ENG-2A3364-004 2A3364-005 0 2A3469-002 0 72-0483 V2500-ENG-▣ 2A3469-004 2A3416-005 2A3475-002 (E) 72-0522 V2500-ENG-**(** 2A4087-001 2A4087-001 2A4087-001 ◐ 72-0562

pw0b520392

FAMILY TREE - HPT CASE AND VANE ASSEMBLY REF. CATALOG SEQUENCE NO. 72-45-20 FIGURE

01 ITEM 005

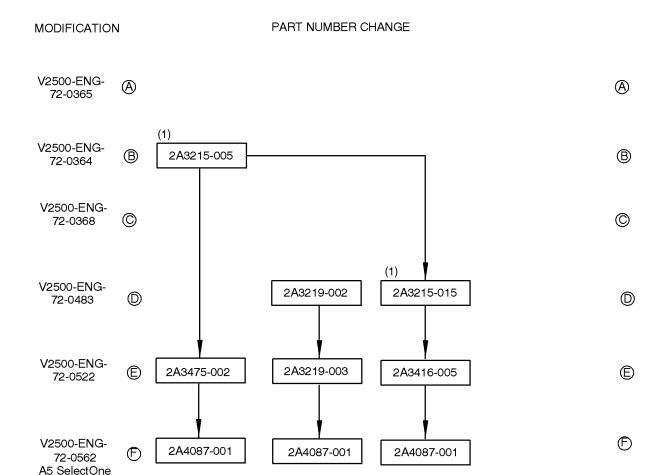
CHART H (SHEET 2 OF 5)

Sep.22/08

Sep. 19/13 Revision 1

A5 SelectOne





(1) DO NOT USE IN MODEL V2533-A5 IF CASE AND VANE ASSEMBLY CONTAINS ANY RING SEGMENT AND VANE CLUSTER ASSEMBLY 2A2272, 2A2272-001, 2A2272-002, 2A2372, 2A2372-002, 2A3372, 2A3372-001, 2A3472, OR 2A3472-001.

w0b520393

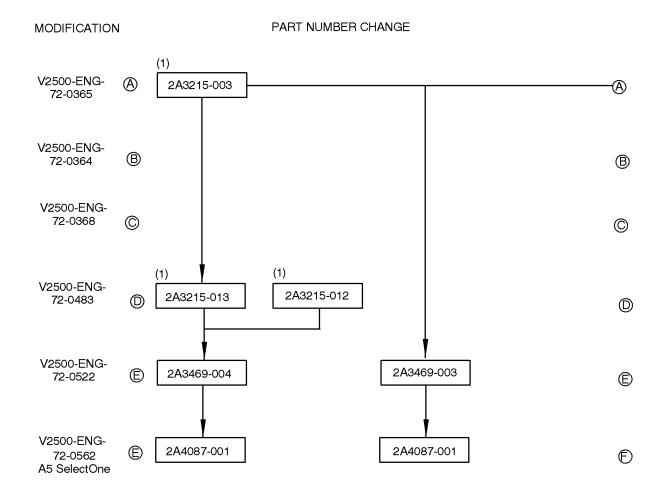
FAMILY TREE - HPT CASE AND VANE ASSEMBLY REF. CATALOG SEQUENCE NO. 72-45-20 FIGURE

O1 ITEM 005

CHART H (SHEET 3 OF 5)

Sep.22/08 Sep. 19/13 Revision 1 V2500-ENG-72-0562
Supplement Page 20





(1) DO NOT USE IN MODEL V2533-A5 IF CASE AND VANE ASSEMBLY CONTAINS ANY RING SEGMENT AND VANE CLUSTER ASSEMBLY 2A2272, 2A2272-001, 2A2272-002, 2A2372, 2A2372-002, 2A3372, 2A3372-001, 2A3472, OR 2A3472-001.

pw0b520394

FAMILY TREE - HPT CASE AND VANE ASSEMBLY REF. CATALOG SEQUENCE NO. 72-45-20 FIGURE

01 ITEM 005

CHART H (SHEET 4 OF 5)

