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 DATE **Feb.10/03**
V2500-A1/A5/D5 SERIES PROPULSION SYSTEM SERVICE BULLETIN

Printed in Great Britain

This document transmits Revision 2 to Service Bulletin EV2500-72-0439

Document History

Service Bulletin Revision Status	
Initial Issue	Nov.29/02
Revision 1	Jan.10/03

Supplement Revision Status

Bulletin Revision 2

 Remove
Pages 1 to 13 of the
Service Bulletin

 Incorporate
Pages 1 to 14 of the
Service Bulletin

 All pages of
Appendix 1

 Page 1 and 2 of
Appendix 1

Reason for change
To revise Accomplishment Instructions and illustrations.
To revise Accomplishment Instructions and illustrations.

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Transmittal - Page 1 of 2

CHECK THAT ALL PREVIOUS TRANSMITTALS HAVE BEEN INCORPORATED

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

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LIST OF EFFECTIVE PAGES

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ENGINE - NO. 4 COMPARTMENT STRAINER IMPROVEMENT

1. Planning Information

A. Effectivity

(1) Airbus A319

Engine Models Applicable

V2522-A5, V2524-A5, V2527M-A5 Engine Serial Nos. V10001 thru V11464, V11466, V11468, V11470, V11472 and V11474*

* This estimate of engine serial numbers will be revised, if necessary, when parts are installed in engines at Pratt and Whitney.

(2) Airbus A320

Engine Models Applicable

V2500-A1 Engine Serial Nos. V0001 thru V0361

V2527-A5, V2527E-A5 Engine Serial Nos. V10001 thru V11464, V11466, V11468, V11470, V11472 and V11474*

* This estimate of engine serial numbers will be revised, if necessary, when parts are installed in engines at Pratt and Whitney.

(3) Airbus A321

Engine Models Applicable

V2530-A5, V2533-A5 Engine Serial Nos. V10001 thru V11464, V11466, V11468, V11470, V11472 and V11474*

* This estimate of engine serial numbers will be revised, if necessary, when parts are installed in engines at Pratt and Whitney.

(4) Boeing MD-90

Engine Models Applicable

V2525-D5, V2528-D5 Engine Serial Nos. V20001 thru V20285

B. Concurrent Requirements

There are no concurrent requirements.



C. Reason

- (1) Condition: Multiple events were found with oil loss from No. 4 bearing compartment and subsequent heat distress damage to High Pressure Turbine (HPT) compartments. Root cause investigation determined that oil loss occurred as a result of No. 4 bearing compartment flooding during extended sub-idle operation.
- (2) Background: Rig testing and oil system analysis showed that the No. 4 bearing compartment had insufficient sub-idle flow capacity to scavenge oil and prevent No. 4 compartment flooding. The compartment exit restriction was determined to be a contributing factor to compartment flooding.
- (3) Objective: Redesign the No. 4 compartment oil exit to minimize the oil flow pressure drop, thus increasing scavenge capacity.
- (4) Substantiation: Changes were validated using the No. 4 compartment rig, ping testing and similarity to existing PW designs.
- (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. Description

Modify the No. 4 bearing seal support assembly.

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R
R
R

**E. Compliance**

R Category 4 for Models A1/A5

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.

R Category 5 for Model D5

R Accomplish when the engine is disassembled sufficiently to afford access to the
R affected subassembly (i.e., modules, accessories, components, build groups) and
R to all affected spare subassemblies.

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

R Estimated man-hours to incorporate the full intent of this Bulletin for Models
R A1/A5:

Venue	Estimated Manhours
In Service	Not Applicable
At Overhaul	80 hours

R Estimated man-hours to incorporate the full intent of this Bulletin for Model
R D5:

Venue	Estimated Manhours
In Service	Not Applicable
At Overhaul	10 hours

H. Weight and Balance

Weight Change	None
Moment	No Effect
Datum	Engine Front Mount Centerline (Power Plant Station (PPS) 100)

I. Electrical Load Data

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



J. Software Accomplishment Summary

Not Applicable.

