SERVICE BULLETIN REVISION NOTICE

ENGINE FUEL AND CONTROL — PROVIDE A NEW ELECTRONIC ENGINE CONTROL (EEC) WITH SCN21/AA SOFTWARE

Turbojet Engine Service Bulletin No. V2500-ENG-73-0222 Revision No. 2 dated April 18, 2019.

Revision History

Original Issue October 27, 2011

Revision 1 dated July 11, 2016

Revision 2 dated April 18, 2019

Reason for the Revision

To add the new EEC Software Loader (ESL), Tool No. IAE2P16613 and SD Card PNs 1018294-6 and 1018294-7.

Effect of Revision on Prior Compliance

None.

This is a Complete Revision (Not Applicable to the SGML version)

The format of this Service Bulletin has been changed from previous versions. This revision shows flow bars of every page. Technical changes incorporated in this revision are marked with revision bars. The contents are in accordance with the list of effective pages.

MODEL APPLICATION

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

BULLETIN ISSUE SEQUENCE

V2500 Series 73-0222

Page	Revision No.	Date
1 thru 32	2	April 18/19

A copy of this Revision Notice and any future revision notices must be filed as a permanent record with your copy of the subject bulletin.

SERVICE BULLETIN

ENGINE FUEL AND CONTROL — PROVIDE A NEW ELECTRONIC ENGINE CONTROL (EEC) WITH SCN21/AA SOFTWARE

MODEL APPLICATION

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

BULLETIN ISSUE SEQUENCE

V2500 Series 73-0222

ATA NUMBER

73-22-34

Compliance Category

6

P&W Distribution Code

V2500

Summary

The purpose of this Service Bulletin is to provide a new Electronic Engine Control (EEC) software version for the V2500-A5 engine identified as V2500-A5 SCN 21/AA.

Planning Information

Effectivity Data

Engine Models Applicable

V2522-A5, V2524-A5, V2527M-A5, V2527-A5, V2527E-A5, V2530-A5, V2533-A5 (A5 Standard and A5 SelectOne™ Retrofit Standard)
Engine Serial Nos. V10001 thru V13190
and
Engine Serial No. V15001

V2522-A5, V2524-A5, V2527M-A5, V2527-A5, V2527E-A5, V2530-A5, V2533-A5 (A5 SelectOne™ Production Standard and SelectTwo™ Production Standard)
Engine Serial Nos. V15002 thru V19999

Concurrent Requirements

Because this software carries over disabling of the P2T2 probe correction logic, originally disabled in SCN18, for 27E (base and bump ratings) and for the 33 (base and bump ratings), the long P2T2 probe (Reference 7, Service Bulletin V2500-ENG-73-0152) and strengthened inlet (Reference 4, Service Bulletin V2500-NAC-71-0206) must be fitted on SCN21/AA engines for the above ratings.

Reason

1. Reduce Fuel Lacquering.

   A. Condition: Some in-service engines have developed a fuel system lacquering condition. Fuel system lacquering can cause malfunction of the Variable Stator Vanes (VSV) and/or the 2.5 Bleed Actuators by blocking internal servo fuel flow filters.

   B. Background: Fuel lacquer is caused by high fuel temperatures. When the fuel temperature remains high for long periods of time, the fuel can break down. This break down increases the risk of lacquering, which blocks the servo fuel flow filters within the actuator. Currently, the heat management system logic limits fuel temperature to 110°C.

   C. Objective: Reduce the amount of fuel lacquering by reducing the overall amount of heat in the system. This will be accomplished by limiting the fuel temperature to no more than 100°C at worst case conditions using the heat management system logic.

2. Improve Quick Relight from High Power.

   A. Condition: The enhanced quick relight logic introduced in SCN 20 (Reference 8, Service Bulletin V2500-ENG-73-0203) was not applied to quick relights from high power.

   B. Background: This is a new requirement.

   C. Objective: Improve the enhanced quick relight logic such that it will be invoked for all quick relight cases above idle. The conditions to invoke the quick relight

logic remain unchanged. Only the fuel derate capability was modified with this new software release.

3. Environmental Control System Pressure Reduction for V2500-A5 Standard Configuration Engines.

   A. Condition: The aircraft Environmental Control System (ECS) over-pressurization protection valve closes during standard slam accelerations to power at the beginning of the take-off roll for the V2500-A5 fleet of standard configuration engines. This valve closure results in isolating the aircraft bleed system making it necessary to decrease the engine power to set the ECS over-pressurization protection valve back to the usual position.

      NOTE: This change is similar to the change made for the V2500 SelectOne™ production/retrofit configuration engine in SCN 20A/Z. See Reference 9, Service Bulletin V2500-ENG-73-0208.

   B. Background: Investigation by Airbus and IAE has revealed this issue is caused by the inability of the aircraft ECS system Pressure Regulating valve (PRV) to respond quickly.

   C. Objective: Derate (slow down) the engine acceleration schedule, for altitudes below 5000 feet, to lower the rate of pressure build-up in the ECS system. This change will be applied to the V2500-A5 standard configuration engine only and will be limited to on-ground conditions during take-off roll.

      The software will apply this change only until the engine has reached take-off power. At that point, the pressure spike in the 7th stage bleed manifold will have ended, and the acceleration schedule can be returned to normal. A backup method of returning the schedules to normal has also been implemented. The schedules will return to normal when Mach number exceeds 0.13.

      Two Class I ECAM faults were activated in SCN 20A (Reference 9, Service Bulletin V2500-ENG-73-0208) as part of this change. These faults had previously been applied only to the A319 for the A319 Take-Off/Go-Around Disassociation logic.

      TOTONG — "A319 Take-Off/Go-Around Disassociation Logic" or "Environmental Control System Pressure Reduction Logic" non-dispatchable.

      GND3FL — This is the same indication as TOTONG except it is reported during the Menu mode FADEC self-test. Both TOTONG and GND3FL have the same clear language message (CLM):

      ATA 341300, CLM 99 — ADIRS 1/ADIRS 2/LGCIU @

      Where, @ equals "1" or "2" depending on engine position.

4. Improve Channel Change Logic.

   A. Condition: This change addresses a problem that occurred one time in revenue service in year 2006. A specific, internal hardware failure of one channel of an EEC150-40 associated with the processor's ability to send and receive data can cause corruption of the data being sent to the other EEC channel. This failure can cause the EEC150-40 to operate incorrectly. The engine must be shutdown for this situation.

   B. Background: The failed EEC channel affected the operation of the functioning EEC channel. This caused engine operation to be affected. The pilot had to shutdown the engine.

C. Objective: Modify the EEC software such that the internal EEC hardware failure does not affect operation of engine. Incorporate a Built-In Test (BIT) that will allow an EEC channel to determine the data being sent to the other EEC channel is corrupted. If the EEC channel detects corrupted data during BIT testing, it will put itself into a continuous reset. This will prevent the good channel from seeing the corrupted data. The failed EEC channel will recover if subsequent BIT testing passes. A new Class 1 fault will be set if the EEC detects a failure of the data bus BIT and written to fault memory if the channel recovers. If the fault cannot be written because the channel does not recover, the healthy channel will set a Class 2 fault if the cross channel communication is lost for 10 seconds.

