SERVICE BULLETIN

ENGINE FUEL AND CONTROL — CONTROL, ELECTRONIC ENGINE (EEC) — REPLACEMENT OR MODIFICATION TO INCORPORATE SCN23/AC SOFTWARE CONFIGURATION

MODEL APPLICATION

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

BULLETIN ISSUE SEQUENCE

V2500 Series 73-0248

ATA NUMBER

73-22-34

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Compliance Category

6

P&W Distribution Code

V2500

October 31/19

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Summary

The purpose of this Service Bulletin is to provide a new Electronic Engine Control (EEC) software version for the V2500-A5 engine model identified as V2500-A5 SCN23/AC. This Service Bulletin provides the new software for the EEC150-20 and EEC150-40.

NOTE: SelectOne engines receiving this software are then classified as a SelectTwo engine configuration. Further SelectTwo engines have the option to activate Reduced Ground Idle (RGI) capability via RGI Service Bulletin and DEP Service Bulletin.

Planning Information

Effectivity Data

Engine Models Applicable

V2522-A5, V2524-A5, V2527M-A5, V2527-A5, V2527E-A5, V2530-A5, V2533-A5
Engine Serial Nos. V10001 thru V13190
Engine Serial Nos. V15001 thru V18981

Concurrent Requirements

1. Engine Models V2527E-A5 and V2533-A5 (Base and Bump Ratings) must incorporate the following Service Bulletins concurrently with this Service Bulletin.
   A. Reference 2, Service Bulletin No. V2500-NAC-71-0206.
   B. Reference 4, Service Bulletin No. V2500-ENG-73-0152.
2. Reference 6, Service Bulletin No. V2500-ENG-73-0237 must be incorporated at the same time as this Service Bulletin.
3. Reference 7, Service Bulletin No. V2500-ENG-73-0238 must be incorporated at the same time as this Service Bulletin.

   NOTE: Incorporation of this Service Bulletin will upgrade the V2500-A5 Engine SelectOne Configuration to V2500-A5 SelectTwo Engine Configuration.

Reason

1. Eliminate a Descent Stall issue caused by a Stability Bleed change Introduced in SCN22/AB.
   A. Problem: Several V2500-A5 SelectTwo operators have experienced unrecoverable engine stalls at low power during descent at altitudes below five thousand (5,000) feet with the 7A handing bleed valve closed and no Environmental Control System (ECS) bleed extraction.
   B. Cause: SCN22 SelectTwo closed the 7A handling bleed valve during descent when minimum idle was selected. High time SelectTwo engines HPCs may have insufficient surge margin available with no stability bleed valve open and no ECS flow during descent at lower altitudes.
   C. Solution: Modify SelectTwo inflight specific logic to only close the 7A handling bleed valve if pressure altitude is above a defined threshold and the above conditions are met. The valve will remain open below this altitude unless the engine is at high power, then it will close.
2. Improve Nuisance Starter Air Valve Failed Closed Messages.

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A. Problem: Starter Air Valve (SAV) failed closed faults are being set in revenue service with SAV vendor reporting No Fault Found (NFF).

B. Cause: The SAV failed to open timer was set to the upper end of the vendor's acceptance limits which did not account for aircraft installation effects.

C. Solution: Increase SAV failed to open confirmation time from seven (7) seconds to ten (10) seconds to address nuisance SAV failed closed faults.

3. Improve Igniter Life.

A. Problem: Continuous ignition is being used during takeoff resulting in accelerated spark plug erosion.

B. Cause: Legacy requirement stated to turn continuous ignition ON during takeoff even though no engine blow out concern existed. Utilizing continuous ignition in high pressure and temperature environments accelerates spark plug erosion.

C. Solution: Do not turn ON continuous ignition during takeoff conditions including flex and derate. "IGNITION" memo will not be displayed during takeoff phase. Also for approach idle and when cowl anti-ice is selected ON, only turn ON continuous ignition if burner pressure is below a defined limit.

4. 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.

5. Supplemental Information

None.

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.

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Manpower

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

   A. In Service: ..... 1.9 hours.

2. For Part B — Programming of the EEC Using Software Loader, Tool No. IAE2P16613 for engines Installed on the Aircraft.

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

   B. Set-up Software Loader, Tool No. IAE2P16613: ..... 0.1 hours.

   C. Install EEC Software: ..... 0.4 hours.

   D. Shut down Tool No. IAE2P16613 after reprogramming: ..... 0.1 hours.

   E. Total Man Hours: ..... 1.0 hours.

3. For Part C — Replacement or Programming of the EEC by an Authorized Rework Vendor for Engines Installed on the Aircraft.

