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DATE ~~R~~ Nov.29/02

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

Printed in Great Britain

This document transmits Revision 4 to Service Bulletin EV2500-72-0401

Document History

Service Bulletin Revision Status	Supplement Revision Status
Initial Issue                      Aug.22/01	
Revision 1                          Jan.30/02	
Revision 2                          Aug.15/02	
Revision 3                          Oct.31/02	

Bulletin Revision 4

Remove	Incorporate	Reason for change
All pages of the Service Bulletin	Pages 1 to 11 of the Service Bulletin	Correction to pricing information.
All pages of Appendix 1	Pages 1 to 3 of Appendix 1	Correction to pricing information.

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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

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ENGINE – PROVIDE NICKEL PLATING ON THE NUMBER 4 CARBON SEAL HOUSING PILOT DIAMETER

1. Planning Information

A. Effectivity

(1) Airbus A319

V2522-A5, V2524-A5, V2527M-A5 Engine Serial No. V10001 thru V11100, V11102, V11104, V11106, V11108, V11110 and V11112\*

\* Engine Serial No. V11112 was shipped from the factory with a new front and old rear seal assembly installed

(2) Airbus A320

(a) V2500-A1 Engine Serial No. V0001 thru V0361

(b) V2527-A5, V2527E-A5 Engine Serial No. V10001 thru V11100, V11102, V11104, V11106, V11108, V11110 AND V11112\*

\* Engine Serial No. V11112 was shipped from the factory with a new front and old rear seal assembly installed

(3) Airbus A321

V2530-A5, V2533-A5 Engine Serial No. V10001 thru V110100, V11102, V11104, V11106, V11108, V11110 and V11112\*

\* Engine Serial No. V11112 was shipped from the factory with a new front and old rear seal assembly installed

(4) Boeing – Longbeach Division MD-90

V2525-D5, V2528-D5 Engine Serial No. V20001 thru V20285

B. Concurrent Requirements

There are no concurrent requirements.

C. Reason

(1) Problem:

Multiple engine teardown inspections at overhaul were carried out and revealed abnormal fretting wear on the Front Carbon Seal Housing pilot diameter. This problem is believed to be a contributing factor to lose oil at sub-idle condition as part of number 4 compartment oil loss into High Pressure Turbine (HPT) investigation.



## (2) Background:

The function of the carbon seal housing pilot diameter is to limit the carbon seal radial displacement and it is expected to have slight contact in between the carbon seal inner diameter and this pilot diameter. The friction coefficient in between the pilot diameter (TI) and the carbon seal inner diameter (A1-0) needs to be improved in order to decrease the wear rate and increase part life.

## (3) Objective:

The proposed solution is to increase durability of the carbon seal housing pilot diameter by introducing a Nickel (NI) coating on the front and rear No.4 Carbon Seal pilot diameters. This solution will decrease the pilot diameter wear rate.

## (4) Substantiation:

This change is substantiated by similarities to other engine models with nickel plating on titanium housings, which has accumulated approximately 4 million total revenue service hours. Housings from these engine models were inspected at overhaul and did not show any excessive wear on pilot diameter.

## (5) Effects of Bulletin on:

Operation

None

Maintenance

None

Overhaul

None

Repair Schemes

None

Interchangeability

None

Fits and Clearances

None



## (6) Supplemental Information

None.

D. Description

Replace the Front and Rear No. 4 Bearing Seal Assemblies, the No. 4 Bearing Seal Support, and the Seal Ring Holder Assembly.

E. Compliance

Category 3 for Model A1

Accomplish by July 2005.

Category 4 for Models A5/D5

Accomplish at the first visit of an engine or module to a maintenance base capable of compliance with the accomplishment instructions regardless of the planned maintenance action or the reason for engine removal.

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.

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.

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J. Software Accomplishment Summary

Not Applicable

See Vendor Supplier Service Bulletin.

