

Date: Sep.5/00

Subject: Transmittal of Revision 2 To Service Bulletin Number  
V25000-ENG-73-0169.

Service Bulletin Revision History:

<u>Event</u>	<u>Date</u>
Basic Issue	Apr.6/00
Revision 1	May1/00
Revision 2	Sep.5/00

Reason For Issuance Of Revision:

- (1) Revise effectivity
- (2) Do editorial corrections
- (3) Reformat to latest specifications

Effect on Prior Compliance:

None.

List of Effective Pages:

<u>Bulletin Page No.</u>	<u>Rev. No.</u>	<u>Effective Date</u>
1 to 3	2	Sep.5/00
4	Basic	Apr.6/00
5 to 24	2	Sep.5/00

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Transmittal

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# International Aero Engines SERVICE BULLETIN

ENGINE - FUEL AND CONTROL - TO PROVIDE A NEW A5SCN15/T ELECTRONIC ENGINE  
CONTROL (EEC)

## MODEL APPLICATION

V2522-A5  
V2524-A5  
V2527-A5  
V2527E-A5  
V2527M-A5  
V2530-A5  
V2533-A5

## BULLETIN INDEX LOCATOR

73-22-00

## Compliance Category Code

| 4

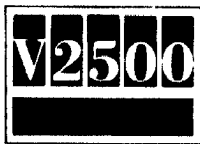
## Internal Reference No.

00VZ001, 00VZ001-1, 00VZ001-5,  
00VZ001A

Apr.6/00  
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## SERVICE BULLETIN

ENGINE - FUEL AND CONTROL - TO PROVIDE A NEW A5SCN15/T ELECTRONIC ENGINE CONTROL (EEC)

### 1. Planning Information

#### A. Effectivity

(1) Aircraft: Airbus A319, A320, A321

(2) Engine:

V2522-A5 Engines V10729, and V10766, and all Engines prior to Engine Serial No. V10725 except V10706.

V2524-A5 Engines V10729, and V10766, and all Engines prior to Engine Serial No. V10725 except V10706.

V2527-A5 Engines V10729, and V10766, and all Engines prior to Engine Serial No. V10725 except V10706.

V2527E-A5 Engines V10729, and V10766, and all Engines prior to Engine Serial No. V10725 except V10706.

V2527M-A5 Engines V10729, and V10766, and all Engines prior to Engine Serial No. V10725 except V10706.

V2530-A5 Engines V10729, and V10766, and all Engines prior to Engine Serial No. V10725 except V10706.

V2533-A5 Engines V10729, and V10766, and all Engines prior to Engine Serial No. V10725 except V10706.

**CAUTION:** THE INTERMIX OF ELECTRONIC ENGINE CONTROLS MUST BE DONE BY THE INSTRUCTIONS GIVEN IN REFERENCE (3), AIRBUS SERVICE BULLETIN A320-73-1068.

#### B. Reason

(1) Condition:

The V2500-A5 High Pressure Compressor (HPC) is experiencing Rotor 4 blade fracture problems in service.

(2) Background:

Rotor 4 Blade root fractures have occurred due to high stresses observed at high N2 speeds. This high stress is aggravated by the current Variable Stator Vane (VSV) schedule.

(3) Objective:

A revised software standard is introduced by this Service Bulletin, which retains all of the aspects of the latest SCN14B/S (Reference Bulletin V2500-ENG-73-0160) standard, but reverts to the previous 'closed' VSV schedule prior to SCN11 (Reference Bulletin V2500-ENG-73-0086). The software standard will be applicable to all A5 thrust ratings. This will significantly reduce blade stress levels.

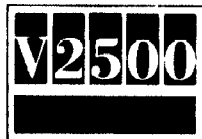
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(4) Substantiation

It has been demonstrated by analysis of engine test data that the more closed vane schedule introduced by this Service Bulletin significantly reduces blade stress levels.

Closed loop bench testing and iron bird testing was satisfactorily completed.

In addition flight testing an A319/A320/A321 was satisfactorily completed on February 23, 2000 for the 150-20 and March 2, 2000 for the 150-40 via internal engineering notice 96VT016.

(5) Effects of Bulletin on Workshop Procedures:

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.

C. Description

- (1) To provide a new Electronic Engine Control (EEC) with SCN15/T software logic.

Part I - If the Electronic Engine Control is sent to one of the addresses listed in Paragraph 3. B.

- (a) A new EEC can be obtained from the supplier referenced in Part I of this Service Bulletin. The removed part is returned, programmed, identified with the new part number, and installed again.

Part II - If the Electronic Engine Control is Reprogrammed on site.

- (b) The EEC can be programmed on site, by the procedure given in part II of this Service Bulletin, and identified with the new part number.

D. Approval

The Part Number Changes and/or part modifications described in Section 2 and 3 of this Service Bulletin have been shown to comply with the applicable Federal Aviation Regulations and are FAA-APPROVED for the Engine Model listed.

E. Compliance

Category 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.