   At Overhaul: ..... 1.4 hours.

4. For Part D — Programming of the EEC using Software Loader, Tool No. IAE2P16613 for Engines removed from the aircraft.

   A. At Overhaul: ..... 0.6 hours.

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. V2500-A5 Series Illustrated Parts Catalog, P&W Ref. PN 2A4428, Chapter/Section 73-22-34.
2. V2500 Service Bulletin V2500-NAC-71-0206: Nacelle – Powerplant – Cowl, Air Intake – Rework To Accommodate Longer P2T2 Probe.

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3. V2500 Service Bulletin V2500-ENG-72-0285: Engine – Conversion – Provide Instructions To Change The V2500-A5 Engine Rating By Modifying The Data Entry Plug.
4. V2500 Service Bulletin V2500-ENG-73-0152: Engine – Introduction Of Longer P2T2 Probe.
5. Airbus Service Bulletin A320-73-1138 — Engine Fuel and Control FADEC System — Introduce EEC Software Standard SCN23/AC on IAE V2500-A5 Engines and Airbus Modification Reference No. 166008P21482. This Service Bulletin is subject to Airbus Modification Reference No. 166008P21482 (classified major) and is covered by A/C Service Bulletin Number A320-73-1138. Under no circumstances should the modified equipment, resulting from the application of this Service Bulletin, be installed on the aircraft type unless its aircraft Service Bulletin is approved.
6. 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).
7. V2500 Service Bulletin V2500-ENG-73-0238 — Engine — Fuel And Control — Operating Procedures For V2500 Software Loader (Software Loader And Data Entry Plug (DEP) Reader).
8. V2500 Standard Practices and Processes, P&W Ref. PN 2A4414, Chapter/Section 73-22-34.

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, Figure 01.

Interchangeability of Parts

SCN21/AA, SCN22/AB, and SCN23/AC Electronic Engine Controls (EEC) are directly interchangeable provided that the DEP has been rewired correctly which enables DEP, PN 2A3106 or DEP, PN 2A4378 selection.

For aircraft installation:

Refer to Reference 5, Airbus Service Bulletin A320-73-1138.

Information in the Appendix

Alternate Accomplishment Instructions (No)

Progression Charts (Yes)

Added Data (Yes)

Revision to Table of Limits (No)

Inspection Procedures (No)

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Material Information

Material — Price and Availability

1. There is no kit provided to do this Service Bulletin.
2. Part availability information is provided in material data Instructions — Disposition.
3. Conversion to model enhancements can only be accomplished as per contractual agreement with International Aero Engines.

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 Engines:

New PN (SCN23/AC)	Qty	Estimate of Unit Price ($)	Keyword	Old PN (SCN22/AB)	Instructions — Disposition
2A4611 (824972-2-026)	1	*	CONTROL, ELECTRONIC ENGINE	2A4347 (824972-2-024) (73-22-34-01-280DE)	(1)(A)(N)(P)(V)
			OR		
2A4612 (824972-3-026)	1	*	CONTROL, ELECTRONIC ENGINE	2A4348 (824972-3-024) (73-22-34-01-280DF)	(1)(A)(N)(P)(V)
			OR		
2A4613 (824972-4-026)	1	*	CONTROL, ELECTRONIC ENGINE	2A4349 (824972-4-024) (73-22-34-01-280DG)	(1)(A)(N)(P)(V)
2A4614 (824972-5-026)	1	*	CONTROL, ELECTRONIC ENGINE	2A4352 (824972-5-024) (73-22-34-01-280DH)	(1)(A)(N)(P)(V)
			OR		
2A4615 (824972-7-026)	1	*	CONTROL, ELECTRONIC ENGINE	2A4353 (824972-7-024) (73-22-34-01-280DI)	(1)(A)(N)(P)(V)
			OR		
2A4616 (824972-9-026)	1	*	CONTROL, ELECTRONIC ENGINE	2A4354 (824972-9-024) (73-22-34-01-280DJ)	(1)(A)(N)(P)(V)
			OR		
2A4610 (824972-11-026)	1	*	CONTROL, ELECTRONIC ENGINE	2A4355 (824972-11-024) (73-22-34-01-280DK)	(1)(A)(N)(P)(V)

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New PN (SCN23/AC)	Qty	Estimate of Unit Price ($)	Keyword	Old PN (SCN22/AB)	Instructions — Disposition
			OR		
2A4617 (808050-4-072)	1	*	CONTROL, ELECTRONIC ENGINE	2A4345 (808050-4-070) (73-22-34-01-280DL)	(1)(A)(N)(P)(V)
			OR		
2A4618 (808050-5-072)	1	*	CONTROL, ELECTRONIC ENGINE	2A4346 (808050-5-070) (73-22-34-01-280DM)	(1)(A)(N)(P)(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 (refer to Table 6).

