P U B L I C A T I O N T R A N S M I T T A L

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DATE: Feb.21/08

V2500-A5 SERIES PROPULSION SYSTEMS SERVICE BULLETIN

This document transmits Revision 1to Service Bulletin V2500-ENG-73-0200 and Revision 1 to the Supplement

Document History

Service Bulletin Revision Status		Supplement Revision Status	
Initial Issue	May 15/07	Initial Issue	May 15/07

Service Bulletin Revision 1

Remove	Incorporate	Reason for change
All pages of the Service Bulletin	Pages 1 to 13 of the Service Bulletin	To add part numbers in Material Information and add References.
	Pages 1 to 3 of Appendix 1	To add part numbers in the Appendix.
	Page 1 of Appendix 2 Appendix 2	To add Information in the Appendix.

V2500-ENG-73-0200

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

Supplement Revision 1

Remove	Incorporate	Reason for change
All pages	Page 1	To add part numbers in Material Information and add References.

International Aero Engines

SERVICE BULLETIN

ENGINE - FUEL AND CONTROL - REPLACEMENT OF RESISTORS AND TOUCH-UP OF SOLDER JOINTS FOR ENGINES WITH EEC150-40 ELECTRONIC ENGINE CONTROL (EEC) INSTALLED

1. Planning Information

A. Effectivity

(1) Airbus A319

(a) V2522-A5, V2524-A5, V2527M-A5

R Engine Serial Nos. V10001 thru V12667 including V12689 except V12664
R and V12666.

(2) Airbus A320

(a) V2527-A5, V2527E-A5

R Engine Serial Nos. V10001 thru V12667 including V12689 except V12664
R and V12666.

(3) Airbus A321

(a) V2530-A5, V2533-A5

R Engine Serial Nos. V10001 thru V12667 including V12689 except V12664
R and V12666.

B. Concurrent Requirements

R This Service Bulletin must be done at the same time or after Reference 4.,
R Servive Bulletin No. V2500-ENG-73-0185.

C. Reason

(1) Problem:

Solder joints of the RM2512, RM2208 and RM2018 ceramic, surface-mount style resistors may exhibit fracturing, over time, in EEC150-40 units. This condition led to one In-Flight Shutdown (IFSD) in July of 2005.

(2) Background:

The results of the root cause investigation and the available industry information confirmed that the Coefficient of Thermal Expansion (CTE) of ceramic surface-mount resistors is significantly lower than that of the epoxy resin material that the Printed Wiring Boards (PWBs) are manufactured from. This difference in CTE imparts a thermo-mechanical stress on the solder joint due to the temperature cycling experienced by the Electronic Engine Control (EEC) during normal flight profiles. Over time, this stress may produce cracks in the solder joints which in some cases, can effect EEC operation.

(3) Objective:

Make available a new configuration EEC150-40 design that minimizes the effect of the CTE difference between the ceramic RM2512, RM2208 and RM2018 resistors and the PWBs by replacing the ceramic devices with plastic encapsulated devices. This change will address all field hardware as well as introduce a new production configuration.

(4) Substantiation:

Based on the results of the root cause investigation of the customer EEC150-40 IFSD event, Hamilton Sundstrand/Pratt and Whitney is implementing a Class I Engineering Change that minimizes the effect of the CTE difference between the ceramic RM2512, RM2208 and RM2018 package-style resistors and the PWB. Tests performed in validating this change for both field rework and new production hardware were the following:

(a) Lightning pin injection tests on discrete outputs.

(b) Standard production testing (thermal cycle, vibration and final acceptance) on both field rework and new production configurations.

(c) Closed loop bench testing for thermocouple inputs on the field rework configuration. This test was performed to demonstrate failure mode compliance in the event of an open solder joint since these RM2208 style resistors will not be replaced in the field rework due to space constraints. These resistors will have their solder joints reflowed in the field rework process.

(5) Effects of Bulletin on:

(a) Removal/Installation:

Not affected.

(b) Disassembly/Assembly:

Not affected.

(c) Cleaning:

Not affected.

(d) Inspection/Check:

Not affected.

(e) Repair:

Not affected.

(f) Testing:

Not affected.

(6) Supplemental Information

None.

D. Description

Return the EEC to Hamilton Sundstrand for resistor replacement and solder joint touch-up.

