V2500 International Aero Engines

SERVICE BULLETIN

ENGINE - FUEL AND CONTROL - TO PROVIDE A NEW A5SCN14B/S 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.

99VZ009

Mar.6/00

1. Planning Information

A. Effectivity

(1) Aircraft: Airbus A319, A320, A321

(2) Engine:

V2522-A5 Engines prior to Engine Serial No. V10678, and V10687 and V10698
V2524-A5 Engines prior to Engine Serial No. V10678, and V10687 and V10698
V2527-A5 Engines prior to Engine Serial No. V10678, and V10687 and V10698
V2527E-A5 Engines prior to Engine Serial No. V10678, and V10687 and V10698
V2527M-A5 Engines prior to Engine Serial No. V10678, and V10687 and V10698
V2530-A5 Engines prior to Engine Serial No. V10678, and V10687 and V10698
V2533-A5 Engines prior to Engine Serial No. V10678, and V10687 and V10698

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:

(a) 1.0 THRUST LEVER ANGLE (TLA) DISAGREEMENT FAULT LOGIC

1 1.0 During reverse operation, a disagreement between the TLA signals going to the Electronic Engine Control (EEC) that last for more than one second will cause the reverser to be commanded to stow. In addition, commanding the reverser to stow results in the EEC setting a nuisance (ECAM) cockpit message associated with the Aircraft Permission Switch. This fault will prevent the Thrust Reverser from being deployed again.

(b) 1.0 REVERSER LINEAR VARIABLE DIFFERENTIAL TRANSFORMER (LVDT) NUISANCE FAULTS CONDITION

1 1.0 Reverser LVDT failures have occurred on the aircraft production line. These problems are causing delays in the production line.

(c) 1.0 NEW EEC150-40 MODEL

1 1.0 The present EEC150-20 model individual components are becoming obsolete and no new sources of replacement parts can be located.

(2) Background:

(a) 1.0 THRUST LEVER ANGLE (TLA) DISAGREEMENT FAULT LOGIC

1 1.0 The current software does not select the more forward TLA, but instead, it chooses Forward Idle. This causes the reverser to be commanded to stow. The EEC software is supposed to select the more forward TLA, limited to Forward Idle, when the TLA signals differ by more than the allowable tolerance. This allows the reverser to remain deployed and allows thrust to be modulated.

(b) 1.0 REVERSER LINEAR VARIABLE DIFFERENTIAL TRANSFORMER (LVDT) NUISANCE FAULTS CONDITION

1 1.0 The reverser LVDT limits are less than the EEC software limits. This causes out-of-range failures to be incorrectly shown by the EEC.

(c) 1.0 NEW EEC150-40 MODEL

1 Individual components that are used in the manufacturing of the present EEC150-20 unit are no longer being manufactured. The general trend in the electronic industry today is to obsolete components that are not of the latest technology, with spare parts of older aerospace products being unavailable.

(3) Objective:

(a) 1.0 THRUST LEVER ANGLE (TLA) DISAGREEMENT FAULT LOGIC

1 1.0 Modify the EEC logic to select the more forward TLA, limited to Reverse Idle, When a TLA disagreement occurs during reverse operation. Note that the limiting TLA value has been changed from Forward Idle to Reverse Idle. This will allow the reverser to remain deployed and allow thrust to be modulated in the event this situation occurs. Also, the nuisance fault associated with the Aircraft Permission Switch will not occur.

In addition, modify the dual TLA fault accommodation logic so that the response will be similar to that of the disagreement logic. For a dual TLA failure during reverse operation, the EEC logic should choose Reverse Idle. The current software chooses Forward Idle, which will cause the reverser to stow. Choosing Reverse Idle will allow the reverser to remain deployed and the nuisance fault associated with the Aircraft Permission Switch will not occur.

(b) 1.0 REVERSER LINEAR VARIABLE DIFFERENTIAL TRANSFORMER (LVDT) NUISANCE FAULTS CONDITION

1 1.0 Change the EEC logic such that incorrect reverser LVDT failures will not occur.

(c) 1.0 NEW EEC150-40 MODEL

1 Introduce a new EEC150-40 model that uses components that are available in the industry.

(4) Substantiation

The following tests were satisfactorily completed:

(a) Pratt & Whitney bench testing July 1999.