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## F. Manpower

Estimated Manhours to incorporate the full intent of Part I of this Service Bulletin (in service):

<u>Venue</u>	<u>Estimated Manhours</u>
(1) In service.. . . . TOTAL:	1 hour 16 minutes
(a) To gain access	
(i) Install warning notices ..	5 minutes
(ii) Open the fan cowls .. . .	7 minutes
(iii) Remove the EEC .. . . .	<u>23 minutes</u>
	TOTAL: 35 minutes
(b) To return to flyable status	
(i) Install the EEC .. . . .	28 minutes
(ii) Close the fan cowls .. . .	8 minutes
(iii) Remove the warning notices	<u>5 minutes</u>
	TOTAL: 41 minutes

Estimated Manhours to incorporate the full intent of Part II of this Service Bulletin (in service):

<u>Venue</u>	<u>Estimated Manhours</u>
(2) In service.. . . . TOTAL:	1 hour 25 minutes
(a) To gain access	
(i) Install warning notices ..	5 minutes
(ii) Open the fan cowls .. . .	7 minutes
(iii) Program the EEC .. .	<u>1 hour</u>
	TOTAL: 1 hour 12 minutes
(b) To return to flyable status	
(i) Close the fan cowls .. . .	8 minutes
(ii) Remove the warning notices	<u>5 minutes</u>
	TOTAL: 13 minutes

Estimated Manhours Part I or Part II (overhaul):

(3) At overhaul .. . . . Not applicable

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G. Material - Price and Availability

- (1) Modification kit is not required.
- (2) This Service Bulletin will be done at no cost to the operator for units that are reprogrammed in the field. See Paragraph 3., Accomplishment Instructions, Part II. Units that are returned to Hamilton Sundstrand Support Systems or Maastricht Aachen Airport to incorporate this Service Bulletin will be charged to the operator. See Paragraph 3., Accomplishment Instructions, Part 1.

H. Tooling - Price and Availability

The tools and equipment that follow are necessary to do the procedure given in Part III of this Service Bulletin.

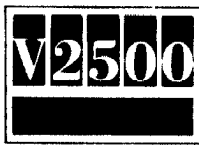
- (1) A dedicated (recommendation) IBM compatible computer, with the following minimum requirements:

- (a) 80286 processor
- (b) 512 Kbytes RAM
- (c) 1.44 Mbyte, 3.5" floppy disk drive
- (d) Dual channel RS-422 asynchronous communication board (HS recommends Model DS202 by Qua Tech Incorporated) with the following setup:  
Channel A EEC - COM3 (Base address 2E8, IRQ level 5)  
Channel B EEC - COM4 (Base address 3E8, IRQ level 3)
- (e) MSDOS operating system (version 3.0 or higher)
- (f) Virus scan program (such as "VI-SPY" or "McAfee" is recommended).

**NOTE:** The IBM computer date/time must be current prior to performing this procedure. (In MS DOS systems (as in the ReProgramming Box PC), at the prompt (C:\>), enter "date" or "time" and the computer will display the current value. If necessary, type in the correct value, and press the Return key.)

- (2) Hamilton Sundstrand diskette referenced in Table 4 (Figure 1 Sheet 10). This diskette contains the EEC 150-20/150-40: application code, trims, memory clear utilities, and software loader. The diskette can be obtained from your:

Customer Support Manager



## SERVICE BULLETIN

(3) EEC 150-20 Programming Harness Definition as defined in Table 1 (Figure 2).

(4) BOOT/BITE switches are defined as:

- (a) Single pole, single throw
- (b) Closed contact resistance of 50 ohms maximum
- (c) Open contact resistance of 100 Kohms minimum
- (d) Closed contact current of 20 mA minimum
- (e) Open contact voltage of 20VDC minimum

and wired between BOOT DISC and BOOT/BITE RTN and BITE DISC and BOOT/BITE DISC for each channel. Reference Table 1 (Figure 2) for EEC connector pins.

(5) EEC 150-20/150-40 NAMEPLATE PN 751333-1 or modified nameplate 822815-1.

(6) 28 VDC +/- 0.5A power supply and associated power cables as defined in Table 2 (Figure 2).

### I. Weight and Balance

- |                   |  |
|-------------------|--|
| (1) Weight change | None   |
| (2) Moment arm    | No effect  |
| (3) Datum         | Engine Front mount Centerline<br>(Power Plant station (PPS) 100) |

### J. Electrical Load Data

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

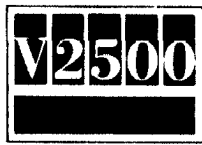
### K. References

(1) IAE V2500 Service Bulletins:

V2500-ENG-73-0052 (Engine - Fuel And Control - To Provide A New Electronic Engine Control (EEC) With The SCN9A Version 021/121 Software Configuration and Hardware Changes to Address Nacelle Drainage Requirements)

V2500-ENG-73-0080 (Engine - Fuel And Control - To Provide A New Electronic Engine Control (EEC) With The SCN10A Software Configuration Version 026/026 Trims)

V2500-ENG-73-0083 (Engine - Fuel And Control - To Provide A New Electronic Engine Control (EEC) With The SCN10B Software Configuration Version 027/027 Trims)



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V2500-ENG-73-0086 (Engine - Fuel And Control - To Provide A New Electronic Engine Control (EEC) With The SCN11 Software Configuration Version 032/032 Trims)

V2500-ENG-73-0111 (Engine - Fuel And Control - To Provide A New SCN11/P (EEC))

V2500-ENG-73-0121 (Engine - Fuel And Control - To Provide A New SCN12/Q (EEC))

V2500-ENG-73-0159 (Engine - Fuel And Control - To Provide A New SCN14/S (EEC))

V2500-ENG-73-0160 (Engine - Fuel And Control - To Provide A New SCN14B/S (EEC))

(2) Hamilton Sundstrand Service Bulletin:

EEC-150-20-73-16, Install Software Identification Plate.

