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DATE: Feb.17/06

V2500-D5 SERIES PROPULSION SYSTEM SERVICE BULLETIN

This document transmits Revision 2 to Service Bulletin EV2500-72-0493 and Revision 2 to the Supplement

Document History

Service Bulletin Revision Status		Supplement Revision Status	
Initial Issue	May 12/05	Initial Issue	May 12/05
Revision 1	Aug.15/05	Revision 1	Aug.15/05

Bulletin Revision 2

Remove	Incorporate	Reason for change
All pages of the Summary	Pages 1 to 3 of the Summary	Corrections to 3.(1)(d) and Fig.2
All pages of the Service Bulletin	Pages 1 to 10 of the Service Bulletin	Corrections to 3.(1)(d) and Fig.2
All pages of Appendix 1	Page 1 and 2 of Appendix 1	Corrections to 3.(1)(d) and Fig.2

Supplement Revision 2

Remove	Incorporate	Reason for change
All pages	Page 1	Corrections to 3.(1)(d) and Fig.2

V2500-ENG-72-0493

CHECK THAT ALL PREVIOUS TRANSMITTALS HAVE BEEN INCORPORATED
If any have not been received please advise Customer Data Services, Rolls-Royce plc, Derby, England

LIST OF EFFECTIVE PAGES

The effective pages to this Service Bulletin following incorporation of Revision 2 to the Bulletin and Revision 2 to the Supplement are as follows:

	Page	Revision Number	Revision Date
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International Aero Engines

SERVICE BULLETIN

ENGINE - NUMBER 4 COMPARTMENT SCAVENGE ELBOW REDESIGN - MOD 72-0493

SUMMARY

Printed in Great Britain

1. PLANNING

A. EFFECTIVITY

Engines V2500-D5 Serial Nos. V20001 through V20285.

B. CONCURRENT REQUIREMENTS

Service Bulletin V2500-ENG-70-0829 must be incorporated concurrently with this Bulletin.

C. REASON/PROBLEM

Problem

Engines have been found with the No. 4 Scavenge Elbow Gasket mis-assembled. This can impact the scavenge capacity of the No. 4 Bearing Compartment and could lead to No. 4 Oil Loss and High Pressure Turbine (HPT) thermal distress. As a part of the V2500-A1/V2500-A5 oil in the HPT corrective action, an alignment pin was added to the external scavenge elbow to prevent gasket mis-assembly.

Evidence

As a part of the V2500-A1/V2500-A5 oil in the HPT corrective action, an alignment pin was added to the external scavenge elbow to prevent gasket mis-assembly, this task adds the same alignment feature to the scavenge elbow used on the V2500-D5 to prevent gasket mis-assembly and provide commonality across the entire V2500 fleet.

Objective

Re-design the V2500-D5 No. 4 Scavenge Elbow to incorporate a Pin to prevent mis-assembly of the Gasket. This is a lesson learned and incorporated in the V2500-A1/V2500-A5 for the No. 4 compartment oil loss corrective action.

D. DESCRIPTION

Replace No. 4 Bearing Scavenge Tube Elbow with a redesigned part.

E. COMPLIANCE

Category Code 6

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

F. MANPOWER

(1)In Service

Not Applicable.

(2)At Overhaul - scheduled removal

NOTE: The parts affected by this Service Bulletin are accessible at overhaul.

(1) Clean Elbow

30 minutes

(2) NDT inspect the elbow

40 minutes

(3) Machine hole

15 minutes

(4) Break sharp edges

1 minute

(5) Dimensionally inspect

5 minutes

(6) NDT inspect the elbow

40 minutes

(7) Press pin into the hole

5 minutes

(8) Identify part to new part number

5 minutes

Total 2 hours 21 minutes

2. MATERIAL INFORMATION

Parts Prices

A. The estimated price of new material is $82.00 to do this Service Bulletin when the part modification procedure is used.

B. The estimated price of new material to do this Service Bulletin using new replacement parts is $1820.00.

International Aero Engines

SERVICE BULLETIN

ENGINE - NUMBER 4 COMPARTMENT SCAVENGE ELBOW REDESIGN - MOD 72-0493

1. Planning Information

A. Effectivity

(1) Boeing MD-90

Engine Models

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

B. Concurrent Requirements

Service Bulletin V2500-ENG-70-0829 must be incorporated concurrently with this Bulletin.

C. Reason

(1) Problem

Engines have been found with the No. 4 Scavenge Elbow Gasket mis-assembled. This can impact the scavenge capacity of the No. 4 Bearing Compartment and could lead to No. 4 Oil Loss and High Pressure Turbine (HPT) thermal distress. As a part of the V2500-A1/V2500-A5 oil in the HPT corrective action, an alignment pin was added to the external scavenge elbow to prevent gasket mis-assembly.