K. References

1. IAE V2500 Service Bulletin V2500-ENG-72-0163 Engine - No. 4 Gearing Compartment - Provide A New No. 4 Bearing Seal Assembly With Nuts Silver Plated On The Threads Only.
2. IAE V2500 Service Bulletin V2500-ENG-70-0115 Information - Engine - Provide Additional Options For The No. 1 And No. 4 Face Seal Assemblies.
3. IAE V2500 Service Bulletin V2500-ENG-72-0282 Engine - Provide New Front And Rear No. 4 Bearing Face Seals.
4. V2500 Standard Practices/Processes Manual.
5. 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 72-42-33 and 72-43-20.
6. V2500 Engine Manual (E-V2500-1IA), Chapter/Section 72-42-33 and 72-43-20.
7. V2500 Engine Manual (E-V2500-3IA), Chapter/Section 72-42-33 and 72-43-20.
8. Internal references 00VA029, 00VA029A, 00VA029-03, 00VA029-06, 00VA029-07, 00VA029-08, 00VA029-09, 00VA029-10, 00VA029-11.
9. ATA Locator - 72-00-00.

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 72-42-33 and 72-43-20, to add the new part.
2. V2500 Engine Manuals (E-V2500-1IA and E-V2500-3IA), Chapter/Section 72-42-33 and 72-43-20 Cleaning, Inspection and Repair, to add the new part.

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 (Yes)

Revision to Table of Limits (No)

Inspection Procedures (No)

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## 2. Material Information

### A. Material – Price and Availability

1. The estimated price of new material to do this Service Bulletin using new replacement parts is USD 42,310.00.
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 V2500-A1, V2522-A5, V2524-A5, V2527-A5, V2527E-A5, V2527M-A5, V2530-A5, V2533-A5, V2525-D5, V2528-D5 Engines Incorporating Service Bulletin V2500-ENG-72-0282

New PN	Qty	Estimate of Unit Price (\$)	Keyword	Old PN	Instructions-Disposition
2A3538	1		.Seal Assy, #4 Brg. Front	2A3525 (72-42-33-01-001)	(1)(F)(N)
2A3537	1	27,830.00	..Support - #4 Brg. Seal Assy	2A2833 (72-42-33-01-020)	(1)(A)(N)
2A3544	1		.Seal Assy, #4 Brg. Rear	2A3526 (72-43-20-01-001)	(1)(F)(N)
2A3543	1	14,480.00	..Seal Ring Holder	2A0847 (72-43-20-01-060)	(1)(A)(N)

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For V2500-A1, V2522-A5, V2524-A5, V2527-A5, V2527E-A5, V2527M-A5, V2530-A5, V2533-A5, V2525-D5, V2528-D5 Engines Not Incorporating Service Bulletin V2500-ENG-72-0282

New PN	Qty	Estimate of Unit Price (\$)	Keyword	Old PN	Instructions-Disposition
2A3581	1		.Seal Assy, #4 Brg. Front	2A2930 (72-42-33-01-001)	(1)(N)
2A3537	1	27,830.00	..Support - #4 Brg. Seal Assy	2A2833 (72-42-33-01-020)	(1)(A)(N)
2A3582	1		.Seal Assy, #4 Brg. Rear	2A2931 (72-43-20-01-001)	(1)(N)
2A3543	1	14,480.00	..Seal Ring Holder	2A0847 (72-43-20-01-060)	(1)(A)(N)

#### D. Instructions/Disposition Code Statements:

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

(A) The new part is available.

(F) The new part will be available on a Full Manufacturing Lead time quote basis only.

(N) The old part is not available.

#### E. Reidentified Parts

Reidentified Parts Data	Old PN
New PN	Keyword
2A3581	Seal Assy, #4 Brg. Front
2A3538	Seal Assy, #4 Brg. Front
2A3582	Seal Assy, #4 Brg. Rear
2A3544	Seal Assy, #4 Brg. Rear
2A3537	Seal Assy, #4 Brg. Rear
2A3543	Seal Assy, #4 Brg. Rear
	Old PN
	2A2930
	2A3525
	2A2931
	2A3526
	2A2833
	2A0847

#### F. Tooling - Price and Availability

Special tools are not required to accomplish this Service Bulletin.

