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V2500-A1 SERIES PROPULSION SYSTEM NON-MODIFICATION SERVICE BULLETIN

This document transmits Revision 1 to Service Bulletin EV2500-73-0188

Document History

Service Bulletin Revision Status	Supplement Revision Status
Initial Issue Jan.15/04	

Bulletin Revision 1

Remove	Incorporate	Reason for change
All pages of the Service Bulletin	Pages 1 to 13 of the Service Bulletin	To add engine serial number V0004

V2500-ENG-73-0188

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

LIST OF EFFECTIVE PAGES

The effective pages to this Service Bulletin following incorporation of Revision 1 are as follows:

Page		Revision Number	Revision Date
	Bulletin		
R	1	1	Apr.5/04
R	2	1	Apr.5/04
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R	4	1	Apr.5/04
R	5	1	Apr.5/04
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R	8	1	Apr.5/04
R	9	1	Apr.5/04
R	10	1	Apr.5/04
R	11	1	Apr.5/04
R	12	1	Apr.5/04
R	13	1	Apr.5/04

NON-MODIFICATION SERVICE BULLETIN - ENGINE - EPR MODIFIER CLASS CORRECTION DUE TO TEST CELL CALIBRATION SHIFT

1. Planning Information

A. Effectivity Data (For Airbus A320)

Engine Models Applicable

R V2500-A1 Engine Serial Nos. V0004, V0014, V0018, V0019, V0022, V0025, V0029, V0031, V0035, V0041, V0042, V0048, V0049, V0066, V0067, V0069, V0075, V0076, V0078, V0083, V0086, V0088, V0089, V0090, V0091, V0093, V0096, V0099, V0101, V0103, V0104, V0106, V0153, V0162, V0167, V0178, V0179, V0181, V0183, V0193, V0195, V0202, V0207, V0208, V0211, V0217, V0219, V0234, V0245, V0249, V0261, V0262, V0310, V0318, V0334, V0349, V0351

B. Concurrent Requirements

There are no concurrent requirements.

C. Reason

R (1) Problem: A total of 57 V2500-A1 engines (whose last shop visit dates back to October 1999) tested at one overhaul facility were shipped with an error in the EPR Modifier Class.

(2) Background: In October 2003, one V2500-A1 engine from the suspect test cell exhibited EPR/Thrust band lower than allowed by the Engine Manual. A back-to-back test of this engine at another test cell confirmed an installed thrust shortfall of up to 1.5%.

(3) Solution: Data has been analyzed for all engines that were tested in the suspect test cell since it was calibrated in 1994 and discovery of the Thrust/EPR discrepancy in October 2003. Results of this review has
R determined that there are 57 engines affected whose Thrust/EPR setting is incorrect due test cell calibration shift. Since discovery of this problem the test cell has been re-calibrated.

(4) Root Cause: Investigation is on-going and the root cause has not been determined. However, review of data shows that all affected engines have been identified and will be addressed by this NMSB. Furthermore, engines tested from this point forward will be shipped with the correct Thrust/EPR relationship.

(5) Corrective Action: Change the data entry plug (DEP) EPR Modifier Class on engine serial numbers listed in Effectivity per the procedures and data provided.

(6) Effects of Bulletin on:

Removal/Installation: Not Applicable.

Disassembly/Assembly: Not Applicable.

Cleaning: Not Applicable.

Inspection/Check: Not Applicable.

Repair: Not Applicable.

Testing: Not Applicable.

(7) Supplemental Information

None.

D. Description

Inspect and provide procedure to re-wire the Data Entry Plug to change EPR Modifier only which will provide correct EPR/Thrust ratio for affected engines.

E. Compliance

Category 3

For Engine serial numbers classified as Priority A in Table 1 accomplish within 10 weeks of bulletin receipt. For Engine serial numbers classified as Priority B in Table 1 accomplish within 20 weeks of bulletin receipt.

F. Approval Data

The part number changes and/or part modifications specified in the Accomplishment Instructions and Material Information sections of this Service Bulletin have been shown to comply with the applicable Federal Aviation Regulations and are FAA-APPROVED for the engine model(s) given.

The compliance statement and the procedures described in this Service Bulletin have been shown to comply with the applicable Federal Aviation Regulations and are FAA-APPROVED for the Engine Model listed.

