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V2500-A5 SERIES PROPULSION SYSTEM SERVICE BULLETIN

This document transmits Revision 2 to Service Bulletin EV2500-73-0185 and Revision 2 to the Supplement

Document History

Service Bulletin Revision Status		Supplement Revision Status	
Initial Issue	Jan.30/04	Initial Issue	Jan.30/04
Revision 1	Dec.8/05	Revision 1	Dec.8/05

Bulletin Revision 2

Remove	Incorporate	Reason for change
All pages of the Summary	Page 1 and 2 of the Summary	To extend the Effectivity.
All pages of the Service Bulletin	Pages 1 to 11 of the Service Bulletin	To extend the Effectivity.
All pages of Appendix 1	Page 1 and 2 of Appendix 1	To extend the Effectivity.

Supplement Revision 2

Remove	Incorporate	Reason for change
All pages	Page 1	To extend the Effectivity.

V2500-ENG-73-0185

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
	Summary		
R	1	2	Aug.15/06
R	2	2	Aug.15/06
	Bulletin		
R	1	2	Aug.15/06
R	2	2	Aug.15/06
R	3	2	Aug.15/06
R	4	2	Aug.15/06
R	5	2	Aug.15/06
R	6	2	Aug.15/06
R	7	2	Aug.15/06
R	8	2	Aug.15/06
R	9	2	Aug.15/06
R	10	2	Aug.15/06
R	11	2	Aug.15/06
	Appendix 1		
R	1	2	Aug.15/06
R	2	2	Aug.15/06
	Supplement		
R	1	2	Aug.15/06

International Aero Engines

SERVICE BULLETIN

ENGINE - FUEL AND CONTROL - EEC150-40 PRESSURE BURNER SENSOR PORT SCREEN DELETION

SUMMARY

1. PLANNING

A. EFFECTIVITY

R Engine V2500-A5 Serial Numbers V10001 through V12338 and V12340, V12342,
R V12344, V12346, V12348.

B. CONCURRENT REQUIREMENTS

CAUTION

DO NOT MIX SCN16/U WITH SCN17/V, SCN18/W, OR SLIMLINE CASTING EEC'S ON THE SAME AIRCRAFT

This modification was originaly introduced as a Controlled Service Use (CSU) program. Testing is now complete and this Bulletin may be accomplished in accordance with the category code.

C. REASON/PROBLEM

Condition: The screen on the EEC150-40 Silicon Capacitive Pressure Sensor (SCPS) Pressure Burner Pb port has a tendency to become contaminated with aluminum hydroxide which is present in the burner as a result of oxidation of aluminum from the compressor lining. Once contaminated, the screen more readily attracts and holds moisture which can potentially lead to freezing at cruise. The frozen Pb signal is detected by the EEC. The Pb Synthesis will allow safe operation for the remainder of the flight, however, a non-dispatchable 'Sensor Fault' is annunciated to the cockpit.

Background: The 40 micron screen traps aluminium hydroxide contamination making the EEC more prone to in-flight Pb freezing events. Although the Pb sensor is directly heated, the screen is located in the Pb port and does not receive heat generated by the sensor heater. The 40 micron mesh presents a relatively colder surface, which encourages condensation on a surface that effectively traps and collects aluminium hydroxide.

Objective: Remove the 40 micron screen from the port of the EEC150-40 SCPS Pb Sensor. The silicon capacitive type of Pb sensors used on the EEC150-40 are resistant to contamination and therefore do not require the filtering properties of the screen.

D. DESCRIPTION

Provide a SCN16/U, SCN17/V, SCN18/W, or Slimline Casting EEC 150-40 with the Pb sensor port screen deleted.

E. COMPLIANCE

Category 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

Not applicable

Total Necessary Man-hours

Not applicable

2. MATERIAL INFORMATION

Part Prices

A. There is no new material cost to do this Service Bulletin when the part modification procedure is used.

B. Contact IAE for Price and manufacturing lead time quote.

International Aero Engines

SERVICE BULLETIN

ENGINE - FUEL AND CONTROL - EEC150-40 PRESSURE BURNER SENSOR PORT SCREEN DELETION

Printed in Great Britain

1. Planning Information

A. Effectivity Data

(1) Airbus A319

Engine Models Applicable

V2522-A5, V2524-A5, V2527M-A5

R Engine V2500-A5 Serial Numbers V10001 through V12338 and V12340, V12342,
R V12344, V12346, V12348.

