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

International Aero Engines

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

DATE: Dec. 1/10

V2500-A5 SERIES PROPULSION SYSTEM NON-MODIFICATION SERVICE BULLETIN

This document transmits the Initial Issue of Service Bulletin V2500-ENG-73-0210.

Service Bulletin Initial Issue

Remove	Incorporate	Reason for change
	Pages 1 to 15 of the Service Bulletin.	Initial Issue.
	Page 1 of the Appendix. (Added Data)	Initial Issue.

V2500-ENG-73-0210
Transmittal - Page 1 of 1

CHECK THAT ALL PREVIOUS TRANSMITTALS HAVE BEEN INCORPORATED
If any have not been received please advise IAE International Aero Engines AG

SERVICE BULLETIN

ENGINE – FUEL AND CONTROL – PLUG, DATA ENTRY – MODIFICATION TO INCREASE THE THRUST LEVEL DURING CLIMB

1. Planning Information

A. Effectivity Data

(1) Airbus A321

(a) V2533-A5 (A5 Standard and A5 SelectOne™ Retrofit Standard)

Engine Serial Nos. – Any engine as applicable

(b) V2533-A5 (A5 SelectOne™ Production Standard)

Engine Serial Nos. – Any engine as applicable

NOTE: Conversion of any V2500-A5 engine to a different model rating as described in this Service Bulletin can only be accomplished as per prior contractual agreement with International Aero Engines (IAE).

B. Concurrent Requirements

SB REQUIREMENTS FOR THE V2500-A5 HIGH PRESSURE TURBINE (HPT):

This Service Bulletin must be done at the same time or after Reference 1, Service Bulletin No. 72-0145.

This Service Bulletin must be done at the same time or after Reference 3, Service Bulletin No. 72-0238.

This Service Bulletin must be done at the same time or after Reference 7, Service Bulletin No. 72-0327.

This Service Bulletin must be done at the same time or after Reference 8, Service Bulletin No. 72-0364.

This Service Bulletin must be done at the same time or after Reference 10, Service Bulletin No. 72-0399.

This Service Bulletin must be done at the same time or after Reference 11, Service Bulletin No. 72-0511.

This Service Bulletin must be done at the same time or after Reference 12, Service Bulletin No. 72-0522.

This Service Bulletin must be done at the same time or after Reference 13, Service Bulletin No. 72-0534

SB REQUIREMENTS FOR THE V2500-A5 HIGH PRESSURE COMPRESSOR (HPC):

This Service Bulletin must be done at the same time or after Reference 2, Service Bulletin No. 72-0202.

This Service Bulletin must be done at the same time or after Reference 4, Service Bulletin No. 72-0273.

This Service Bulletin must be done at the same time or after Reference 6, Service Bulletin No. 72-0295.

This Service Bulletin must be done at the same time or after Reference 9, Service Bulletin No. 72-0376.

OTHER SB REQUIREMENTS FOR V2500-A5 ENGINES:

This Service Bulletin must be done at the same time or after Reference 16, Service Bulletin No. 73-0197.

This Service Bulletin must be done at the same time or after Reference 17, Service Bulletin No. 75-0081.

SB REQUIREMENTS FOR V2500-A5 SELECTONE™ ENGINES OBTAINED BY CONVERSION:

This Service Bulletin must be done at the same time or after Reference 9, Service Bulletin No. 72-0376.

This Service Bulletin must be done at the same time or after Reference 14, Service Bulletin No. 72-0565.

This Service Bulletin must be done at the same time or after Reference 17, Service Bulletin No. 75-0081.

SB REQUIREMENTS FOR THE NACELLE:

This Service Bulletin must be done at the same time or after Reference 18, Service Bulletin No. V2500-NAC-70-0614.

This Service Bulletin must be done at the same time or after Reference 19, Service Bulletin No. V2500-NAC-71-0184.

This Service Bulletin must be done at the same time or after Reference 20, Service Bulletin No. V2500-NAC-75-0062.