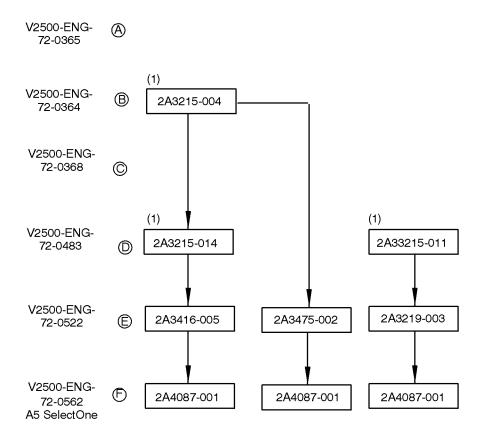
Sep.22/08

Sep. 19/13 Revision 1



MODIFICATION

PART NUMBER CHANGE



(1) DO NOT USE IN MODEL V2533-A5 IF CASE AND VANE ASSEMBLY CONTAINS ANY RING SEGMENT AND VANE CLUSTER ASSEMBLY 2A2272, 2A2272-001, 2A2272-002, 2A2372, 2A2372-002, 2A3372, 2A3372-001, 2A3472, OR 2A3472-001.

-wob520395

FAMILY TREE - HPT CASE AND VANE ASSEMBLY REF. CATALOG SEQUENCE NO. 72-45-20 FIGURE

O1 ITEM 005

CHART H (SHEET 5 OF 5)

Sep.22/08 Sep. 19/13 Revision 1



A5 SelectOne

## SERVICE BULLETIN

MODIFICATIONS PART NUMBER CHANGE BASE 2A1706 V2500-ENG-72-0562 2A4130

FAMILY TREE - DUCT SUPPORT - HPT STAGE 1 REF. CATALOG SEQUENCE NO. 72-45-22 FIGURE 01 ITEM 010 CHART J

Sep.22/08

Sep. 19/13 Revision 1

V2500-ENG-72-



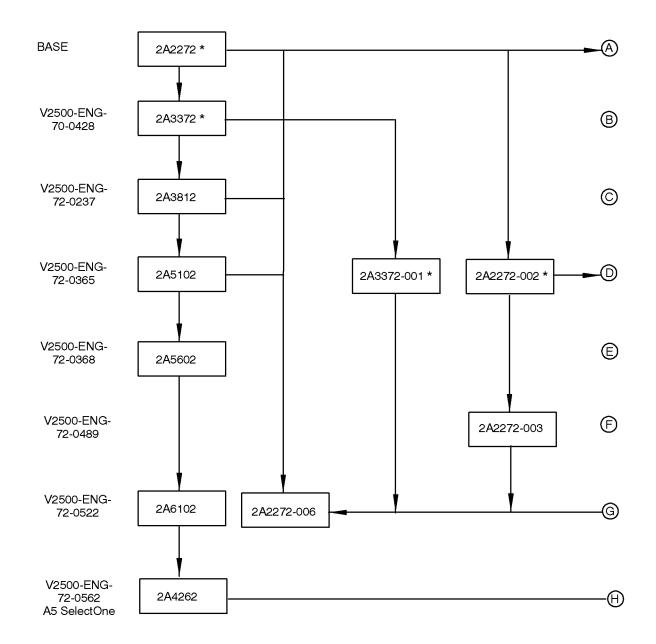
PART NUMBER CHANGE **MODIFICATIONS BASELINE** 2A2063-01 V2500-ENG-70-300 2A3061-01 V2500-ENG-70-0823 2A3579-01 V2500-ENG-2A3886-01 72-0483 V2500-ENG-72-0562 2A4169 A5 SelectOne

pw0b519390

FAMILY TREE - DUCT SEGMENT 1ST STAGE ASSEMBLY REF. CATALOG SEQUENCE NO. 72-45-23
FIGURE 01 ITEM 060
CHART K

Sep.22/08 Sep. 19/13 Revision 1





\* DO NOT USE IN MODEL V2533-A5

pw0b520541

FAMILY TREE - RING SEGMENT AND VANE CLUSTER ASSEMBLY (NON-BORESCOPE) REF. CATALOG SEQUENCE NO. 72-45-24 FIGURE 02 ITEM 050

CHART L (SHEET 1 OF 2)