A new Class 1 fault will be recorded:

VOIDBF — Failure of the OUTCOM / IOPCOM Data Bus Test

ATA 732234, CLM 1 — EEC@

Otherwise, the following Class 2 fault will be recorded:

XLINKL — Crosslink Failure

ATA 732234, CLM 1 — EEC@

Where, @ equals "1" or "2" depending on engine position.

5. Restore V2500 SelectOne™ Production/Retrofit Configuration Engine Idle Performance.

A. Condition: V2500 SelectOne™ production configuration engine pass-off data indicates a performance degradation at idle conditions relative to the V2500-A5 standard configuration engine.

B. Background: The flow capacity of the V2500 SelectOne™ production/reftrofit configuration engine High Pressure (HP) compressor with the Variable Stator Vanes (VSV) in the closed position has been found to be too low.

C. Objective: Change the HP compressor VSV schedule for the V2500 SelectOne™ production/reftrofit configuration engine to restore ground and approach idle performance to that of the V2500-A5 standard configuration engine.

6. Prevent Engine Rundown due to Combined Pb and T2 Failures.

A. Condition: In November 2007, a revenue service event occurred where an engine experienced an un-commanded power reduction to sub-idle level followed by a crew initiated In Flight Shut-Down (IFSD). It was determined that the combination of the two separate fault conditions, a frozen burner pressure (Pb) line and a loss of T2 probe heat power, resulted in fuel flow being commanded to a fail-safe, sub-idle level.

B. Background: Certain engine parameters are needed by the EEC software in order to safely control fuel flow. When these parameters are not available and they cannot be modeled based on other parameters, the software cannot safely operate the engine above idle. Therefore, fuel flow is commanded to a fail-safe, sub-idle level.

For this case, the T2 sensor was available. The problem was a loss of T2 probe heat power, not a loss of the T2 sensor. The T2 sensor was still functioning. It might have been sensing a colder temperature than normal because of possible ice build-up on the probe. If the Pb line is frozen but the T2 sensor available, the

software can safely operate the engine above idle. Therefore, fuel flow does not need to be commanded to a fail-safe, sub-idle level.

C. Objective: Modify the software to not command fuel flow to a fail-safe, sub-idle level when the Pb line is frozen and T2 probe heat power is lost.

7. Improve Fault Annunciation for Overspeed Events.

A. Condition: When an overspeed event occurs, there is no Electronic Centralized Aircraft Monitoring (ECAM) message to confirm the cause of the engine condition. Fuel flow is correctly commanded to a sub-idle level and the engine parameter displays in the cockpit will show idle or sub-idle levels. But there is no ECAM message to confirm the cause of the engine condition.

B. Background: This is a new requirement.

C. Objective: Provide an ECAM warning and related maintenance message to inform the crew of an overspeed activation. EEC ARINC bit 155-15 will be set to trigger the ECAM warning. The ECAM warning, ENG 1(2) FADEC FAULT, will be displayed when the overspeed valve is activated. In addition, a new Class 1 fault will be recorded by the EEC. This will cause the maintenance message, PROPULSION SYSTEM 1(2), to be included in the Post Flight Report by the CFDIU. This will allow the relation to be found between the ECAM warning message and the Post Flight Report maintenance message.

When the overspeed solenoid is energized in response to an overspeed event, a new Class 1 fault will be recorded:

OVSPE — Overspeed Solenoid Energized ECAM indication

ATA 710000, CLM 72 — PROPULSION SYSTEM@

Where, @ equals "1" or "2" depending on engine position.

8. Provide Reverser Inhibit ECAM Display through Menu Mode Test Condition.

A. Condition: The cockpit computers do not tell the flight crew that the thrust reverser has been pinned and will not be available at landing.

B. Background: This is a new Airbus requirement for the A319, A320 and A321. Currently, the EEC does not know that the thrust reverser has been pinned and therefore cannot tell the cockpit computers.

C. Objective: Provide a new Menu mode procedure to allow line maintenances to supply the pinned status of the reverser to the EEC. The EEC will tell the cockpit computer the status of the reverser so that it can be displayed to the flight crew.

The following ECAM messages will be displayed if the reverser is inhibited:

ENG1(2) REV INHIBITED (with Flight Warning Computer standard F6)

-or- ENG1(2) REVERSER FAULT (with Flight Warning Computer pre-F6)

If there is a problem such that the EEC cannot record the status of the reverser, a new Class 2 fault will be set:

RMIFAL — Reverser Manual Inhibit Fault

ATA 732234, CLM 1 — EEC@

Where, @ equals "1" or "2" depending on engine position.

9. Ensure Single Channel Menu Mode Capability.

A. Condition: Menu mode cannot be entered in an EEC150-40 if only one channel is powered. This is not consistent with the capability of the EEC150-20 EEC.

B. Background: This is a new requirement. The ability to enter Menu mode with only one channel powered has never been a formal requirement. The EEC150-20 already has the capability but the EEC150-40 does not.

C. Objective: Modify the EEC software such that the EEC150-40 can enter Menu mode with only one channel powered.

10. Recover N2 Margin for V2500-A5 V2533 Standard Configuration Engines at Overhaul and Repair Shops.

A. Condition: Some V2500-A5 standard configuration engines at Overhaul and Repair Shops have difficulties in clearing the V2533 N2 margin acceptance criteria at pass-off.

B. Background: N2 margin is reduced after engine refurbishment because the overhaul process does not fully restore engine component hardware back to production new standard.

C. Objective: Introduce a more open Variable Stator Vane (VSV) schedule at higher airflows. The more open VSV schedule will only be applied to the V2533 standard configuration engine. The more open VSV schedule increases the N2 margin limit to 13820 rpm. It can be accessed through a Data Entry Plug change.

The new Data Entry Plug can only be incorporated by the overhaul shop if the engine has incorporated the Reference 6, Service Bulletin V2500-ENG-72-0295 redesigned R4 blade.

This change introduces two new Variants for the V2533 standard configuration engine as follows:

(1) Variant 01 — More open VSV schedule.

(2) Variant 11 — More open VSV schedule with 4% Climb thrust increase.

11. Revise Dispatch Level for N1 and N2 Faults.

A. Condition: The EEC software must ensure that the engine will be dispatched only if it is more than one fault away from an unprotected overspeed condition. Analysis has shown that certain failure conditions exist where the engine could be dispatched and be only one fault away from an unprotected overspeed condition.

B. Background: The only way to ensure that the overspeed system will protect the engine under all dispatchable configurations is to require that both N1 and N2 are available to both EEC channels for every flight. The current software does not require that both N1 and N2 are available to both EEC channels for every flight.

C. Objective: Change single channel N1 and N2 faults (including cross-check and interface) from Time Limited Dispatch (TLD) to No Dispatch. This will ensure that under worst-case dispatch, a single failure will not result in an unprotected overspeed condition.

A review of the last 5 years of EEC fault memory history (over 2000 EECs) confirmed the change in dispatch level for these faults will have limited impact on Delays and Cancellations.