Spare Parts Availability

(A) The new part is available.

(N) The old part is not available.

(P) Procure the part directly from the Supplier referenced in Vendor Services or Special Components.

(V) This is the Collins Aerospace part number.

Vendor Services or Special Components/Materials

Not Applicable.

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Vendor Services or Special Components/Materials

P&W Designation	Vendor Designation	Name	Vendor Name & Address
2A4611	824972-2-026	CONTROL, ELECTRONIC ENGINE	Collins Aerospace A United Technologies Company One Hamilton Road Dock W Windsor Locks, CT 06096-1010 USA FAA Repair License Number: SI3R842L
2A4612	824972-3-026	CONTROL, ELECTRONIC ENGINE	
2A4613	824972-4-026	CONTROL, ELECTRONIC ENGINE	
2A4614	824972-5-026	CONTROL, ELECTRONIC ENGINE	
2A4615	824972-7-026	CONTROL, ELECTRONIC ENGINE	
2A4616	824972-9-026	CONTROL, ELECTRONIC ENGINE	
2A4610	824972-11-026	CONTROL, ELECTRONIC ENGINE	
2A4617	808050-4-072	CONTROL, ELECTRONIC ENGINE	
2A4618	808050-5-072	CONTROL, ELECTRONIC ENGINE	
FAA Repair License Number: SI3R842L FAA Repair License Number: CW5Y794M			

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Tooling — Price and Availability

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

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A. IAE Software Loader, Tool No. IAE2P16613

The IAE EEC Software Loader and DEP Reader, Tool No. IAE2P16613 must be used with the appropriate reprogramming SD card (encrypted) to accomplish this Service Bulletin. This equipment can be obtained by contacting your Customer Fleet Director. Refer to Table 1 below for the reprogramming SD card PN.

This reprogramming SD card contains the EEC 150-20/150-40 application code, trims and memory clear utilities. The reprogramming SD card 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

Table 1: Reprogramming Input Reference Table A5 SelectTwo SCN23/AC

	New PN SCN23/AC	Old PN SCN22/AB
Trim Checksum	30022	37151
EEC reprogramming SD Card for Tool No. IAE2P16613	1018294-7	1018294-6
Control, Electronic Engine — 150-40	2A4611	2A4347
Control, Electronic Engine — 150-40	2A4612	2A4348
Control, Electronic Engine — 150-40	2A4613	2A4349
Control, Electronic Engine — 150-40	2A4614	2A4352
Control, Electronic Engine — 150-40	2A4615	2A4353
Control, Electronic Engine — 150-40	2A4616	2A4354
Control, Electronic Engine — 150-40	2A4610	2A4355
Control, Electronic Engine — 150-20	2A4617	2A4345
Control, Electronic Engine — 150-20	2A4618	2A4346

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Reidentified Parts

Table 2: Reidentified Parts Data (SCN23/AC and SCN22/AB)

New PN (SCN23/AC)	Keyword	Old PN (SCN22/AB)
2A4611 (824972-2-026)	Control, Electronic Engine	2A4347 (824972-2-024)
2A4612 (824972-3-026)	Control, Electronic Engine	2A4348 (824972-3-024)
2A4613 (824972-4-026)	Control, Electronic Engine	2A4349 (824972-4-024)
2A4614 (824972-5-026)	Control, Electronic Engine	2A4352 (824972-5-024)
2A4615 (824972-7-026)	Control, Electronic Engine	2A4353 (824972-7-024)
2A4616 (824972-9-026)	Control, Electronic Engine	2A4354 (824972-9-024)
2A4610 (824972-11-026)	Control, Electronic Engine	2A4355 (824972-11-024)
2A4617 (808050-4-072)	Control, Electronic Engine	2A4345 (808050-4-070)
2A4618 (808050-5-072)	Control, Electronic Engine	2A4346 (808050-5-070)

Other Material Information Data

Not Applicable.