K. References

1. IAE V2500 Service Bulletin V2500-ENG-72-0401 (Engine - Provide Nickel Plating On The Number 4 Carbon Seal Housing Pilot Diameter).
2. V2500 Engine Manual (E-V2500-1IA), Chapter/Section 72-00-50, 72-00-42, 72-00-43, 72-42-30, and 72-42-33.
3. V2500 Engine Manual (E-V2500-3IA), Chapter/Section 72-42-30 and 72-42-33, .
4. V2500 Standard Practices/Processes Manual (E-V2500-1IA), Chapter/Section 70-23-02.
5. V2500 Standard Practices/Processes Manual (E-V2500-3IA), Chapter/Section 70-23-02.
- R 6. Internal Reference Nos. - 01VC411, 02VC352, 01VC411B.
7. ATA Locator - 72-40-00.

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, Figure 1.
2. V2500 Engine Manuals (E-V2500-1IA and E-V2500-3IA), Chapter/Section 72-42-33 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. There is no new material cost to do this Service Bulletin when the part modification procedure is used.
2. Part prices were not available at the time of Service Bulletin publication. Contact IAE's Spare Parts Sales Department for firm quotations.
3. There is no kit provided to do this Service Bulletin.
4. 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:

New PN	Qty	Estimate of Unit Price (\$)	Keyword	Old PN (ATA/Figure/Item)	Inst/Disp
2A3846	1		Seal Assembly – No. 4 Brg. Front	2A3538 (72-42-33-01-001)	(1)(F) (N)(I)
2A3845	1		.Support Assembly – No. 4 Brg. Seal	2A3537 (72-42-33-01-020)	(1)(A) (N)(I)

D. Instructions/Disposition Code Statements:

Parts Modification Conditions

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

Spare Parts Availability

- R (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.

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.

E. Tooling – Price and Availability

Special tools are not required to accomplish this Service Bulletin.

F. Reidentified Parts

Reidentified Parts Data		
New PN	Keyword	Old PN
2A3846	Seal Assembly – No. 4 Brg. Front	2A3538
2A3845	Support Assembly – No. 4 Brg. Seal	2A3537

G. Other Material Information Data

Not Applicable.



3. Accomplishment Instructions

R For Models A1/A5

- (1) Remove the Low Pressure (LP) turbine module as specified in Reference 2., Engine Manual, Chapter/Section 72-00-50.
- (2) Remove the outer combustion chamber assembly as specified in Reference 2., Engine Manual, Chapter/Section 72-00-42.
- (3) Remove the No. 4 bearing and rear compartment parts as specified in Reference 2., Engine Manual, Chapter/Section 72-00-43.
- (4) Disassemble the No. 4 bearing front compartment as specified in Reference 2., Engine Manual, Chapter/Section 72-42-30.
- (5) Disassemble the No. 4 bearing front seal assembly as specified in Reference 2., Engine Manual, Chapter/Section 72-42-33.

R CAUTION: REMOVE THE STRAINER ASSEMBLY PN 2A0885 BEFORE PRODUCING 10 HOLES
R IN THE SEAL SUPPORT ASSEMBLY.

R (6) Produce and deburr 10 holes in the No. 4 bearing seal support assembly. Refer to Figure 1, Sheet 1 for the location of the assembly. Refer to Figure 1, Sheets 2, 3, 4 and 6 for the location of the 10 holes.

(7) Inspect the holes by Figure 1, Sheets 2, 3, 4 and 6.

(8) Do a Fluorescent Penetrant Inspection (FPI) of the repair area using the medium sensitivity water washable fluorescent penetrant crack inspection specified in Reference 4., Standard Practices/Processes Manual, Chapter/Section 70-23-02.

R If cracks are detected reject the part.

R (9) Reinstall a new strainer assembly per Engine Manual, Chapter/Section
R 72-42-33 Repair-009.