G. Manpower

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

Venue	Estimated Manhours
In Service	To do a modification and test the DEP 13 minutes To identify the DEP 3 minutes To mark the Engine Identification plate 5 minutes Total 21 minutes
At Overhaul	Not Applicable

H. Weight and Balance

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

I. Electrical Load Data

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

J. Software Accomplishment Summary

Not Applicable.

K. References

1. IAE V2500 Service Bulletin V2500-ENG-70-0209.
2. Aircraft Maintenance Manual 73-22-34.
3. Aircraft Maintenance Manual 73-22-35.
4. V2500 Standard Practices/Processes Manual (E-V2500-1IA).

R 5. Internal Reference No. - 03VC265, 03VC265A.

6. ATA Locator - 73-22-00.

L. Interchangeability of Parts

Not affected.

M. Information in the Appendix

Alternate Accomplishment Instructions (No)

Progression Charts (No)

Added Data (No)

Revision to Table of Limits (No)

Inspection Procedures (No)

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 determined by the quaintity of jumpers required.

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 Engines:

New PN	Qty	Estimate of Unit Price ($)	Keyword	Old PN (ATA/Figure/Item)	Insts - Disp
2A2315	AR	43.70	Lead, Electrical, (Jumper 1)	2A2315 (73-22-35-01-145)	(3)(A)(I)
2A2304	AR	82.50	Lead, Electrical, (Jumper 2)	2A2304 (73-22-35-01-155)	(3)(A)(I)
2A2305	AR	104.00	Lead, Electrical, (Jumper 3)	2A2305 (73-22-35-01-165)	(3)(A)(I)
2A2306	AR	124.00	Lead, Electrical, (Jumper 4)	2A2306 (73-22-35-01-175)	(3)(A)(I)

D. Instructions/Disposition Code Statements:

Parts Modification Conditions

(3) This part may be required to accomplish this bulletin.

Spare Parts Availability

(A) The new part is available.

Cleaning, Inspection and Repair Information

(I) The cleaning, inspection and repair requirements are the same for the old and new part.

E. Tooling - Price and Availability

Special tools are listed in the Aircraft Maintenance Manual references 1 and 2.

F. Reidentified Parts

Not Applicable.

3. Accomplishment Instructions

(1) This service bulletin is complied with if the engine was tested in accordance with V2500-Engine Manual 71-00-00 Test No. 10, Performance Test after 5 November 2003. In this case, the test results can be used as record of bulletin accomplishment. The following notes and steps 2 through 9 are skipped.

If the previous test was not accomplished continue with the following notes and steps 2 through 10.

NOTE: Accomplishment of this Service Bulletin requires modifying the Engine Identification Plate. In certain instances this may require obtaining a new Engine Identification Plate from your IAE representative. Before beginning work on this Service Bulletin make sure there is enough time to obtain a new Identification Plate if required.

NOTE: Service bulletin incorporation on engines installed on aircraft may be desirable and should be individually evaluated.

NOTE: Service bulletin incorporation is permitted on both engines on an aircraft at the same time.

(2) Gain access and remove the Data Entry Plug (DEP) in accordance with the Aircraft Maintenance Manual (AMM) 73-22-35-401.

(3) Confirm that all data marked on the DEP agrees with the information on the Engine Identification Plate. Also confirm that the Engine Pressure Ratio (EPR) Modifier Class marked on the DEP agrees with the existing EPR Modifier Class in Table 1 for that engine serial number. If not, contact your local IAE Representative.

(4) Disassemble and re-wire the DEP to change the EPR Modifier Class according to the information in Table 1. Table 1 provides the existing EPR Modifier Class and the new EPR Modifier Class for each affected engine by serial number.

(a) Disassemble the DEP Assembly per procedure specified in AMM 73-22-35-801.

(b) Make two photo copies of Figure 1 of this Service Bulletin, Contact Hole Locations.

(c) Mark all existing jumper connections from the DEP connectors on one copy of the figure and label it 'Pre SB 73-0188 Pin Connectors'.

(d) Find the existing EPR Modifier Class marked on the DEP and confirm that the Data Entry Plug wiring agrees with the jumpers according to Table 2.

(e) Find the new EPR Modifier Class for the engine serial number in Table 1.

