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

International Aero Engines

400 MAIN STREET, MAIL STOP 121-10
EAST HARTFORD, CT 06108, USA.
TELEPHONE:- 860 565 5515
FAX:- 860 565 0600

P.O. BOX 31, DERBY
TELEGRAMS - 'ROYCAR' DERBY
TELEX - 37645
TELEPHONE:- 44 (0) 1332 242424
FAX:- 44 (0) 1332 249936

DATE: Jan.19/06

V2500-A5 SERIES PROPULSION SYSTEM SERVICE BULLETIN

This document transmits Revision 1 to Service Bulletin EV2500-70-0888 and Revision 1 to the Supplement

Document History

Service Bulletin Revision Status		Supplement Revision Status	
Initial Issue	Apr.8/05	Initial Issue	Apr.8/05

Bulletin Revision 1

Remove	Incorporate	Reason for change
All pages of the Summary	Page 1 and 2 of the Summary	Effectivity revised.
All pages of the Service Bulletin	Pages 1 to 7 of the Service Bulletin	Effectivity revised.
All pages of Appendix 1	Page 1 and 2 of Appendix 1	Effectivity revised.

Supplement Revision 1

Remove	Incorporate	Reason for change
All pages	Page 1	Effectivity revised.

LIST OF EFFECTIVE PAGES

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

Page		Revision Number	Revision Date
	Summary		
R	1	1	Jan.19/06
R	2	1	Jan.19/06
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R	1	1	Jan.19/06
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R	6	1	Jan.19/06
R	7	1	Jan.19/06
	Appendix 1		
R	1	1	Jan.19/06
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R	1	1	Jan.19/06

International Aero Engines

SERVICE BULLETIN

ENGINE – FUEL AND CONTROL – ELECTRONIC ENGINE CONTROL (EEC) – NEW SLIMLINE CASTING

SUMMARY

1. PLANNING

A. EFFECTIVITY

R Engine V2500-A5 Serial Numbers V10001 thru V11999, V12001, V12003 thru V12007,
R V12009, V12011, V12013, V12025, V12027, V12033, V12035

B. CONCURRENT REQUIREMENTS

None.

C. REASON/PROBLEM

R Condition

The original EEC 150-40 design encountered a close clearance condition on the inboard side between the EEC and the Fan Case B-flange and EEC mounting brackets, and between the outboard EEC surface and the Fan Cowl. A revision to the vibration isolators and the addition of a spacer prior to entry into service provided the necessary clearance but has resulted in producibility issues.

Background

The precision isolators and spacers installed during the assembly of the current EEC 150-40 are unique across the entire line of Hamilton Sundstrand EEC's and require a special measurement rig and special procedures during the assembly process.

Objective

Provide an EEC 150-40 with a casting revision which introduces standard vibration isolators and builds the spacer into the casting, provides additional clearance between the B-flange and EEC mounting brackets, and provides additional clearance between the EEC outboard surface and the nacelle.

D. DESCRIPTION

Introduce a new EEC 150-40 that has a slimline casting that accommodates standard vibration isolators and provides additional clearance at the B-flange and the nacelle. The new casting also has an increased diameter of the bore from the Pb port to the Pb sensor.

E. COMPLIANCE

Category Code 7

Accomplish when the supply of superseded parts has been depleted.

F. MANPOWER

In service - Not applicable.

At overhaul - Not applicable.

2. MATERIAL INFORMATION

A. PARTS PRICES

Part prices were not available at the time of Service Bulletin publication. Contact IAE's Spare Parts Sales Department for firm quotations.

International Aero Engines

SERVICE BULLETIN

ENGINE - FUEL AND CONTROL - ELECTRONIC ENGINE CONTROL (EEC) - NEW SLIMLINE CASTING

Printed in Great Britain

1. Planning Information

A. Effectivity

(1) Airbus A319

R V2522-A5, V2524-A5, V2527M-A5 Engine Serial Nos. V10001 thru V11999,
R V12001, V12003 thru V12007, V12009, V12011, V12013, V12025, V12027,
R V12033, V12035

(2) Airbus A320

R V2527-A5, V2527E-A5 Engine Serial Nos. V10001 thru V11999, V12001, V12003
R thru V12007, V12009, V12011, V12013, V12025, V12027, V12033, V12035

(3) Airbus A321

R V2530-A5, V2533-A5 Engine Serial Nos. V10001 thru V11999, V12001, V12003
R thru V12007, V12009, V12011, V12013, V12025, V12027, V12033, V12035

B. Concurrent Requirements

There are no concurrent requirements.