(2) Evidence

As a part of the V2500-A1/V2500-A5 oil in the HPT corrective action, an alignment pin was added to the external scavenge elbow to prevent gasket mis-assembly, this task adds the same alignment feature to the scavenge elbow used on the V2500-D5 to prevent gasket mis-assembly and provide commonality across the entire V2500 fleet.

(3) Objective

Re-design the V2500-D5 No. 4 Scavenge Elbow to incorporate a Pin to prevent mis-assembly of the Gasket. This is a lesson learned and incorporated in the V2500-A1/V2500-A5 for the No. 4 compartment oil loss corrective action.

(4) Substantiation

A back to back structural finite element analysis of the current bill of material design and the proposed re-design using component temperature data from X804-24B was performed and determined the stress level at the highest stress location within the elbow assembly did not change. A 3-D solid model and rapid prototypes were used to verify the corrective position of the pin relative to its interfacing components.

(5) Effect of Bulletin on:

(a) Removal/Installation

None.

(b) Disassembly/Assembly

None.

(c) Cleaning

None.

(d) Inspection/Check

None.

(e) Repair

None.

(f) Testing

None.

(6) Supplemental Information

None.

D. Description

Replace No. 4 Bearing Scavenge Tube Elbow with a redesigned part.

E. Compliance

Category Code 6

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

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 models 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 models listed.

G. Manpower

(1) In service

Not applicable

(2) At overhaul - scheduled removal

NOTE: The parts affected by this Service Bulletin are accessible at overhaul.

(a) Clean Elbow

30 minutes

(b) NDT inspect the elbow

40 minutes

(c) Machine hole

15 minutes

(d) Break sharp edges

1 minute

(e) Dimensionally inspect

5 minutes

(f) NDT inspect the elbow

40 minutes

(g) Press pin into the hole

5 minutes

(h) Identify part to new part number

5 minutes

Total 2 hours 21 minutes

H. Weight and Balance

(1) Weight Change

None.

(2) Moment Arm

No Effect.

(3) Datum

Engine Front Mount Centreline (Power Plant Station (PPS) 100).

I. Electrical Load Data

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

J. Software Accomplishment Summary

Not Applicable.

K. References

(1) IAE V2500 Service Bulletin V2500-ENG-70-0829 (Information - Engine - Provide A New No. 4 Bearing and Lock).

(2) IAE V2500 Service Bulletin V2500-ENG-72-0167 (Engine - Diffuser and Combustion Section - Replace the Existing No. 4 Bearing Scavenge Tube Crush Gasket with a Gasket Having Improved Sealing Features).

(3) V2500 Engine Illustrated Parts Catalogs (S-V2500-3IA, S-V2500-3IB), Chapter/Section 72-42-20.

(4) V2500 Engine Manual (E-V2500-3IA), Chapter/Section 72-42-00.

(5) Internal Reference No. - 01VA009N.

(6) ATA Locator - 72-42-00.

L. Other Publications Affected

(1) V2500 Engine Illustrated Parts Catalogs (S-V2500-3IA, S-V2500-3IB), Chapter/Section 72-42-20.

(2) V2500 Engine Manuals (E-V2500-1IA and E-V2500-3IA), Chapter/Section 72-42-00, Cleaning, Inspection and Repair, to add the new part.

M. Interchangeability of Parts

The superseded Elbow may be used with either pre or post Service Bulletin V2500-ENG-70-0829. The new Elbow must only be used with the new Gasket and Lock introduced in Service Bulletin V2500-ENG-70-0829.

N. Information in the Appendix

Alternate Accomplishment Instructions (No)

Progression Charts (Yes)

Added Data (Yes)

Revision to Table of Limits (No)

Inspection Procedures (No)

2. Material Information

A. Industry Support Program

Not Applicable.

B. The Material Data That Follows Is For Each Engine

72-42-20

For V2525-D5, V2528-D5 Engines

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
02-340	2A3951-01	1	.Elbow Assembly	-	2A2514	(1)(B)(L)(I)
02-342	MS9390-280	1	..Pin	-		(B)

C. Instructions/ Disposition Code Statements:

Parts Modification Conditions

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

Spare Parts Availability

(B) The new part will be available approximately October 31, 2005.

(L) The old part will be supplied until the supply is fully used.

Cleaning, Inspection and Repair Information

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

D. Tooling - Price and Availability

Special tools are not required to accomplish this Service Bulletin.

E. Reidentified Parts

Reidentified Parts Data

New PN	Keyword	Old PN
2A3951-01	Elbow Assembly	2A2514

F. Other Material Information Data

Not Applicable.