(f) Mark the jumper locations for the new EPR Modifier Class on the second copy of the Contact Hole Location Sheet. Mark all other existing jumper locations that are not affected by the EPR Modifier Class Change. Label this copy 'Post SB 73-0188 Pin Connectors'.

(g) Remove the jumpers to change from the existing EPR Modifier Class and install the jumpers needed for the new EPR Modifier Class according to the procedures in AMM 73-22-35-801.

NOTE: When following the procedures in AMM 73-22-35-801 you will be installing different jumpers than the original configuration to accommodate the changes in Table 1.

(h) Assemble and test the DEP per AMM 73-22-35-801.

(i) Cross out the existing EPR Modifier Class on the DEP and mark the new EPR Modifier Class on the DEP using vibropeen method, reference Standard Practices/Processes Manual (SPP) 70-09-00 Marking Of Parts.

(5) Cross out the existing EPR Modifier Class on the Engine Identification plate with a single line so it is still legible. Mark the new EPR Modifier Class on the Engine Identification plate. Use vibropeen method, reference SPP 70-09-00 Marking Of Parts. If there is not sufficient room to mark the new EPR Modifier Class on the Engine Identification plate contact your local IAE Representative for a new Engine Identification plate.

(6) If required, Install a new Engine Identification Plate. See reference 1.

CAUTION: MAKE SURE THAT THE DATA ON THE NEW ENGINE IDENTIFICATION PLATE IS CORRECT FOR THE ENGINE IT IS INSTALLED ON.

(a) Remove the four bolts that secure the old Engine Identification Plate to the bracket located on the fan case at the 9 o'clock position. See Figure 2.

(i) Return the old Engine Identification Plate to the IAE representative.

(ii) Obtain a new Engine Identification Plate from the IAE representative.

(b) Install the new Engine Identification Plate to the bracket located on the fan case at the 9 o'clock position with part number 4W0102 Bolts (4 off). See Figure 2.

(c) Torque bolts between 32-36 lbfin (3,61-4,07Nm).

(7) Check the DEP wiring by interrogating the Multipurpose Control Display Unit (MCDU) and comparing the Electronic Engine Control (EEC) configuration information output to the Engine Data Plate information when the EEC and DEP are installed on the aircraft. Use the procedure in the AMM 73-22-35.

(8) Do an operational test of the EEC by the procedures given in AMM 73-22-34, Operation Test of the EEC.

(9) Close Up Actions.

(10) Recording Instructions

(a) A record of accomplishment is required.