This Service Bulletin must be done at the same time or after Reference 21, Service Bulletin No. V2500-NAC-78-0127.

C. Reason

(1) Condition:

V2500-A5 engine operators have requested thrust enhancements within specific areas of the take off envelope.

(2) Background:

The V2533-A5 Maximum Climb (MCL) thrust increase option increases the thrust level during climb by up to 4% from 15,000 ft. onwards (linear transition to 20,000 ft.) to end of climb altitude. The MCL thrust increase will be applied to the V2533-A5 engine model only and may be used in combination with the V2533-A5 Bump Take Off (BTO) rating.

The MCL increase option and associated High Pressure (HP) compressor Variable Stator Vane (VSV) schedule changes are already embedded in SCN-19 (SCN-20A for SelectOne™) onward and is selectable by a modification to the Data Entry Plug (DEP).

(3) Objective:

Introduce the 33k 4% MCL increase and update DEP drawing.

(4) Effects of Bulletin on:

(a) Removal/Installation:

Not affected.

(b) Disassembly/Assembly:

Not affected.

(c) Cleaning:

Not affected.

(d) Inspection/Check:

Not affected.

(e) Repair:

Not affected.

(f) Testing:

Not affected.

(5) Supplemental Information

None.

D. Description

Modify the DEP as specified in the Accomplishment Instructions.

E. Compliance

Category 8

Accomplish based upon experience with the prior configuration.

NOTE: 1. Service Bulletin incorporation on engines installed on aircraft may be desirable and should be individually evaluated.

2. This Service Bulletin must be incorporated at the same time on both wings/engines.

F. Approval Data

The part number changes and/or part modifications specified in the Accomplishment Instructions and Material Information sections of this Service Bulletin have been shown to comply with the applicable Federal Aviation Regulations and are FAA-APPROVED for the engine models given.

The compliance statement and the procedures described in this Service Bulletin have been shown to comply with the applicable Federal Aviation Regulations and are FAA-APPROVED for the Engine Model listed.

The technical content of this Service Bulletin has been approved under the authority of the EASA Design Organization Approval N° EASA.21J.031.

G. Manpower

(1) In Service

(a) To gain access:

20 minutes

(b) To remove DEP assembly:

1 minutes

(c) To modify the DEP assembly:

13 minutes

(d) To re-identify DEP assembly:

3 minutes

(e) To install DEP assembly:

1 minute

(f) To mark and install Engine Identification Plate:

5 minutes

(g) Return aircraft to flyable status:

20 minutes

(h) Total:

63 minutes

(2) At Overhaul

NOTE: The parts affected by this Service Bulletin are accessible at overhaul.

(a) To remove DEP assembly:

1 minute

(b) To modify the DEP assembly:

13 minutes

(c) To re-identify DEP assembly:

3 minutes

(d) To install DEP assembly:

1 minute

(e) To mark and install Engine Identification Plate:

5 minutes

(f) Total:

23 minutes

H. Weight and Balance

(1) Weight Change

None.

(2) Moment Arm

No Effect.

(3) Datum

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

I. Electrical Load Data

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

J. Software Accomplishment Summary

Not Applicable.

K. References

(1) IAE V2500 Service Bulletin V2500-ENG-72-0145 Engine - HP Turbine Rotor and Stator Assembly - Provide New Stage 2 Turbine Rotor Hub With Increased Front Snap Diameter - Category Code 7 - Mod.Eng-72-0145.

(2) IAE V2500 Service Bulletin V2500-ENG-72-0202 Engine - HP Compressor - Introduce A Strengthened HPC Rear Shaft And A New Mating Rear Rotating Seal - Category Code 7 - Mod.Eng-72-0202.

(3) IAE V2500 Service Bulletin V2500-ENG-72-0238 Engine - HP Turbine Rotor and Stator Assembly - Provide New Stage 1 Turbine Hub - Category Code 8 - Mod.Eng-72-0238.