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Accomplishment Instructions

For Engines Installed On Aircraft:

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

1. Replace or do a modification of the EEC by the procedure that follows:

   A. Remove the EEC as specified in Reference 5, Airbus Service Bulletin A320-73-1138. See Figure 1 for the location of the part.

   B. Replace the EEC software as given in Table 3 or do a modification of the EEC as follows. See Figure 1.

      (1) Send the part to the vendor listed in the Vendor Services section. The modified EEC will be returned identified as given in Table 3 below.

   C. Install the EEC as specified in Reference 5, Airbus Service Bulletin A320-73-1138. See Table 2 for old and new part numbers. Remark EEC as given in Table 3 below.

Table 3: EEC Software Replacement/Modification

NEW PN (SCN23/AC)	OLD PN (SCN22/AB)
2A4611 (824972-2-026)	2A4347 (824972-2-024)
2A4612 (824972-3-026)	2A4348 (824972-3-024)
2A4613 (824972-4-026)	2A4349 (824972-4-024)
2A4614 (824972-5-026)	2A4352 (824972-5-024)
2A4615 (824972-7-026)	2A4353 (824972-7-024)
2A4616 (824972-9-026)	2A4354 (824972-9-024)
2A4610 (824972-11-026)	2A4355 (824972-11-024)
2A4617 (808050-4-072)	2A4345 (808050-4-070)
2A4618 (808050-5-072)	2A4346 (808050-5-070)

   D. Recording Instructions

      (1) A record of accomplishment is required.

2. Do programming of the EEC using Software Loader, Tool No. IAE2P16613 by the procedure that follows:

   NOTE: Reference 7, Service Bulletin No. V2500-ENG-73-0238, Software Loader, now provides the following information:

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A. Installing EEC Software

(1) This procedure provides instructions for uploading software to the EEC, this procedure can be accomplished on-wing, off-wing (engine stand), or on an uninstalled EEC.

B. Testing Cables and Equipment

(1) Instructions to check/troubleshoot the software loader assembly via internal self-tests.

C. DEP Electrical Wiring Test

(1) Instructions to evaluate DEP configurations for automated results and error feedback via Siemen's SIMATIC ITP1000Tablet.

D. Retrieving Fault Dump Files

(1) Instructions for using an engine support program which captures fault information stored within EEC memory.

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. IAE2P16613 is available from your local IAE representative.

Reprogramming the EEC will clear the fault memory. Fault dump will be automatically stored in the Siemen's 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 Collins Aerospace 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 installed on the engine.

3. Prepare EEC for software load by the procedure that follows:

A. Open the nacelle and prepare the aircraft for servicing as specified in Reference 5, Airbus Service Bulletin A320-73-1138. 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 5, Airbus Service Bulletin A320-73-1138. See Figure 1 for the location of the part.

4. Install Software per software loader Reference 7, Service Bulletin No. V2500-ENG-73-0238.

NOTE: Obtain Trim Checksum number from Table 1 of this Service Bulletin.

NOTE: Ensure DEP, PN 2A4378 is installed.

For Engines Not Installed On Aircraft:

1. Replace or do a modification of the EEC by the procedure that follows:

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A. Replace the EEC software as shown in Table 4 below or do a modification of the EEC as follows. See Figure 1.

(1) Send the part to the vendor listed in the Vendor Services section. The modified EEC will be returned identified as given in Table 4 below. Remark EEC PN as given in Table 4 below.

NOTE: Note: Refer to Reference 7, V2500 Service Bulletin V2500-ENG-73-0238 — Engine Fuel and Control — Introduction of Software Loader for instructions how to Replace/modify the EEC software using Tool No. IAE2P16613.

Table 4 EEC Software Replacement/Modification

NEW PN (SCN23/AC)	OLD PN (SCN22/AB)
2A4611 (824972-2-026)	2A4347 (824972-2-024)
2A4612 (824972-3-026)	2A4348 (824972-3-024)
2A4613 (824972-4-026)	2A4349 (824972-4-024)
2A4614 (824972-5-026)	2A4352 (824972-5-024)
2A4615 (824972-7-026)	2A4353 (824972-7-024)
2A4616 (824972-9-026)	2A4354 (824972-9-024)
2A4610 (824972-11-026)	2A4355 (824972-11-024)
2A4617 (808050-4-072)	2A4345 (808050-4-070)
2A4618 (808050-5-072)	2A4346 (808050-5-070)