3. Accomplishment Instructions

A. Reoperation Instructions

(1) Reoperate Elbow Part Number 2A2514.

(a) Disassemble Diffuser and Combustion Group and remove the No. 4 Bearing Scavenge Tube per engine manual Task 72-42-00-040-001, Subtask 72-42-00-040-074.

(b) Clean PN 2A2514 Elbow. Refer to Task 72-42-20-100-103.

(c) Examine the Elbow for damage, corrosion, and wear.

(i) Refer to the Standard Practices/Processes manual for data on definitions of damage. Refer to Task 70-02-02-350-501.

(ii) Inspect the Elbow per Task 72-42-20-200-109.

(1) Test for cracks on the Elbow. Use Penetrant inspection procedure 70-23-01-230-501.

R (d) Machine an alignment pin hole (0.185 (4.699) - 0.186 (4.724) as specified in Figure 2.

(e) Break edges 0.003 - 0.030.

(f) Examine the Elbow for damage, corrosion, and wear.

(i) Refer to the Standard Practices/Processes manual for data on definitions of damage. Refer to Task 70-02-02-350-501.

(ii) Inspect the Elbow per Task 72-42-20-200-109.

(1) Test for cracks on the Elbow. Use Penetrant inspection procedure 70-23-01-230-501.

(g) Press Pin PN MS9390-280 into the alignment pin hole. See Figure 2.

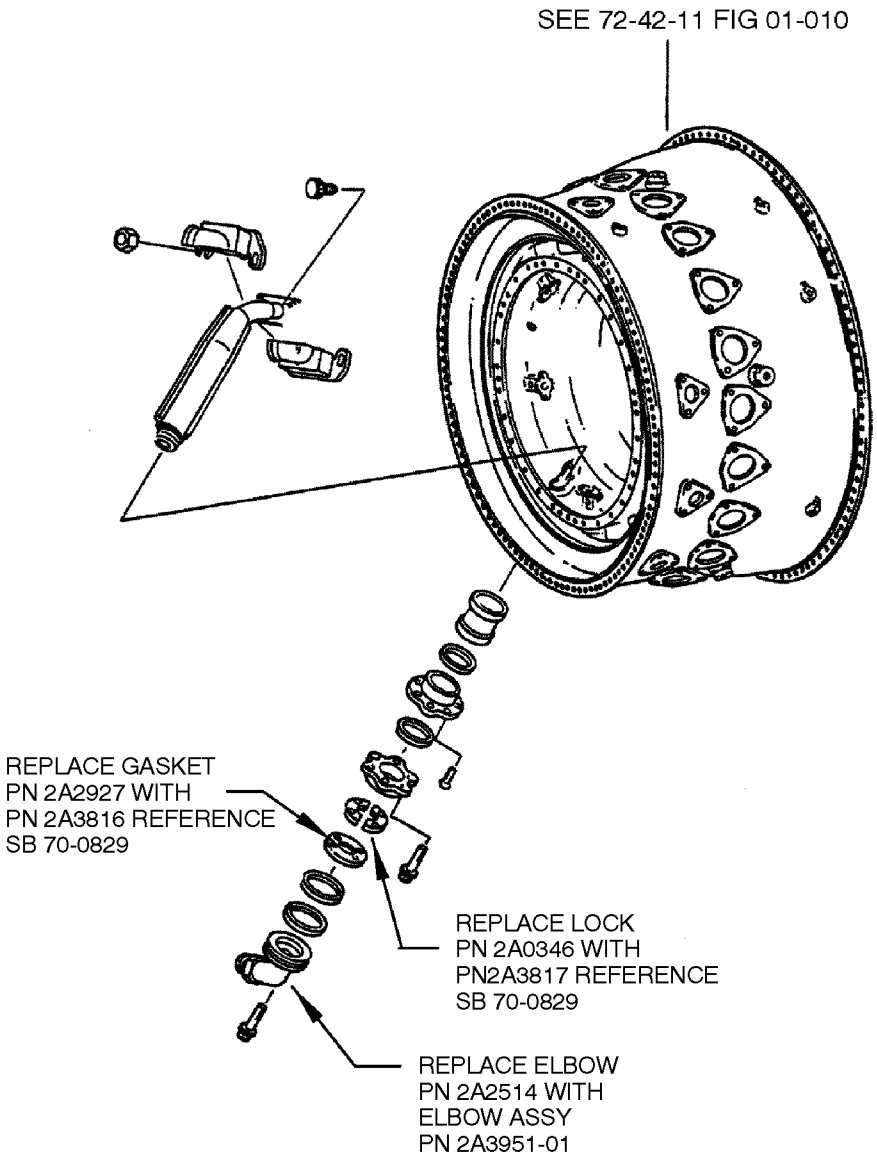
(2) Identify the Elbow with Pin installed as PN 2A3951-01. Refer to Standard Practices/Procedures, 70-09-400-501

B. Assembly Instructions

(1) Replace the Elbow PN 2A2514, with a new Elbow Assy PN 2A3951-01 Containing Pin PN MS9390-280. Refer to engine manual Task 72-42-00-430-001 Subtask 72-42-00-430-067. See Figure 1.