The ECAM message ENG1(2) OVSPD PROTECTION FAULT will be displayed on the ground if any one of the following faults occurs during a flight:

Fault ATA Clear Language Message* Description

DM1IF 732234 EEC@ Internal EEC interface failure

N1IFA 732234 EEC@ Internal EEC interface failure

N2IFA 732234 EEC@ Internal EEC interface failure

RSLXF 732234 EEC@ Internal EEC interface failure

N2XCF 732238 ENG DED ALTERN/HC/EEC@ N2 cross-check failure

N1L 771100 N1 SENS/HC/EEC@ N1 sensor failed

N1XCF 771100 N1 SENS/HC/EEC@ N1 cross-check failure

*Where, @ equals 1 or 2 depending on engine position.

12. Revise Dispatch Level for Inability to Correctly Run Overspeed System Self-Test Due to Inability to Write to Electrical Erasable Read Only Memory (EEROM).

    A. Condition: In order to improve the reliability of the overspeed protection system, the EEC software must set a Class 2 fault if the overspeed self-test logic is not functioning properly or is at risk of not functioning properly. Recent analysis has shown that the inability to write to EEROM can cause the overspeed spooldown test to not sequence properly. This failure condition is currently a SMR fault.

    B. Background: Previous analysis was based on the understanding that the inability to write to EEROM would affect one location only. Recent testing has shown that a single failure can occur that prevents the ability to write to EEROM for the entire channel. If a failure does prevent writing to all EEROM, the existing SMR fault can be dormant and never addressed.

    C. Objective: Change the failure of the ability to write to EEROM from a Scheduled Maintenance fault to a Class 2 fault.

    The following fault is now a Class 2 fault:

    EMWVF — E2ROM write verification fail flag

    ATA 732234, CLM 1 — EEC@.

    Where, @ equals "1" or "2" depending on engine positions.

13. Improve Accuracy of Overspeed Spooldown Test Timing Design to Reduce Nuisance Faults Caused by EEC Software.

    A. Condition: There has been an increase in the number of overspeed protection faults reported during engine shutdown. The reported CLM is FMU/HC/EEC@ with fault OSFFMU. Testing of the Fuel Metering Units (FMU) at the vendor has, in many cases, been returned No Fault Found (NFF).

    The fault is set when the EEC tests the overspeed system during engine shutdown on the ground. The overspeed valve is commanded closed and the software monitors the feedback of the valve position. If the valve is not sensed as closed by the EEC within 800 msec, OSFFMU will be set.

    B. Background: The FMU specification requires that the overspeed valve must close within 600 msec. The NFF units were within this specification. The time to close the overspeed valve can be different for each engine shutdown. The time necessary for the software to sense the valve is closed can be more than 200 msec. These causes together could result in the nuisance fault OSFFMU.

C. Objective: Closed Loop Bench testing has identified that the fault detection in the software can be improved to reduce the frequency of nuisance OFSFFMU faults. Modify the software to monitor the overspeed valve feedback more frequently to reduce the software processing time which will reduce the number of nuisance OSFFMU faults.

14. 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.

15. Supplemental Information

A. For engines serial numbers V18191 and above, if SCN21 is utilized the Aircraft (A/C) Multipurpose Control Display Unit (MCDU) will display a value of Engine Serial Number (ESN) that is 5,000 lower than actual ESN, this calculation also affects A/C reports wherever ESN is listed. (Example of display: ESN V19000 after downgrade to SCN21 MCDU will display a value of V14000) Also see Table 1. Reports e.g. Cruise, Performance, Gas Path, Starting...

With production of ESN V18191 due in 2016 Airbus and IAE want to alert customers of this issue. Configuration testing has been completed and verifies the expected results which confirm no effect on engine operation. IAE recommendation to avoid this condition is to have SCN22 configuration or above embodied.

Understanding of ESN:

(1) DEP Assembly, PN 2A3106 , Reference 11, Pre Service Bulletin V2500-ENG-73-0237 (Pre SCN22).

(a) Valid for Engine Serial Numbers V10001-V13190 and V15001-V19999. Engine serial numbers V13191 to V15000 are not used.

(b) The Numerical Value (NV) to pin the DEP is equal to the ESN minus a software offset of 10,000.

(2) DEP Assembly, PN 2A4378, Reference 11, Post Service Bulletin V2500-ENG-73-0237 (SCN22).

(a) Valid for Engine Serial Numbers V10001 – V13190 and V15001 – V19999. Engine serial numbers V13191 to V15000 are skipped.

(b) The NV to pin the DEP is equal to the ESN minus a software offset of 10,000 or 15,000 depending on the ESN.

Table 1

Engine Serial Number — ESN (on engine data plate)	SCN 22/AB MCDU-Display	SCN 21/AA MCDU-Display
V10001	V10001	V10001
to	to	to
V13190	V13190	V13190
V15001	V15001	V15001
to	to	to
V18190	V18190	V18190
V18191	V18191	V13191
to	to	to
V19999	V19999	V14999

Description

Replace or do a modification of the EEC as specified in the Accomplishment instructions.

Compliance

Category 6

Accomplish when the subassembly (i.e. modules, accessories, components, build groups) is disassembled sufficiently to afford access to the affected part and to all affected spare parts.

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 technical content under the JAR 25 regulation of this document is approved under the authority of DOA ref. EASA.21J.031.

Manpower

For Part A — Replacement or Programming of the EEC by an Authorized Rework Vendor (For Engines Installed on Aircraft).

1. In Service: .....1.9 hours total

For Part B — Programming of the EEC using Software Loader, Tool No. IAE2P16552, IAE2P16613 or IAE2P16552-A (For Engines Installed on Aircraft)

1. Prepare EEC for software load: ..... 0.4 hours
2. Set-up Software Loader, Tool No. IAE2P16552, IAE2P16613, or IAE2P16552-A ..... 0.1 hours
3. Install EEC software: ..... 0.4 hours

4. Shut down Tool No. IAE2P16552, IAE2P16613, or IAE2P16552-A after reprogramming: ..... 0.1 hours

5. Total: ..... 1.0 hours

For Part C — Programming of the EEC Using Software Reprogrammer System, PN IAE3R19290 (For Engines Installed on Aircraft).

1. Prepare EEC for software load: ..... 0.4 hours

2. Set-up Software Loader, PN IAE3R19290: ..... 0.1 hours

3. Install EEC software: ..... 1.0 hours

4. Total: ..... 1.5 hours

For Part D — Replacement or Programming of the EEC by an Authorized Rework Vendor (For Engines Removed from Aircraft).

1. At Overhaul: .....1.4 hours total

For Part E — Programming of the EEC Using Software Loader, Tool No. IAE2P16552, IAE2P16613, or IAE2P16552-A (For Engines Removed from Aircraft).

1. At Overhaul: .....0.6 hours total

For Part F — Programming of the EEC Using Software Reprogrammer System, PN IAE3R19290 (For Engines Removed from Aircraft).

1. At Overhaul: .....1.2 hours total

Weight and Balance

1. Weight Change

   None.

2. Moment Arm

   No Effect.

3. Datum

   Engine Front Mount Centerline (Power Plant Station (PPS) 100)

Electrical Load Data

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

Software Accomplishment Summary

Not Applicable.