R NOTE: If the EEC has a Pb sensor screen installed, it will be removed and the
R part number updated accordingly.

E. Compliance

Category Code 4

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.

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

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 Model listed.

G. Manpower

For Part A - Engines Installed on Aircraft

(1) Remove the EEC (includes installing warning notices and opening fan cowls)

R 0.6 hour

(2) Install the EEC (includes closing fan cowls and removing warning notices)

R 1.3 hour

(3) Total man-hours

R 1.9 hour

For Part B - Engines Removed from Aircraft

(1) Remove the EEC

R 0.4 hour

(2) Install the EEC

R 1.0 hour

(3) Total man-hours

R 1.4 hour

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 Electronic Engine Control (EEC) With A5 SCN17/V Software).

(4) IAE V2500 Service Bulletin V2500-ENG-73-0185 (Engine - Fuel And Control - EEC150-40 Pressure Burner Sensor Port Screen Deletion).

(5) 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).

(6) IAE V2500 Service Bulletin V2500-ENG-73-0197 (Engine - Fuel And Control - To Provide A New Electronic Engine Control (EEC) With A5 SCN19/X Software).

(7) Airbus Aircraft Modification No. 38078.

(8) Hamilton Sundstrand Service Bulletin EEC150-40-73-21 (Resistor Replacement).

R (9) Hamilton Sundstrand Service Bulletin EEC150-40-73-22 (Solder Joint
R Production Change).

(10) 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.

(11) V2500 Aircraft Maintenance Manual, Chapter/Section 73-22-34.

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

R (13) Internal Reference No.:

R Engineering Change 06VZ010, 06VZ010B, 06VZ010-03, 06VZ010-04.

R (14) Airbus Letter reference: 914.0065/08 dated 02-Feb-08.

(15) ATA Locator - 73-22-34.

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 and E-V2500-3IA), Chapter/Section 73-22-34 Cleaning, Inspection and Repair, to add the new parts.

M. Interchangeability of Parts

Old and new parts are directly interchangeable.

N. Information in the Appendix

Alternate Accomplishment Instructions (No)

Progression Charts (Yes)

R Added Data (Yes)

Revision to Table of Limits (No)

Inspection Procedures (No)

2. Material Information

A. Material - Price and Availability

Modification kit is not required.

For Price and availability of spares refer to the supplement of this Service Bulletin.

B. Industry Support Program

Not Applicable.

C. The material data that follows is for each engine.

73-22-34

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

	FIG- ITEM NUMBER	NEW PART NUMBER	QTY	PART TITLE	MAT	OLD PN	INSTR - DISP
R	01-280	2A4191 (824972-11-016)	1	Control, Electronic Engine (SCN19)	-	2A4034 (824972-5-016)	(2) (F) (I) (V)
R	01-280	2A3496 (824972-11-014)	1	Control, Electronic Engine (SCN18)	-	2A3929 (824972-5-014)	(2) (F) (I) (V)

For V2522-A5, V2524-A5, V2527-A5, V2527E-A5, V2527M-A5, V2530-A5, V2533-A5
R Delivered and Spare Engines:

FIG- ITEM NUMBER	NEW PART NUMBER	QTY	PART TITLE	MAT	OLD PN	INSTR - DISP
01-280	2A4184 (824972-7-008)	1	Control, Electronic Engine (SCN16)	-	2A3893 (824972-3-008)	(1) (M) (I) (V)
01-280	2A4184 (824972-7-008)	1	Control, Electronic Engine (SCN16)	-	2A3504 (824972-2-008)	(1) (M) (I) (V)
01-280	2A4181 (824972-7-010)	1	Control, Electronic Engine (SCN17)	-	2A3839 (824972-2-010)	(1) (M) (I) (V)
01-280	2A4181 (824972-7-010)	1	Control, Electronic Engine (SCN17)	-	2A3894 (824972-3-010)	(1) (M) (I) (V)
01-280	2A4173 (824972-7-014)	1	Control, Electronic Engine (SCN18)	-	2A3911 (824972-2-014)	(1) (M) (I) (V)