C. Reason

R (1) Condition: The original EEC 150-40 design encountered a close clearance condition on the inboard side between the EEC and the Fan Case B-flange and EEC mounting brackets, and between the outboard EEC surface and the Fan Cowl. A revision to the vibration isolators and the addition of a spacer prior to entry into service provided the necessary clearance but has resulted in producibility issues.

(2) Background: The precision isolators and spacers installed during the assembly of the current EEC 150-40 are unique across the entire line of Hamilton Sundstrand EEC's and require a special measurement rig and special procedures during the assembly process.

(3) Objective: Provide an EEC 150-40 with a casting revision which introduces standard vibration isolators and builds the spacer into the casting, provides additional clearance between the B-flange and EEC mounting brackets, and provides additional clearance between the EEC outboard surface and the nacelle.

(4) Substantiation: The new casting successfully completed FAA substantiation vibration testing. A Hamilton Sundstrand Engineering report of these tests was audited and approved by the FAA.

The new EEC 150-40 casting provides a smaller space envelope while maintaining both the electrical connectors and pressure ports at the same radial and axial locations. The tangential location changes by 0.084 inch but this is accommodated in the flexible harness and pressure lines to the EEC. This has been confirmed as acceptable by trial installation.

The smaller space envelope is possible by cutting back material at the top edges near the nacelle and at the bottom in the area of the EEC bracket and the fan case B-flange. The new casting smaller envelope ensures additional clearance both between the fan case flange and the nacelle compared to the entry into service configuration which has already proven to be provide acceptable clearances.

(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

Introduce a new EEC 150-40 that has a slimline casting that accommodates standard vibration isolators and provides additional clearance at the B-flange and the nacelle. The new casting also has an increased diameter of the bore from the Pb port to the Pb sensor.

E. Compliance

Category 7

Accomplish when supply of superseded parts has been depleted.

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

(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-73-0189 (Engine - Fuel And Control - To Provide A New Electronic Engine Control (EEC) With A5 SCN18/W Software).

2. Hamilton Sundstrand Service Bulletin EEC-150-40-73-18 (Engine Fuel and Control - EEC 150-40, Engine Electronic Control - New Casting).

3. 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 73-22-34-01-280.

4. V2500 Engine Manual (E-V2500-1IA), Chapter/Section 73-22-00.

R 5. Internal Reference No. - 99VB068, 99VB068-01.

6. 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 73-22-34-01-280, to add the new parts.

2. V2500 Engine Manuals (E-V2500-1IA), 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)

Added Data (No)

Revision to Table of Limits (No)

Inspection Procedures (No)

O. General Information

The Material Information section of this Service Bulletin provides the latest information concerning the availability of the affected parts.

2. Material Information

A. Industry Support Program

Not Applicable.

B. 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 Engines:

FIG- ITEM NUMBER	NEW PART NUMBER	QTY	PART TITLE	MAT	OLD PN	INSTR - DISP
01-280	824972-4-014 (2A3928)	1	Control, EEC	-	824972-2 -014(2A3911)	(2)(A)(V)(I)
01-280	824972-5-014 (2A3929)	1	Control, EEC (without Pb screen)	-	824972-3 -014(2A3912)	(2)(A)(V)(I)

NOTE: Part numbers inside (parentheses) are IAE part numbers.

C. Instructions/Disposition Code Statements:

Parts Modification Conditions

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

Spare Parts Availability

(A) The new part is available.
(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

Not Applicable.