References

NOTE: In 2014 IAE converted the V2500 Technical Publications to a new system. As a result of the conversion, some manuals were consolidated. All manuals received new P&W part numbers. To facilitate the use of this Service Bulletin, a Technical Publications conversion table is provided in the Appendix.

1. ATA Locator — 73-22-34.

2. V2500-A5 Series Illustrated Parts Catalog, P&W Ref. PN 2A4428, Chapter/Section 73-22-34.
3. V2500 Aircraft Maintenance Manual, Chapter/Section 73-22-34.
4. V2500 Service Bulletin V2500-NAC-71-0206 (Nacelle — Powerplant — Cowl, Air Intake — Rework To Accommodate Longer P2T2 Probe).
5. V2500 Service Bulletin V2500-ENG-72-0285 (Engine — Conversion — Provide Instructions To Change The V2500-A5 Engine Rating By Modifying The Data Entry Plug).
6. V2500 Service Bulletin V2500-ENG-72-0295 (Engine — HP Compressor Blades — Introduction Of A Redesigned Stage 4 Blade Assembly).
7. V2500 Service Bulletin V2500-ENG-73-0152 (Engine — Introduction Of Longer P2T2 Probe).
8. V2500 Service Bulletin V2500-ENG-73-0203 (Engine — Fuel And Control — Provide A New Electronic Engine Control (EEC) With A5 SCN20/Y Software).
9. V2500 Service Bulletin V2500-ENG-73-0208 (Engine — Fuel And Control — Provide A New Electronic Engine Control (EEC) With A5 SCN20A/Z Software).
10. V2500 Service Bulletin V2500-ENG-73-0236 (Engine — Fuel And Control — Provide A New Electronic Engine Control (EEC) With A5 SCN22/AB Software).
11. V2500 Service Bulletin V2500-ENG-73-0237 (Engine Fuel And Control — Data Entry Plug (DEP) — Replacement Or Modification Of, To Provide SCN22/AB Software And Reduced Ground Idle (RGI) Capability).
12. V2500 Service Bulletin V2500-ENG-73-0238 (Engine Fuel And Control — Introduction Of Software Loader).
13. Airbus Service Bulletin A320-73-1097-00 (Engine Fuel and Control FADEC System — Introduce EEC Software Standard SCN21/AA on IAE V2500-A5 Engines and Aircraft Modification No. 150848).
14. Hamilton Sundstrand Service Bulletin EEC-150-20-73-16 (Install Software Identification Plate).
15. This Service Bulletin is covered by Aircraft Modification No. 150848/P11677 and by A/C Service Bulletin Number A320-73-1097.

    NOTE: Under no circumstances shall the modified equipment, resulting from the application of this Service Bulletin, be installed on the aircraft type unless its aircraft Service Bulletin is approved.

Other Publications Affected

NOTE: In 2014 IAE converted the V2500 Technical Publications to a new system. As a result of the conversion, some manuals were consolidated. All manuals received new P&W part numbers. To facilitate the use of this Service Bulletin, a Technical Publications conversion table is provided in the Appendix.

1. V2500-A5 Series Illustrated Parts Catalog, P&W Ref. PN 2A4428, Chapter/Section 73-22-34.

Interchangeability of Parts

Old (SCN20A) and new (SCN21/AA) electronic engine controls are directly interchangeable provided that the DEP has not been rewired, which enables the more open VSV schedule. Refer to Part C, item 10 for more details.

For aircraft installation observe the following: Intermix conditions with engines having any prior software version, crosswing on the same aircraft, are given in Reference 13, Airbus Service Bulletin A320-73-1097-00.

Information in the Appendix

Alternate Accomplishment Instructions (No)

Progression Charts (Yes)

Added Data (Yes)

Revision to Table of Limits (No)

Inspection Procedures (No)

Material Information

Material — Price and Availability

1. Part prices were not available at the time of Service Bulletin publication. Contact IAE Spares Management & Logistics for firm quotations.
2. There is no kit provided to do this Service Bulletin.
3. Part availability information is provided in material data Instructions — Disposition.

Industry Support Program

Not Applicable.

The material data that follows is for each engine.

For V2522-A5, V2524-A5, V2527-A5, V2527E-A5, V2527M-A5, V2530-A5, V2533-A5, V2522-A5 (SelectOne™), V2524-A5 (SelectOne™), V2527-A5 (SelectOne™), V2527E-A5 (SelectOne™), V2527M-A5 (SelectOne™), V2530-A5 (SelectOne™), V2533-A5 (SelectOne™) Engines:

New PN	Qty	Estimate of Unit Price ($)	Keyword	Old PN	Instructions — Disposition
2A4278 (824972-11-022)	1	*	CONTROL, ELECTRONIC ENGINE	2A4251 (824972-11-020) (73-22-34-01-280)	(1)(F)(N) (I)(V)
2A4270 (824972-2-022)	1	*	CONTROL, ELECTRONIC ENGINE	2A4244 (824972-2-020) (73-22-34-01-280)	(1)(M)(N) (I)(V)
2A4273 (824972-3-022)	1	*	CONTROL, ELECTRONIC ENGINE	2A4245 (824972-3-020) (73-22-34-01-280)	(1)(M)(N) (I)(V)
2A4274 (824972-4-022)	1	*	CONTROL, ELECTRONIC ENGINE	2A4246 (824972-4-020) (73-22-34-01-280)	(1)(M)(N) (I)(V)
2A4275 (824972-5-022)	1	*	CONTROL, ELECTRONIC ENGINE	2A4247 (824972-5-020) (73-22-34-01-280)	(1)(M)(N) (I)(V)
2A4276 (824972-7-022)	1	*	CONTROL, ELECTRONIC ENGINE	2A4248 (824972-7-020) (73-22-34-01-280)	(1)(M)(N) (I)(V)
2A4277 (824972-9-022)	1	*	CONTROL, ELECTRONIC ENGINE	2A4249 (824972-9-020) (73-22-34-01-280)	(1)(M)(N) (I)(V)
2A4279 (808050-4-068)	1	*	CONTROL, ELECTRONIC ENGINE	2A4253 (808050-4-066) (73-22-34-01-280)	(1)(M)(N) (I)(V)
2A4280 (808050-5-068)	1	*	CONTROL, ELECTRONIC ENGINE	2A4254 (808050-5-066) (73-22-34-01-280)	(1)(M)(N) (I)(V)

Instructions/Disposition Code Statements:

Parts Modification Conditions

Estimated part prices are provided when they are available at time of publication. The Estimate of Unit Price is only for planning purposes and does not constitute a firm quotation. An asterisk (*) is shown where part pricing information was unavailable. In either case, contact IAE Spares for firm quotations.

(1) The new part can be obtained by modification of the old part as specified in the Accomplishment Instructions.

Spare Parts Availability

(F) The new part will be available on a Full Manufacturing lead time quote basis only.

(M) It is possible to get the new part only by modification.

(N) The old part is not 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.

Vendor Services or Special Components/Materials

Not Applicable.