	FIG- ITEM NUMBER	NEW PART NUMBER	QTY	PART TITLE	MAT	OLD PN	INSTR - DISP
	01-280	2A4173 (824972-7-014)	1	Control, Electronic Engine (SCN18)	-	2A3912 (824972-3-014)	(1) (M) (I) (V)
	01-280	2A4175 (824972-9-014)	1	Control, Electronic Engine (SCN18)	-	2A3928 (824972-4-014)	(1) (M) (I) (V)
	01-280	2A4175 (824972-9-014)	1	Control, Electronic Engine (SCN18)	-	2A3929 (824972-5-014)	(1) (M) (I) (V)
	01-280	2A4177 (824972-7-016)	1	Control, Electronic Engine (SCN19)	-	2A4030 (824972-2-016)	(1) (M) (I) (V)
	01-280	2A4177 (824972-7-016)	1	Control, Electronic Engine (SCN19)	-	2A4031 (824972-3-016)	(1) (M) (I) (V)
	01-280	2A4179 (824972-9-016)	1	Control, Electronic Engine (SCN19)	-	2A4033 (824972-4-016)	(1) (M) (I) (V)
	01-280	2A4179 (824972-9-016)	1	Control, Electronic Engine (SCN19)	-	2A4034 (824972-5-016)	(1) (M) (I) (V)
R	01-280	2A3496 (824972-11-014)	1	Control, Electronic Engine (SCN18)	-	2A3911 (824972-2-014)	(2) (I) (V)
R	01-280	2A3496 (824972-11-014)	1	Control, Electronic Engine (SCN18)	-	2A3912 (824972-3-014)	(2) (I) (V)
R	01-280	2A3496 (824972-11-014)	1	Control, Electronic Engine (SCN18)	-	2A3928 (824972-4-014)	(2) (I) (V)
R	01-280	2A3496 (824972-11-014)	1	Control, Electronic Engine (SCN18)	-	2A3929 (824972-5-014)	(2) (F) (I) (V)
R	01-280	2A3496 (824972-11-014)	1	Control, Electronic Engine (SCN18)	-	2A4173 (824972-7-014)	(2) (I) (V)
R	01-280	2A3496 (824972-11-014)	1	Control, Electronic Engine (SCN18)	-	2A4175 (824972-9-014)	(2) (I) (V)
R	01-280	2A4191 (824972-11-016)	1	Control, Electronic Engine (SCN19)	-	2A4030 (824972-2-016)	(2) (I) (V)
R	01-280	2A4191 (824972-11-016)	1	Control, Electronic Engine (SCN19)	-	2A4031 (824972-3-016)	(2) (I) (V)
R	01-280	2A4191 (824972-11-016)	1	Control, Electronic Engine (SCN19)	-	2A4033 (824972-4-016)	(2) (I) (V)

	FIG- ITEM NUMBER	NEW PART NUMBER	QTY	PART TITLE	MAT	OLD PN	INSTR - DISP
R	01-280	2A4191 (824972-11-016)	1	Control, Electronic Engine (SCN19)	-	2A4034 (824972-5 -016)	(2) (I) (V)
R	01-280	2A4191 (824972-11-016)	1	Control, Electronic Engine (SCN19)	-	2A4177 (824972-7 -016)	(2) (I) (V)
R	01-280	2A4191 (824972-11-016)	1	Control, Electronic Engine (SCN19)	-	2A4179 (824972-9 -016)	(2) (I) (V)

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.

(2) The new part is a replacement part only, and cannot be obtained by modification of the old part.

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.

E. Tooling - Price and Availability

Special tools are not required to accomplish this Service Bulletin.

F. Reidentified Parts

New PN	Keyword	Old PN
2A4184	Control, Electronic Engine (SCN16)	2A3504
2A4184	Control, Electronic Engine (SCN16)	2A3893
2A4181	Control, Electronic Engine (SCN17)	2A3839
2A4181	Control, Electronic Engine (SCN17)	2A3894
2A4173	Control, Electronic Engine (SCN18)	2A3911
2A4173	Control, Electronic Engine (SCN18)	2A3912
2A4175	Control, Electronic Engine (SCN18)	2A3928
2A4175	Control, Electronic Engine (SCN18)	2A3929
2A4177	Control, Electronic Engine (SCN19)	2A4030
2A4177	Control, Electronic Engine (SCN19)	2A4031
2A4179	Control, Electronic Engine (SCN19)	2A4033
2A4179	Control, Electronic Engine (SCN19)	2A4034

G. Other Material Information Data

Not Applicable.

