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DATE: Jan.23/09

V2500-A5/D5 SERIES PROPULSION SYSTEM NON-MODIFICATION SERVICE BULLETIN

This document transmits the Revision 2 of IAE Non-Modification Service Bulletin V2500-ENG-75-0107 and the Revision 3 of Goodrich Engine Control Systems Non-Modification Service Bulletin VSVA 2607-75-005.

Document History

Service Bulletin Revision Status

Initial Issue	Oct.12/07
Revision 1	Nov.16/07

Non-Modification Service Bulletin Revision 2

Remove	Incorporate	Reason for change
All pages of the IAE Service Bulletin V2500-ENG-75-0107	Pages 1 to 4 of the IAE Service Bulletin V2500-ENG-75-0107	To change the Compliance Code, transmit the Revision 3 of the Goodrich Service Bulletin VSVA 2607-75-005 and to correct wording.
All pages of the Goodrich Service Bulletin VSVA 2607-75-005	Pages 1 to 12 of the Goodrich Service Bulletin VSVA 2607-75-005	Revision 3.

CHECK THAT ALL PREVIOUS TRANSMITTALS HAVE BEEN INCORPORATED
If any have not been received please advise Customer Data Services, Rolls-Royce plc, Derby, England

International Aero Engines

SERVICE BULLETIN

NON MODIFICATION SERVICE BULLETIN - AIR - REQUIREMENT TO FLUSH A VARIABLE STATOR VANE ACTUATOR (VSVA) 2607 UNIT FOLLOWING REPAIR OR RECONDITION AT AN APPROVED MAINTENANCE FACILITY

1. Planning Information

A. Effectivity

(1) Airbus A319

(a) V2522-A5, V2524-A5, V2527M-A5 Engines

(i) VSV Actuator, P/N 2607MK1 and 2607MK2.

(2) Airbus A320

(a) V2527-A5, V2527E-A5 Engines

(i) VSV Actuator, P/N 2607MK1 and 2607MK2.

(3) Airbus A321

(a) V2530-A5 Engines

(i) VSV Actuator, P/N 2607MK1 and 2607MK2.

(b) V2533-A5 Engines

(i) VSV Actuator, P/N 2607MK2.

(4) Boeing MD-90

(a) V2525-D5, V2528-D5 Engines

(i) VSV Actuator, P/N 2607MK1 and 2607MK2.

B. Reason

R A limited number of low cyclic life Variable Stator Vane Actuator (VSVA) 2607Mk2 have been rejected from service following loss of positional control of the VSVA. This Non-Modification Service Bulletin highlights the accomplishment
R requirements for VSVA flushing on completion of repair or recondition at an approved maintenance facility.

C. Description

Investigation and risk assessment have shown that in-built contamination is the most probable cause of the reported issue. A flow-flush procedure at the maintenance facility has been developed to minimise the risk of an in-service
R event following actuator repair or recondition.

D. Compliance

R Category 6

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

E. Approval

The compliance statement at 1.D. and the procedures in section 3. of this Non-Modification Service Bulletin comply with Federal Aviation Regulations and are FAA approved for the engine models listed.

F. Manpower

No additional manpower.

G. References

(1) Airbus A319/A320/A321 Aircraft Maintenance Manual, Chapter 75-32-41 Removal/Installation of VSVA.

(2) Boeing MD 90 Aircraft Maintenance Manual, Chapter 75-31-01 Removal/Installation of VSVA.

(3) IAE V2500-A5/D5 Engine Manual (E-V2500-1IA, E-V2500-3IA), Chapter/Section 72-00-40, Removal/Installation of VSVA.

(4) Goodrich Engine Control Systems (GECS) Non-Modification Service Bulletin
R (NMSB) VSVA 2607-75-005 dated Dec 23/08.

(5) Internal Reference No.

R Engineering Change No. 07VR920A.

2. Material Information

None

3. Accomplishment Instructions

A. Rework Instructions

None.