(2) Recording Instructions

(a) A record of accomplishment is required.



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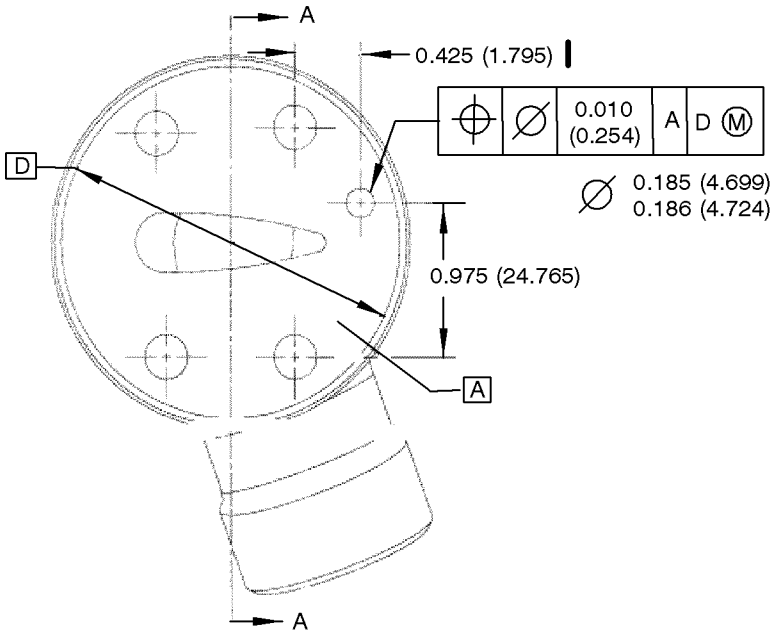
LOCATION OF ELBOW GASKET AND LOCK
Figure 1



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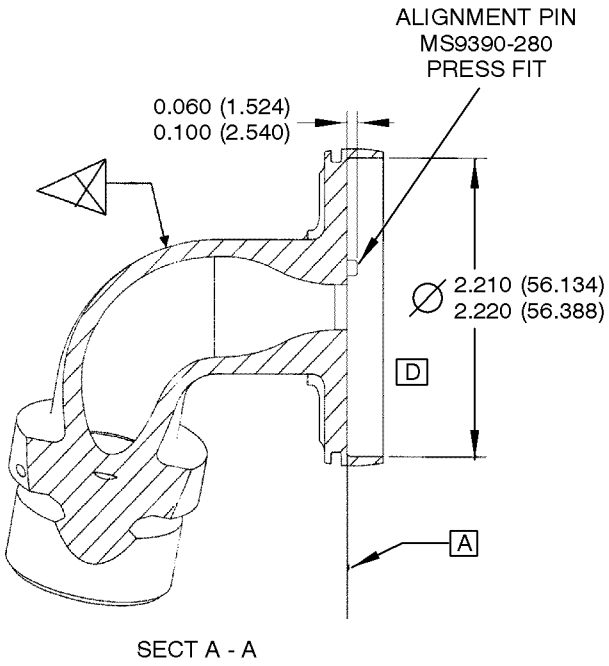

SECT A - A

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R ELBOW ASSEMBLY
R Figure 2

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.

MODIFICATION	PART NUMBER CHANGE
BASELINE	2A2514
V2500-ENG-72-0493	2A3951-01

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FAMILY TREE ELBOW ASSEMBLY. REF. CATALOG SEQUENCE NUMBER 70-42-20 FIGURE 2 ITEM 340
Chart A

International Aero Engines

SERVICE BULLETIN

ENGINE - NUMBER 4 COMPARTMENT SCAVENGE ELBOW REDESIGN - MOD 72-0493

SUPPLEMENT - PRICES AND AVAILABILITY

V2500 All

1. Modification Kit:

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

2. Material Cost

   NOTE: The prices shown are for estimating purposes only and as such are given in good faith, without commercial liability for advanced planning purposes only. Refer to IAE Spares and/or current Price Catalogue for current prices.

   A. The estimated price of new material to do this Service Bulletin using new replacement parts is $1820.00.

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

3. New Production Parts:

New Production Part No.	Description	Unit Price US Dollars
2A3951-01	.Elbow Assembly	1820.00
MS9390-280	..Pin	82.00