Tooling — Price and Availability

The following equipment is required to accomplish this Service Bulletin for units that are reprogrammed in the field. Units that are returned to Hamilton Sundstrand Support Systems or Maastricht Aachen Airport to incorporate this Service Bulletin will be charged to the operator.

1. IAE Software Loader, Tool No. IAE2P16552, IAE2P16613, or IAE2P16552-A.

   NOTE: The IAE software loader must be used with the appropriate reprogramming SD card to accomplish this Service Bulletin. This equipment can be obtained by contacting your Customer Fleet Director.

   The reprogramming SD card is referenced in Accomplishment Instructions, Table 2. This reprogramming SD card contains the EEC 150-20/150-40 application code, trims, memory clear utilities, and software loader. The reprogramming SD card can be obtained from your Customer Fleet Director.

   OR

   Hamilton Sundstrand Software Reprogrammer System, PN IAE3R19290 and Hamilton Sundstrand PN AD42600-1, PN AD42600-2 or PN AD42600-3.

   NOTE: The Hamilton Sundstrand software reprogrammer system must be used with the appropriate reprogramming diskette to accomplish this Service Bulletin. This equipment can be obtained by contacting your Customer Fleet Director.

   The reprogramming diskette is referenced in Accomplishment Instructions, Table 2. This reprogramming diskette contains the EEC 150-20/150-40 application code, trims, memory clear utilities, and software loader. The reprogramming diskette can be obtained from your Customer Fleet Director.

2. EEC 150-20/150-40 Name Plate PN 751333-1 or modified Name Plate PN 822815-1.

Reidentified Parts

Reidentified Parts Data

New PN	Keyword	Old PN
2A4270 824972-2-022	CONTROL, ELECTRONIC ENGINE	2A4244 824972-2-020
2A4273 824972-3-022	CONTROL, ELECTRONIC ENGINE	2A4245 824972-3-020
2A4274 824972-4-022	CONTROL, ELECTRONIC ENGINE	2A4246 824972-4-020
2A4275 824972-5-022	CONTROL, ELECTRONIC ENGINE	2A4247 824972-5-020
2A4276 824972-7-022	CONTROL, ELECTRONIC ENGINE	2A4248 824972-7-020
2A4277 824972-9-022	CONTROL, ELECTRONIC ENGINE	2A4249 824972-9-020
2A4278 824972-11-022	CONTROL, ELECTRONIC ENGINE	2A4251 824972-11-020
2A4279 808050-4-068	CONTROL, ELECTRONIC ENGINE	2A4253 808050-4-066
2A4280 808050-5-068	CONTROL, ELECTRONIC ENGINE	2A4254 808050-5-066

Other Material Information Data

Not Applicable.

Accomplishment Instructions

Part A — Replacement or Programming of the EEC by an Authorized Rework Vendor (For Engines installed on Aircraft)

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

1. Remove the EEC as specified in Reference 3, Aircraft Maintenance Manual, Chapter/Section 73-22-34, Task 73-22-34-000-010. See Figure 1 for the location of the part.
2. Replace the old EEC with a new one as specified in the Material Information Section.

   OR

   Send your EEC to one of the authorized rework vendors that follows:

   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

      A United Technologies Company

      One Hamilton Road

      Dock W

      Windsor Locks, Ct. 06096-1010

      U.S.A.

      FAA Repair License Number: SI3R842L

   B. Hamilton Sundstrand Corporation

      A United Technologies Company

      Worldwide Repair — Maastricht

      Maastricht Airport

      Horsterweg

      6191 RX Beek

      The Netherlands

      FAA Repair License Number: CW5Y794M

3. Install the EEC as specified in Reference 3, Aircraft Maintenance Manual, Chapter/Section 73-22-34, Task 73-22-34-400-010. See Table 2 for old and new part numbers.
4. Recording Instructions

   A. A record of accomplishment is required.

Part B — Programming of the EEC Using Software Loader, Tool No. IAE2P16552, IAE2P16613, or IAE2P16552-A (For Engines installed on Aircraft) Reference 12, Service Bulletin V2500-ENG-73-0238.

NOTE: Reference 5, Service Bulletin V2500-ENG-72-0285 for DEP wiring and marking instructions.

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

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

Reprogramming assistance regarding proper use of Software Loader, Tool No. IAE2P16552, IAE2P16613 or IAE2P16552-A is available from your local IAE representative.

Reprogramming the EEC will clear the fault memory. Fault dump will be automatically stored in the TDS Ranger device that is included with Software Loader, Tool No. IAE2P16552, IAE2P16552-A, or Siemens SIMATIC ITP1000 tablet that is included with Software Loader, Tool No. IAE2P16613 and may be retrieved at a later time.

NOTE: Disassembly of the EEC is not required.

Data integrity check of the Hamilton Sundstrand supplied software is performed as part of the reprogramming procedure.

A bit-for-bit memory verification test is included as part of the reprogramming procedure.

No functional, thermal cycle, or vibration testing is required for units reprogrammed in accordance with this Service Bulletin.

The EEC can be programmed at room ambient conditions or while it is installed on the engine.

1. Section 1 — Prepare EEC for Software Load

   A. Open the nacelle and prepare the aircraft for servicing as specified in Reference 3, Aircraft Maintenance Manual, Chapter/Section 73-22-34, Task 73-22-34-000-010. See Figure 1 for the location of the part.

   B. Remove the EEC harness connector from J1, J3, J7 and J9.

   C. If desired, remove the EEC as specified in Reference 3, Aircraft Maintenance Manual, Chapter/Section 73-22-34, Task 73-22-34-000-010. See Figure 1 for the location of the part.

2. Section 2 — Install Software per software loader Reference 12, Service Bulletin V2500-ENG-73-0238.

3. Section 3 — Close up

   A. If necessary, install the EEC as specified in Reference 3, Aircraft Maintenance Manual, Chapter/Section 73-22-34, Task 73-22-34-400-010.

   Reconnect harness connectors to EEC J1, J3, J7 and J9 connectors.

B. Close the nacelle and return the aircraft to service as specified in Reference 3, Aircraft Maintenance Manual, Chapter/Section 73-22-34, Task 73-22-34-400-010.

C. Recording Instructions

(1) A record of accomplishment is required.

Part C — Programming of the EEC Using Software Reprogrammer System, PN IAE3R19290 (For Engines Installed on Aircraft)

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

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

Reprogramming assistance regarding proper use of Software Reprogrammer System, PN IAE3R19290 is available from your local IAE representative.

Do not turn on aircraft/external supply 28VDC power until instructed to do so.

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

NOTE: Hamilton Sundstrand Electronic Engine Control Model EEC150-20 or 150-40 software is loaded into the EEC using the Hamilton Sundstrand supplied reprogrammer and software.

Disassembly of the EEC is not required.

Data integrity check of the Hamilton Sundstrand supplied software is performed as part of the reprogramming procedure.

A bit-for-bit memory verification test is included as part of the reprogramming procedure.

No functional, thermal cycle, or vibration testing is required for units reprogrammed in accordance with this Service Bulletin.

The EEC can be programmed at room ambient conditions or while it is installed on the engine.