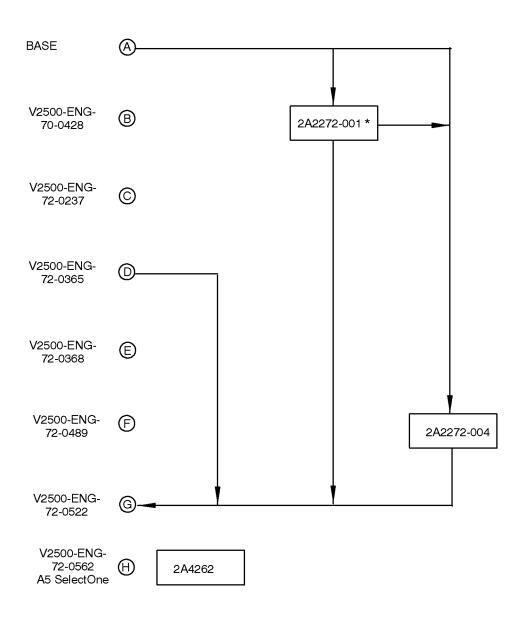
Sep.22/08

Sep. 19/13 Revision 1

V2500-ENG-72-0562

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\* DO NOT USE IN MODEL V2533-A5

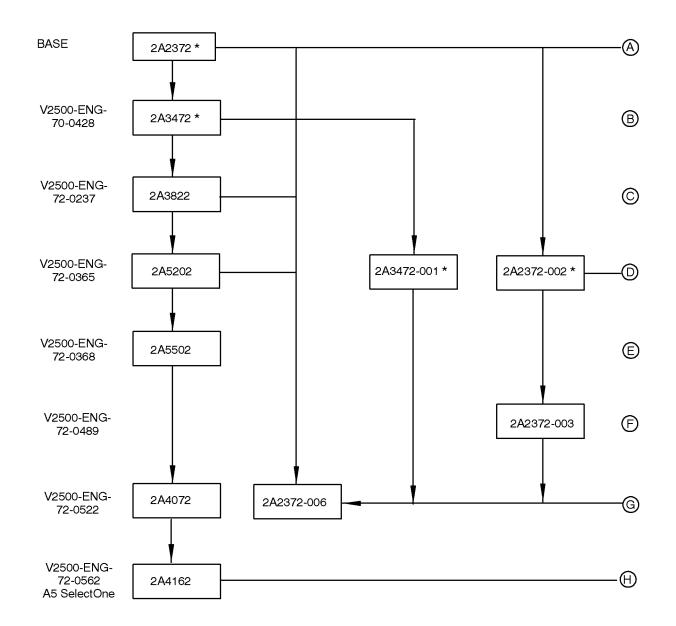
pw0b520542

FAMILY TREE - RING SEGMENT AND VANE CLUSTER ASSEMBLY (NON-BORESCOPE) REF. CATALOG SEQUENCE NO. 72-45-24 FIGURE 02 ITEM 050

CHART L (SHEET 2 OF 2)

Sep.22/08 Sep. 19/13 Revision 1





\* DO NOT USE IN MODEL V2533-A5

pw0b520543

FAMILY TREE - RING SEGMENT AND VANE CLUSTER ASSEMBLY (BORESCOPE) REF. CATALOG SEQUENCE NO. 72-45-24 FIGURE 02 ITEM 260

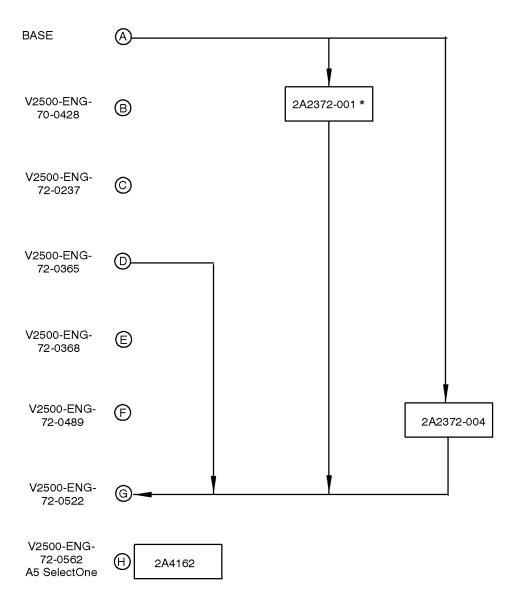
CHART M (SHEET 1 OF 2)