B. Assembly Instructions

(1) For the correct Removal/Installation procedures, refer to one of the manuals that follow:

(a) A319/320/321 Aircraft Maintenance Manual, Chapter/Section 75-32-41, Removal/Installation.

(b) MD90 Aircraft Maintenance Manual, Chapter/Section 75-33-41, Removal/Installation.

(c) IAE V2500-A5/D5 Engine Manual, Chapter/Section 72-00-40, Removal/Installation.

(2) For the procedure to flow flush the VSVA, refer to the attached Goodrich Engine Control Systems Non-Modification Service Bulletin VSVA 2607-75-005.

C. Recording Instructions

(1) A record of accomplishment is required (Refer to the attached Goodrich Engine Control Systems Non-Modification Service Bulletin VSVA 2607-75-005).

GOODRICH ENGINE CONTROL SYSTEMS
SHAFTMOOR LANE
HALL GREEN
BIRMINGHAM B28 8SW
ENGLAND
TELEPHONE: 44 121 707 7111
FAX: 44 121 707 8826

SERVICE BULLETIN
REVISION TRANSMITTAL

VARIABLE STATOR VANE ACTUATOR, TYPE: VSVA 2607

ATA REF 75-32-61

THIS PAGE TRANSMITS REVISION 3 OF SERVICE BULLETIN VSVA 2607-75-005

Reason for issue

To amend the wording of para. 1.C.(2) Cause and a typographical change to page numbering.

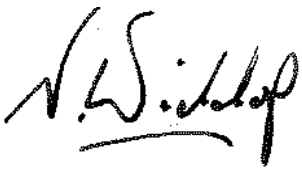
Action

Refer to the Revision Record of this Service Bulletin and make sure that you have the previous issue.
Remove and destroy pages 1 thru 12 and put in the attached pages 1 thru 12 dated Dec 23/08.

Revision Record

Revision Number:	Dated:
Original	Sep 27/07
1	Oct 09/07
2	Oct 27/08
3	Dec 23/08

APPROVED FOR GOODRICH ENGINE CONTROL SYSTEMS

Signed:  Date: Dec 23/08

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Goodrich Engine Control Systems

SERVICE BULLETIN

NON MODIFICATION SERVICE BULLETIN NUMBER VSVA 2607-75-005

ENGINE COMPRESSOR CONTROL - VARIABLE STATOR VANE ACTUATOR, TYPE: VSVA 2607

PROCEDURE TO FLOW FLUSH A VSVA 2607 UNIT TO REMOVE ANY BUILT-IN CONTAMINATION AFTER REPAIR OR RECONDITION

1. Planning Information

A. Effectivity

VSVA 2607 Mk1 and Mk2**.**

B. Concurrent Requirements

Not applicable.

C. Reason

(1) Problem

A number of low hour VSVA 2607 units have been rejected from service after loss of actuator positional control during engine operation.

(2) Cause

Although a specific problem with the VSVA 2607 unit has not been identified, investigation has shown that contamination is a probable cause of the reported issue.

(3) Solution

A new check has been added to the standard test procedure, done after the repair or recondition of a VSVA 2607 Mk1 and Mk2 unit, which includes a flow flush procedure to make sure there is no built-in contamination, of a size sufficient to cause a malfunction of the actuator.

D. Description

This Non Modification Service Bulletin gives details of the procedure to flow flush a VSVA 2607 Mk1 and Mk2 unit, after it has been repaired or reconditioned at an approved maintenance facility.

E. Compliance

Accomplishment of this Non Modification Service Bulletin is achieved by either Part 1 or Part 2 below. The level of repair or recondition will be detemined by the serviceability of the VSVA on arrival at the Repair and Overhaul facility.

Part 1. If the Torque Motor requires repair or recondition, the Torque Motor will be returned to the supplier. Following the Torque Motor repair an agreed flush procedure will be done. This standard of Torque Motor is identified by the suffix "A" after its Serial Number. This Torque Motor will be installed and the complete VSVA will be flushed, as given in Para. 3.B. of this NMSB.