(4) IAE V2500 Service Bulletin V2500-ENG-72-0273 Engine - HP Compressor Discs (Stages 9-12) - Introduction Of A Revised HP Compressor Stage 9-12 Disc Assembly - Category Code 4 - Category Code 6, Category 7 - Mod.Eng-72-0273.

(5) IAE 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) IAE V2500 Service Bulletin V2500-ENG-72-0295 Engine HP Compressor Blades Introduction Of A Redesigned Stage 4 Blade Assembly.

(7) IAE V2500 Service Bulletin V2500-ENG-72-0327 Engine - High Pressure Turbine Rotor And Stator Assembly - Introduce New Rotating Parts With Potential For Increased Cyclic Life.

(8) IAE V2500 Service Bulletin V2500-ENG-72-0364 Engine - High Pressure Turbine - Provide New Stage 2 High Pressure Turbine Duct Segment.

(9) IAE V2500 Service Bulletin V2500-ENG-72-0376 Engine - HP Compressor Discs (Stages 3-8) - Introduction Of A Revised Stage 3-8 Disc Assembly With Increased Life.

(10) IAE V2500 Service Bulletin V2500-ENG-72-0399 Engine - Provide A New 2nd Stage Turbine Rotor Blade Retention Configuration.

(11) IAE V2500 Service Bulletin V2500-ENG-72-0511 Engine - New 1st Stage Rotor Assembly With Metering Plugs Removed And New 1st Stage HPT Seal.

(12) IAE V2500 Service Bulletin V2500-ENG-72-0522 Engine - Provide New Second Stage Vane With Increased Cooling Air.

(13) IAE V2500 Service Bulletin V2500-ENG-72-0534 Engine - Provide New Second Stage Turbine Air Seal.

(14) IAE V2500 Service Bulletin V2500-ENG-72-0565 Engine - Provide The Requirements For Modification To The V2500 SelectOne™ Retrofit Standard.

(15) IAE V2500 Service Bulletin V2500-ENG-72-0584 Engine - LP Compressor - To Apply The Multi-Rating Engine Identification Plate To All A5 Engine Models.

(16) IAE V2500 Service Bulletin V2500-ENG-73-0197 Engine - Fuel And Control - To Provide A New Electronic Engine Control (EEC) With A5 SCN19/X Software.

(17) IAE V2500 Service Bulletin V2500-ENG-75-0081 Air - Stage 10 To HPT Air Valve - Deletion Of The HPC Stage 10 Make-Up Air Valve And Associated Hardware.

(18) IAE V2500 Service Bulletin V2500-NAC-70-0614 Information - Nacelle - To Announce The Availability Of Heatshields For The Pressure Regulating Valve and The High Pressure Bleed Valve.

(19) IAE V2500 Service Bulletin V2500-NAC-71-0184 Nacelle - Inlet Cowl - TAI Interbulkhead Duct And Access Panel - Replacement Of.

(20) IAE V2500 Service Bulletin V2500-NAC-75-0062 Air - Nacelle - Exhaust - ACAC Exhaust Duct - Exit Area Increase Of - Category Code 4 - Mod.NAC-75-0062.

(21) IAE V2500 Service Bulletin V2500-NAC-78-0127 Nacelle - Exhaust - Vent, Cooling, Slave Booster Stage Bleed Valve Actuator (BSBVA) Cooling Vent, Right Thrust Reverser Half - Addition Of For Cooling And Commonality Across All A320/A321/A319-A5 Aircraft.

(22) V2500 Engine Illustrated Parts Catalogs (S-V2500-5IA), Chapter/Section 73-22-35.

(23) V2500 Engine Illustrated Parts Catalogs (S-V2500-5SA), Chapter/Section 73-22-35.

(24) V2500 Engine Manual (E-V2500-1IA), Chapter/Section 71-00-00.