#### G. Other Material Information Data

Not Applicable.



### 3. Accomplishment Instructions

- (1) Obtain a new front support No.4 Bearing Seal Assembly PN 2A3537 and new rear Seal Ring Holder PN 2A3543 from IAE spares or accomplish the following Front and Rear Piston Ring Groove Land Repair as required prior to assembly:
  - (a) Complete the repair VRS 3627 for the front Support No.4 Bearing Seal Assembly PN 2A3537. See Reference (6) or (7) Chapter/section 72-42-33.
  - (b) Complete the repair VRS 3629 for the rear Seal Ring Holder PN 2A3543. See Reference (6) or (7) Chapter/section 72-43-20.
- (2) For V2500-A1/A5 Engines.
  - (a) Replace the No. 4 Bearing Support Assembly, PN 2A2833 with 2A3537.
    - (i) When you assemble the No. 4 Bearing Front Seal Assembly, PN 2A3538 or 2A3581 install the No. 4 Bearing Seal Support Assembly PN 2A3537 (1 off) by the procedure given in Reference (6), Chapter/Section 72-42-33, Assembly. Refer to Figure 1.
    - (ii) Identify the 2A2930 or 2A3525 No. 4 Bearing Front Seal Assembly as 2A3581 or 2A3538 respectively by the procedure given in Reference(4), Chapter/Section 70-09-00 Marking of Parts.
    - (iii) Install the No. 4 Bearing Front Seal Assembly, PN 2A3538 or 2A3581 by the procedure given in Reference (6) Chapter/Section 72-42-30, Assembly
  - (b) Replace the No. 4 Bearing Rear Seal Assembly, PN 2A2931 or 2A3526 with 2A3582 or 2A3544 respectively.
    - (i) When you assemble the No. 4 Bearing Rear Seal Assembly, install the 2A3543 No. 4 Bearing Seal Ring Holder (1 off) by the procedure given in Reference (6), Chapter/Section 72-42-33, Assembly. Refer to Figure 2.
    - (ii) Identify the 2A2931 or 2A3526 No. 4 Bearing Front Seal Assembly as 2A3582 or 2A3544 respectively by the procedure given in Reference(4), Chapter/Section 70-09-00 Marking of Parts.
    - (iii) Install the 2A3544 or 2A3582 No. 4 Bearing Rear Seal Assembly by the procedure given in Reference (6) Chapter/Section 72-42-30, Assembly.



(3) For V2500-D5 Engines.

(a) Replace the No. 4 Bearing Support Assembly, PN 2A2833 with 2A3537.

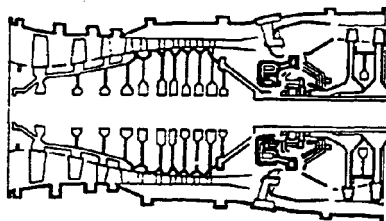
- (i) When you assemble the No. 4 Bearing Front Seal Assembly, PN 2A3538 or 2A3581 install the No. 4 Bearing Seal Support Assembly PN 2A3537 (1 off) by the procedure given in Reference (6), Chapter/Section 72-42-33, Assembly. Refer to Figure 1.
- (ii) Identify the 2A2930 or 2A3525 No. 4 Bearing Front Seal Assembly as 2A3581 or 2A3538 respectively by the procedure given in Reference(4), Chapter/Section 70-09-00 Marking of Parts.
- (iii) Install the No. 4 Bearing Front Seal Assembly, PN 2A3538 or 2A3581 by the procedure given in Reference (6) Chapter/Section 72-42-30, Assembly

(b) Replace the No. 4 Bearing Rear Seal Assembly, PN 2A2931 or 2A3526 with 2A3582 or 2A3544 respectively.