3. Accomplishment Instructions

A. Part A - For Engines Installed on Aircraft

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

R (1) Remove the EEC as specified in Reference 11., Aircraft Maintenance Manual, Chapter/Section 73-22-34.

(2) Send your EEC to an authorized rework vendor for incorporation of
R Reference 8., Hamilton Sundstrand Service Bulletin EEC150-40-73-21 and
R Reference 9., Hamilton Sundstrand Service Bulletin EEC150-40-73-22:

NOTE: Only fully authorized repair facilities are allowed to perform this rework.

The designation by IAE of an authorized rework vendor indicates that the vendor has demonstrated the necessary capability to carry out the rework. However, IAE makes no warranties or representations concerning the qualifications or quality standards of the vendors to carry out the rework and accepts no responsibility whatsoever for any work that may be carried out by a rework vendor, other than IAE. Authorized rework vendors do not act as agents or representatives of IAE.

(a) Hamilton Sundstrand Corporation

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Dock W

Windsor Locks, CT 06096-1010

USA

R (3) Install the EEC as specified in Reference 11., Aircraft Maintenance Manual, Chapter/Section 73-22-34.

B. Part B - For Engines Removed from Aircraft

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

R (1) Remove the EEC as specified in Reference 12., Engine Manual, Chapter/Section 72-00-32.

(2) Send your EEC to an authorized rework vendor for incorporation of
R Reference 8., Hamilton Sundstrand Service Bulletin EEC150-40-73-21 and
R Reference 9., Hamilton Sundstrand Service Bulletin EEC150-40-73-22:

NOTE: Only fully authorized repair facilities are allowed to perform this rework.

The designation by IAE of an authorized rework vendor indicates that the vendor has demonstrated the necessary capability to carry out the rework. However, IAE makes no warranties or representations concerning the qualifications or quality standards of the vendors to carry out the rework and accepts no responsibility whatsoever for any work that may be carried out by a rework vendor, other than IAE. Authorized rework vendors do not act as agents or representatives of IAE.

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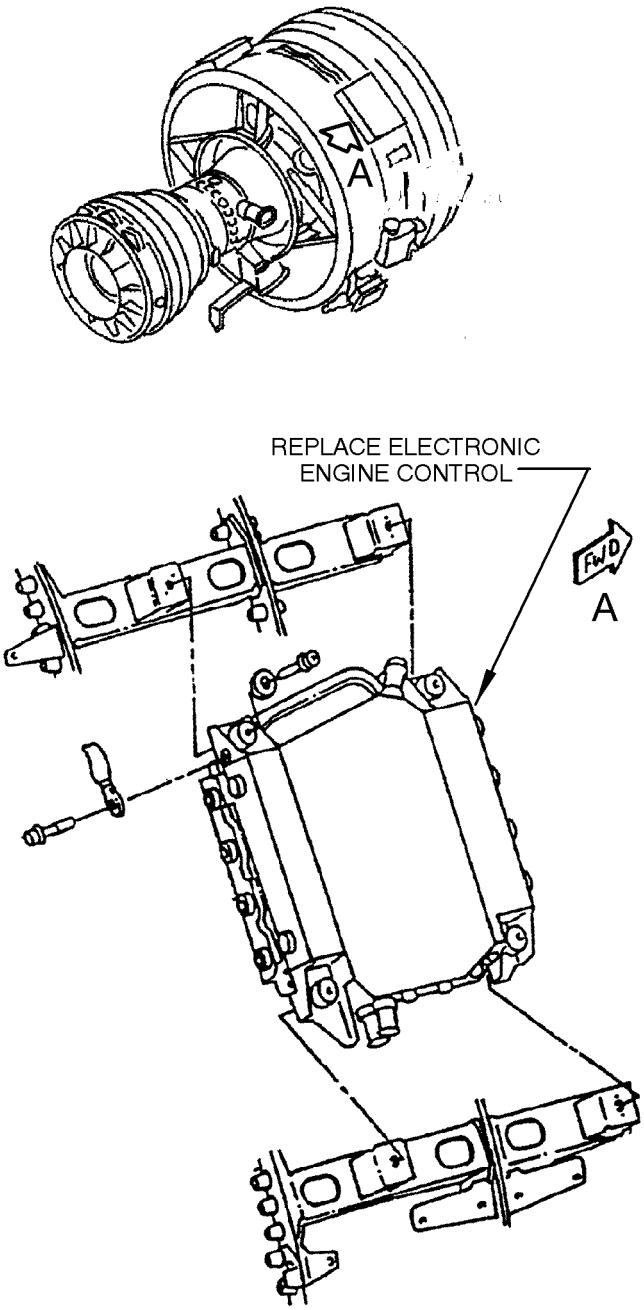
USA