(25) V2500 Standard Practices/Processes Manual (E-V2500-1IA), Chapter/Section 70-09-00.

(26) V2500 Aircraft Maintenance Manual.

(27) Internal Reference No. - 08VA076B, 08VA076B Memo 1 and 08VA076B Memo 3.

(28) This Service Bulletin is subject to Aircraft Modification No. 34679.

Under no circumstances shall the modified equipment, resulting from the application of this SB, be installed on the aircraft type unless the corresponding modification, and if applicable, its aircraft SB are approved.

(29) ATA Locator - 73-22-30.

L. Other Publications Affected

(1) V2500 Engine Illustrated Parts Catalogs (S-V2500-5IA), Chapter/Section 73-22-35.

(2) V2500 Engine Illustrated Parts Catalogs (S-V2500-5SA), Chapter/Section 73-22-35.

(3) V2500 Engine Manuals (E-V2500-1IA and E-V2500-3IA), Chapter/Section 71-00-00, Testing 11.

M. Interchangeability of Parts

This Service Bulletin must be incorporated at the same time on both wings/engines.

N. Information in the Appendix

Alternate Accomplishment Instructions (No)

Progression Charts (No)

Added Data (Yes)

Revision to Table of Limits (No)

Inspection Procedures (No)

2. Material Information

A. Material - Price and Availability

Not Applicable.

B. Industry Support Program

Not Applicable.

C. The material data that follows is for each engine

Not Applicable.

D. Instruction/Disposition Code Statements

Not Applicable.

E. Tooling - Price and Availability

Special tools are note required to accomplish this Service Bulletin.

F. Reidentified Parts

Not Applicable.

G. Other Material Information Data

Not Applicable.

3. Accomplishment Instructions

A. Part A - For Engines Installed on Aircraft

NOTE: 1. Service Bulletin incorporation on engines installed on aircraft may be desirable and should be individually evaluated.

2. This Service Bulletin must be incorporated at the same time on both wings/engines.

3. Use Reference 26, Aircraft Maintenance Manual, Task 73-22-35-300-010-01 for SelectOne™ engines and procedure 73-22-35-300-010 for standard A5 engines.

(1) Remove the Data Entry Plug Assembly, PN 2A3106 as specified in Reference 26, Aircraft Maintenance Manual, Chapter/Section 73-22-35, Replace the Jumpers, Contacts or Connector - VRS3500.

(2) Remove the backshell assembly to access the jumper wires as specified in procedure VRS3500.

NOTE: Do not remove the jumper pin connections at this time.

(3) Make two copies of Reference 5, Service Bulletin No. V2500-ENG-72-0285, Contact Hole Locations, Figure 5. Mark one as Figure A and one as Figure B

(a) Record the following information in the corresponding fields on Figure A from the DEP connector:

(i) Engine serial number

(ii) Bump rating

(iii) Variant

(iv) EPR modifier and Bias

(b) Mark the existing DEP connections on the diagram in Figure A.

NOTE: Jumper wires are utilized for engine serial number, bump rating, variant, EPR modifier, and EPR bias. Only the jumpers for the variant require removal. The other connections need to be maintained per the four steps that follow.

(c) Locate the current variant number in Reference 5, Service Bulletin No. V2500-ENG-72-0285, Table 4 (for standard A5 engines) or Table 5 (for SelectOne™ engines). Highlight the pin connections, listed in the applicable table, for the current variant number on the connections that were marked in the previous step.

(d) Using the table that follows, locate the variant of the desired new configuration. Mark these pin connections on the diagram in Figure B.

Variant Table

Variant No.	Engine Rating	Thrust Level	Bump No.	Crank (sec)	Channel A	Channel B	Jumper Type	No. Req.	**EEC Software
04	2	33	02	30	Y to X	N to M	2 pin	2 pin:2	SCN-19/X
08	2	33	02	30	Y to C	N to q	2 pin	2 pin:2	SCN-20A/Z
09	2	33	03	30	b to F, Z to E, Y to C	h to S, N to q, g to R	2 pin, 3 pin	2 pin:3, 3 pin:1	SCN-20A/Z

NOTE: ** Indicated EEC software standard or later must be installed.