(2) Airbus A320

Engine Models Applicable

V2527-A5, V2527E-A5

R Engine V2500-A5 Serial Numbers V10001 through V12338 and V12340, V12342,
R V12344, V12346, V12348.

(3) Airbus A321

Engine Models Applicable

V2530-A5, V2533-A5

R Engine V2500-A5 Serial Numbers V10001 through V12338 and V12340, V12342,
R V12344, V12346, V12348.

B. Concurrent Requirements

This modification was originaly introduced as a Controlled Service Use (CSU) program. Testing is now complete and this Bulletin may be accomplished in accordance with the category code.

This Service Bulletin must be done at the same time or after Reference 2, 3 or 4, Service Bulletin No. V2500-ENG-73-0170, V2500-ENG-73-0184, or V2500-ENG-73-0189.

C. Reason

(1) Condition: The screen on the EEC150-40 Silicon Capacitive Pressure Sensor (SCPS) Pressure Burner Pb port has a tendency to become contaminated with aluminum hydroxide which is present in the burner as a result of oxidation of aluminum from the compressor lining. Once contaminated, the screen more readily attracts and holds moisture which can potentially lead to freezing at cruise. The frozen Pb signal is detected by the EEC. The Pb Synthesis will allow safe operation for the remainder of the flight, however, a non-dispatchable "Sensor Fault" is annunciated to the cockpit.

(2) Background: The 40 micron screen traps aluminium hydroxide contamination making the EEC more prone to in-flight Pb freezing events. Although the Pb sensor is directly heated, the screen is located in the Pb port and does not receive heat generated by the sensor heater. The 40 micron mesh presents a relatively colder surface, which encourages condensation on a surface that effectively traps and collects aluminium hydroxide.

(3) Objective: Remove the 40 micron screen from the port of the EEC150-40 SCPS Pb Sensor. Screen removal will prevent localized condensation which precipitates aluminium hydroxide contamination. The silicon capacitive type of Pb sensors used on the EEC150-40 are resistant to contamination and therefore do not require the filtering properties of the screen.

(4) Substantiation: The SCPS used to measure Pb on the EEC150-40 is resistant to contamination. If a small quantity of a contaminant or moisture were to reside on the diaphragm of a capacitive sensor, it has little effect on the deflection of the diaphragm. The pressure measurement effect is negligible. This makes the SCPS inherently more tolerant of moisture and contamination than other type of sensors. The SCPS has been utilized in the EEC150-40 design since 1998 and to date, there have been no Pb sensors removed due to contamination.

Hamilton Sundstrand has analyzed numerous EEC150-40 contaminated screens from units that have come back from service. Dozens of additional screens have been visually inspected, photographed, and cataloged. The only contaminant consistently observed in any measurable quantity has been aluminum hydroxide. Occasionally moisture is also noticed in the Pb port. In addition, the long service experience from the Vibration Cylinder sensor in the EEC150-20 also shows only small quantities of accumulated contamination.

For the purpose of demonstrating the resistance of the SCPS to contamination, HS designed and built a rig for back-to-back comparative testing of an EEC150-40 with and without the screen installed in the EEC Pb port. Testing was carried out from March through May of 2005 where significant levels of moisture and contamination were introduced to the sensor. Results showed that the 'no screen' configuration did in fact last significantly longer under fault free operation when compared to the 'screen' configuration.

In addition to this testing, an EEC150-40 without the screen installed was tested on a production engine at Pratt Whitney Middletown test facilities. No Pb faults were recorded during either engine run nor was there any impact on engine operation. Additional visual examination of the port, adapter, and sensor showed no signs of any debris or contaminants.

(5) Effects of Bulletin on:

Removal/Installation: Not affected.

Disassembly/Assembly: Not affected.

Cleaning: Not affected.

Inspection/Check: Not affected.

Repair: Not affected.

Testing: Not affected.

(6) Supplemental Information

None.