EEC-150-20-73-25, Incorporation of New Software Configuration: A5 SCN15/T).

EEC-150-40-73-1, Incorporation of New Software Configuration: A5 SCN15/T).

(3) Airbus Service Bulletin A320-73-1068, and Aircraft Modification No. 30362.

(4) V2500 Aircraft Maintenance Manual.

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





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## SERVICE BULLETIN

### 2. Material Information

A. Kit associated with this bulletin.

None

B. Parts affected by this bulletin.

New Part No. (ATA No.)	Qty	Est'd Unit Price(\$)	Keyword	Old Part No. (IPC No.)	Instructions Disposition
------------------------------	-----	----------------------------	---------	------------------------------	-----------------------------

Applicability: For each V2522-A5, V2524-A5, V2527-A5, V2527E-A5, V2527M-A5, V2530-A5 and V2533-A5 Engine to incorporate this Service Bulletin

808050-4-042 1 (2A3488) (73-22-34)	Control, Electronic Engine (150-20)	808050-4-040 (1D) (A) (B) (2A3473) (01-280)
--	---	---

OR

824972-2-006 1 (2A3489) (73-22-34)	Control, Electronic Engine (150-40)	824972-2-004 (1D) (A) (B) (2A3471) (01-280)
--	---	---

### C. Instructions/Disposition Code Statements:

(1D) The new part can be obtained through modification by the approved procedure in Reference (2). Purchase the new parts from or return the old parts for modification to one of the approved vendors listed in Paragraph 3. B. in the Accomplishment Instructions.

(A) The new part will be available approximately July, 2000.

(B) The old part will no longer be supplied.

**NOTE:** The estimated unit prices, if shown, are provided for planning purposes only and do not constitute a firm quotation. Consult the IAE Price Catalog or contact IAE's Spare Parts Sales Department for information concerning firm prices.

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3. Accomplishment Instructions

Part I - If the Electronic Engine Control is sent to one of the addresses listed in Paragraph 3.B.

- A. The Source Demonstration requirements of this rework means that any facility not authorized to accomplish this rework either utilize the Authorized Vendors listed below or contact IAE Manager Maintenance Operations to determine if a qualification program can be initiated at their facility.

IAE-INTERNATIONAL AERO ENGINES AG  
400 Main Street M/S 121-10  
East Hartford, CT 06108 USA

- B. Authorized Rework Vendors for this bulletin are listed below.

Customer Service Center  
Hamilton Sundstrand Support Systems  
97 Newberry Road  
East Windsor, CT 06088 USA

OR

Hamilton Sundstrand Customer Support Center - Maastricht B. V.  
Maastricht Aachen Airport  
Horsterweg 7  
P.O. Box 269  
6190 AG Beek  
The Netherlands

- C. The designation by IAE of an authorized rework vendor indicates that the vendor has demonstrated the necessary capability to enable it 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 when IAE is listed as the vendor. Authorized rework vendors do not act as agents or representatives of IAE.

D. Removal Instructions

- (1) Remove the Old P/N (See Table 4 Figure 1 Sheet 10) Electronic Engine Control by the procedure given in Reference (4), Chapter/Section 73-22-34, Removal Installation. Refer to Figure 2.

E. Rework Instructions

- (1) Do a modification of the Old P/N (See Table 4 Figure 1 Sheet 10) Electronic Engine Control (See Reference (4), Chapter/Section 73-22-34, Fig/Item No. 01-280) and reidentify by the procedures given in Reference (3).

<u>Procedure</u>	<u>Supplementary Information</u>
(a) Send the Electronic Engine Control to the approved vendor to be modified. See Paragraph 3.B.	See Figure 3.



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### F. Installation Instructions

- (1) Install the New P/N (See Table 4 Figure 1 Sheet 10) Electronic Engine Control (1 off) by the approved procedure given in Reference (4), Chapter/Section 73-22-34, Removal/Installation.

### G. Recording Instructions

- (1) A record of accomplishment is necessary.

### Part II - If the Electronic Engine Control is Reprogrammed on site.

Refer to Figure 1 Sheets 1 through 10 for detailed instructions on reprogramming the EEC on site.

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Part II – If the Electronic Engine Control is Reprogrammed on site.

**NOTE:** The latest software standard may be loaded directly into any prior approved software standard. It is not required to load all the interim software standards.

**NOTE:** This procedure can only be accomplished by maintenance personnel that have been trained by an IAE representative.

**NOTE:** In the following procedure, statements provided to show text copied from the computer screen:

**are indented, bold, and as illustrated on this line.**

- A. Isolate aircraft electrical system and gain access to the EEC by doing the pre-requisite procedures given in Job Set-up in Reference (4), Chapter/Section 73-22-34, Removal/Installation (the removal procedure).

**NOTE:** Do not turn on aircraft 28VDC power until instructed to do so in the following procedure.

**NOTE:** Reprogramming the EEC will clear the fault memory. It is recommended that a record of existing EEC faults be obtained before initiating reprogramming.