F. Other Material Information Data

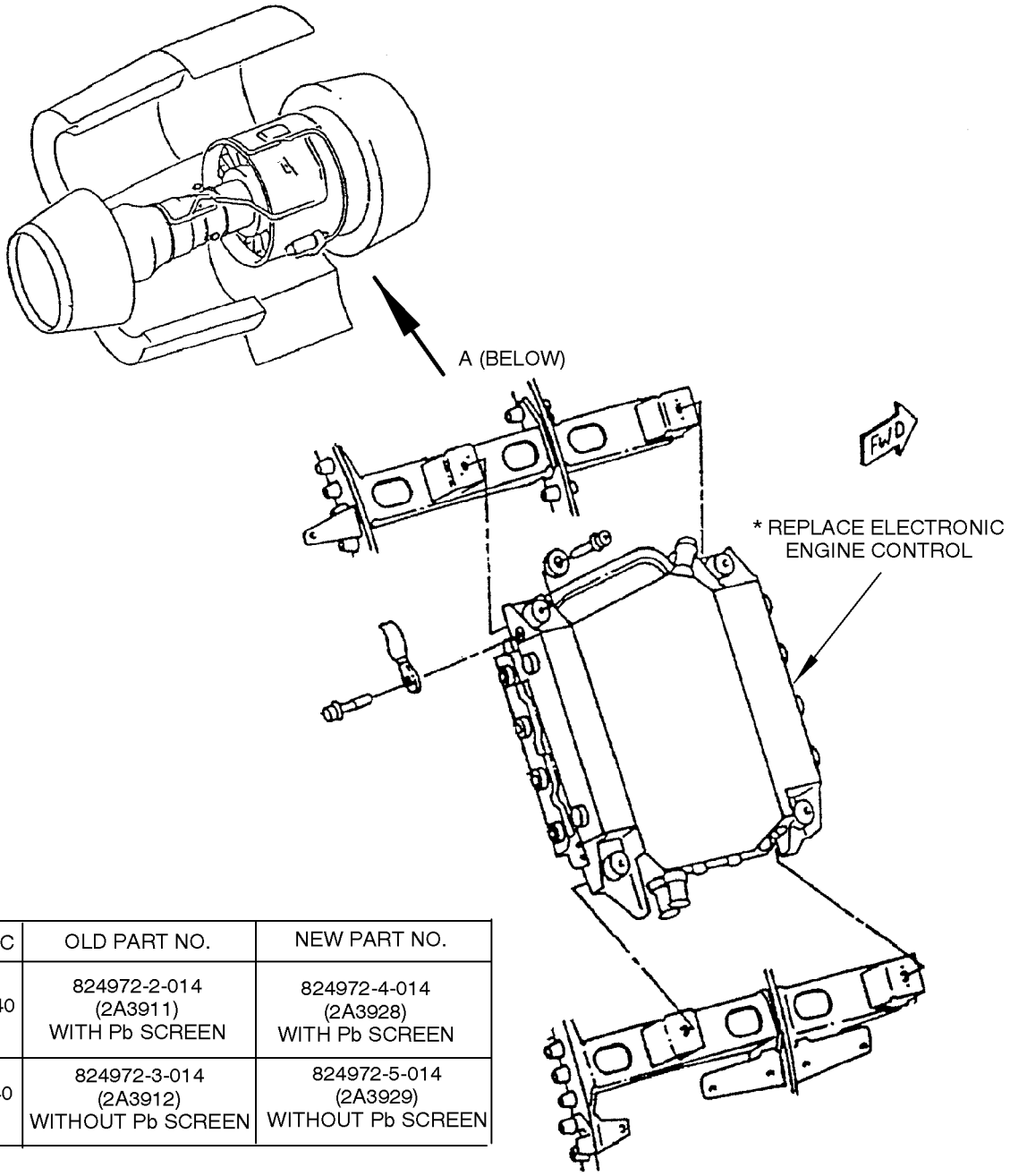
Not Applicable.

3. Accomplishment Instructions

(1) Replace the EEC with one that has the slimline casting.

(2) Recording Instructions

(a) A record of accomplishment is not required.



* EEC	OLD PART NO.	NEW PART NO.
150-40	824972-2-014 (2A3911) WITH Pb SCREEN	824972-4-014 (2A3928) WITH Pb SCREEN
150-40	824972-3-014 (2A3912) WITHOUT Pb SCREEN	824972-5-014 (2A3929) WITHOUT Pb SCREEN

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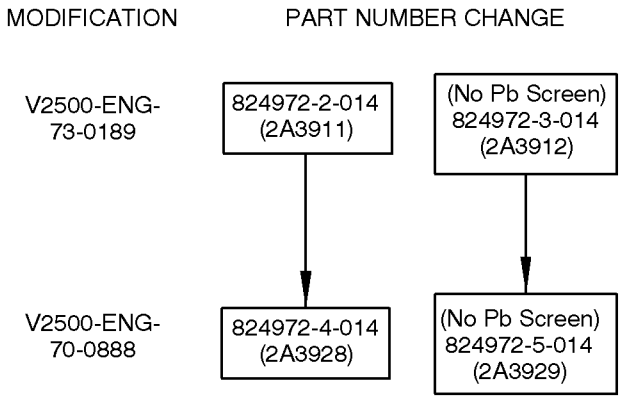
LOCATION OF THE ELECTRONIC ENGINE CONTROL (EEC)
Figure 1

APPENDIX 1

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



FAMILY TREE - ELECTRONIC ENGINE CONTROL REF. CATALOG SEQUENCE NO. 73-22-34-FIGURE 01-ITEM 280.