(e) Ignore the highlighted variant connections in Figure A and copy the rest of the connections to the diagram in Figure B. This figure now contains all the required connections for the new DEP.

(f) Determine the jumper pin changes required from the differences between the diagrams in Figure A and Figure B and any new jumpers needed.

(4) Modify the DEP connector as specified in Reference 26, Aircraft Maintenance Manual, Chapter/Section 73-22-35, VRS3500 following Steps C and D, except use the diagrams in this Service Bulletin in place of the worksheet called out in the Aircraft Maintenance Manual procedure.

(5) Continue to assemble the DEP assembly as specified in Reference 26, Aircraft Maintenance Manual, Chapter/Section 73-22-35, VRS3500.

(6) Do a check of the wiring, using electrical tester IAE 2P16369 as specified in Reference 26, Aircraft Maintenance Manual, Chapter/Section 73-22-35, VRS3500, Step E. A continuity check of the jumper pin connections can be used as an alternative means to do this check.

NOTE: The electrical tester can not be used on the SelectOne™ engines, the continuity check must be utilized.

(7) Mark the DEP backshell with the new variant number.

New variants are:

04 A321 V2533, crank time 30 sec, NO bump, Enhanced 33K MCL enabled

08 A321 V2533, crank time 30 sec, NO bump, Enhanced 33K MCL enabled, SelectOne™

09 A321 V2533, crank time 30 sec, bump, Enhanced 33K MCL enabled, SelectOne™

Use the vibration peen method as follows:

(a) Symbols are made with the vibration of a radius-tipped conial tool as follows:

(i) Manual: the tool is hand-operated. It has one tip.

(ii) Mechanical: the tool is mechanically operated. It has one or more tips which make one or more symbols at the same time.

(b) Depth of marks for vibration peen, Manual and Mechanical - 0.006 in. (0,152 mm).

(8) Install the DEP as specified in Reference 26, Aircraft Maintenance Manual, Chapter/Section 73-22-35, VRS3500, Step F through to the end.

(9) Perform engine marking as follows:

(a) If Engine Identification Plate PN 5A1874 is being replaced with the same part number, do as follows:

(i) Remove four Bolts, PN 4W0102; four Nuts, PN 4W0001; and Engine Identification Plate, PN 5A1874.

(ii) Obtain a new engine identification plate with all applicable information from your IAE Representative and return the existing engine identification plate.

(iii) Install the new engine identification plate with four Bolts, PN 4W0102 and four Nuts, PN 4W0001. Tighten the bolts to 36.0 to 45.0 LBF-IN (4,067 to 5,084 Nm).

(b) If Engine Identification Plate, PN 5A1875 is being replaced with PN 5A1942, follow the procedure in Reference 15, Service bulletin No. V2500-ENG-72-0584.

(c) If Engine Identification Plate, PN 5A1942 is being replaced with the same part number or revised, follow the procedures in Reference 15, Service Bulletin No. V2500-ENG-72-0584.

B. Part B - For Engines Removed from Aircraft

NOTE: 1. This Service Bulletin must be incorporated at the same time on both wings/engines.

2. Use Reference 24, Engine Manual, Task 71-00-00-700-011-B00, Testing 11 - Set Jumpers in Data Entry Plug (DEP).

(1) Remove the Data Entry Plug Assembly, PN 2A3106 as specified in Reference 24, Engine Manual, Task 71-00-00-700-011-B00, Testing 11, Subtask 71-00-00-060-055.

(2) Remove the backshell assembly to access the jumper wires as specified in Reference 24, Engine Manual, Task 71-00-00-700-011-B00, Testing 11, Subtask 71-00-00-060-056.