B. General

- (1) Hamilton Sundstrand electronic Engine Control Model EEC150-20 or 150-40, software is programmed into the EEC using an IBM compatible computer and Hamilton Sundstrand supplied software.
  - (a) Disassembly of the EEC is not required.
  - (b) Data integrity of the Hamilton Sundstrand supplied software is performed as part of the reprogramming procedure.
  - (c) A bit-for-bit memory verification test is included as part of the reprogramming procedure.
  - (d) No functional, thermal cycle, or vibration testing is required for units reprogrammed in accordance with this Service Instruction.
  - (e) The EEC can be programmed at room ambient conditions or while it is installed on the engine.
- (2) The tools specified in Paragraph 1. H. are necessary to accomplish this procedure.

- C. Do the steps that follow to reprogram the Electronic Engine Control (EEC) without removing it from the engine.

- (1) Verify that the model number on the identification plate of the unit is "EEC 150-20" or "EEC 150-40".
- (2) Record the current unit part number and the unit serial number from the nameplate. This information will be input into your computer.
- (3) Connect commercial power to all necessary reprogramming equipment.

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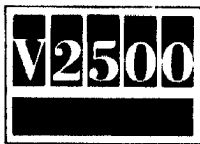
Accomplishment Instructions for Part II - If the  
Electronic Engine Control is Reprogrammed on site.  
Figure 1 (Sheet 1)

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- (4) Remove the harness connector from the EEC connector marked J1 and connect the **programing harness connector** marked P1 to the EEC connector marked J1. Ensure that the red engagement stripe on the EEC connector J1 is fully covered.
  - (5) Remove the harness connector from the EEC connector marked J7 and connect the **programing harness connector** marked P7 to the EEC connector marked J7. Ensure that the red engagement stripe on the EEC connector J7 is fully covered.
  - (6) If the computer and power supply connections to the cables are permanent, go to step (9).
  - (7) Connect the **programing harness connector** marked CH A UART to the IBM compatible computer UART board connectors for the channel A RS-422 Port (COM3). Make sure that the connectors are properly mated.
  - (8) Connect the **programing harness connector** marked CH B UART to the IBM compatible computer UART board connectors for the channel B RS-422 Port (COM4). Make sure that the connectors are properly mated.
- NOTE: UART connections can differ for different IBM Compatible Computers .
- NOTE: It is important to verify that the connectors are correctly installed for correct loader operation. Hamilton Sundstrand recommends labeling the RS-422 COM3 port as CH A UART and COM4 port as CH B UART on the computer to reduce errors.
- (9) If the EEC is powered by aircraft 28VDC power supply, go to step (13).
  - (10) If the computer and power supply connections to the cables are not permanent, connect the opposite end of P3 and P9 cables to the 28VDC power supply.
  - (11) Remove the harness connector from the EEC connector marked J3 and connect the power supply harness connector marked P3 to the EEC connector marked J3. Ensure that the red engagement stripes on EEC connector J3 are fully covered.
  - (12) Remove the harness connector from the EEC connector marked J9 and connect the power supply harness connector marked P9 to the EEC connector marked J9. Ensure that the red engagement stripes on EEC connector J9 are fully covered .
  - (13) Locate the BOOT/BITE switches for channel A and channel B. Set the Boot/BITE switches to the ON (closed) position.
  - (14) Turn on the 28VDC power supply to the EEC.

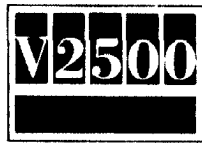
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Accomplishment Instructions for Part II - If the  
Electronic Engine Control is Reprogrammed on site.  
Figure 1 (Sheet 2)

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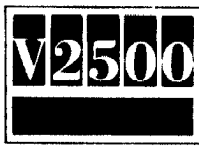
- (15) Turn on the power to the IBM compatible computer.  
**NOTE:** Please make sure that the Disk Drive "A" has no disks present, prior to power on of the computer.
- (16) Wait for the MSDOS prompt "**C:\>**" to appear on the IBM compatible computer.  
**NOTE:** The procedure uses disk drive "A" to identify the location of the floppy drive in the computer system. If your computer is configured with the 3.5 inch floppy drive at a different designation, substitute that designation into the procedure.
- (17) Obtain the Hamilton Sundstrand reprogramming diskette which is given in Table 4 (Figure 1 Sheet 10) and Reference (2).  
(a) Make sure that the write protection tab of the diskette is covering the "hole".  
**NOTE:** If necessary, you can remove the stickers from the corner of the disk and move the protecting device to close the hole.  
(b) Insert the diskette into the floppy drive designated as "A" on the IBM computer.
- (18) The display will show the "**C:\>**". Type **a:** then press the **RETURN** key.  
**NOTE:** Some computers have the **RETURN** key designated **ENTER**.
- (19) The display will show the "**A:\>**" prompt.  
(a) Type **LDR150** then press the **RETURN** key. this starts the UART programming utility.  
(1) Several messages will appear including the program identification, version number, time and the UTC/P&W document property rights notice.  
(2) If there is a configuration error on the diskette, the program will display the appropriate error message and abort the programming process. Refer to Table 3 (Figure 1 Sheet 9) for a summary of error code description and troubleshooting suggestions.
- (20) The UART programming utility LDR150, will display the following message:

**Enter operators name performing download : [ ] >**

- (a) The field between the brackets will always be empty the first time the program is executed on the diskette.
- (b) Subsequent execution of the program will display the last name entered.  
(1) If the operator is the same, press the **RETURN** key to continue.  
(2) If a different name is present than the operator or no name is present, the operator should enter his/her name and press the **RETURN** key.