1. Section 1

A. Open the nacelle and prepare the aircraft for servicing as specified in Reference 3, Aircraft Maintenance Manual, Chapter/Section 73-22-34, Task 73-22-34-000-010.

B. Verify that the model number on the identification plate of the unit is "EEC 150-20" or "EEC 150-40". See Figure 1 for the location of the part.

C. If desired, remove the EEC as specified in Reference 3, Aircraft Maintenance Manual, Chapter/Section 73-22-34, Task 73-22-34-000-010. See Figure 1 for the location of the part.

D. Record the current unit part number and the unit serial number from the nameplate. This information will be input into your computer.

E. Connect power to all necessary equipment.

F. Remove the harness connector from the EEC connector marked J1 and connect the programming harness connector marked P1 to the EEC connector marked J1. Make sure that the red engagement stripe on the EEC connector J1 is fully covered.

G. Remove the harness connector from the EEC connector marked J7 and connect the programming harness connector marked P7 to the EEC connector marked J7. Make sure that the red engagement stripe on the EEC connector J7 is fully covered.

H. If the computer and power supply connections to the cables are permanent, then go to the subsequent section titled: "Section 2".

I. Connect the programming 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.

NOTE: UART connections can differ for different IBM compatible computers.

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.

J. Connect the programming 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.

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.

2. Section 2

A. If the EEC is powered by aircraft 28VDC power supply, then go to the subsequent section titled: "Section 3".

B. 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.

C. 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.

D. 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.

3. Section 3

A. Set the BOOT/BITE switches to the ON (closed) position.

NOTE: These switches are located in the junction box on the EEC Programming Harness that is attached to the computer.

B. Turn on the power to the reprogramming computer.

C. Turn on the 28VDC power supply to the EEC.

NOTE: Make sure that the disk drive "A" has no disks present prior to power on of the computer.

D. Wait for the MSDOS prompt "C:\>" to appear on the reprogramming computer.

E. Obtain the Hamilton Sundstrand reprogramming diskette which is identified in Table 2 of these Accomplishment Instructions.

CAUTION: ENSURE THAT ORIGINAL DISKETTE IS PROVIDED IN A CLOSED ELECTROSTATIC DISPATCH BAG, IS UNDAMAGED, AND HAS THE CORRECT PART NUMBER.

HANDLE DISKETTE WITH CAUTION. DO NOT EXPOSE TO STRONG MAGNETIC FIELDS, EXTREME TEMPERATURE, DUST OR WATER, ETC.

(1) Make sure that the write protection tab of the diskette covers the "hole".

NOTE: 1. If necessary, you can remove the stickers from the corner of the disk and move the protecting device to close the hole.

2. The diskette may be used multiple times for multiple engines. A log file is generated each time containing the engine and EEC serial numbers.

(2) Insert the diskette into the floppy drive of the reprogramming computer.

F. The display will show the "C:\>" prompt.

Type "a:", then press the RETURN key.

NOTE: Some computers have the RETURN key designated ENTER.

G. The display will show "A:\>" prompt.

Type "LDR150", then press the RETURN key. This starts the UART programming utility.

NOTE: Several messages will appear including the program identification, version number, time and the UTC/P&W document property rights notice.

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 1 for a summary of error code description and troubleshooting suggestions.

4. Section 4

A. The UART programming utility LDR150 will display the following message:

"Enter operators name performing download: [ ] >"

NOTE: The field between the brackets will always be empty the first time the program is executed on the diskette.

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.

B. 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] :>"

(1) If a fault dump has already been accomplished or is not required:

Type "C", then press the RETURN key.

(2) If a fault dump is required or the operator wishes to terminate the programming procedure:

Type "Q", then press the RETURN key.

(3) If the operator selects the quit option, turn off the 28VDC power to the EEC and go to the section titled: "Section 6".

C. 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 the next two steps, 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: PN 808050-4-030 would be entered as 808050-04-030.

D. The LDR150 program will now prompt with the following message:

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

From the Hamilton Sundstrand nameplate, enter the 13 character EEC hardware part number and press the RETURN key.

E. The LDR150 program will now prompt with the following message:

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

From Table 2 enter the 13 character EEC hardware part number and press the RETURN key.

F. The LDR150 program will now prompt with the following message:

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

The XXXXXX.TRM designation is the name of the trim file being loaded to the EEC. From Table 2, enter the trim checksum value and press the RETURN key.

G. The LDR150 program will now prompt with the following message:

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

(1) To proceed with programming process:

Type "N" , then press the RETURN key. Go to the subsequent section titled: "Section 5", then continue.

(2) To correct any errors in the data entered:

Type "Y", then press the RETURN key. Then go back to the beginning of Section 4.

(3) To quit the programming process:

Type "Q", then press the RETURN key. Turn off the 28VDC power to the EEC then go to the section titled: "Section 6"

5. Section 5

A. At this point the screen will display the progress of the programming process.

(1) 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.

(2) If an error occurs, see Table 1 for a summary of error code description and troubleshooting suggestions.

B. The LDR150 program will now 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"

Set the BOOT/BITE switches to the OFF (open) position.

C. Switch off the 28VDC supply to the EEC, wait 5 seconds, then switch on the 28VDC power supply to the EEC.

D. Press the RETURN key.

E. 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"

Set the BOOT/BITE switches to the ON (closed) position.

F. Switch off the 28VDC power supply to the EEC, wait 5 seconds, then switch on the 28VDC supply to the EEC.

G. Press the RETURN key.

H. 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.

I. Press the RETURN key.

J. The LDR150 program will now display the status of the programming process.

(1) 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.

(2) 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 1 describes the error codes and action to be taken.

6. Section 6

A. Press the RETURN key to terminate the program and return to the MSDOS prompt "A:\>".

B. A Paper copy of the log file can be made from the reprogramming computer if a printer is available. You can do this as follows:

NOTE: You can remove the diskette and move to a computer with a printer if no printer is connected to the original system. Complete the following commands to make a paper copy.

(1) At the MSDOS prompt:

Type "VLXXXX.LOG".

(2) Press the RETURN key.

(3) Wait until the printer is finished before proceeding to the next step.

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

C. Disconnect the EEC reprogramming electrical connectors from J1 and J7 and J3/J9, if applicable.

D. Reconnect the aircraft electrical harness connectors to J1 and J7 and J3/J9, if applicable.

E. Identify the EEC by the procedure as follows:

(1) If not already installed, install the software identification plate below the existing nameplate by the procedure specified in Reference 14, Hamilton Sundstrand Service Bulletin EEC 150-20-73-16.

(2) Use a ballpoint pen or equivalent to put the last three digits of the new Hamilton Sundstrand hardware part number from Table 2 in the software "S/W NO." column of the identification plate, and the date in the "DATE" column of the software identification plate. See Table 2 for old and new part numbers.

(3) Erase (scratch out) the existing Hamilton Sundstrand hardware part number and date, if previously marked on the software identification plate.

(4) Erase (scratch out) the last three digits of the Hamilton Sundstrand hardware part number from the nameplate above the software identification plate.

F. For this reprogramming diskette, make/add a record of accomplishment, listing diskette part number, operator, EEC serial number and date.