(b) ESN test on Serial No. V10606 July 12, 1999.

(c) Airbus Iron Bird test July 1999.

(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 SCN14B/S software logic.

Part I - If the Electronic Engine Control is sent to one of the addresses listed in Paragraph 2. 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.

F. Manpower

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

Venue	Estimated Manhours
(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	23 minutes
	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	5 minutes
	TOTAL: 41 minutes

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

Venue	Estimated Manhours
(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 .. .	1 hour
	TOTAL: 1 hour 12 minutes
(b) To return to flyable status	
(i) Close the fan cowls	8 minutes
(ii) Remove the warning notices	5 minutes
	TOTAL: 13 minutes

Estimated Manhours Part I or Part II (overhaul):

(3) At overhaul .. .. Not applicable

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 2., 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 2., Accomplishment Instructions, Part 1.

H. Tooling - Price and Availability

The tools and equipment that follow are necessary to do the procedure given in Part II 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 5)

(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.

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

IAE Reliability Group
400 Main Street
M/S 121-10
East Hartford,
CT 06108 USA
Tel: 860-565-1936 Fax: 860-565-2472

(3) 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

E8158

(4) BOOT/BITE switches 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 for EEC connector pins.

(5) EEC 150-20 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.

EEC SIGNAL NAME	PROWER 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

E8159

I. Weight and Balance

(1) Weight change — None

(2) Moment arm — No effect

(3) Datum — Engine Front mount Centerline (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)

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))

(2) Hamilton Sundstrand Service Bulletin:

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

EEC-150-20-73-24, Incorporation of New Software Configuration: A5 SCN14B/S).

(3) Airbus Service Bulletin A320-73-1068, and Aircraft Modification No. 30054.

(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.

L. Other Publications Affected

(1) The V2500 Engine Illustrated Parts Catalog (S-V2500-2IA), Chapter/Section 73-22-34, Figure 1, to add the new parts.

2. Accomplishment Instructions

Part I - If the Electronic Engine Control is sent to one of the addresses listed in Paragraph 2.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 (Table 4) Electronic Engine Control by the procedure given in Reference (4), Chapter/Section 73-22-34, Removal Installation. Refer to Figure 1.

E. Rework Instructions

(1) Do a modification of the Old P/N (Table 4) Electronic Engine Control (See Reference (4), Chapter/Section 73-22-34, Fig/Item No. 01-280) and reidentify by the procedures given in Reference (2).

	Procedure	Supplementary Information
(a)	Send the Electronic Engine Control to the approved vendor to be modified. See Paragraph 2.B.	See Figure 1.

F. Installation Instructions

(1) Install the New P/N (Table 4), 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.

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. E7975

However the number 'E7975' is a SB graphic reference and does NOT appear on the computer screen.

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 EEc150-40, 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".

(2) Record the current unit part number and the unit serial number from the nameplate. This information will input into your computer.

(3) Connect commercial power to all necessary reprogramming equipment.

(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, skip to step C. (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 (COM-3). 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, skip to step C. (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) Turn on the aircraft 28VDC power supply to the EEC

(14) Locate the BOOT/BITE switches for channel A and channel B. Set the Boot/BITE switches to the ON (closed) position.

(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 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 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 : [ ] >

E7963

(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.

(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] :>**

E7964

(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 C.(37).

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

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

E7965

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 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]> E7966

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]> E7967

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

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

Enter Trim Checksum Value for "XXXXXX.TRM" : E7968

The xxxxxx.xxx designation is the name of the Trim File being loaded to the EEC. From Table 4 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] : E7969

(a) To proceed with programming process, type **N**, then press the **RETURN** key. Continue with step C. (27).

(b) To correct any errors in the data entered, type **Y** then press **RETURN**. continue with step C. (20).