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Accomplishment Instructions for Part II - If the  
Electronic Engine Control is Reprogrammed on site.  
Figure 1 (Sheet 3)



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- (21) The LDR150 program will display the following message:

**WARNING—EEC Fault Memory Will Be Cleared By This Program.  
If an EEC Fault Dump Is Requested prior to Programming,  
enter Q to Quit or C to Continue [Q/C] :>**

- (a) If a fault dump has already been accomplished or is not required, type **C**, then press the **RETURN** key.
  - (b) If a fault dump is required or the operator wishes to terminate the programming procedure, type **Q**, then press the **RETURN** key.
  - (c) If the operator selects the quit option, turn off the 28VDC power to the EEC and go to step (37).
- (22) The LDR150 program will now prompt with the following message:

**Enter the 9 character EEC Serial Number : [XXXX-XXXX]>**

From the Hamilton Sundstrand nameplate, enter the nine character EEC serial number and press the **RETURN** key.

**NOTE:** For steps (23) and (24), if the EEC 150–20 or EEC 150–40 part number on the nameplate between the dashes is a single digit, enter a zero immediately preceding this digit.

Example: P/N 808050–4–030 would be entered as 808050–04–030.

- (23) The LDR150 program will now prompt with the following message:

**Enter the 13 character Current EEC HW Part No.: [XXXXX-XX-XXX]>**

From the Hamilton Sundstrand nameplate, enter the 13 character EEC Hardware Part Number and press the **RETURN** key.

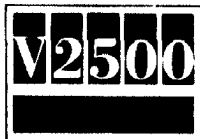
- (24) The LDR150 program will now prompt with the following message:

**Enter the 13 character SB EEC HW Part No. : [XXXXX-XX-XXX]>**

From Table 4 (Figure 1 Sheet 10) and Reference (2), the Service Bulletin, enter the 13 character EEC Hardware Part Number and press the **RETURN** key.

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Accomplishment Instructions for Part II - If the  
Electronic Engine Control is Reprogrammed on site.  
Figure 1 (Sheet 4)



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- (25) The LDR 150 program will now prompt with the following message:

**Enter Trim Checksum Value for "XXXXXX.TRM" :**

The xxxxx.xxx designation is the name of the Trim File being loaded to the EEC. From Table 4 (Figure 1 Sheet 10) and Reference (2), the Service Bulletin, enter the trim checksum value and press the **RETURN** key.

- (26) The LDR150 program will now prompt with the following message:

**Do you wish to reenter the above entries [Y/N/Q] :**

- (a) To proceed with programming process, type **N**, then press the **RETURN** key. Continue with step (27).
- (b) To correct any errors in the data entered, type **Y** then press **RETURN** key. Continue with step (20).
- (c) To quit the programming process, type **Q**, then press **RETURN** key. Turn off the 28VDC power to the EEC and continue with step (37).

- (27) At this point the screen will be initialized to display the activity of the programming process.

- (a) Status messages will scroll across the screen.

**NOTE:** For a successful Reprogramming operation, this step will take the following approximate times:.

EEC 150-20 30 minutes.  
EEC 150-40 10 minutes.

- (b) If an error occurs, see Table 3 (Figure 1 Sheet 9) for a summary of error code description and troubleshooting suggestions.

- (28) The LDR150 program will prompt with the following message:

**Turn OFF the BITE and BOOT switches to the EEC  
then**

**Turn OFF POWER to the EEC and wait at least 5 seconds  
then**

**Turn ON POWER to the EEC**

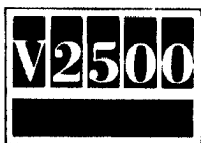
**...Press the RETURN Key When Ready to Continue**

Locate the BOOT/BITE switches on your test equipment, and set the BOOT/BITE switches to the OFF (open) position.

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Accomplishment Instructions for Part II - If the  
Electronic Engine Control is Reprogrammed on site.  
Figure 1 (Sheet 5)





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- (29) Switch off the 28VDC supply to the EEC, wait 5 seconds, then switch on the 28VDC power supply to the EEC.
- (30) On the IBM compatible computer, press the **RETURN** key.
- (31) Wait until the LDR150 program prompts with the following message:

**Turn ON the BITE and BOOT switches to the EEC  
then  
Turn OFF POWER to the EEC and wait at least 5 seconds  
then  
Turn ON POWER to the EEC  
...Press the RETURN Key When Ready to Continue**

Locate the BOOT/BITE switches on your test equipment, and set the BOOT/BITE switches to the ON (closed) position.

- (32) Switch off the 28VDC power supply to the EEC, wait 5 seconds, then switch on the 28VDC supply to the EEC.
- (33) On the IBM compatible computer, press the **RETURN** key.
- (34) Wait until the LDR150 program prompts with the following message:

**Turn Off POWER to the EEC  
...Press the RETURN Key When Ready to Continue**

Switch off the 28VDC supply to the EEC.

- (35) On the IBM compatible computer, press the **RETURN** key.

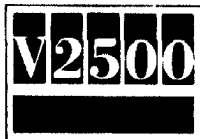
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E8269

Accomplishment Instructions for Part II - If the  
Electronic Engine Control is Reprogrammed on site.  
Figure 1 (Sheet 6)

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- (36) The LDR150 program will now display the status of the programming process. Record the name of the log file for hard copy report of the process.