G. If necessary, install the EEC as specified in Reference 3, Aircraft Maintenance Manual, Chapter/Section 73-22-34, Task 73-22-34-400-010.

H. Close the nacelle and return the aircraft to service as specified in Reference 3, Aircraft Maintenance Manual, Chapter/Section 73-22-34, Task 73-22-34-400-010.

7. Recording Instructions

A. A record of accomplishment is required.

Part D — Replacement or Programming of the EEC by an Authorized Rework Vendor (For Engines Removed from Aircraft)

1. Replace the old EEC with a new one as specified in the Material Information Section.

OR

Send your EEC to one of the authorized rework vendors that follows. See Figure 1 for the location of the part. See Table 2 for old and new part numbers.

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

A United Technologies Company

One Hamilton Road

Dock W

Windsor Locks, Ct. 06096-1010

U.S.A

FAA Repair License Number: SI3R842L

B. Hamilton Sundstrand Corporation

A United Technologies Company

Worldwide Repair — Maastricht

Maastricht Airport

Horsterweg

6191 RX Beek

The Netherlands

FAA Repair License Number: CW5Y794M

2. Recording Instructions

   A. A record of accomplishment is required.

Part E — Programming of the EEC Using Software Loader, Tool No. IAE2P16552, or IAE2P16613, or IAE2P16552-A (For Engines Removed from Aircraft)

1. See Part B of this Service Bulletin for Accomplishment Instructions, except disregard the steps to open and close the nacelle.

Part F — Programming of the EEC Using Software Reprogrammer System, PN IAE3R19290 (For Engines Removed from Aircraft)

1. See Part C of this Service Bulletin for Accomplishment Instructions, except disregard the steps to open and close the nacelle.

Table 1 — Error Code Definitions

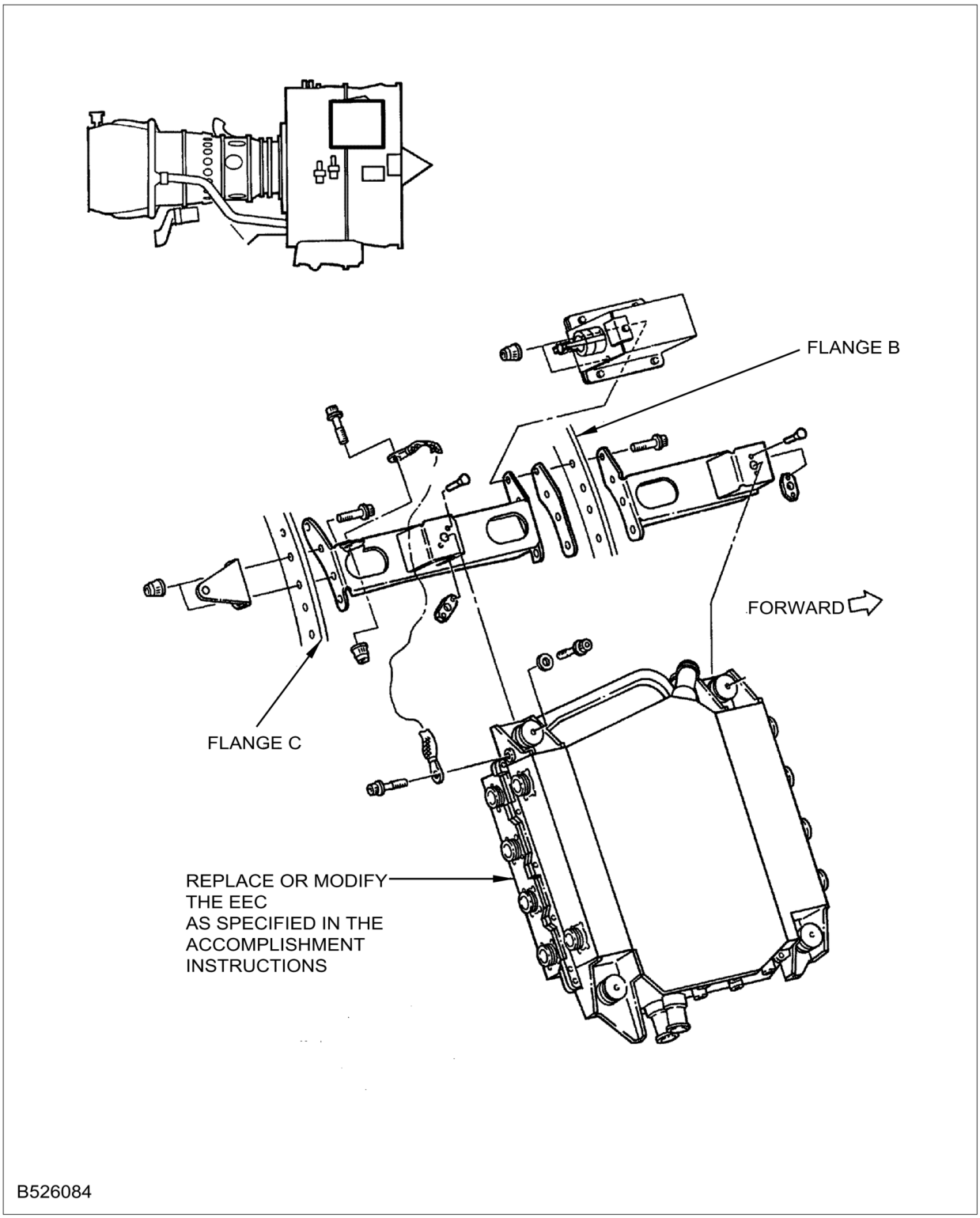
Error Code	Error Type	Action
E1	EEC VERIFY ERROR — Data verify error in EEC — Compare failed or location could not be programmed.	Try procedure 3 times. If still bad, operator has the option to: return the unit OR successfully reprogram the unit to the prior A5 Software Standard, as defined by the corresponding Software Service Bulletin in the Family Tree.
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 PN mismatch, EEC compatibility mismatch, Trim Checksum mismatch).	Operator data entered incorrectly 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 the disk and retry.

Table 2 — Reprogramming Input Reference Table A5 and A5 SelectOne™ SCN21/AA

	New PN	Old PN
Trim Checksum	22424	N/A
Reprogramming SD Card for IAE2P16552 150-20/150-40	1018294-3	N/A
Reprogramming SD Card for IAE2P16552-A 150-20/150-40	1018294-4	N/A

	New PN	Old PN
Reprogramming SD Card for IAE2P16613 150-20/150-40	1018294-6 or 1018294-7	N/A
Reprogramming Diskette for IAE3R19290 150-20/150-40	819191-50	N/A
Control, Electronic Engine (SCN21/AA) PW Part No. (HS) HW Part No.	2A4270 824972-2-022	2A4244 824972-2-020
Control, Electronic Engine (SCN21/AA) PW Part No. (HS) HW Part No.	2A4273 824972-3-022	2A4245 824972-3-020
Control, Electronic Engine (SCN21/AA) PW Part No. (HS) HW Part No.	2A4274 824972-4-022	2A4246 824972-4-020
Control, Electronic Engine (SCN21/AA) PW Part No. (HS) HW Part No.	2A4275 824972-5-022	2A4247 824972-5-020
Control, Electronic Engine (SCN21/AA) PW Part No. (HS) HW Part No.	2A4276 824972-7-022	2A4248 824972-7-020
Control, Electronic Engine (SCN21/AA) PW Part No. (HS) HW Part No.	2A4277 824972-9-022	2A4249 824972-9-020
Control, Electronic Engine (SCN21/AA) PW Part No. (HS) HW Part No.	2A4278 824972-11-022	2A4251 824972-11-020