(10) Identify No. 4 Bearing Seal Support Assembly, PN 2A3537, as PN 2A3845. Refer to Figure 1, Sheet 5.

(11) Assemble the No. 4 bearing front seal assembly as specified in Reference 2., Engine Manual, Chapter/Section 72-42-33.

(12) Identify No. 4 Bearing Front Seal Assembly, PN 2A3538, as PN 2A3846. Refer to Figure 1, Sheet 6.

(13) Assemble the No. 4 bearing front compartment as specified in Reference 2., Engine Manual, Chapter/Section 72-42-30.



- (14) Install the No. 4 bearing and rear compartment parts as specified in Reference 2., Engine Manual, Chapter/Section 72-00-43.
- (15) Install the outer combustion chamber assembly as specified in Reference 2., Engine Manual, Chapter/Section 72-00-42.
- (16) Install the Low Pressure (LP) turbine module as specified in Reference 2., Engine Manual, Chapter/Section 72-00-50.

R For Model D5

- R (1) Disassemble the No. 4 bearing front compartment as specified in Reference
R 3., Engine Manual, Chapter/Section 72-42-30.

- R (2) Disassemble the No. 4 bearing front seal assembly as specified in
R Reference 3., Engine Manual, Chapter/Section 72-42-33.

R CAUTION: REMOVE THE STRAINER ASSEMBLY PN 2A0885 BEFORE PRODUCING 10 HOLES
R IN THE SEAL SUPPORT ASSEMBLY.

- R (3) Produce and deburr 10 holes in the No. 4 bearing seal support assembly.
R Refer to Figure 1, Sheet 1 for the location of the assembly. Refer to
R Figure 1, Sheets 2 thru 4 for the location of the 10 holes.

- R (4) Inspect the holes by Figure 1, Sheet 3.

- R (5) Do a Fluorescent Penetrant Inspection (FPI) of the repair area using the
R medium sensitivity water washable fluorescent penetrant crack inspection
R specified in Reference 5., Standard Practices/Processes Manual,
R Chapter/Section 70-23-02.

R If cracks are detected reject the part.