- (a) If a successful programming occurred, the following message will be displayed:

**\*\*\*\*EEC PROGRAMMING SUCCESSFULLY COMPLETED\*\*\*\***  
**Record the log file name "VLXXXX.LOG" for later printout.**

If desired, record the log file name "VLXXXX.LOG" for later printout."

- (b) If programming was unsuccessful, the following message will be displayed:

**\*\*\*\*DOWNLOAD PROCESS ABORTED – ERROR CODE "X"**  
**Record the log file name "VLXXXX.LOG" for later printout.**

If desired, record the log file name "VLXXXX.LOG" for later printout."

The "X" refers to the type of error that caused the process to abort. Table 3 (Figure 1 Sheet 9) describes the error codes and action to be taken.

- (37) Press the **RETURN** key to terminate the program and return to the MSDOS prompt "**A:\>**".
- (38) A paper copy of the log file can be made by the IBM compatible computer if a printer is available. You can do this as follows:
- NOTE: You can remove the diskette, write protect the diskette, and move to a system with a printer if no printer is connected to the original system. Complete the commands listed below to make a paper copy.
- (a) At the MSDOS prompt, type **PRINT VLXXX.LOG**.
- (b) Press the **RETURN** key.
- (c) Wait until the printer is finished before proceeding to the next step.
- (d) Remove the diskette, write protect the diskette.
- (39) Disconnect the EEC reprogramming electrical connectors from J1 and J7 and J3/J9, if applicable.
- (40) Reconnect the aircraft electrical harness connectors to J1 and J7 and J3/J9, if applicable.

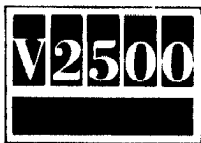
E8270

Accomplishment Instructions for Part II – If the  
Electronic Engine Control is Reprogrammed on site.  
Figure 1 (Sheet 7)

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- (41) Identify the Electronic Engine Control by the procedure as follows and in Reference (2).
- (a) If not already installed, install the Software Identification Plate below the existing nameplate by the procedure specified in HS SB EEC150-20-73-16 Reference (2), as shown below:



**Hamilton Sundstrand**

A United Technologies Company

S/W NO.	DATE

- (b) Use a ballpoint pen or its equivalent to put the last three digits of the HS HW New Part Number from Table 4 (Figure 1 Sheet 10) under "S/W No.", and the Date under "DATE", on the Software Identification Plate.
- (c) Erase (scratch out) the existing HS HW Part Number and Date if previously marked on the Identification Plate.
- (42) Close-up the engine and remove the remaining notices by doing the post-requisite procedures given in Job Close-up in Reference (4), Chapter/Section 73-22-34, Installation.
- (43) Do the post-installation test specified in Reference (4), Chapter/Section 71-00-00, as required for Removal/Installation of an Electronic Engine Control.
- (44) For this reprogramming diskette, make (add to) a record of accomplishment, listing diskette part number, operator, EEC serial number, and date.
- (45) When fleet reprogramming is complete, return reprogramming diskette and record of accomplishment to IAE representative, for return to IAE.

E8271

Accomplishment Instructions for Part II - If the  
Electronic Engine Control is Reprogrammed on site.  
Figure 1 (Sheet 8)

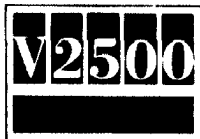
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## Error Code Definitions

ERROR CODE	ERROR TYPE	ACTION
E1	EEC VERIFY ERROR – Data verify error in EEC – Compair failed or location could not be programmed.	Try procedure 3 times, if still bad, operator has the option to a.) return the unit, or b.) successfully ReProgram the unit to a prior A5 Software Standard, as listed in Figure 4 – Family Tree, and as defined by the cor- responding Software Service Bulletin
E2	COMMUNICATION ERROR – Communication problem between EEC and IBM compatible computer.	Check BITE, cables, power supply, UART board, and EEC. Retry 3 times.
E3	CONFIGURATION ERROR – Configuration data comparison failed. (Possible Hardware P/N mismatch, EEC compatibility mis- match, Trim Checksum mismatch).	Operator data entered incorrect or incorrect data on existing name- plate. Check data – retry with the correct information.
E4	SYSTEM PROBLEM – Poor operating environment, bad disk, or program aborted by operator.	If the process was not terminated by the operator, check that the disk is not write protected, or replace the disk and retry.

Table 3  
Error Code Definitions

E8272

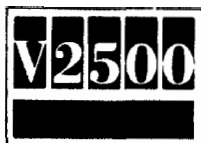
Accomplishment Instructions for Part II – If the  
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Figure 1 (Sheet 9)

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Reprogramming Input Reference Table

A5 SCN15/t				
	<u>Old P/N</u>	<u>A5 SCN15/T New P/N</u>	<u>SB Line Reference</u> <u>Paragraph</u> <u>Line</u>	
Reprogramming Diskette 150-20 150-40	n/a	819191-23 819191-21	2. Part II	C. (17)
EEC: (HS) HW Part No. 150-20 150-40	808050-4-040 824972-2-004	808050-4-042 824972-2-006	2. Part I	D. (1), E. (1), F. (1)
EEC: IAE P/N 150-20 150-40	2A3473 2A3471	2A3488 2A3489	2. Part I	D. (1), E. (1), F. (1)
Trim Checksum	n/a	27170	2. Part II	C. (25)
Table 4 Reprogramming Input Reference Table				

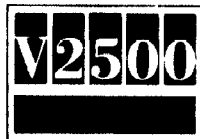
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E8273

Accomplishment Instructions for Part II - If the  
Electronic Engine Control is Reprogrammed on site.  
Figure 1 (Sheet 10)

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EEC 150-20 Programming Harness Definition as defined in Table 1.