R (3) Install the EEC as specified in Reference 12., Engine Manual, Chapter/Section 72-00-32.

NEW PART NO.	OLD PART NO.
(2) 824972-11-016 (2A4191)	(4) 824972-5-016 (2A4034)
(2) 824972-7-008 (2A4184)	(1) 824972-3-008 (2A3893)
(2) 824972-7-008 (2A4184)	(2) 824972-2-008 (2A3504)
(2) 824972-7-010 (2A4181)	(1) 824972-2-010 (2A3839)
(2) 824972-7-010 (2A4181)	(2) 824972-3-010 (2A3894)
(2) 824972-7-014 (2A4173)	(1) 824972-2-014 (2A3911)
(2) 824972-7-014 (2A4173)	(2) 824972-3-014 (2A3912)
(4) 824972-9-014 (2A4175)	(3) 824972-4-014 (2A3928)
(4) 824972-9-014 (2A4175)	(4) 824972-5-014 (2A3929)
(2) 824972-7-016 (2A4177)	(1) 824972-2-016 (2A4030)
(2) 824972-7-016 (2A4177)	(2) 824972-3-016 (2A4031)
(4) 824972-9-016 (2A4179)	(3) 824972-4-016 (2A4033)
(4) 824972-9-016 (2A4179)	(4) 824972-5-016 (2A4034)
(2) 824972-11-014 (2A3496)	(1) 824972-2-014 (2A3911) (2) 824972-3-014 (2A3912) (3) 824972-4-014 (2A3928) (4) 824972-5-014 (2A3929) (2) 824972-7-014 (2A4173) (4) 824972-9-014 (2A4175)
(2) 824972-11-016 (2A4191)	(1) 824972-2-016 (2A4030) (2) 824972-3-016 (2A4031) (3) 824972-4-016 (2A4033) (4) 824972-5-016 (2A4034) (2) 824972-7-016 (2A4177) (4) 824972-9-016 (2A4179)

R



(1) With Pb Screen
(2) No Pb Screen
(3) With Pb Screen & Slimline Case
(4) No Pb Screen & Slimline Case