Part 2. If the Torque Motor is serviceable and does not require repair or recondition, it will be re-installed and the complete VSVA will be flushed, as given in Para. 3.B. of this NMSB.

F. Approval

Non Modification Service Bulletin No VSVA 2607-75-005 was technically approved by IAE on Sep 27/07. Revision 1 to the Non Modification Service Bulletin was technically approved by IAE on Oct 08/07, Revision 2 was technically approved by IAE on Oct 22/08 and Revision 3 was technically approved by IAE on Dec 23/08. The procedures described in this bulletin have been shown to comply with the appropriate Federal Aviation Regulations and are FAA approved for those unit types listed in this bulletin.

G. Manpower

(1) In Service

Not applicable

(2) In Repair

5 hours

H. Weight and Balance

No change.

I. Electrical Load Data

Not applicable.

J. Software Accomplishment Summary

Not applicable.

K. References

Goodrich Component Maintenance Manual (CMM) 75-32-61.

L. Other Publications Affected

None.

M. Interchangeability or Intermixability of Parts

Not applicable.

2. Material Information

A. Material - Price and Availability

NOTE: If necessary, use the equivalent alternatives for the items given in the table below:

P/N	Description	Availability	List Price
NY41 04700	Millipore Membrane Filter	TBA	TBA

B. Industry Support Information.

The cost to accomplish the flushing defined in this NMSB will be free of charge to the operator. The cost of any necessary parts and labour not related to this NMSB will be charged to the operator. If the operator requests a serviceable Torque Motor to be replaced the cost of any parts and labour incurred by this request will be charged to the operator. Serviceable VSVA units returned solely for this NMSB will be subjected to a chargeable as received and recertification test.

C. Material Necessary for Each Unit

NOTE: If necessary, use the equivalent alternatives for the items given in the table below

New P/N	Description	Old P/N	Qty	Instruction
NY41 04700	Millipore Membrane Filter	-	AR	1
86633707-01	Label, Adhesive	-	1	N/A

Instruction Notes:

1 Refer to the test procedure in Para 3.B. with regard to the quantity of Millipore Membrane Filters that will be necessary.

D. Reidentified Parts

Not applicable.

E. Tooling - Price and Availability

NOTE: If necessary, use the equivalent alternatives for the items given in the table below:

P/N	Description	Availability	List Price
CAT No.XX4504700	Millipore High Pressure Filter Holder	TBA	TBA
CAT No.PDMA04700	Millipore Petrislide	TBA	TBA

3. Accomplishment Instructions.

A. General

(1) If, in the test procedure that follows, a VSVA 2607 unit is rejected because it shows that one or more of the items listed at step 3.B.(18)(k) or 3.B.(28) ARE NOT as specified, use the address that follows for more instructions:

Technical Services Project Leader - V2500
Goodrich Engine Control Systems,
Shaftmoor Lane,
Hall Green,
Birmingham,
B28 8SW,
United Kingdom.

(2) If more instructions on how to do the procedure that follows are necessary, speak to the person specified in Para 3.A.(1).

(3) This procedure replaces the 100 cycles check specified in Para 3.C.(9) of the Goodrich Component Maintenance Manual 75-32-61, Ref TESTING AND TROUBLE SHOOTING.