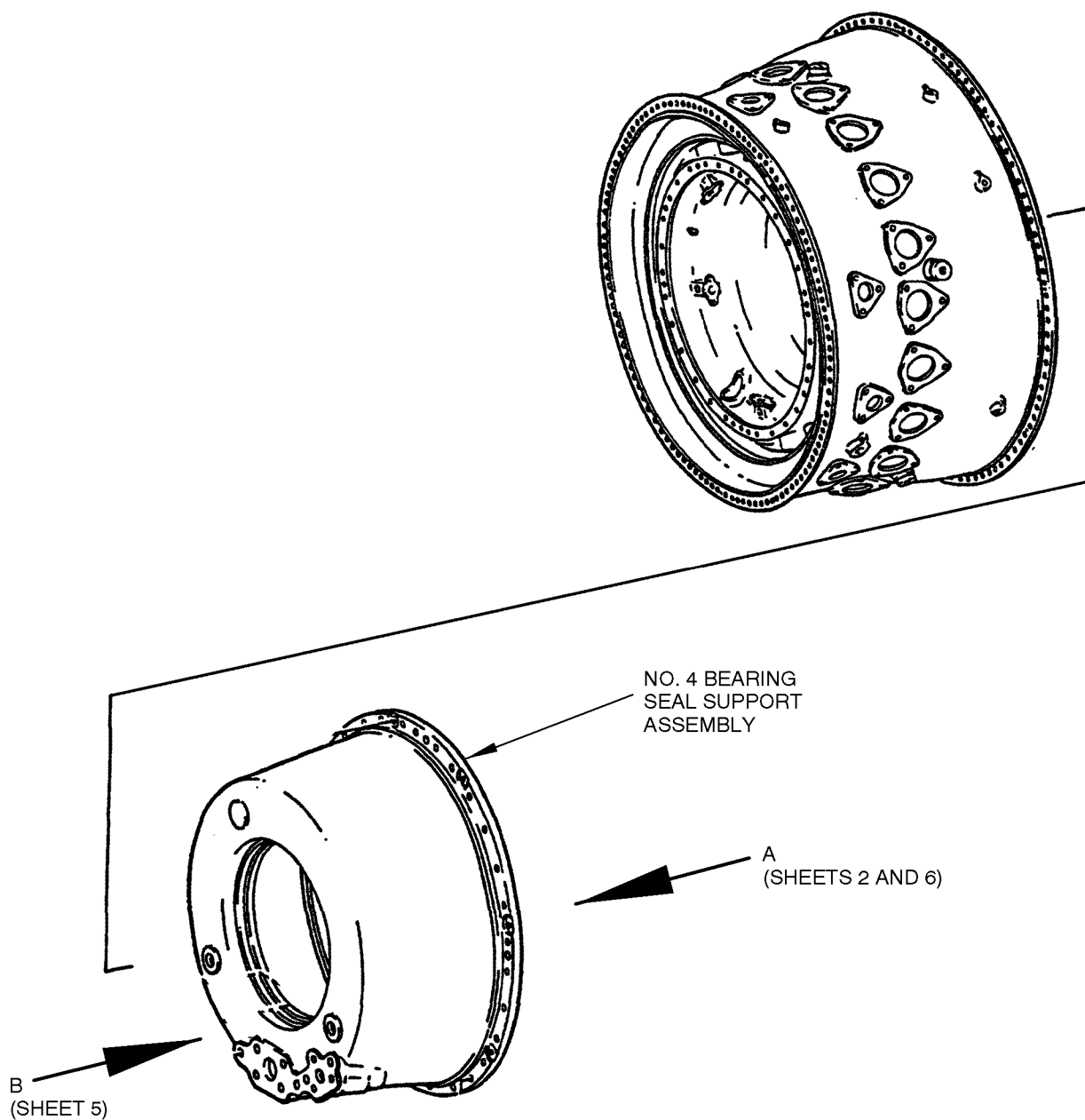
- R (6) Reinstall a new strainer assembly per Engine Manual, Chapter/Section
R 72-42-33 Repair-009.

- R (7) Identify No. 4 Bearing Seal Support Assembly, PN 2A3537, as PN 2A3845.
R Refer to Figure 1, Sheet 5.

- R (8) Assemble the No. 4 bearing front seal assembly as specified in Reference
R 3., Engine Manual, Chapter/Section 72-42-33.

- R (9) Identify No. 4 Bearing Front Seal Assembly, PN 2A3538, as PN 2A3846. Refer
R to Figure 1, Sheet 6.

- R (10) Assemble the No. 4 bearing front compartment as specified in Reference 3.,
R Engine Manual, Chapter/Section 72-42-30.



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Location of the No.4 Bearing Seal Support Assembly
Figure 1, Sheet 1