Sep.22/08

Sep. 19/13 Revision 1

V2500-ENG-72-0562





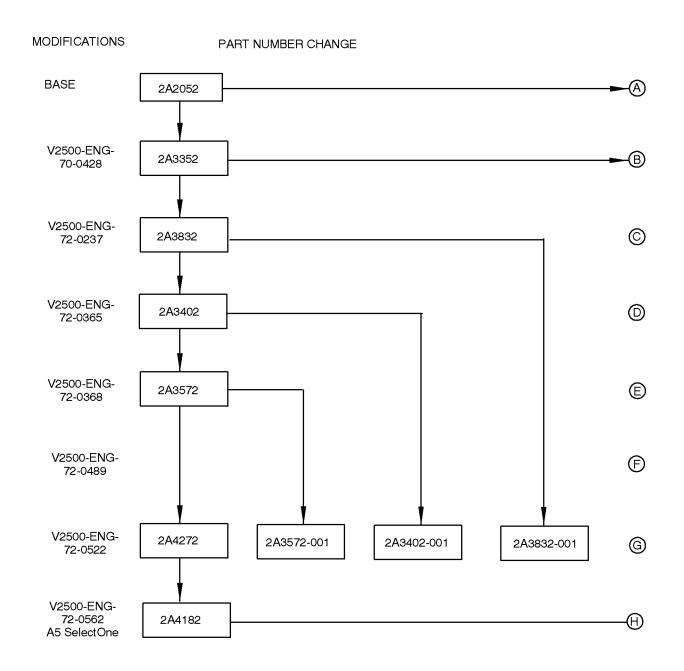
\* DO NOT USE IN MODEL V2533-A5

ow0b520544

FAMILY TREE - RING SEGMENT AND VANE CLUSTER ASSEMBLY (BORESCOPE) REF. CATALOG SEQUENCE NO. 72-45-24 FIGURE 02 ITEM 260 CHART M (SHEET 2 OF 2)

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pw0b520549

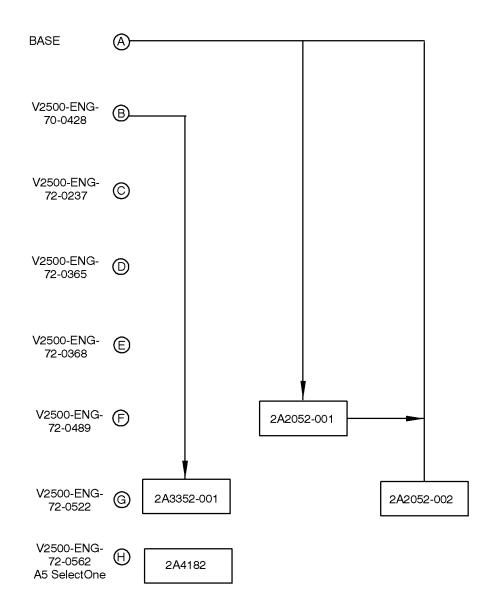
FAMILY TREE - HPT STAGE 2 VANE ASSEMBLY (NON-BORESCOPE) REF. CATALOG SEQUENCE NO. 72-45-24 FIGURE 02 ITEM 130 AND 350

CHART N (SHEET 1 OF 2)