EEC SIGNAL NAME	PROGRAMMING HARNESS CONNECTOR	QUA-TECH CONNECTOR	QUA-TECH SIGNAL NAME
UART IN LINE B CHA	P1-b	PA-2	TXD+
UART IN LINE A CHA	P1-H	PA-7	TXD-
UART OUT LINE A CHA	P1-c	PA-4	RXD+
UART OUT LINE B CHA	P1-J	PA-8	RXD-
BOOT DISC CHA	P1-D	N/A	N/A
BITE DISC CHA	P1-Z	N/A	N/A
BOOT/BITE RTN CHA	P1-m	N/A	N/A
UART IN LINE B CHB	P7-b	PB-2	TXD+
UART IN LINE A CHB	P7-H	PB-7	TXD-
UART OUT LINE A CHB	P7-c	PB-4	RXD+
UART OUT LINE B CHB	P7-J	PB-8	RXD-
BOOT DISC CHB	P7-D	N/A	N/A
BITE DISC CHB	P7-Z	N/A	N/A
BOOT/BITE RTN CHB	P7-m	N/A	N/A

Table 1  
Programming Harness Definition

## Power Supply Connections

EEC SIGNAL NAME	PROWEE SUPPLY HARNESS CONNECTOR	POWER SUPPLY
GTP CHA	P3-m	+28VDC
GTP RTN CHA	P3-r	+28VDC RTN
GTP CHB	P9-m	+28VDC
GTP RTN CHB	P9-r	+28VDC RTN

Table 2  
Power Supply Connections

E8274

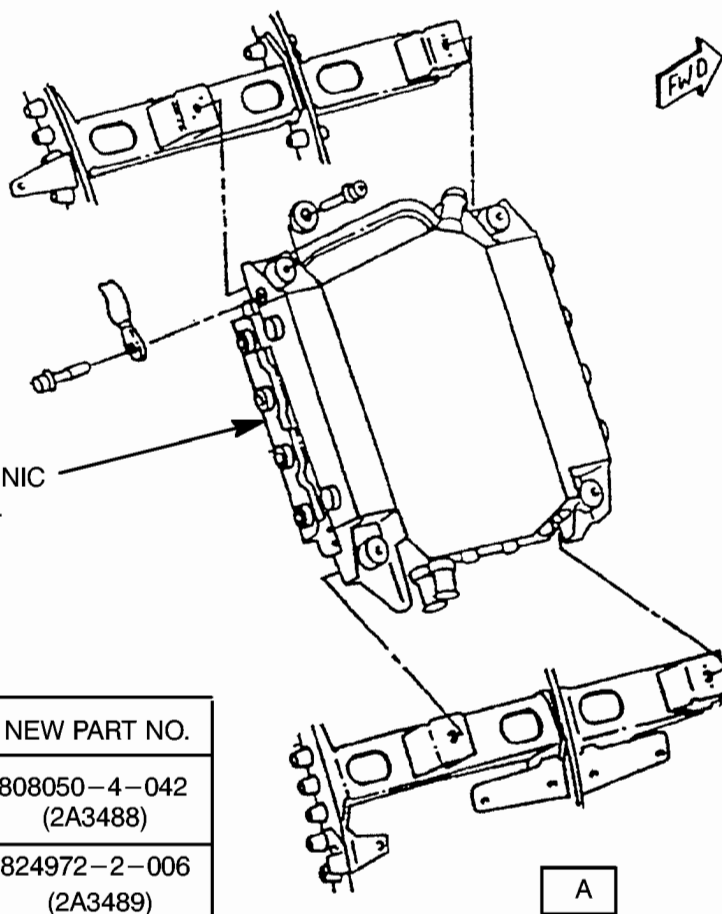
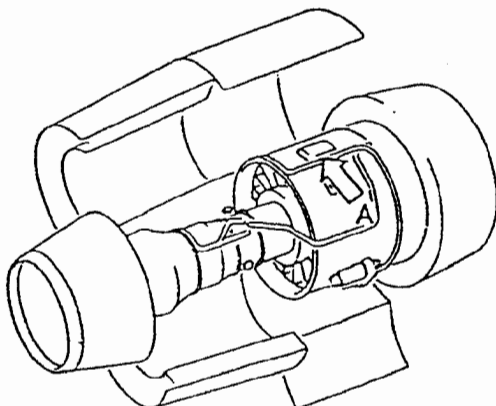
Programming Harness Definition Table 1 and Power Supply Connections Table 2.  
Figure 2



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2



\* REPLACE ELECTRONIC  
ENGINE CONTROL

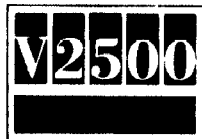
* EEC	OLD PART NO.	NEW PART NO.
150-20	808050-4-040 (2A3473)	808050-4-042 (2A3488)
150-40	824972-2-004 (2A3471)	824972-2-006 (2A3489)

E8200

Location of the Electronic Engine Control (EEC)  
Figure 3

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## MODIFICATIONS

### BASE LINE

V2500-ENG-73-0052  
PROVIDE A NEW ELECTRONIC  
ENGINE CONTROL WITH SCN-9A  
VERSION 021/121 SOFTWARE  
CONFIGURATION AND HARDWARE  
CHANGES TO ADDRESS NACELLE  
LEAKAGE REQUIREMENTS