B. Procedure to flow flush a VSVA 2607 unit, Ref. Goodrich Component Maintenance Manual (CMM) 75-32-61.

WARNING: BEFORE YOU USE CHEMICALS, READ, UNDERSTAND, AND OBEY ALL SAFETY INSTRUCTIONS FOR THE CHEMICALS. THESE INSTRUCTIONS INCLUDE INSTRUCTIONS FROM THE MANUFACTURER, THE MATERIAL SAFETY DATA SHEET (MSDS), AND GOVERNMENT REGULATIONS. CHEMICALS CAN CAUSE INJURY TO YOU OR MAKE YOU SICK WHEN SAFETY INSTRUCTIONS ARE NOT OBEYED. AN MSDS GIVES INSTRUCTIONS ON HOW YOU MUST SAFELY USE, KEEP, AND DISCARD CHEMICALS. GET INSTRUCTIONS FROM YOUR EMPLOYER ON HOW YOU MUST SAFELY USE, KEEP, AND DISCARD CHEMICALS.

(1) During the standard test procedure in the CMM, after a repair or recondition, stop the procedure at Para 3.C., Ref TESTING AND TROUBLESHOOTING section.

(2) Set the test conditions specified in Para 3.E, Ref TESTING AND TROUBLESHOOTING section.

(3) Adjust the HP supply pressure to 1378,95 ± 68,95 kPa (200 ± 10 psig) to move the piston to the fully extend position.

NOTE: It is not necessary to monitor the movement of the piston during this step.

(4) Make sure there is no current to the Torque Motor.

(5) Open the LP return line to move the piston to the fully retracted position.

NOTE: It is not necessary to monitor the movement of the piston during this step.

(6) Close the LP return line.

(7) Decrease the HP supply pressure to zero.

(8) Do again steps 3.B.(3) to 3.B.(7) 4 times.

(9) Set the test conditions specified in Para 3.F.(1), Ref TESTING AND TROUBLESHOOTING section.

(10) Adjust the HP supply pressure to set a HP supply - LP return pressure difference of 7032,65 ± 344,74 kPa (1020 ± 50 psid).

(11) Do the Ram Velocity test from Para G.(10) to Para G.(17), ONLY at the ± 50 mA condition, in Torque Motor CHANNEL 1.

NOTE: It is not necessary to record any current values.

(12) Do again step 3.B.(11) 14 times.

(13) Adjust the HP supply pressure to set a HP supply - LP return pressure difference of 1378,95 ± 68,95 kPa (200 ± 10 psid).

(14) Do the Ram Velocity test from Para G.(10) to Para G.(17), ONLY at the ± 50 mA condition, in Torque Motor CHANNEL 1.

NOTE: It is not necessary to record any current values.

(15) Do again step 3.B.(14) 14 times.

(16) Decrease the HP supply pressure and the Torque Motor current to zero.

WARNING: REFER TO THE CHEMICAL WARNING AT THE START OF THIS SECTION.

(17) Install a Millipore high pressure filter holder (P/N CAT No. XX4504700), without a Millipore membrane filter (P/N NY41 04700) installed, in the LP return line from the VSVA 2607 unit, Ref TESTING AND TROUBLESHOOTING section.

NOTE: The Millipore high pressure filter holder (P/N CAT No. XX4504700) must be installed as close to the VSVA 2607 LP return test fitting (P/N 9700-2015) as possible.

(18) Do the standard test procedure in Para 3.C. of the CMM, Ref TESTING AND TROUBLESHOOTING section, up to Para 3.C.(8), then continue as follows:

(a) Do at least 50 cycles to flush the VSVA unit and the Millipore high pressure filter holder.

(b) Stop the test, decrease the set conditions to the minimum values and shut down the rig.

WARNING: REFER TO THE CHEMICAL WARNING AT THE START OF THIS SECTION.

(c) Install a Millipore membrane filter (P/N NY41 04700) in the Millipore high pressure filter holder (P/N CAT No. XX4504700).

NOTE: Do not move the HP inlet pipes to the VSVA unit during the procedure to install the Millipore membrane filter (P/N NY41 04700).

(d) Do the standard test procedure in the CMM again from Para 3.C.(1) to Para 3.C.(8), Ref TESTING AND TROUBLESHOOTING section.

(e) Do 200 cycles, in the sequence that follows:

1 Complete 25 cycles, then decrease the HP and LP pressures to the minimum possible value, for two seconds.

2 After two seconds increase the pressures to the test conditions specified in the CMM and continue to complete the next 25 cycle step.