International Aero Engines

SERVICE BULLETIN

ENGINE – FUEL AND CONTROL – ELECTRONIC ENGINE CONTROL (EEC) – NEW SLIMLINE CASTING

Supplement

V2500 All

1. Modification Kit

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

2. Parts Prices

Part prices were not available at the time of Service Bulletin publication. Contact IAE's Spare Parts Sales Department for firm quotations.

3. New Production Parts

New Production Part Number	Description	Unit Price US Dollars
824972-4-014 (2A3928)	Control, EEC	Not available
824972-5-014 (2A3929)	Control, EEC (without Pb screen)	Not available

NOTE: Part numbers inside (parentheses) are IAE part numbers.

Hamilton Sundstrand
A United Technologies Company

SERVICE BULLETIN

ENGINE FUEL AND CONTROL - EEC150-40 ELECTRONIC ENGINE CONTROL - INTRODUCTION OF IMPROVED CASTINGS

1. Planning Information

A. Effectivity

(1) All Hamilton Sundstrand EEC150-40 Electronic Engine Controls with part numbers 824972-2-YYY and 824972-3-YYY used on Airbus A319, A320, and A321 aircraft that use the IAE V2500-A5 engine.

NOTE: "YYY" identifies all available software configurations.

B. Concurrent Requirements

(1) None

C. Reason

(1) Problem

(a) The original EEC150-40 design encountered a potential interference condition between the EEC housing, the fan case, and the nacelle. Prior to entry into service, a revision to the EEC vibration isolators and the addition of spacers provided the necessary clearance. The addition of these special features increases the processing requirements to the EEC in the repair shop.

(b) Moisture can accumulate in the pressure sense line from the engine to the EEC which is susceptible to freezing.

(2) Cause

(a) The potential interference condition between the EEC housing, the fan case, and the nacelle was due to installation information provided to HS when the EEC150-40 was designed.

(b) Externally induced moisture into the EEC Pb sensor port.

(3) Solution

(a) Provide a revised EEC150-40 casting that eliminates the need for the special features, which decreases the processing requirements to the EEC in the repair shop.

(b) Maximize the diameter of the air passage in the EEC housing to the Pb sensor.

(4) Substantiation

(a) This configuration was successfully fit checked at the Rolls Royce Derby engine mock-up using a class III mock-up of the new EEC casting provided by Hamilton Sundstrand.

(b) A larger diameter air passage is less susceptible to water blockage.

D. Description

(1) This service bulletin provides information on the availability of a new EEC Housing Assembly and a new EEC Cover Assembly. New production EEC's will have these changes incorporated into them as a product improvement change. These new slimline castings may be used in field units if there is a need to replace a casting.

E. Compliance

(1) Code 8 - You can do this Service Bulletin if the operator thinks the change is necessary because of what he knows of the history of the EEC150-40.

F. Approval

(1) The repairs or modifications herein have been shown to comply with the applicable Federal Aviation Regulations and are FAA-approved for the EEC150-40 Electronic Engine Control listed.

G. Manpower

(1) Approximately 1.0 man-hour is required to do these Service Bulletin procedures when you do component maintenance. This estimate does not include any time for test.

H. Weight and Balance

(1) None

I. Electrical Load Data

(1) None

J. Software Accomplishment Summary

(1) Not applicable

K. References

(1) E9137 Standard Electronic Practices Manual

(2) Component Maintenance Manual 73-28-02

L. Other Publications Affected

(1) Component Maintenance Manual 73-28-02

M. Interchangeability or Intermixability of Parts

(1) Not applicable

2. Material Information

A. Material - Price and Availability

(1) The parts will be available on January 1, 2006 and Table 1 contains their estimated price.

B. Industry Support Information

(1) This Service Bulletin will be done at charge to the operator for EEC150-40 units that are returned to the following addresses:

Hamilton Sundstrand Corporation
A United Technologies Company
One Hamilton Road
Dock W
Windsor Locks, CT 06096-1010
USA

FAA Repair Station License Number SI3R842L

OR

Hamilton Sundstrand
A United Technologies Company
Customer Support Center - Maastricht B.V.
Maastricht Aachen Airport
Horsterweg 7
6199 AC Maastricht - Airport,
The Netherlands

FAA Repair Station License Number CW5Y794M

(2) The hard copy purchase order to perform this Service Bulletin must refer to Hamilton Sundstrand Service Bulletin number EEC150-40-73-18.