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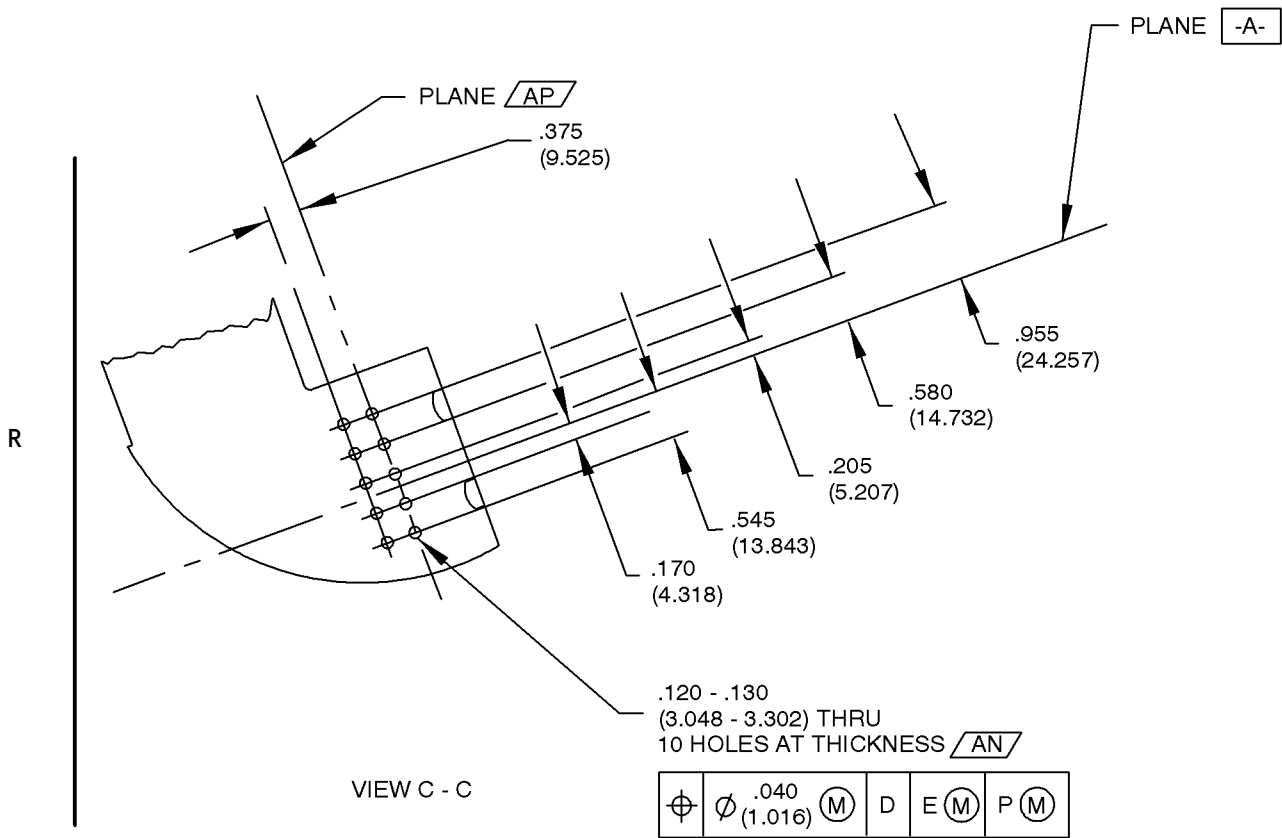


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Location of the 10 Machined Holes
Figure 1, Sheet 3