3 Continue the sequence in steps 3.B.(18)(e)1 and 2 until 200 cycles have been completed.

(f) After 200 cycles have been completed, push the STOP switch (SW8) to stop the cycling.

(g) Make sure there is no leakage from the VSVA unit external surfaces, or the drain connection.

(h) Stop the test, decrease the set conditions to the minimum values and shut down the rig.

WARNING: REFER TO THE CHEMICAL WARNING AT THE START OF THIS SECTION.

(i) Disassemble the Millipore high pressure filter holder (P/N CAT No. XX4504700) and use clean tweezers, or a suitable equivalent, to carefully remove the Millipore membrane filter (P/N NY41 04700).

NOTE: Try not to move the inlet pipe and top plate of the Millipore high pressure filter holder during the procedure to remove the Millipore membrane filter (P/N NY41 04700).

(j) Carefully install the Millipore membrane filter (P/N NY41 04700) removed at step 3.B.(18)(i), to a Millipore petrislide (P/N CAT No.PDMA04700).

NOTE: The filter surface with the particles on must be at the top all the time, to keep the particles on the surface.

(k) Visually examine the Millipore membrane filter as follows:

1 Use X10 magnification to make sure there are seen to be less than 100 particles collected.

2 Use X40 magnification to visually estimate (eg. by comparison, on a crossline graticule microscope or with the 41 micron holes in the Millipore membrane filter) the maximum dimensions of any particles visually identified as metallic or mineral, to make sure they are less than 50 microns.

(l) If any of the items listed at step 3.B.(18)(k) ARE NOT as specified, then the procedure must be done again from step 3.B.(18)(c).

NOTE: If necessary, it is permitted to do the procedure again from step 3.B.(18)(c) a total of three times.

(m) If any of the items listed at step 3.B.(18)(k) ARE NOT as specified after three tries, then the VSVA 2607 unit must be rejected.

(n) If all of the items listed at step 3.B.(18)(k) ARE as specified, then this Millipore membrane filter (P/N NY41 04700), still installed to a Millipore petrislide (P/N CAT No.PDMA04700), must be put into storage as follows, before the test procedure can continue from step 3.B.(18)(o):

1 Carefully put the Millipore petrislide (P/N CAT No.PDMA04700), with the Millipore membrane filter (P/N NY41 04700) still installed, into an applicable container.

NOTE: The filter surface with the particles on must be at the top all the time, to keep the particles on the surface.

2 Put a label on the container and write on it

— NMSB VSVA 2607-75-005 (Ref Para 3.B.(18)(k))

— The unit type number

— The unit serial number

3 Keep the Millipore membrane filter (P/N NY41 04700) stored as specified until you are told that it can be discarded.

(o) Disconnect the LP return line and the HP supply line from the VSVA unit, Ref TESTING AND TROUBLESHOOTING section.

(p) Remove the Millipore high pressure filter holder (P/N CAT No. XX4504700) from the LP return line to the VSVA unit, Ref TESTING AND TROUBLESHOOTING section.

(19) Continue the test procedure in the CMM to complete Para 3.C.(12) thru Para 3.J.(3), Ref TESTING AND TROUBLESHOOTING section.

(20) Install a Millipore high pressure filter holder (P/N CAT No. XX4504700), without a Millipore membrane filter (P/N NY41 04700) installed, in the LP return line from the VSVA 2607 unit, Ref TESTING AND TROUBLESHOOTING section.

NOTE: The Millipore high pressure filter holder (P/N CAT No. XX4504700) must be installed as close to the VSVA 2607 LP return test fitting (P/N 9700-2015) as possible.

(21) Do again the standard test in Para 3.H. of the CMM, Ref TESTING AND TROUBLESHOOTING section.

(22) Stop the test, decrease the set conditions to the minimum values and shut down the rig.