C. Material Necessary for Each Component

(1) Material to be Purchased

(a) This Service Bulletin change will use parts in Table 1 for each EEC150-40 unit that is changed.

(b) Any parts that usually are discarded when you disassemble the EEC150-40 unit may not be listed.

(c) In the list of parts for this change, MSQ is the “Minimum Sales Quantity.” The parts that have an entry in this area of the list are supplied only in this quantity, or a multiple of this quantity.

(d) In the list of parts for this change, the “Key Word” is the name of the part.

(e) In the list of parts for this change, the “Instruction Codes” tell you what to do with the parts. A short list under the list of parts tells you about the instruction codes that are used in the list.

(f) The prices that are shown are estimates for one part. When you buy the parts, the prices may be different. Send requests for parts to:

Hamilton Sundstrand
A United Technologies Company
Attention: Manager, Commercial Spares Administration
Mail Stop: 236-6
P.O. Box 7002
4747 Harrison Avenue
Rockford, IL 61125-7002 USA

Facsimile: (815) 226-2624

(g) Refer to Table 1.

Table 1. Material Information

New PN	Qty	Estimated Price	Key Word	PN Before this SB	Instruction Code
824972-4-YYY	1	N/A	Control, Electronic Engine	824972-2-YYY	A
824972-5-YYY	1	N/A	Control, Electronic Engine	824972-3-YYY	A
824961-3	1	$8,792.00	Housing	824961-1	B, C
824962-2	1	$7,114.00	Cover	824962-1	B, C
824962-4	1	$7,114.00	Cover	824962-3	B, C
1002655-1	1	$335.00	Sensor Adapter	824936-2	B, C
769879-3	4	$746.00	Isolator, Vibration	1001164-1	B, C
N/A	4	N/A	Spacer, Isolator	1001044-6	C

- Instruction Code A. The “PN Before this SB” is used to make the “New PN”.
- Instruction Code B. This Service Bulletin adds the “New PN” to the EEC150-40.
- Instruction Code C. This Service Bulletin removes the “PN Before this SB” from the EEC150-40. Discard the old part.

(2) Material Supplied by the Operator

(a) None

D. Material Necessary for Spare

(1) Material to be Purchased

(2) Material Supplied by the Operator

(a) None

E. Reidentified Parts

(1) Refer to paragraph 3.

F. Tooling

(1) None

3. Accomplishment Instructions

A. The user of this publication should obtain the material safety data sheets [Occupational Safety and Health Act (OSHA) Form 20 or equivalent] from the manufacturers or suppliers of materials to be used. The user must become completely familiar with the manufacturer/supplier information and adhere to the procedures, recommendations, warnings, and cautions of the manufacturer/supplier for the safe use, handling, storage, and disposal of these materials.

CAUTION: READ REPAIR GENERAL IN CMM 73-28-02 BEFORE YOU TOUCH THE EEC150-40 ELECTRONIC ENGINE CONTROL. OBEY THE INSTRUCTIONS IN THE E9137 STANDARD ELECTRONIC PRACTICES MANUAL WHEN YOU TOUCH THE EEC150-40 OR ITS COMPONENTS. IT IS AN ELECTROSTATIC DISCHARGE SENSITIVE (ESDS) DEVICE. IT CAN BE DAMAGED BY ELECTROSTATIC DISCHARGE, WHICH CAN BE TRANSMITTED BY TOUCH.

B. Refer to the E9137 Standard Electronic Practices Manual to do the procedure unless otherwise noted.

C. Disassemble the EEC to remove all parts from the Housing and the Cover.

D. Discard the old Isolator Spacers (4 each), Vibration Isolators (4 each), Sensor Adapter, Housing and the Cover.

E. Re-assemble the EEC using Housing PN 824961-3, Sensor Adapter PN 1002655-1, and Vibration Isolators (4 each) PN 769879-3.

(1) If the old Cover was PN 824962-1, assemble using cover PN 8243962-2.

(2) If the old Cover was PN 824962-3, assemble using cover PN 8243962-4.

F. To show this service bulletin was done put the new end assembly part number in the “PART NO.” area of the new identification plate.

Table 2. Reidentification

Old Part Number	New Part Number
824972-2-YYY	824972-4-YYY
824972-3-YYY	824972-5-YYY

NOTE: “YYY” identifies all available software configurations.

Hamilton Sundstrand Internal Reference Number 287440
Hamilton Sundstrand Internal Identification Number EEC150-40-73-18
P&WEH Engineering Change Number 99VB068