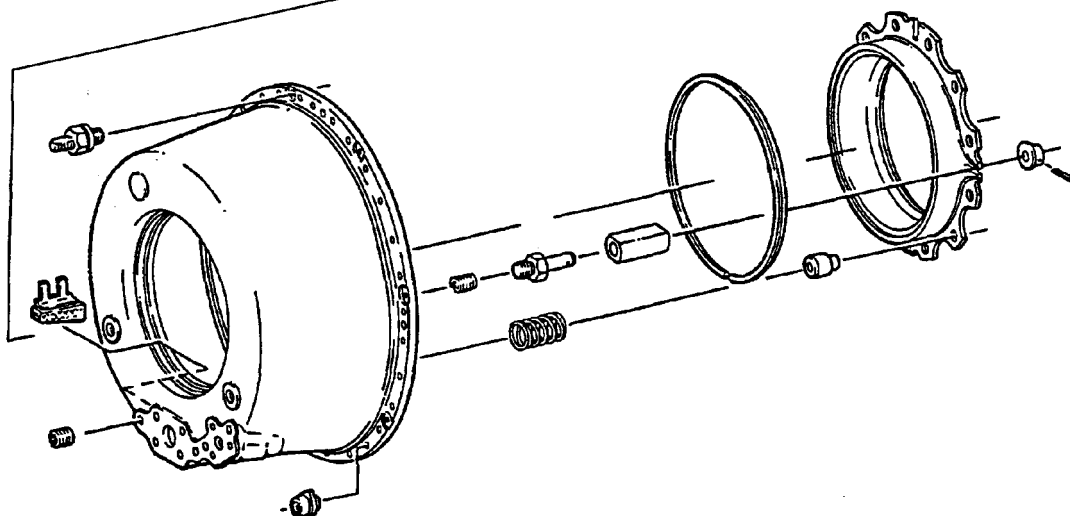
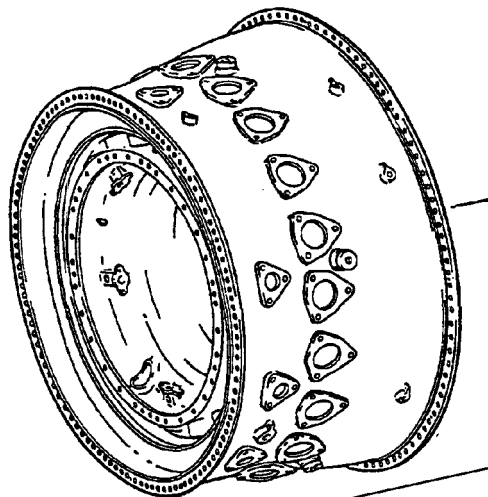
- (i) When you assemble the No. 4 Bearing Rear Seal Assembly, install the 2A3543 No. 4 Bearing Seal Ring Holder (1 off) by the procedure given in Reference (7), Chapter/Section 72-42-33, Assembly. Refer to Figure 2.
- (ii) Identify the 2A2931 or 2A3526 No. 4 Bearing Front Seal Assembly as 2A3582 or 2A3544 respectively by the procedure given in Reference(4), Chapter/Section 70-09-00 Marking of Parts.
- (iii) Install the 2A3544 or 2A3582 No. 4 Bearing Rear Seal Assembly by the procedure given in Reference (7) Chapter/Section 72-42-30, Assembly.

(4) Recording Instructions

(a) A record of accomplishment is required.