Sep.22/08

Sep. 19/13 Revision 1



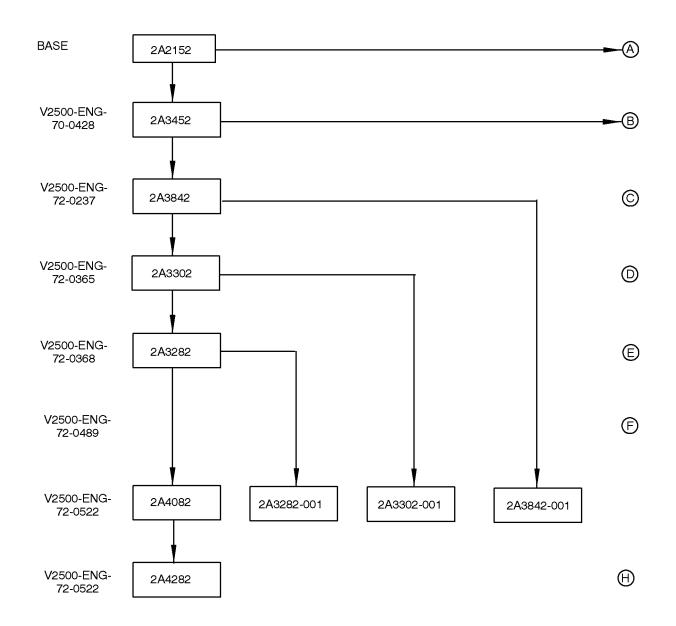


ow0b520546

FAMILY TREE - HPT STAGE 2 VANE ASSEMBLY (NON-BORESCOPE) REF. CATALOG SEQUENCE NO. 72-45-24 FIGURE 02 ITEM 130 AND 350 CHART N (SHEET 2 OF 2)

Sep.22/08 Sep. 19/13 Revision 1





pwob520547

FAMILY TREE - HPT STAGE 2 VANE ASSEMBLY (BORESCOPE) REF. CATALOG SEQUENCE NO. 72-45-24 FIGURE 02 ITEM 240

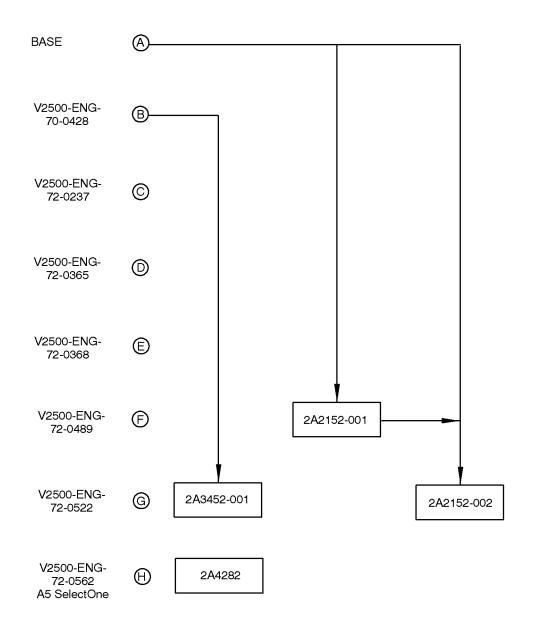
CHART P (SHEET 1 OF 2)

Sep.22/08

Sep. 19/13 Revision 1

V2500-ENG-72-0562





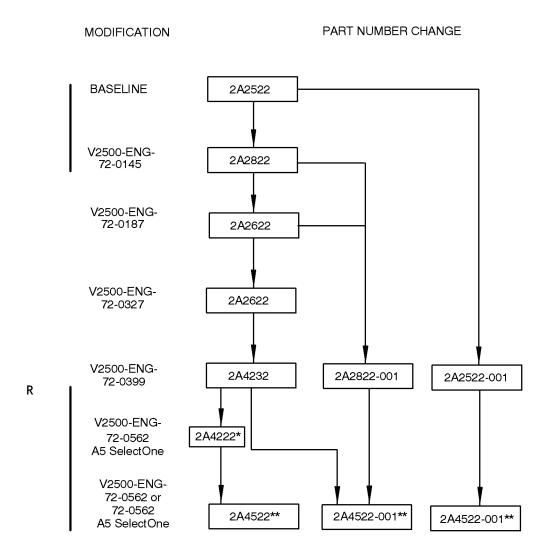
w0b520548

FAMILY TREE - HPT STAGE 2 VANE ASSEMBLY (BORESCOPE) REF. CATALOG SEQUENCE NO. 72-45-24 FIGURE 02 ITEM 420

CHART P (SHEET 2 OF 2)

Sep.22/08 Sep. 19/13 Revision 1 V2500-ENG-72-0562





\*Only in Engine V15001 and V15002 Pre SB 72-0575

\*\*These assembly part numbers must have a 2A4802 or 2A3002 stage 2 hub installed

pw0b520507a

R

R

FAMILY TREE - STAGE 2 HPT ROTOR ASSEMBLY REF. CATALOG SEQUENCE NO. 72-45-30 FIGURE

01 ITEM 010

CHART Q

Sep.22/08

Sep. 19/13 Revision 1



PART NUMBER CHANGE MODIFICATION **BASELINE** 2A2022\* V2500-ENG-2A2702 72-0187 V2500-ENG-<sup>(1)</sup> 2A8702 72-0220 2A2202-002\* V2500-ENG-(2) 2A8702 72-0267 V2500-ENG-2A9002 2A2702-001\* 72-0302 2A2202-003\* 2A2202-002\* V2500-ENG-2A4122\*\* 72-0562 A5 SelectOne V2500-ENG-