D. Description

Provide a SCN16/U, SCN17/V, SCN18/W, or Slimline Casting EEC 150-40 with the Pb sensor port screen deleted.

E. Compliance

Category 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 model(s) given.

The compliance statement 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

(1) In Service

Not Applicable.

(2) At Overhaul

Not Applicable.

H. Weight and Balance

(1) Weight Change

None.

(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-70-0888 (Engine - Fuel And Control - Electronic Engine Control (EEC) - New Slimline Casting).

2. IAE V2500 Service Bulletin V2500-ENG-73-0170 (Engine - Fuel And Control - To Provide A New A5 SCN16/U Electronic Engine Control (EEC)).

3. IAE V2500 Service Bulletin V2500-ENG-73-0184 (Engine - Fuel And Control - To Provide A New A5 SCN17/V Electronic Engine Control (EEC)).

4. IAE V2500 Service Bulletin V2500-ENG-73-0189 (Engine - Fuel And Control - To Provide A New Electronic Engine Control (EEC) With A5 SCN18/W Software).

5. Hamilton Sundstrand Service Bulletin EEC-150-40-73-11 (Incorporation of New Software Configuration: A5 SCN16/U, A5 SCN17/V, or A5 SCN 18W with the Pb sensor screen removed).

6. Airbus Service Bulletin A320-73-1082 and Aircraft Modification No's. 33684 and 34221.

7. V2500 Aircraft Maintenance Manual.

8. V2500 Engine Manual (E-V2500-1IA), Chapter/Section 72-00-32.

9. V2500 Engine Illustrated Parts Catalogs (S-V2500-2IA, S-V2500-2IB, S-V2500-5IA, S-V2500-5IB, S-V2500-6IA, S-V2500-6IB, S-V2500-7IA, and S-V2500-71B), Chapter/Section 73-22-34.

R 10. Internal Reference No. - 02VC192, 02VC192C, 02VC092C-01.

11. ATA Locator - 73-22-00.

L. Other Publications Affected

1. V2500 Engine Illustrated Parts Catalogs (S-V2500-2IA, S-V2500-2IB, S-V2500-5IA, S-V2500-5IB, S-V2500-6IA, S-V2500-6IB, S-V2500-7IA, and S-V2500-7IB), Chapter/Section 73-22-34, to add the new parts.

2. V2500 Engine Manuals (E-V2500-1IA), Chapter/Section 72-00-32-050-001 for removal and 72-00-32-450-001 for installation of the EEC.

M. Interchangeability of Parts

SCN18 is two way functionally interchangeable with SCN17 subject to concurrency requirements and only under specific conditions driven at an aircraft level. Refer to Airbus Service Bulletin A320-73-1082 (Ref 6.) for the definition of those conditions.

NOTE: SCN18 is functionally one way interchangeable with SCN16 or prior version and subject to concurrency requirements (SCN18 can not be reverted to SCN16 or prior software version due to the fan keep out zone logic incorporated at SCN17).

NOTE: For Aircraft Installation observe the following:

Engines with SCN18 software must not be intermixed with engines having SCN16 software or prior version software, on the same aircraft, due to the fan keep out zone logic incorporated at SCN17.

Engines with SCN18 software can only be intermixed with engines having SCN17 software on the same aircraft under specific conditions. Refer to Airbus Service Bulletin A320-73-1082 (Ref 6.) for the definition of those conditions.

N. Information in the Appendix

Alternate Accomplishment Instructions (No)

Progression Charts (Yes)

Added Data (No)

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.

73-22-34

V2522-A5, V2524-A5, V2527-A5, V2527E-A5, V2527M-A5, V2530-A5, V2533-A5 Engines:

FIG ITEM NO	NEW PART NO	QTY	PART TITLE	MAT	OLD PN	INSTR - DISP
01-280	824972-3-008 (2A3893)	1	Control, Electronic Engine, SCN16/U (150-40)	-	824972-2-008 (2A3504)	(1)(M)(V)(I)
			OR			
01-280	824972-3-010 (2A3894)	1	Control, Electronic Engine, SCN17/V (150-40)	-	824972-2-010 (2A3839)	(1)(M)(V)(I)
			OR			
01-280	824972-3-014 (2A3912)	1	Control, Electronic Engine, SCN18/W (150-40)	-	824972-2-014 (2A3911)	(1)(M)(V)(I)
			OR			
01-280	824972-5-014 (2A3929)	1	Control, Electronic Engine, Slimline Casting (150-40)	-	824972-4-014 (2A3928)	(1)(F)(V)(I)

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

(F) The new part will be available on a Full Manufacturing lead time quote basis only.
(M) It is possible to get the new part only by modification.
(V) This is the Hamilton Sundstrand part number.