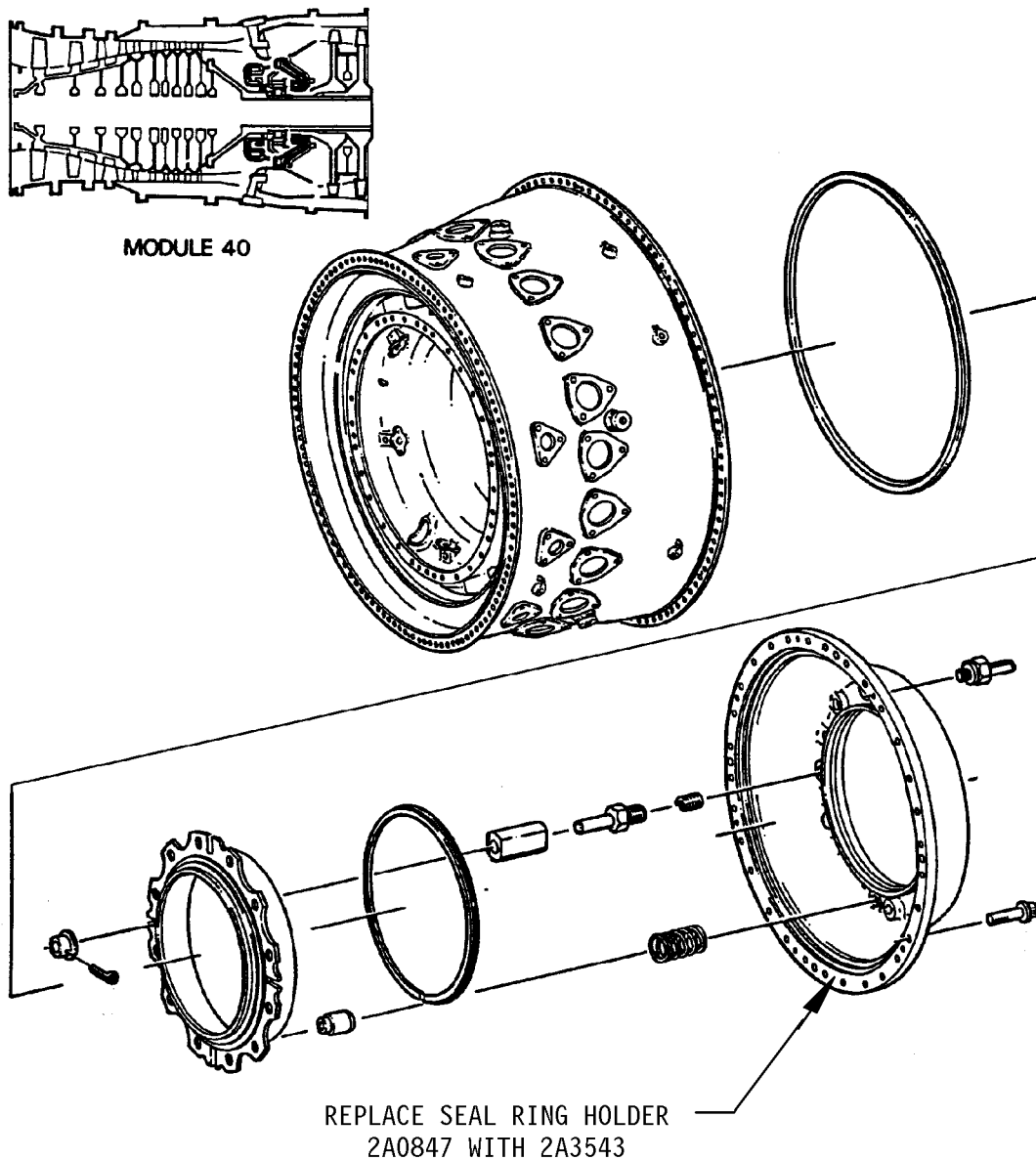


MODULE 40



Engine - No.4 bearing front seal assembly  
Fig 1

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E8393

Engine - No.4 bearing rear seal assembly  
Fig 2

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