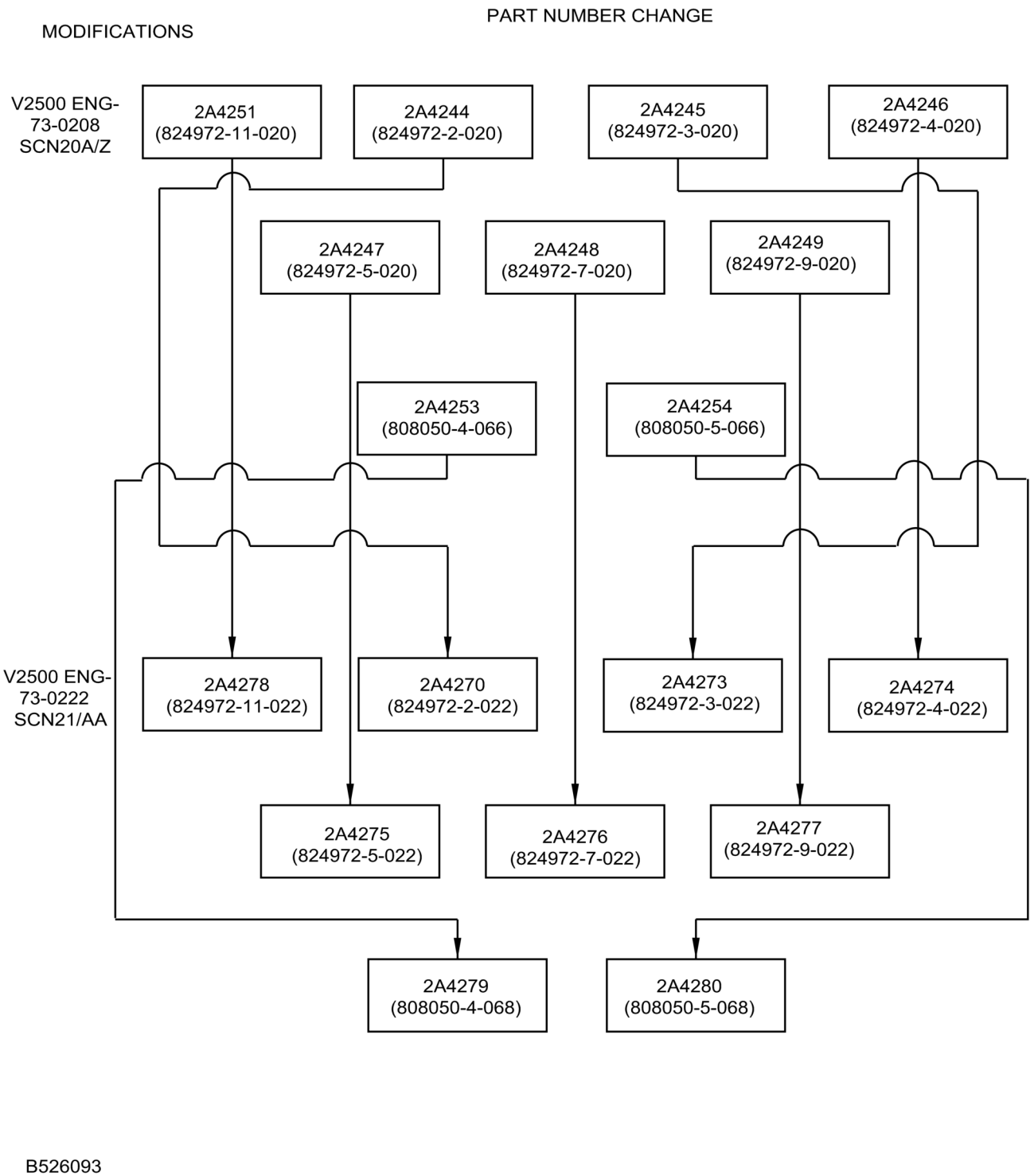
	New PN	Old PN
Control, Electronic Engine (SCN21/AA) PW Part No. (HS) HW Part No.	 2A4279 808050-4-068	 2A4253 808050-4-066
Control, Electronic Engine (SCN21/AA) PW Part No. (HS) HW Part No.	 2A4280 808050-5-068	 2A4254 808050-5-066



LOCATION OF THE ELECTRONIC ENGINE CONTROL
73-22-34
FIGURE 1

Appendix

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



FAMILY TREE — ELECTRONIC ENGINE CONTROL
CHART A

Added Data

Internal Reference Information

Revision No.	Reference Document	Origination
Original	EC09VZ001 EC09VZ001-01 EC09VZ001-02	DTL/JDH
1	EA16VC146	STO/IEL
2	EA19VC101	EA/RCM

Number values shown in parentheses adjacent to U.S. values are International System of units (SI) equivalents.

NOTE: In 2014 IAE converted the V2500 Technical Publications to a new system. As a result of the conversion, some manuals were consolidated. All manuals received new P&W part numbers. To facilitate the use of this Service Bulletin, the following Technical Publications cross reference table is provided.

Technical Publications Cross Reference Table

Publication	Engine Model(s)	IAE IETM Pub Ref	P&W Part Number
EIPC — A5	V2522/V2524/V2527M-AQ02	S-V2500-6IA	2A4428
	V2522/V2524/V2527M-AQ03	S-V2500-6IB	
	V2522/V2524/V2527M-SQ02	S-V2500-6SA	
	V2522/V2524/V2527M-SQ03	S-V2500-6SB	
	V2522/V2524/V2527M-SQ04	S-V2500-6NA	
	V2522/V2524/V2527M-SQ05	S-V2500-6NB	
	V2527/V2527E-AQ02	S-V2500-7IA	
	V2527/V2527E-AQ03	S-V2500-7IB	
	V2527/V2527E-SQ02	S-V2500-7SA	
	V2527/V2527E-SQ03	S-V2500-7SB	
	V2527/V2527E-SQ04	S-V2500-7NA	
	V2527/V2527E-SQ05	S-V2500-7NB	
	V2530-AQ02	S-V2500-2IA	
	V2530-AQ03	S-V2500-2IB	
	V2530-SQ02	S-V2500-2SA	
	V2530-SQ03	S-V2500-2SB	
	V2530-SQ04	S-V2500-2NA	
	V2530-SQ05	S-V2500-2NB	
	V2533-AQ02	S-V2500-5IA	
	V2533-AQ03	S-V2500-5IB	
	V2533-SQ02	S-V2500-5SA	
	V2533-SQ03	S-V2500-5SB	
	V2533-SQ04	S-V2500-5NA	
	V2533-SQ05	S-V2500-5NB	