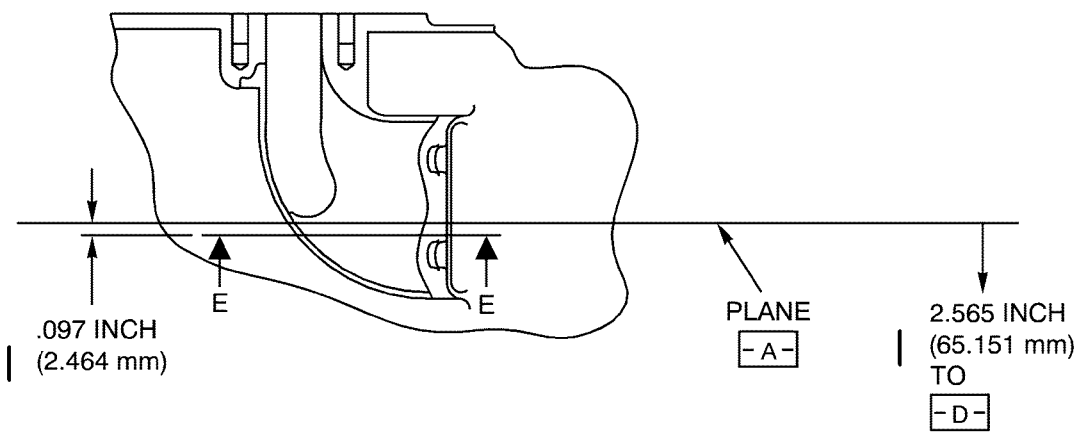
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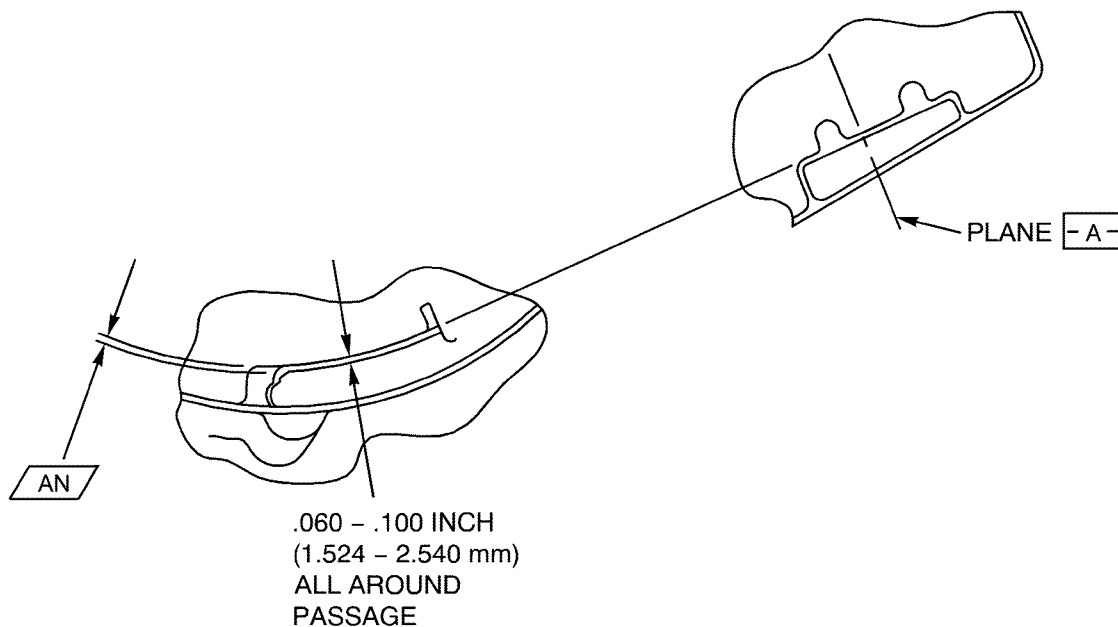
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SECTION D-D



SECTION E-E

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Location of the 10 Machined Holes
Figure 1, Sheet 4