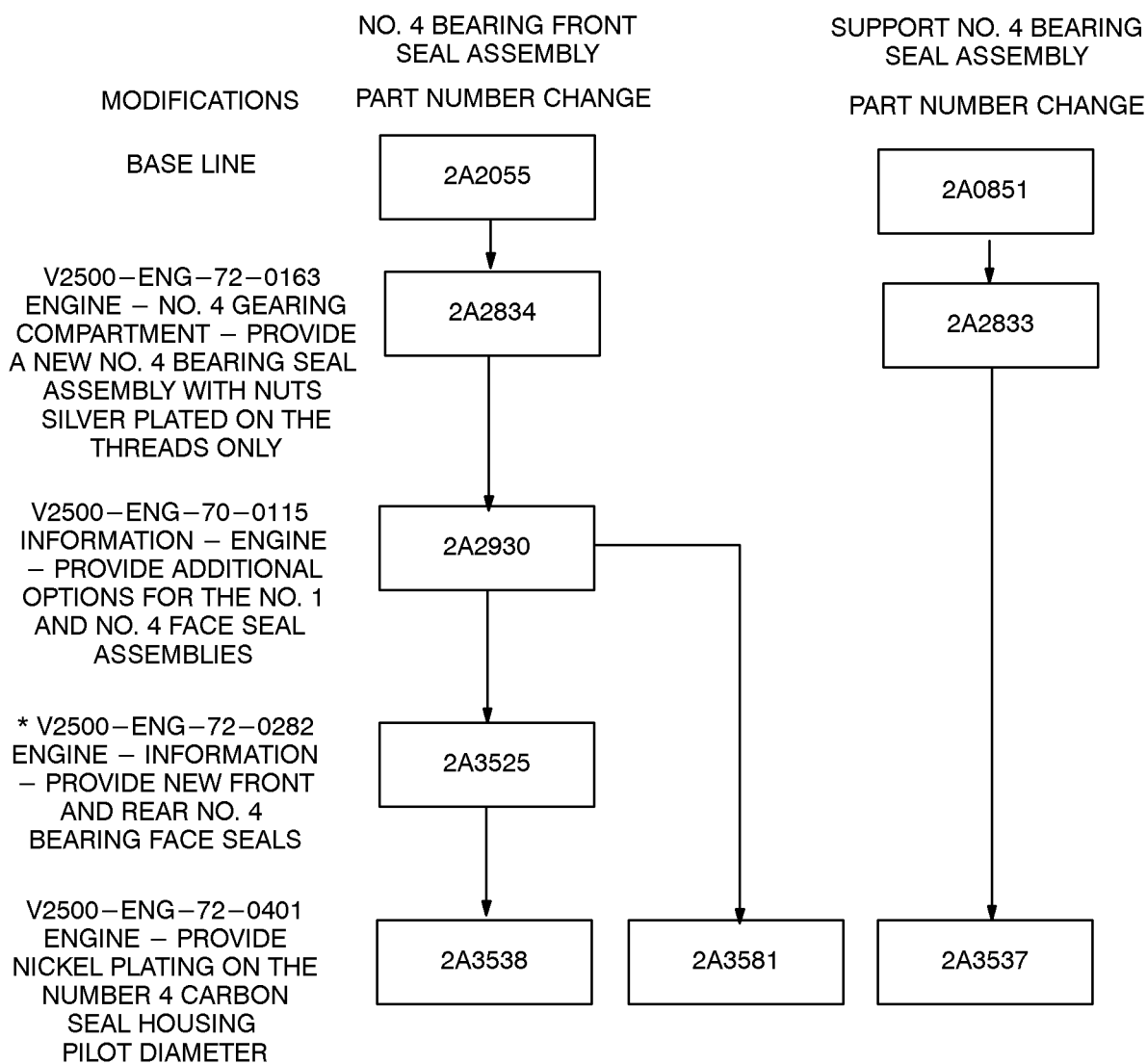
APPENDIX 1

Figs 3 and 4 – Parts Progression to Show the Changed Part in Relation to Other Parts

Added data

Number values shown in parenthesis adjacent to U.S. values are Systeme Internationale equivalents.