NOTE: Do not remove the jumper pin connections at this time.

(3) Make two copies of Reference 20, Engine Manual, Task 71-00-00-700-011-B00, Testing 11, Contact hole locations Fig.71-00-00-990-420. Mark one as Figure A and one as Figure B.

(a) Record the following information in the corresponding fields on Figure A from the DEP connector:

(i) Engine serial number

(ii) Bump rating

(iii) Variant

(iv) EPR modifier and Bias

(b) Mark the existing DEP connections on the diagram in Figure A.

NOTE: Jumper wires are utilized for the engine serial number, bump rating, variant, EPR modifier, and EPR bias. Only the jumpers for the variant require removal. The other connections need to be maintained per the four steps that follow.

(c) Locate the current variant number in Reference 5, Service Bulletin No. V2500-ENG-72-0285, Table 4 (for base A5 engines) or Table 5 (for SelectOne™ engines). Highlight the pin connections, listed in the applicable table, for the current variant number on the connections that were marked in the previous step.

(d) Using the table that follows, locate the variant of the desired new configuration. Mark these pin connections on the diagram in Figure B.

Variant Table

Variant No.	Engine Rating	Thrust Level	Bump No.	Crank (sec)	Channel A	Channel B	Jumper Type	No. Required	**EEC Software
04	2	33	02	30	Y to X	N to M	2 pin	2 pin:2	SCN-19/X

08	2	33	02	30	Y to C	N to q 2 pin 2 pin:2 SCN-20A/Z
09	2	33	03	30	b to F, Z to E, Y to C	h to S,2 pin 2 pin:3 SCN-20A/Z N to q,3 pin 3 pin:1 g to R

NOTE: ** Indicated EEC software standard or later must be installed.

(e) Ignore the highlighted variant connections in Figure A and copy the rest of the connections to the diagram in Figure B. This figure now contains all the required connections for the new DEP.

(f) Determine the jumper pin changes required from the differences between the diagrams in Figure A and Figure B and any new jumpers needed.

(4) Modify the DEP connector as specified in Reference 24; Engine Manual; Task 71-00-00-700-011-B00; Testing 11; Subtask 71-00-00-350-002, 71-00-00-350-003 and 71-00-00-350-360.

(5) Assemble the DEP assembly as specified in Reference 24, Engine Manual, Task 71-00-00-700-011-B00, Testing 11, Subtask 71-00-00-460-053.

(6) Test the DEP assembly as specified in Reference 24, Engine Manual, Task 71-00-00-700-011-B00, Testing 11, Subtask 71-00-00-750-115.

NOTE: The electrical tester can not be used on the SelectOne™ engines, the continuity check must be utilized.

(7) Install the DEP as specified in Reference 24, Engine Manual, Task 71-00-00-700-011-B00, Testing 11, Subtask 71-00-00-450-053.

(8) Perform engine marking as follows:

(a) If Engine Identification Plate PN 5A1874 is being replaced with the same part number, do as follows:

(i) Remove four Bolts, PN 4W0102; four Nuts, PN 4W0001; and Engine Identification Plate, PN 5A1874.

(ii) Obtain a new engine identification plate with all applicable information from your IAE Representative and return the existing engine identification plate.

(iii) Install the new engine identification plate with four Bolts, PN 4W0102 and four Nuts, PN 4W0001. Tighten the bolts to 36.0 to 45.0 LBF-IN (4,067 to 5,084 Nm).

(b) If Engine Identification Plate, PN 5A1875 is being replaced with PN 5A1942, follow the procedures in Reference 15, Service Bulletin No. V2500-ENG-72-0584.

(c) If Engine Identification Plate, PN 5A1942 is being replaced with the same part number or revised, follow the procedures in Reference 15, Service Bulletin No. V2500-ENG-72-0584.

APPENDIX

Added Data

Internal Reference Information

Revision No.	Reference Document	Origination
Original	EC08VA076B	DTL/JDH