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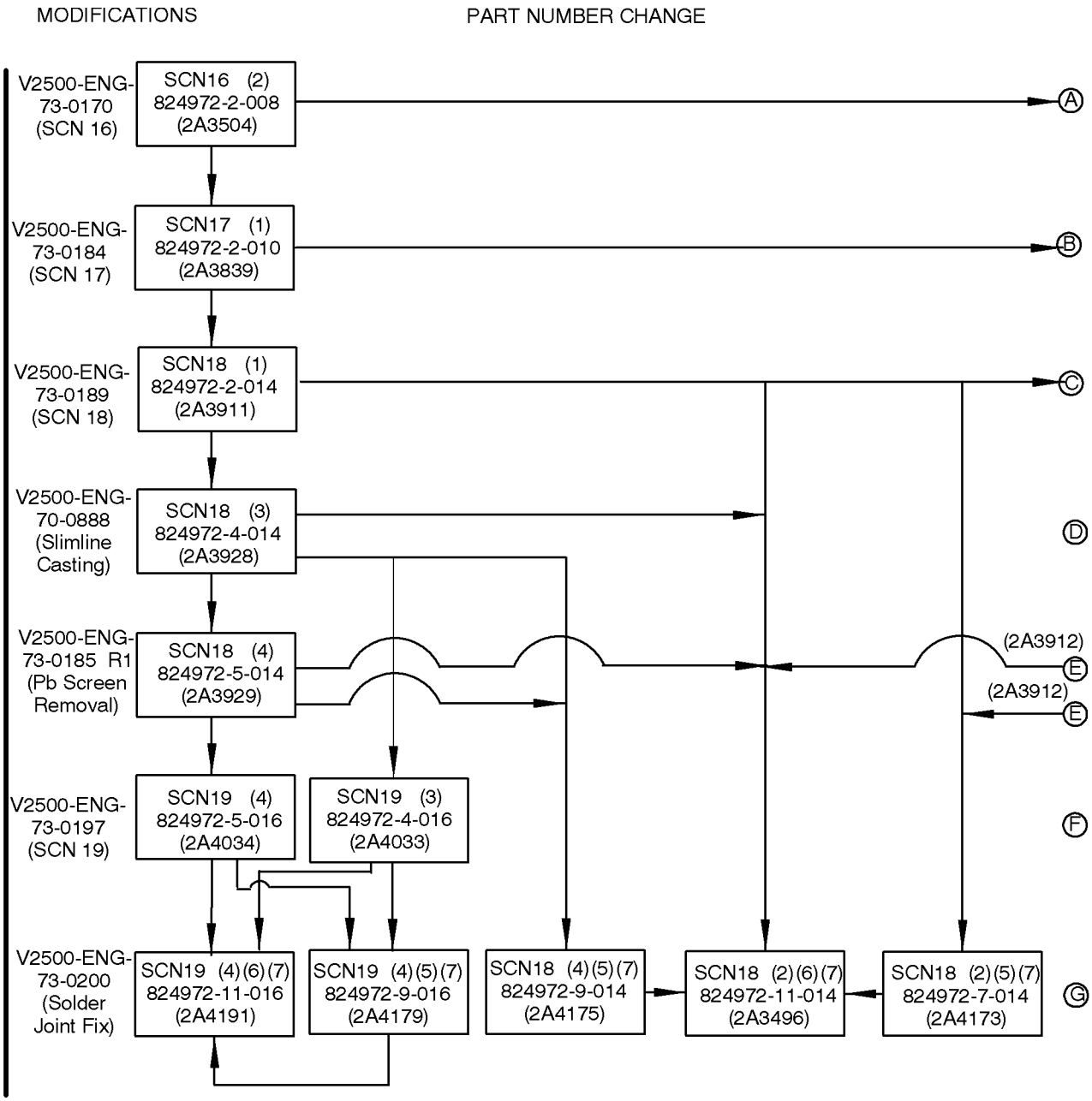
R Location of the Electronic Engine Controller (EEC)
R Figure 1

APPENDIX 1

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



(1) With Pb Screen
(2) No Pb Screen
(3) With Pb Screen & Slimline Case
(4) No Pb Screen & Slimline Case
(5) The new part can be obtained by modification of the old part as specified in the Accomplishment Instructions.
(6) The new part is a replacement part only, and cannot be obtained by modification of the old part.
(7) With Reference 4., Service Bulletin No. V2500-ENG-73-0185 incorporated.