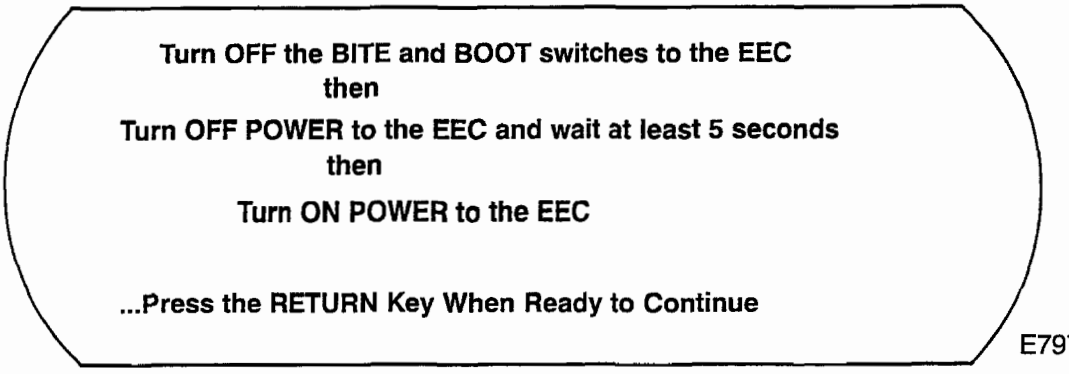
(c) To quit the programming process, type **Q**, then press **RETURN** . Turn off the 28VDC power to the EEC and continue with step C. (37).

(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.

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

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



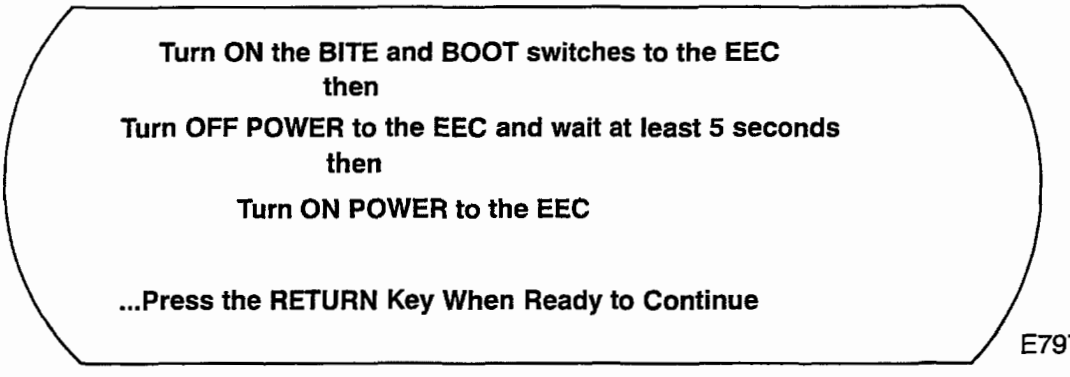
E7970

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

(29) Switch off the 28VDC Aircraft 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:



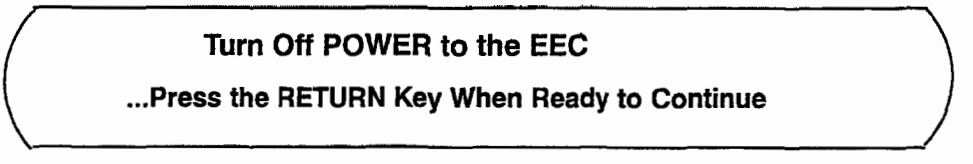
E7971

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:



E7972

Switch off the 28VDC supply to the EEC

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

(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.

E7973

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.

E7974

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 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.

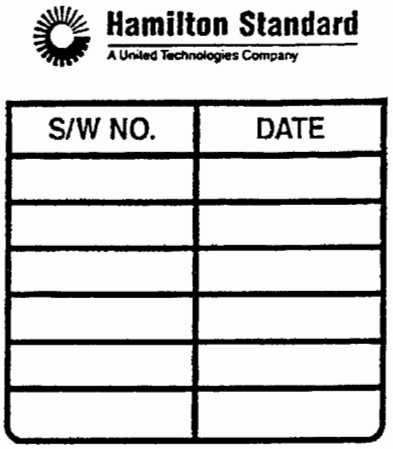
(d) Remove the diskette, write protect the diskette.

(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.

(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:



E8146

(b) Use a ballpoint pen or its equivalent to put the last three digits of the HS HW New Part Number from Table 4 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.