V2500-ENG-73-0080  
PROVIDE A NEW ELECTRONIC  
ENGINE CONTROL WITH SCN-10A  
SOFTWARE CONFIGURATION  
VERSION 026/026 TRIMS

V2500-ENG-73-0083  
PROVIDE A NEW ELECTRONIC  
ENGINE CONTROL WITH SCN-10B  
SOFTWARE CONFIGURATION  
VERSION 027/027 TRIMS

V2500-ENG-73-0086  
PROVIDE A NEW ELECTRONIC  
ENGINE CONTROL WITH SCN-11  
SOFTWARE CONFIGURATION  
VERSION 032/032 TRIMS

## PART NUMBER CHANGE

808050-3-014  
(2A2989)

808050-4-020  
(2A3098)

808050-4-024  
(2A3210)

808050-4-026  
(2A3223)

808050-4-028  
(2A3250)

A

CONTINUED ON  
SHEET 2

E8148

Family Tree - Electronic Engine Control (EEC)  
Ref. Catalog Sequence No. 73-22-34. Fig. 01 Item 280  
Figure 4 (Sheet 1)



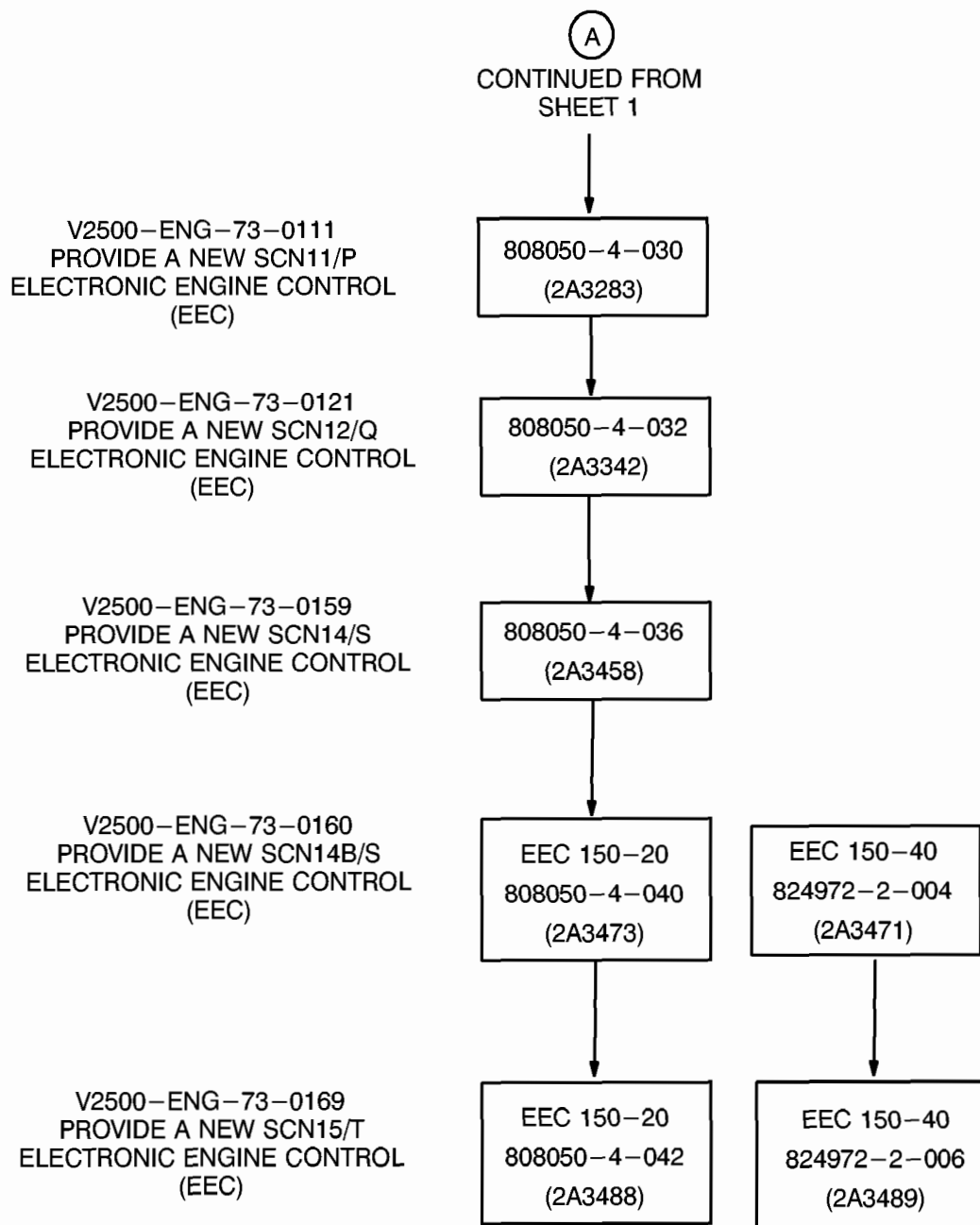


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## SERVICE BULLETIN

MODIFICATIONS

PART NUMBER CHANGE



E8201

Family Tree - Electronic Engine Control (EEC)  
Ref. Catalog Sequence No. 73-22-34. Fig. 01 Item 280  
Figure 4 (Sheet 2)