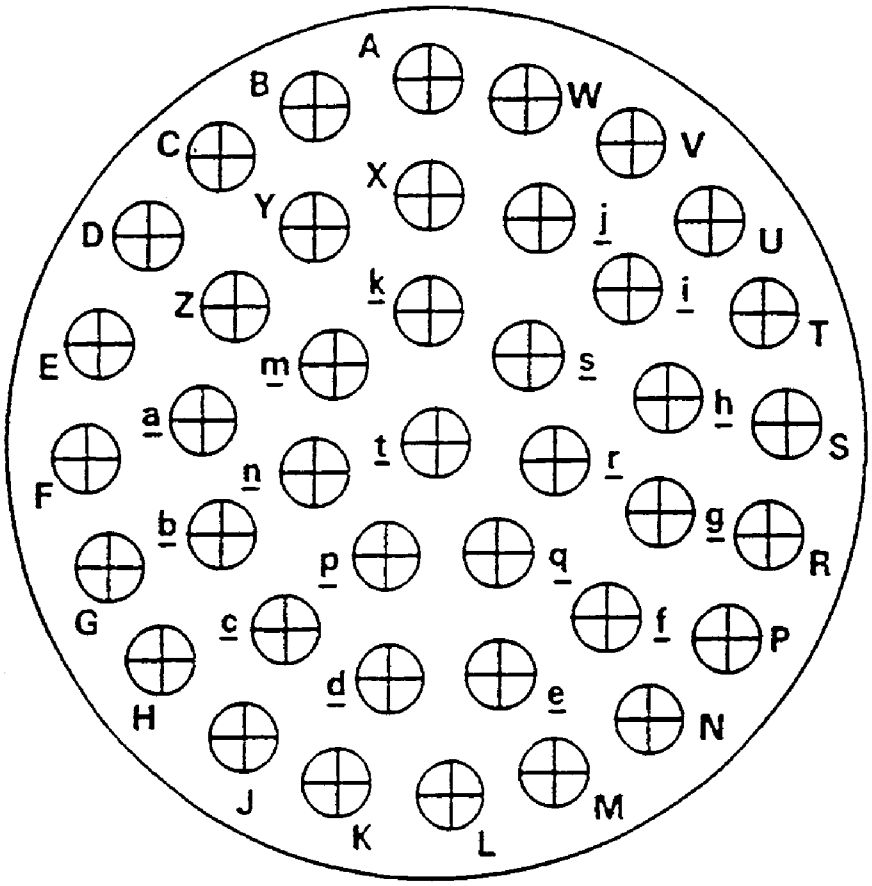
Table 1 EPR Modifier Class Changes

	Engine S/N	Existing EPR Modifier Class	New EPR Modifier Class	Change in EPR Modifier Class	Priority
R	V0004	6	8	2	A
R	V0014	4	5	1	B
	V0018	6	8	2	A
	V0019	7	8	1	B
	V0022	4	6	2	A
	V0025	6	8	2	A
	V0029	4	6	2	A
	V0031	5	7	2	A
	V0035	6	7	1	B
	V0041	5	7	2	A
	V0042	5	7	2	A
	V0048	6	7	1	B
	V0049	5	7	2	A
	V0066	5	7	2	A
	V0067	6	8	2	A
	V0069	6	7	1	B
	V0075	5	6	1	B
	V0076	6	8	2	A
	V0078	5	7	2	A
	V0083	5	6	1	B
	V0086	5	7	2	A
	V0088	6	8	2	A
	V0089	5	8	3	A
	V0090	6	7	1	B
	V0091	6	8	2	A
	V0093	7	8	1	B
	V0096	5	6	1	B
	V0099	4	6	2	A
	V0101	4	6	2	A
	V0103	4	6	2	A
	V0104	6	8	2	A

Engine S/N	Existing EPR Modifier Class	New EPR Modifier Class	Change in EPR Modifier Class	Priority
V0106	6	8	2	A
V0153	7	8	1	B
V0162	6	7	1	B
V0167	4	6	2	A
V0178	5	6	1	B
V0179	4	5	1	B
V0181	4	5	1	B
V0183	4	6	2	A
V0193	5	6	1	B
V0195	4	5	1	B
V0202	5	8	3	A
V0207	5	6	1	B
V0208	6	7	1	B
V0211	8	9	1	B
V0217	8	10	3	A
V0219	6	7	1	B
V0234	9	8	1	B
V0245	6	8	2	A
V0249	6	7	1	B
V0261	5	6	1	B
V0262	6	8	2	A
V0310	5	7	2	A
V0318	7	8	1	B
V0334	7	9	2	A
V0349	5	7	2	A
V0351	6	7	1	B

Table 2 DEP Pin Selection For EPR Modifier Classes

EPR Modifier Class	Channel A	Channel B	Jumper	Quantity
01	No Jumper	No Jumper		
02	Z to a	g to P	2 Pin	2
03	Z to m	g to r	2 Pin	2
04	Z to m	g to r	3 Pin	2
	Z to a	g to P		
05	Z to E	g to R	2 Pin	2
06	Z to E	g to R	3 Pin	2
	Z to a	g to P		
07	Z to E	g to R	3 Pin	2
	Z to m	g to r		
08	Z to E	g to R	4 Pin	2
	Z to m	g to r		
	Z to a	g to P		
09	Z to D	g to f	2 Pin	2
10	Z to D	g to f	3 Pin	2
	Z to a	g to P		
11	Z to D	g to f	3 Pin	2
	Z to m	g to r		
12	Z to D	g to f	4 Pin	2
	Z to m	g to r		
	Z to a	g to P		
13	Z to D	g to f	3 Pin	2
	Z to E	g to R		
14	Z to D	g to f	4 Pin	2
	Z to E	g to R		
	Z to a	g to P		
15	Z to D	g to f	4 Pin	2
	Z to E	g to R		
	Z to m	g to r		
16	Z to D	g to f	5 Pin	2
	Z to E	g to R		
	Z to m	g to r		
	Z to a	g to P		



NOTE: Upper case I, O, and Q are not used.
Lower case i and o are not used.