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
824972-3-008 (2A3893)	Control, Electronic Engine, SCN16/U (150-40)	824972-2-008 (2A3504)
824972-3-010 (2A3894)	Control, Electronic Engine, SCN17/V (150-40)	824972-2-010 (2A3839)
824972-3-014 (2A3912)	Control, Electronic Engine, SCN18/W(150-40)	824972-2-014 (2A3911)
824972-5-014 (2A3929)	Control, Electronic Engine, Slimline Casting (150-40)	824972-4-014 (2A3928)

F. Other Material Information Data

Not Applicable.

3. Accomplishment Instructions

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

NOTE: SCN18 is two way functionally interchangeable with SCN17 subject to concurrency requirements and only under specific conditions driven at an aircraft level. Refer to Airbus Service Bulletin A320-73-1082 (Ref 6.) for the definition of those conditions.

SCN18 is functionally one way interchangeable with SCN16 or prior version and subject to concurrency requirements (SCN18 can not be reverted to SCN16 or prior software version due to the fan keep out zone logic incorporated at SCN17).

NOTE: For Aircraft Installation observe the following:

Engines with SCN18 software must not be intermixed with engines having SCN16 software or prior version software, on the same aircraft, due to the fan keep out zone logic incorporated at SCN17.

Engines with SCN18 software can only be intermixed with engines having SCN17 software on the same aircraft under specific conditions. Refer to Airbus Service Bulletin A320-73-1082 (Ref 6.) for the definition of those conditions.

(1) Remove the EEC as specified in Reference 7., Aircraft Maintenance Manual, Chapter/Section 73-22-34.

(2) Send the old EEC part number 2A3504, 2A3839, 2A3911, or 2A3928 to an approved FAA electronic repair shop capable of recertifying the Hamilton
R Sunstrand EEC's SCN16/U, SCN17/V, SCN18/W, or SLIMLINE CASTINGS (150-40) in accordance with Service Bulletin EEC-150-40-73-11.

(3) Do an Inspection/Check of the Burner Pressure Sensor Tube as specified in Reference 7., Aircraft Maintenance Manual, Chapter/Section 73-22-49.

(4) If the Aircraft is equipped with SCN16/U part number 2A3504, replace with part number 2A3893, SCN16/U that has been modified by removing the Pressure Burner sensor port screen. See Reference 7., Aircraft Maintenance Manual, Chapter/Section 73-22-34.

If the Aircraft is equipped with SCN17/V part number 2A3839, replace with part number 2A3894, SCN17/V that has been modified by removing the Pressure Burner sensor port screen. See Reference 7., Aircraft Maintenance Manual, Chapter/Section 73-22-34.