- \*\*Only in Engine V15001 and V15002 Pre SB 72-0575
- \* DO NOT USE IN V2533-A5 ENGINES
- (1) FOR MODELS V2522-A5, V2524-A5, V2527-A5. V2528E-A5, V2527M-A5, V2530-A5
- (2) FOR MODEL V2533-A5

2A4422

pw0b520518

72-0562 or

72-0575 A5 SelectOne

FAMILY TREE - STAGE 2 HPT BLADE REF. CATALOG SEQUENCE NO. 75-45-32 FIGURE 01 ITEM 010 CHART R

Sep.22/08 Sep. 19/13 Revision 1



### APPENDIX 1

# <u>Supplement - Revision to Table of Limits</u>

Engine Manual(s), Chapter/Section 05-10-01, A1/A5 Revision 73, dated August 1, 2008 is scheduled to incorporate the Part Service Life Limits related to this Service Bulletin and will take precedence over the Service Bulletin. The listed parts are allowed A5 SelectOne, other Life Limited HPT Rotors are not allowed in A5 SelectOne.

Revision to Table of Limits life cycles is as follows:

REVISION to Table of Limits tire cycles is as follows.					
CL	REF	AFFECTED PARTS PART # / CL MODEL	REPLACE IF EITHER LIMIT EXCEED		
			CYCLE MAX HRS MAX		
W	1600	HUB - TURBINE, 1 STG 2A5001 V2500-A5	20,000		
			•		
W	1600	HUB - TURBINE, 1 STG 2A2801 V2500-A5	15,000		
W	1601	HUB - TURBINE, 2 STG 2A4802 V2500-A5	20,000		
W	1601	HUB - TURBINE, 2 STG 2A3002 V2500-A5	15,000		
W	1602	SEAL - AIR, HPT, 1 - 2A4157 V2500-A5 2 STG	20,000		
W	1602	SEAL - AIR, HPT, 1 - 2A1350 V2500-A5 2 STG	15,000		
W	1603	SEAL - AIR, HPT, 1 2A3423 V2500-A5 STG (TOBI)	20,000		
W	1604	SEAL - AIR, HPT, 1 2A3923 V2500-A5 STG	20,000		
W	1605	PLATE - RING, BLADE, 2A3437 V2500-A5 HPT, 2 STG	20,000		
W	1605	PLATE - RING, BLADE, 2A3426 V2500-A5 HPT, 2 STG	15,000		



### APPENDIX 2

# <u>Supplement - Prices and Availability</u>

V2500-A5, -A5 SelectOne Retrofit Standard and -A5 SelectOne Production Standard

#### 1. Modification Kit

A. There is a kit number PN 2A4243 to do this Service Bulletin.

#### 2. Material Cost

- A. Part prices were not available at the time of Service Bulletin publication. Contact IAE's Spare Parts Sales Department for firm quotations.
- B. There is a kit, number PN 2A4243 to do this Service Bulletin. Contact IAE's Spare Parts Sales Department for firm quotations.

### 3. <u>New Production Parts</u>

New Production Part Number	Description	Unit Price US Dollars
2A4210 2A4085	Turbine Nozzle Group Support Assy - HPT Stg 1	o
2A4088-01	Seal Assy - Brush Stg 1	
2A4161	Lock - Support, Sea Stg 1	ι
NAS1398C3A4	Rivet - Blind Stg 1	
2A4081*	Vane Assy - HPT Stg	
2A4271	Vane Assy - HPT Stg 1	
2A4126	Seal - HPT Stg 1	
2A4086	TOBI Duct Assy - HP	Т
2A4220*	Rotor and Stator Assy	
2A4250	Rotor and Stator Assy	
2A9921	Turbine Rotor - HPT Stg 1	
2A9721	Blade - HPT Stg 1	
2A4087	Case and Vane Assy	_
27.1001	HPT Stg 1	
2A4130	Support - HPT Stg 1	
2A4129	Seal - HPT Stg 1	
2A4136	Gasket	
2A4131	Band Segment	
2A4133	Band Segment	
2A4169	Duct Segment	