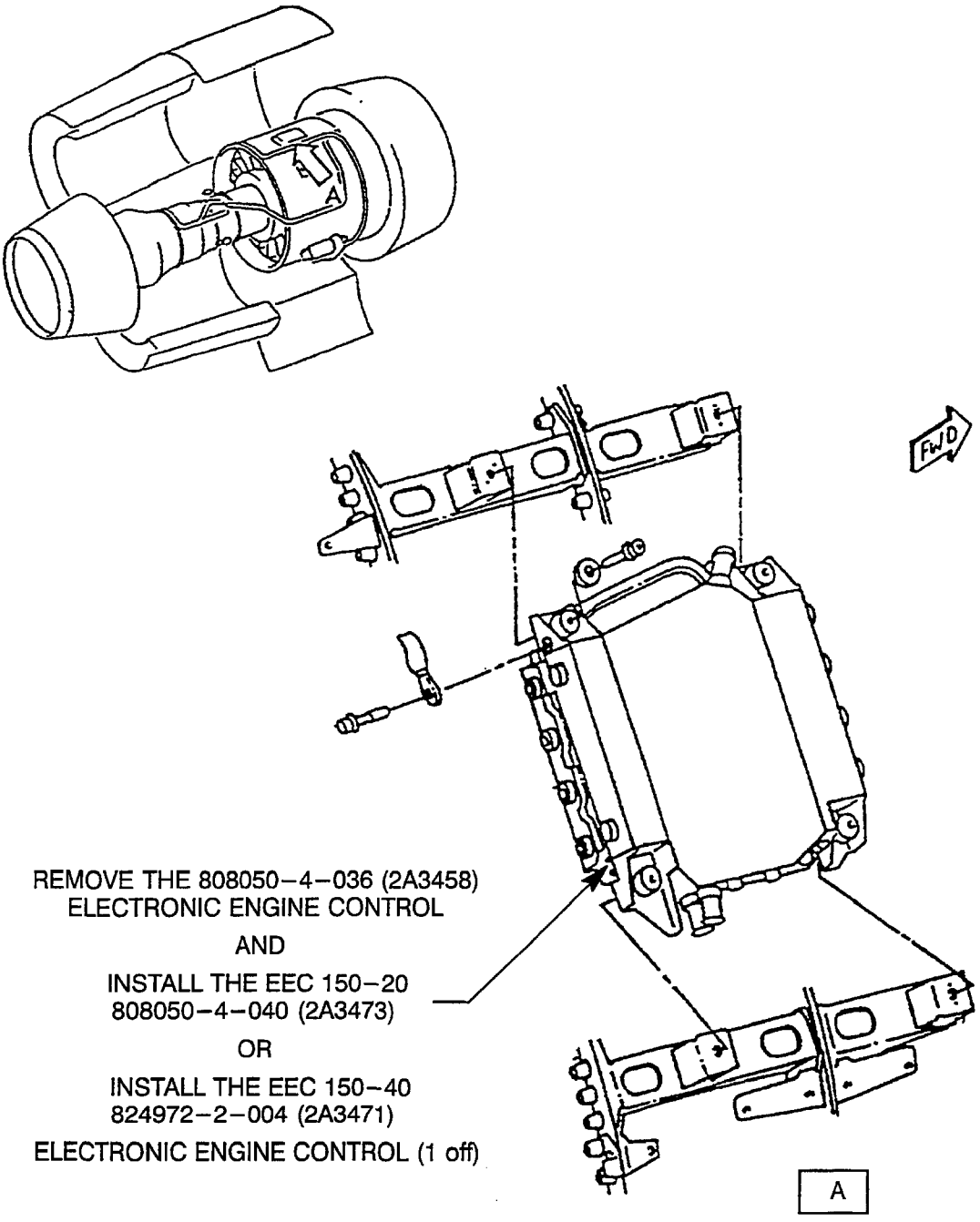
(45) When fleet reprogramming is complete, return reprogramming diskette and record of accomplishment to IAE representative, for return to IAE.

ERROR CODE	ERROR TYPE	ACTION
E1	EEC VERIFY ERROR - Data verify error in EEC - Compare failed or location could not be programmed	Try procedure 3 times, if still bad return EEC unit.
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 mismatch, Trim Checksum mismatch)	Operator data entered incorrect or incorrect data on existing nameplate. 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 disk and retry.