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\* V2500-ENG-72-0282 SUPERSEDES INFORMATION BULLETIN V2500-ENG-70-0801

E8394

PWH

Family tree – No.4 bearing front seal assembly and No.4 bearing seal support  
assembly Ref. catalog sequence No's 72-42-33 Fig 1 item 001 and 020

Fig 3

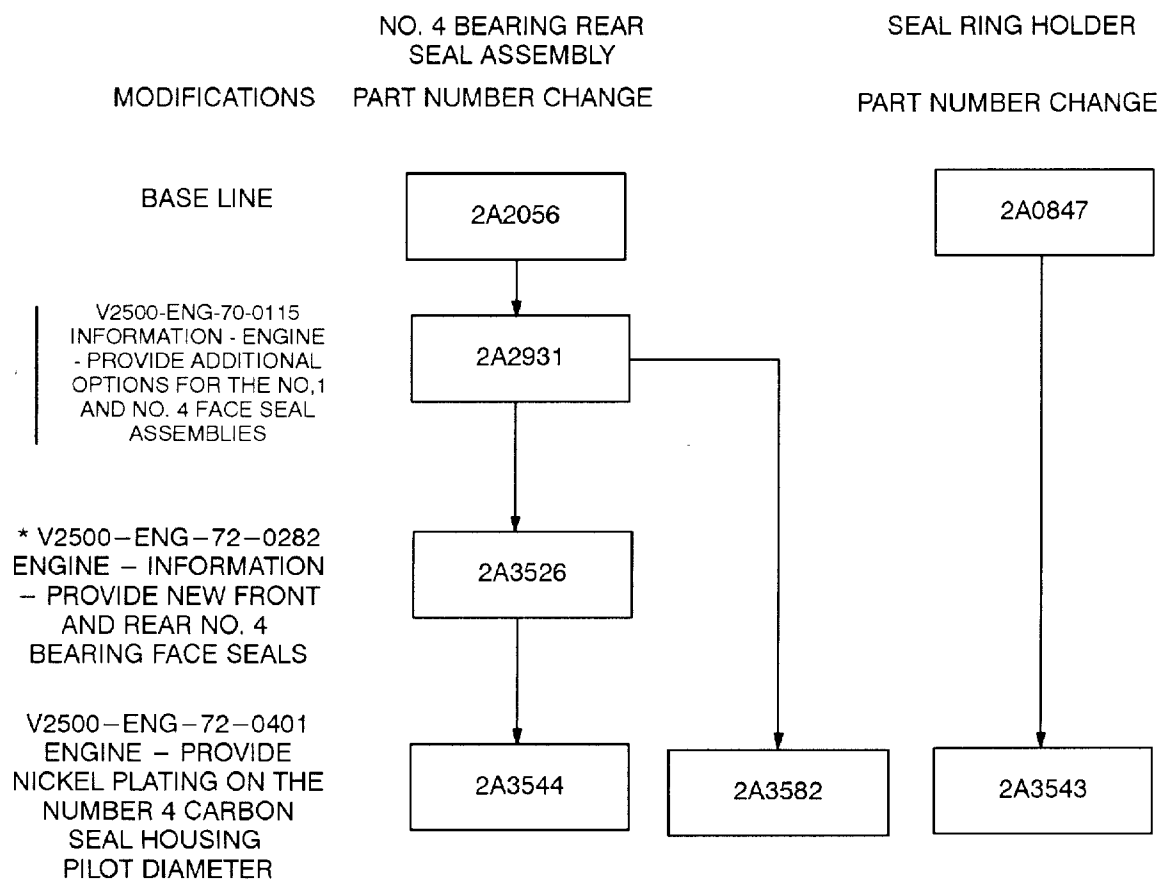
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Family tree - No.4 bearing rear seal assembly and seal ring holder assembly Ref.  
catalog sequence No's 72-43-20 Fig 1 item 001 and 060

Fig 4

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