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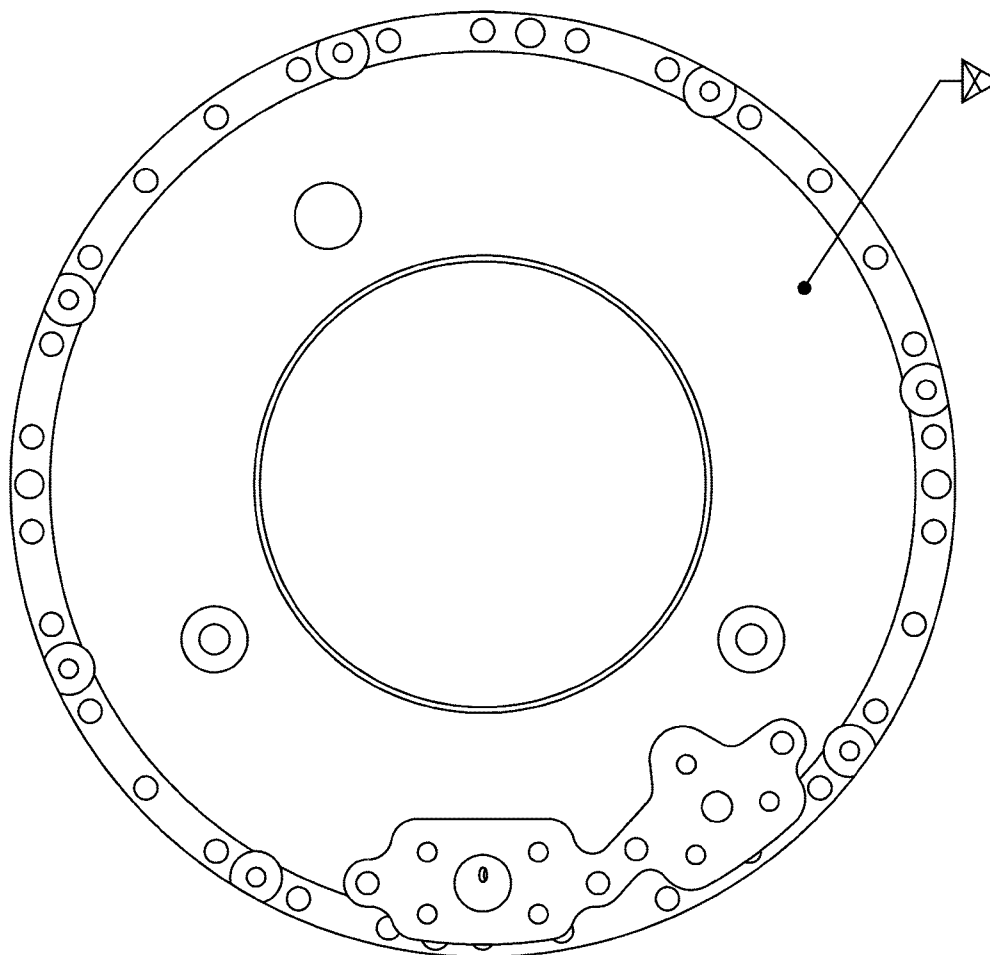
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Identification of the Modified No.4 Bearing Seal Support Assembly
Figure 1, Sheet 5

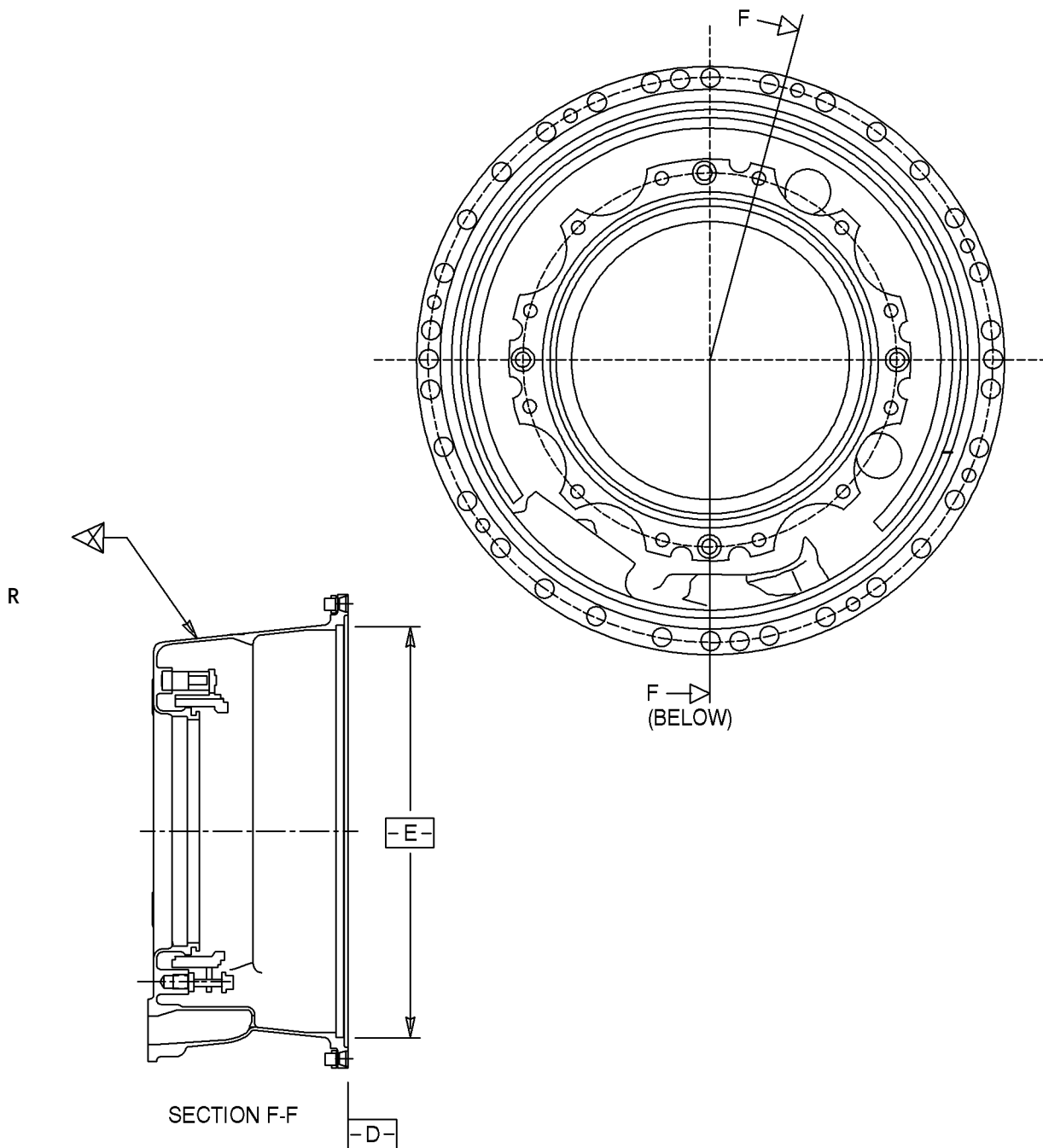
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R Identification of the Modified No.4 Bearing Front Seal Assembly
R Figure 1, Sheet 6