Table 3
Error Code Definitions

A5 SCN14B/S				
	Old P/N	A5 SCN14B/S New P/N	SB Line Reference Paragraph	Line
Reprogramming Diskette	n/a	819191-18	2. Part II	C. (17)
EEC: (HS) HW Part No.	808050-4-036	808050-4-040	2. Part I	D.(1), E.(1), F.(1),
			2. Part II	C. (24)
EEC: IAE P/N	2A3458	2A3473	2. Part I	D.(1), E.(1), F.(1)
Trim Checksum	n/a	30179	2. Part II	C. (25)

Table 4
Reprogramming Input Reference Table



Location of the Electronic Engine Control (EEC)
Figure 1

3. Material Information

A. Kit associated with this bulletin.

None

B. Parts affected by this bulletin.

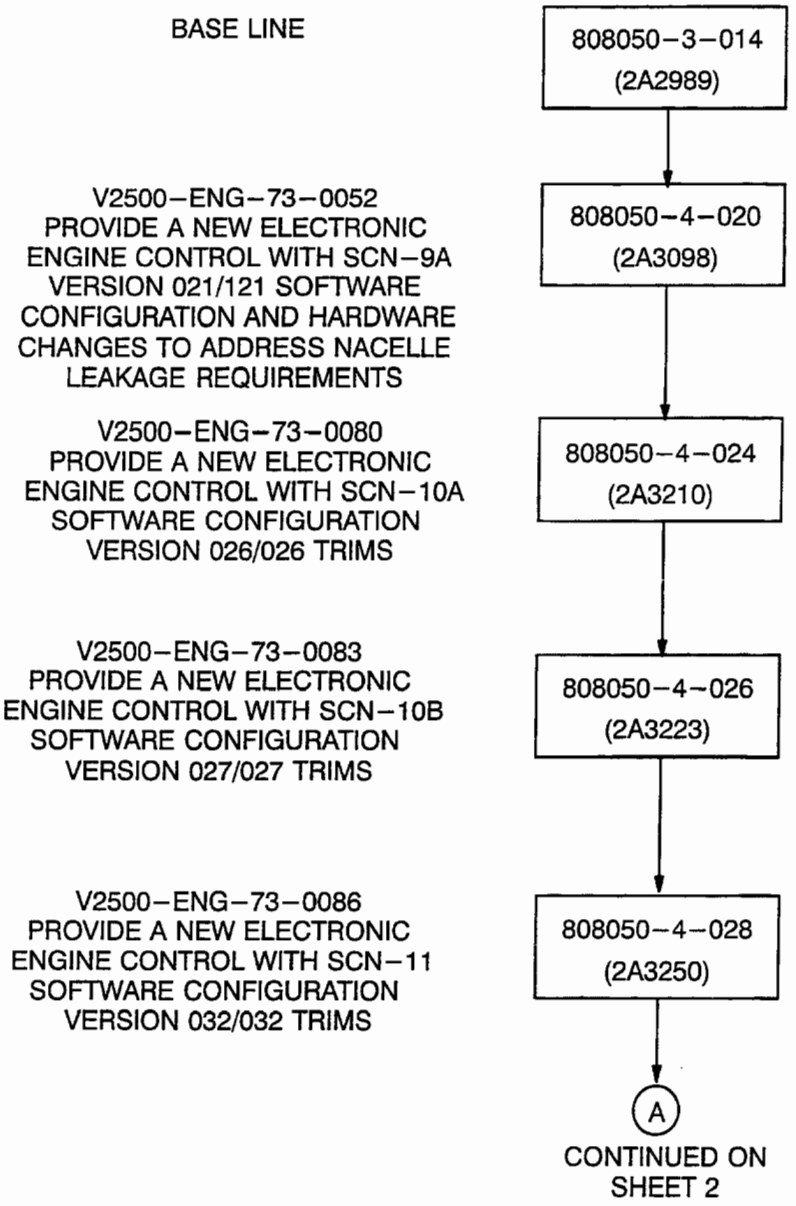
New Part No. (ATA No.)	Qty	Est'd Unit Price($)	Keyword	Old Part No. (IPC No.)	Instructions Disposition
Applicability: For each V2522-A5, V2524-A5, V2527-A5, V2527E-A5, V2527M-A5, V2530-A5 and V2533-A5 Engine to incorporate this Service Bulletin					
808050-4-040 (2A3473) (73-22-34)	1		Control, Electronic Engine (150-20)	808050-4-036 (2A3458) (01-280)	(1D)(A)
824972-2-004 (2A3471) (73-22-34)	1		Control, Electronic Engine (150-40)		(A)

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 2. B. in the Accomplishment Instructions.