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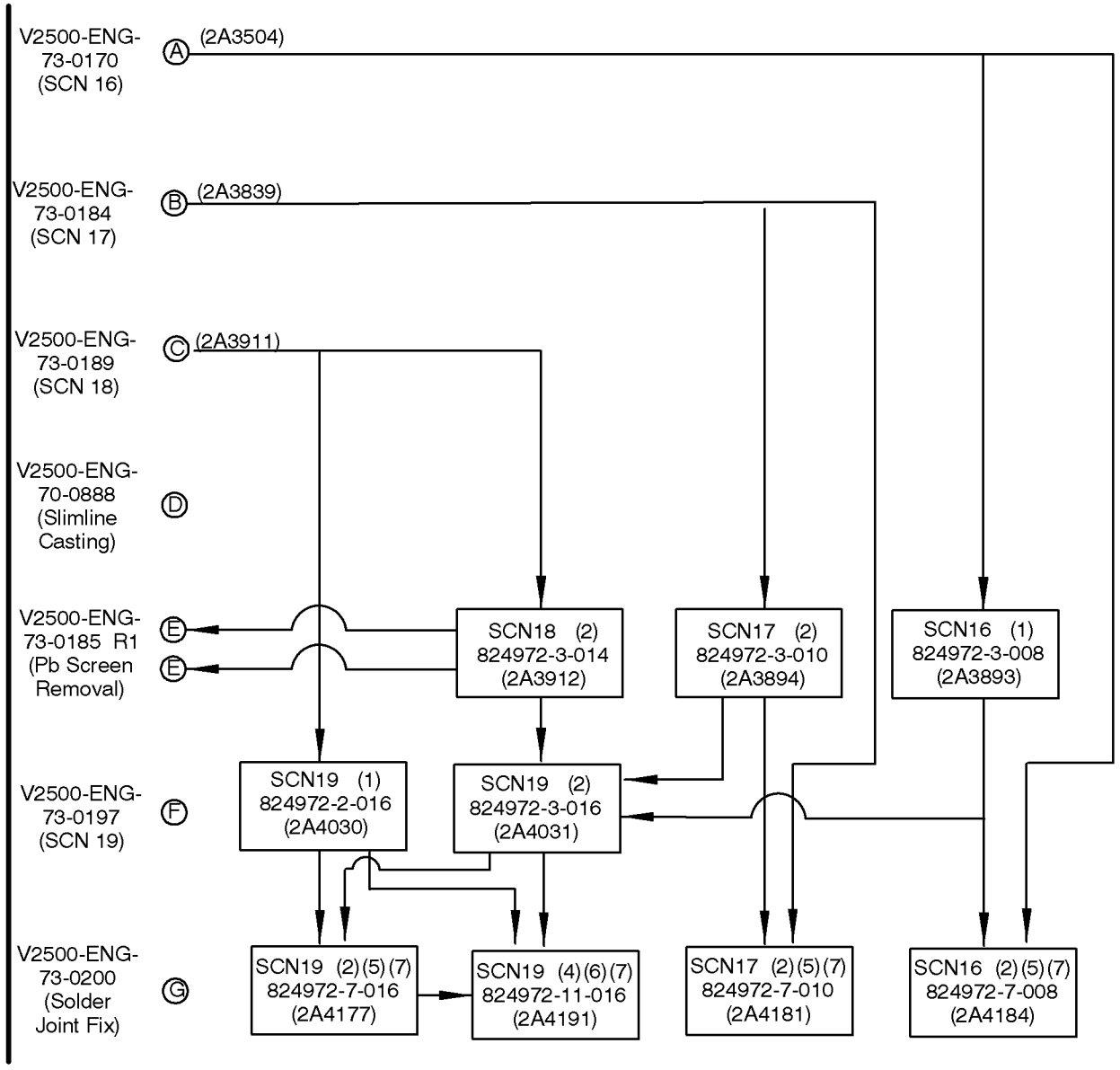
R Family Tree - Electronic Engine Control (EEC) Ref. Catalog Sequence No. 73-22-34,
Fig. 01 Item 280
R Chart A (Sheet 1 of 2)



R

(1) With Pb Screen
(2) No Pb Screen
(3) With Pb Screen & Slimline Case
(4) No Pb Screen & Slimline Case
(5) New part can be obtained by modification of the old part as specified in the Accomplishment Instructions.
(6) New part is a replacement part only, and cannot be obtained by modification of the old part.
(7) With Reference 4., Service Bulletin No. V2500-ENG-73-0185 incorporated.

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R Family Tree - Electronic Engine Control (EEC) Ref. Catalog Sequence No. 73-22-34, Fig. 01 Item 280

R Chart A (Sheet 2 of 2)

APPENDIX 2

R Added Data

R Internal Reference Information

	Revision No.	Reference Document	Origination
R	1	Engineering Change:	DL/TR
R		O6VZO10,	
R		O6VZO10B,	
R		O6VZO10-03,	
R		O6VZO10-04,	

International Aero Engines

SERVICE BULLETIN

ENGINE – FUEL AND CONTROL – REPLACEMENT OF RESISTORS AND TOUCH-UP OF SOLDER JOINTS FOR ENGINES WITH EEC150-40 ELECTRONIC ENGINE CONTROL (EEC) INSTALLED

Supplement

V2500 All

1. Modification Kit

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

2. Material Cost

   NOTE: Refer to IAE Spares and/or current Price Catalog for current prices.

   A. Contact IAE for new part pricing.

3. New Production Parts

	New Production Part Number	Description	Unit Price US Dollars
	2A4191	Control, Electronic Engine (SCN19)	Contact IAE
R	2A3496	Control, Electronic	Contact IAE
R		Engine (SCN18)	