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APPENDIX 1

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

Added Data

Number values shown in parentheses adjacent to U.S. values are International System of units (SI) equivalents.

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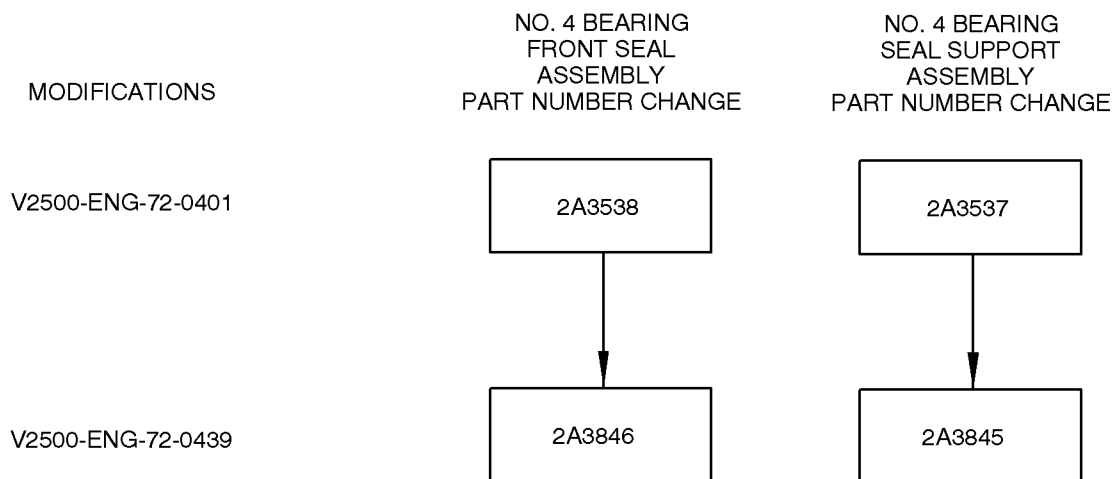
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Family Tree - No.4 Bearing Seal Support Assembly Ref. Catalog Sequence Nos.
72-42-33, Figure 1 Item 001 and Item 020
Figure 2

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