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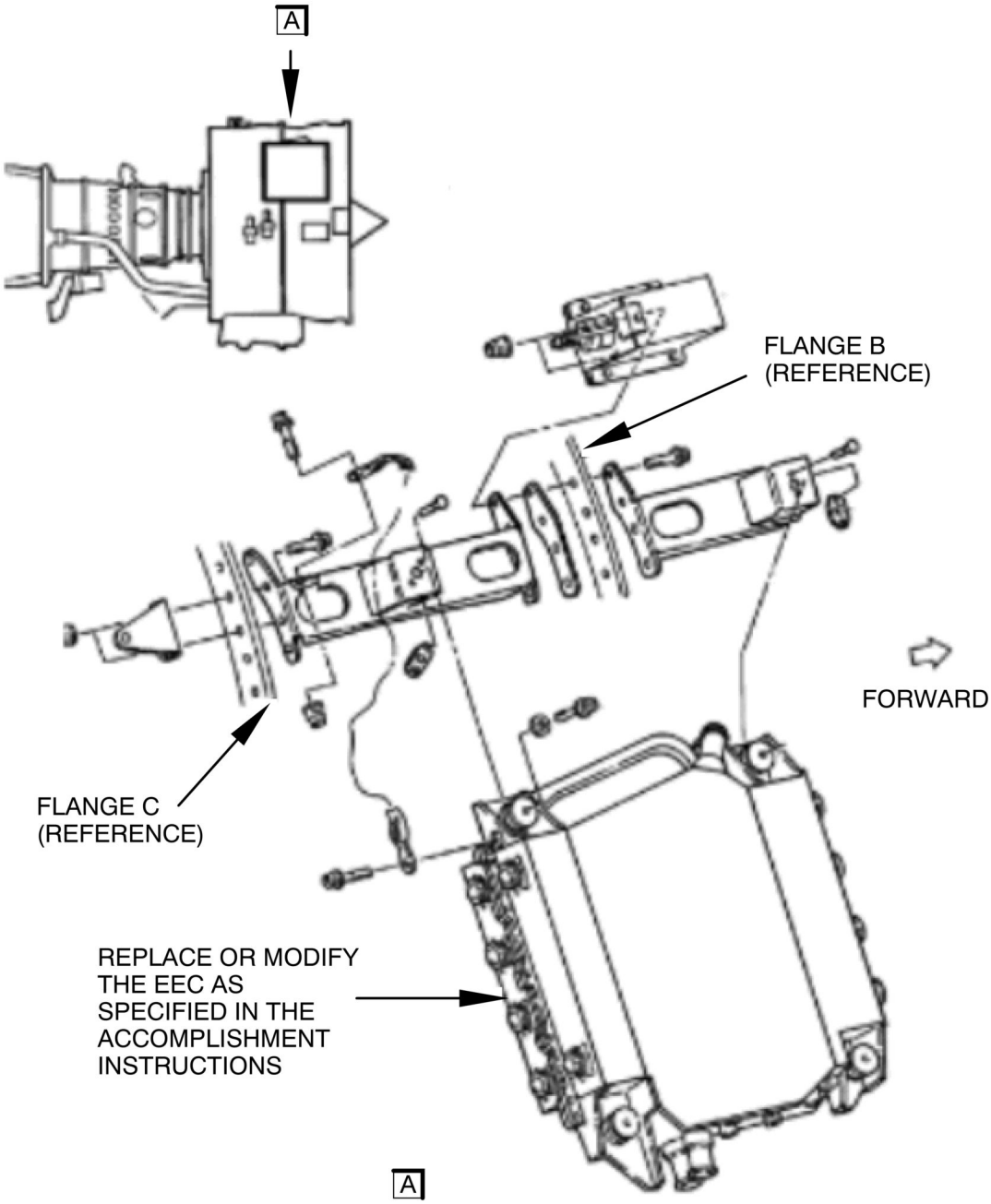

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LOCATION OF THE EEC
73-22-34
FIGURE 1