Sep.22/08

V2500-ENG-72-0562

Sep. 19/13 Revision 1



New Production Part Number	Description	Unit Price US Dollars
2A4106	Seal	
2A4182	Vane Assy - HPT Stg 2	
2A4162	Ring Segment - HPT Stg 2 Vane Cluster	
2A4127	Seal - HPT Stg 2	
2A4262	Ring Segment - HPT	
	Stg 2 Vane Cluster (Boro)	
2A4145	Seal - Feather - HP1	-
	Stg 2	
2A4128	Seal - HPT Stg 2	
2A4163	Gasket	
2A4282	Vane Assy - HPT Stg 2	
2A4182	Vane Assy - HPT Stg 2 (Boro)	
2A4222*	Turbine Rotor - HPT Stg 2	
2A4522	Turbine Rotor - HPT Stg 2	
2A4122*	Blade Assy - HPT Sto	I
2A4422	Blade Assy - HPT Sto 2	I

\*The new part is applicable to Engine Serial Nos. V15001 and 15002 only Pre SB 72-0575 and/or SB 72-0576.



# APPENDIX 3

# Supplement - Added Data

Internal Reference Revision No.	ce Information Reference Document	Origination
Original	EC 07SEL01P EC 07SEL02P	JP/TR
1	EC 09VA007 IEN 09VC017 EC 09VA027 EA 13VC056	JP/JHD/CMS



Administration

Engine and Propeller Directorate

Engine Certification Office 12 New England Executive Park Burlington, MA 01803 (781) 238-7140, Fax: (781) 238-7199

AUG 1 9 2013

Mr. Karl Yeager IAE Flight Safety, Certification and Airworthiness 400 Main Street East Hartford, CT 06108

Dear Mr. Yaeger:

Subject: IAE global Alternative Method of Compliance

(AMOC) to Airworthiness Directive (AD) 2011-25-08

The Federal Aviation Administration (FAA) Engine Certification Office (ECO) received your letter dated June 6, 2013, requesting a global AMOC to AD 2011-25-08, paragraph F and paragraph G, for the International Aero Engines (IAE) V2500 series engines. Paragraph F of AD 2011-25-08 requires periodic borescope inspections using IAE service bulletin (SB) V2500-ENG-72-580 revision 3. Paragraph G of AD 2011-25-08 requires specific parts be installed per SB V2500-ENG-72-0542 revision 1, or SB V2500-ENG-72-0483 revision 3 as mandatory terminating action.

IAE AMOC proposal would use SB V2500-ENG-72-0580 revision 4, for compliance with paragraph F instead of SB V2500-ENG-72-0580 revision 3. The AMOC proposal would also use SB V2500-ENG-72-0483 revision 4, SB V2500-ENG-72-0562 initial release or SB V2500-ENG-72-0562 revision 1 to comply with paragraph G instead of SB V2500-ENG-72-0483 revision 3.

The ECO reviewed the supporting data for your request and determined that the substitutions and revisions to the service information are equivalent to the original references in the AD. Therefore, the FAA approves your Global AMOC to paragraph F and paragraph G of AD 2011-25-08 to use SB V2500-ENG-72-0580 revision 4, for compliance with paragraph F instead of SB V2500-ENG-72-0580 revision 3 and to use SB V2500-ENG-72-0483 revision 4, SB V2500-ENG-72-0562 initial release or SB V2500-ENG-72-0562 revision 1 to comply with paragraph G instead of SB V2500-ENG-72-0483 revision 3.

We have determined that this AMOC is of general applicability to the IAE V2500 series engine type designs, and therefore this letter is issued to IAE with the understanding that it may subsequently be distributed to operators. Operators may then use this letter, along with evidence of compliance with the terms of this letter, to document compliance to AD 2011-25-08.

This FAA AMOC is transferable with the engine(s) to another owner or operator.

Before using this AMOC, operators must notify their appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

All provisions of FAA AD 2011-25-08 that are not specifically referenced above remain fully applicable and must be complied with accordingly.

If you have any questions or need additional information, please contact Martin Adler at 781-238-7157, fax 781-238-7199, or via electronic mail at martin.adler@faa.gov.

Sincerely

Thomas Boudreau

Manager, Engine Certification Office