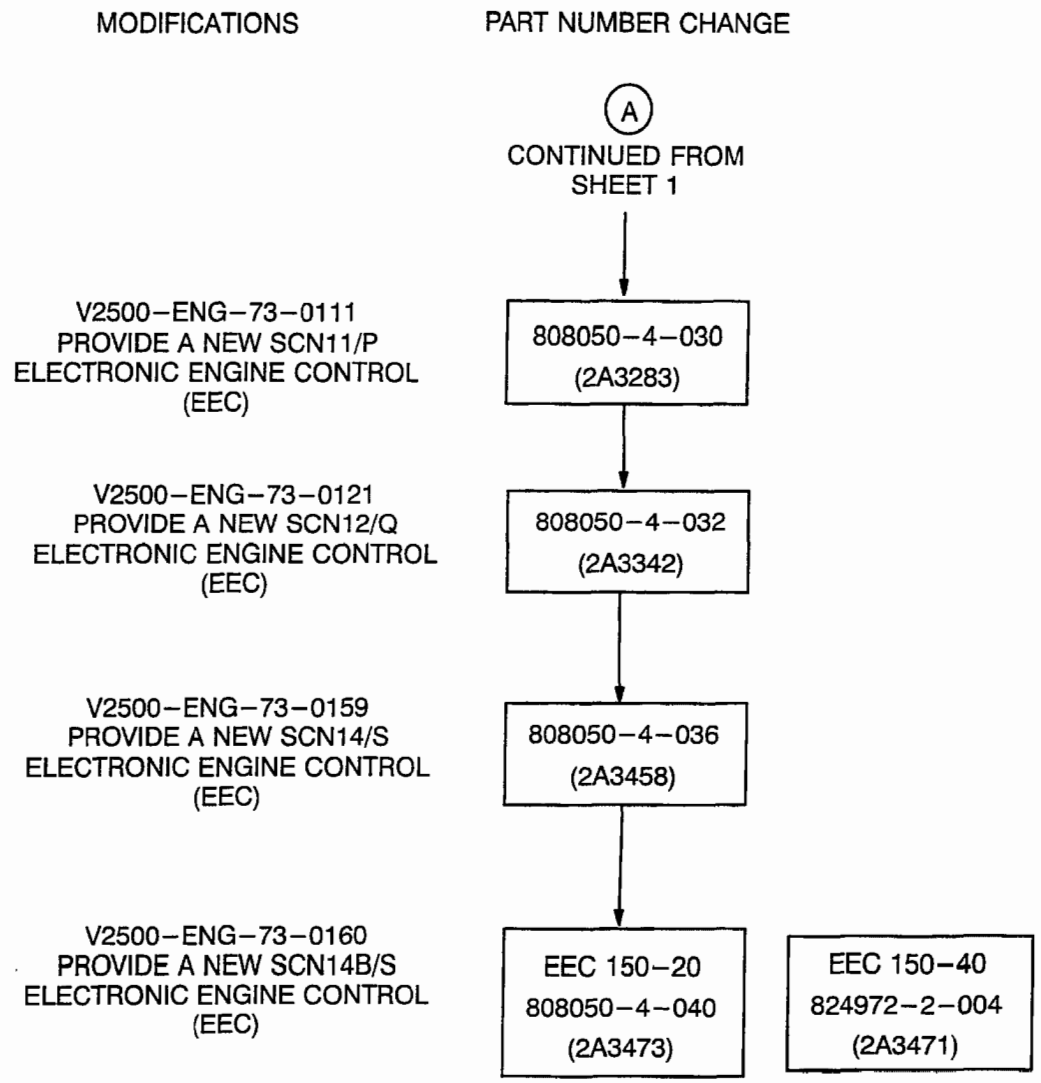
(A) The new part will be available approximately March, 2000.

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.



E8148

Family Tree - Electronic Engine Control (EEC)
Ref. Catalog Sequence No. 73-22-34. Fig. 01 Item 280 C
Figure 2 (Sheet 1)



E8151A

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