ENGINE NO. _____

RATING - BUMP _____

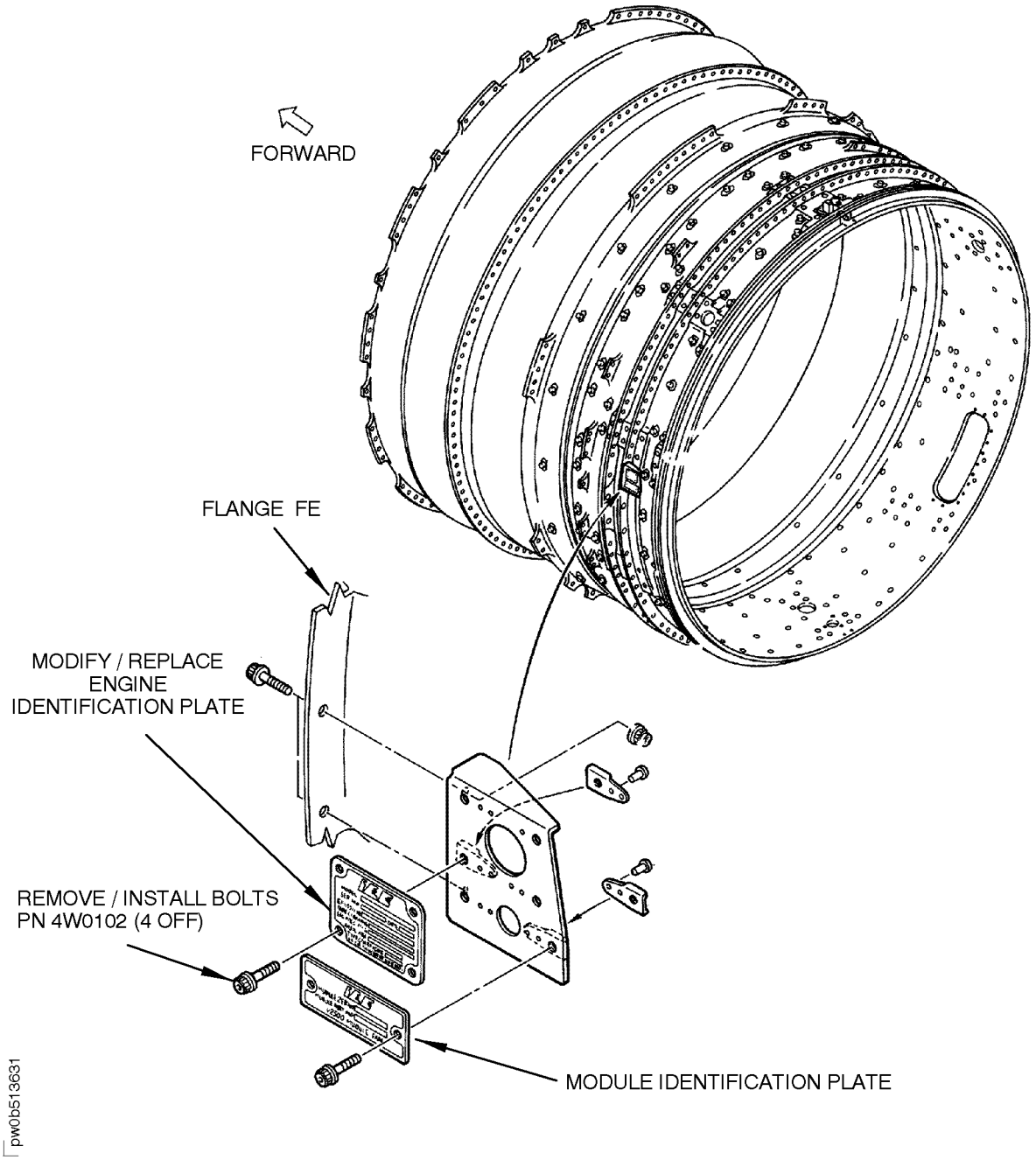
VARIANT _____

EPR MOD. _____

P/N _____

pw0b513601

Contact Hole Locations
Figure 1



Location of the Engine Identification Plate (Ref. Catalog Sequence No. 72-32-85, Figure 3, Item 120)
Figure 2