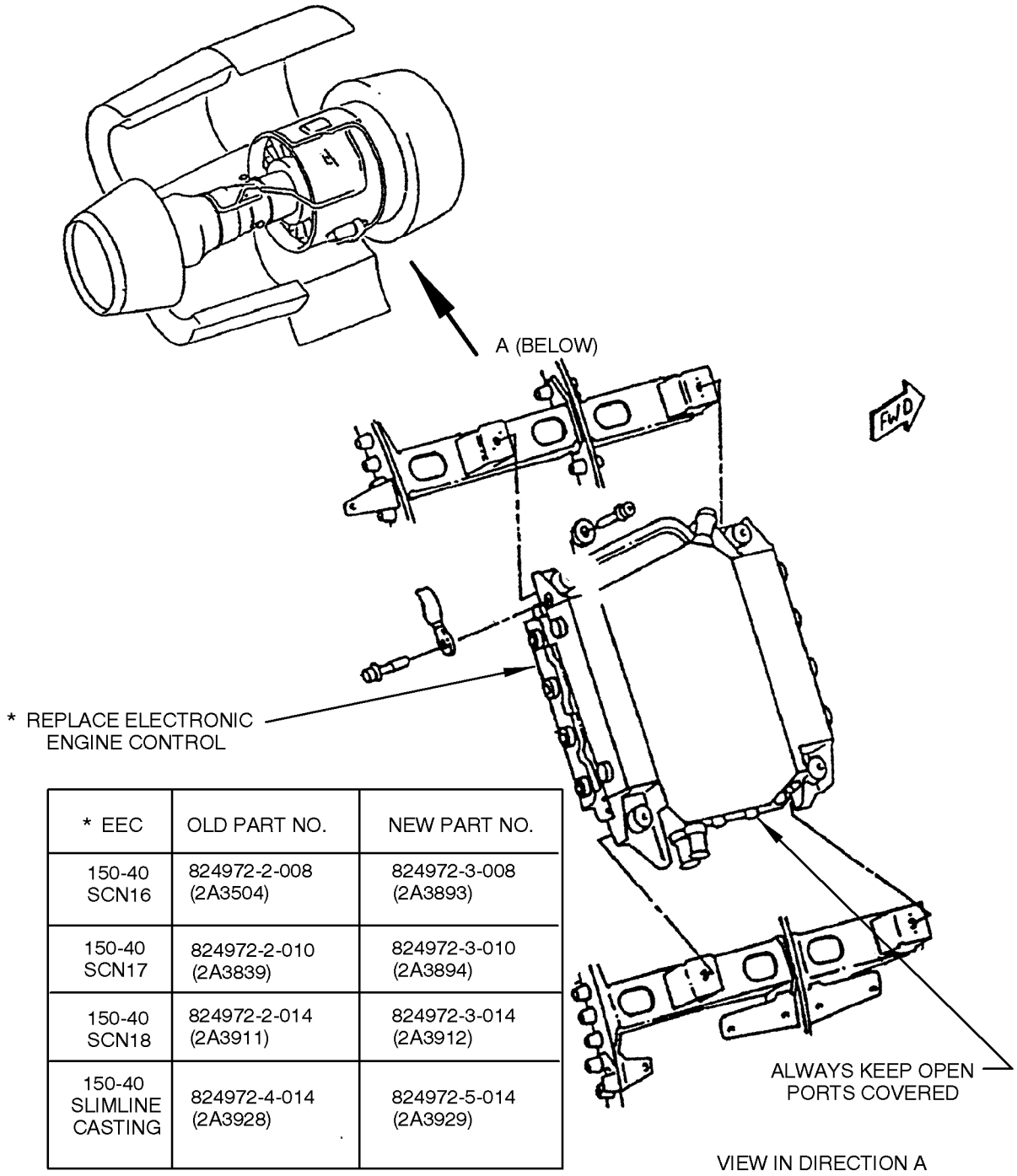
If the Aircraft is equipped with SCN18/W part number 2A3911, replace with part number 2A3912, SCN18/W that has been modified by removing the Pressure Burner sensor port screen. See Reference 7., Aircraft Maintenance Manual, Chapter/Section 73-22-34.

If the Aircraft is equipped with Slimline Casting EEC part number 2A3928, replace with part number 2A3929. See Reference 7., Aircraft Maintenance Manual, Chapter/Section 73-22-34.

(5) Recording Instructions

(a) A record of accomplishment is required.

R



* EEC	OLD PART NO.	NEW PART NO.
150-40 SCN16	824972-2-008 (2A3504)	824972-3-008 (2A3893)
150-40 SCN17	824972-2-010 (2A3839)	824972-3-010 (2A3894)
150-40 SCN18	824972-2-014 (2A3911)	824972-3-014 (2A3912)
150-40 SLIMLINE CASTING	824972-4-014 (2A3928)	824972-5-014 (2A3929)