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Appendix

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

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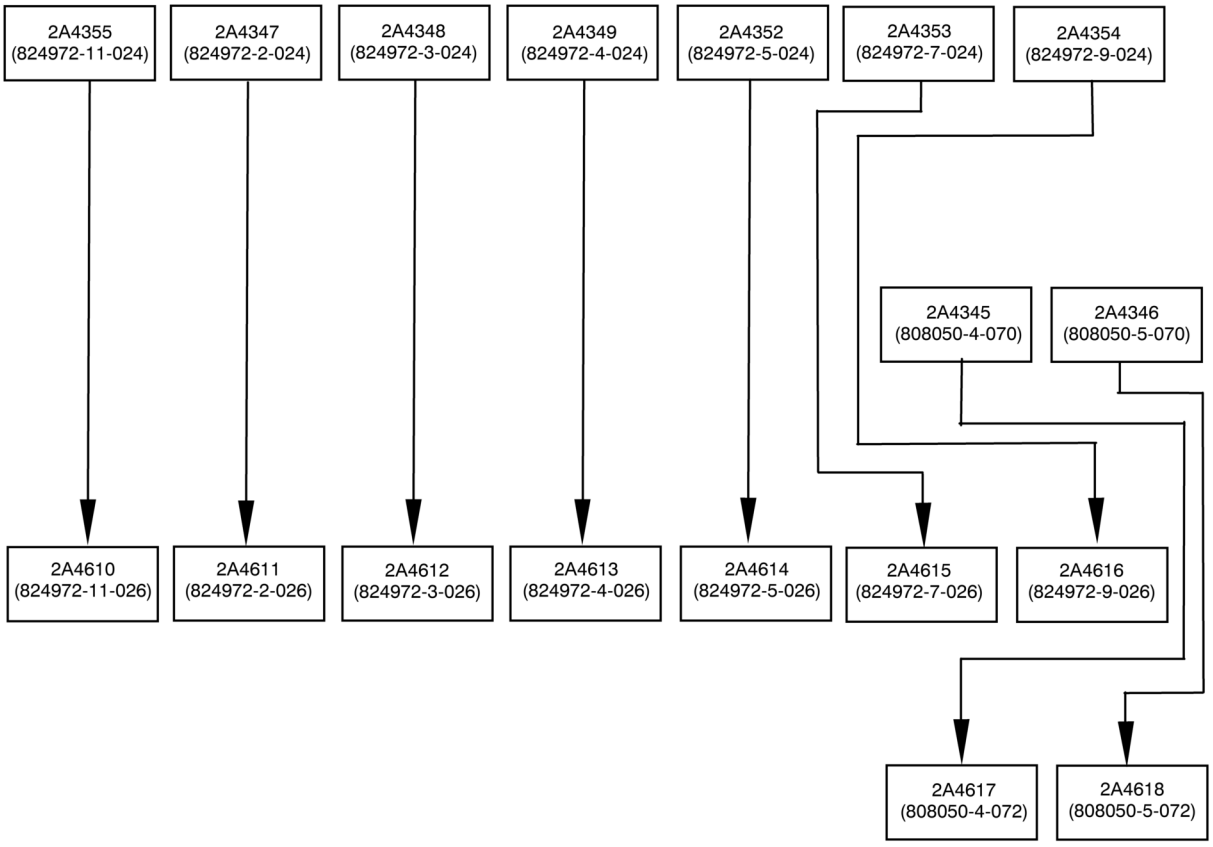

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PARTS PROGRESSION
EEC CHART A

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Added Data

Internal Reference Information

Revision No.	Reference Document	Origination
Original	EC18VZ007	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
ENGINE MANUAL — A1, A5	All	E-V2500-1IA	2A4407
CMM-EHC — A1, A5	All	EHC-V2500-1IA	2A4409
CMM-FN — A1, A5	All	FN-V2500-1IA	2A4410
CMM-MMC — A1, A5	All	MECH-V2500-1IA	2A4411
CMM-THD — A1, A5	All	THD-V2500-1IA	2A4412
TLM — A1, A5	All	T-V2500-1IA	2A4408
ENGINE MANUAL — D5	All	E-V2500-3IA	2A4416
CMM-EHC — D5	All	EHC-V2500-31A	2A4418
CMM-FN — D5	All	FN-V2500-3IA	2A4419
CMM-MMC — D5	All	MECH-V2500-3IA	2A4420
CMM-THD — D5	All	THD-V2500-3IA	2A4423
TLM — D5	All	T-V2500-3IA	2A4417
SPPM (SPM) — A1, A5, D5	All	SPP-V2500-1IA	2A4414
EIPC — A1	V2500-A1102Q00	S-V2500-1IA	2A4427

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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	
EIPC — D5	V2525/V2528-AQ02	S-V2500-3IA	2A4426
	V2525/V2528-AQ03	S-V2500-3IB	
	V2525/V2528-AQ04	S-V2500-3IC	

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