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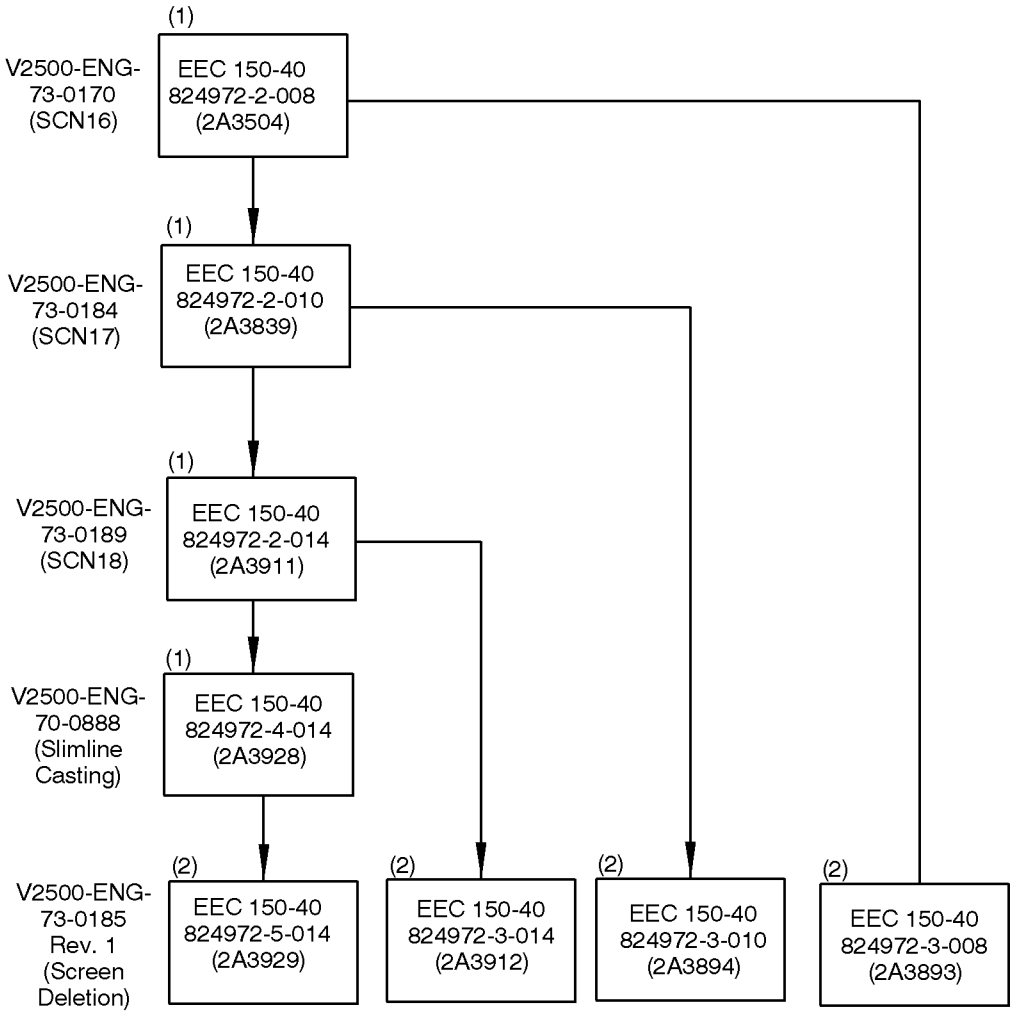
R R LOCATION OF THE ELECTRONIC ENGINE CONTROL (EEC)
Figure 1

APPENDIX 1

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

MODIFICATION

PART NUMBER CHANGE



(1) WITH Pb SCREEN
(2) Pb SCREEN DELETED

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FAMILY TREE - ELECTRONIC ENGINE CONTROL (EEC) REF. CATALOG SEQUENCE NO. 73-22-34, FIG. 01 ITEM 280
Chart A

International Aero Engines

SERVICE BULLETIN

ENGINE - FUEL AND CONTROL - EEC150-40 PRESSURE BURNER SENSOR PORT SCREEN DELETION

Supplement

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 Catalog for current prices.

   A. There is no new material cost to do this Service Bulletin when the part modification procedure is used.

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

3. New Production Parts

New Production Part Number	Description	Unit Price US Dollars
824972-5-014 (2A3929)	Control, Electronic Engine, Slimline Casting	Contact IAE for Price and manufacturing lead time quote