WARNING: REFER TO THE CHEMICAL WARNING AT THE START OF THIS SECTION.

(23) Install a Millipore membrane filter (P/N NY41 04700) in the Millipore high pressure filter holder (P/N CAT No. XX4504700).

NOTE: Try not to move the inlet pipe and top plate of the Millipore high pressure filter holder during the procedure to install the Millipore membrane filter (P/N NY41 04700).

(24) Set the test conditions in Para 3.H. of the CMM, Ref TESTING AND TROUBLESHOOTING section, then operate the rig for 15 minutes.

(25) Stop the test, decrease the set conditions to the minimum values and shut down the rig.

WARNING: REFER TO THE CHEMICAL WARNING AT THE START OF THIS SECTION.

(26) Disassemble the Millipore high pressure filter holder (P/N CAT No. XX4504700) and use clean tweezers, or a suitable equivalent, to carefully remove the Millipore membrane filter (P/N NY41 04700).

NOTE: Try not to move the inlet pipe and top plate of the Millipore high pressure filter holder during the procedure to remove the Millipore membrane filter (P/N NY41 04700).

(27) Carefully install the Millipore membrane filter (P/N NY41 04700) removed at step 3.B.(26), to a Millipore petrislide (P/N CAT No.PDMA04700).

NOTE: The filter surface with the particles on must be at the top all the time, to keep the particles on the surface.

(28) Visually examine the Millipore membrane filter as follows:

(a) Use X40 magnification to visually estimate (eg. by comparison, on a crossline graticule microscope or with the 41 micron holes in the Millipore membrane filter) the maximum dimensions of ANY particles collected, to make sure they are less than 50 microns.

(29) If any of the items listed at step 3.B.(28) ARE NOT as specified, then the procedure must be done again from step 3.B.(23).

NOTE: If necessary, it is permitted to do the procedure again from step 3.B.(23) a total of three times.

(a) If any of the items listed at step 3.B.(28) ARE NOT as specified after three tries, then the VSVA 2607 unit must be rejected.

(30) If all of the items listed at step 3.B.(28) ARE as specified, then this Millipore membrane filter (P/N NY41 04700), still installed to a Millipore petrislide (P/N CAT No.PDMA04700), must be put into storage as follows, before the test procedure can continue from step 3.B.(31):

(a) Carefully put the Millipore petrislide (P/N CAT No.PDMA04700), with the Millipore membrane filter (P/N NY41 04700) still installed, into an applicable container.

NOTE: The filter surface with the particles on must be at the top all the time, to keep the particles on the surface.

(b) Put a label on the container and write on it

— NMSB VSVA 2607-75-005 (Ref Para 3.B.(28))

— The unit type number

— The unit serial number

(c) Keep the Millipore membrane filter (P/N NY41 04700) stored as specified until you are told that it can be discarded.

(31) Remove the Millipore high pressure filter holder (P/N CAT No. XX4504700) from the LP return line.

(32) Continue the standard test in the CMM from Para 3.K., Ref TESTING AND TROUBLESHOOTING section.

C. Recording Action,

(1) If Part 1 of the Non Modification Service Bulletin compliance has been done, (refer to Para. 1.E.):

WARNING: REFER TO THE CHEMICAL WARNING AT THE START OF THIS SECTION.

— Mark the top of the Torque Motor (adjacent to the Supplier’s name plate) with a white paint dot of approximately 2 mm diameter, and

— Record on the applicable unit documentation that complete accomplishment of Part 1 of this Non Modification Service Bulletin has been done.

WARNING: REFER TO THE CHEMICAL WARNING AT THE START OF THIS SECTION.

(2) If it is necessary to mark the Torque Motor with white gloss paint (Indestructible Paint - IP9064-0000 or the equivalent alternative) apply the paint in accordance with the manufacturer’s instructions.

(3) If Part 2 of the Non Modification Service Bulletin compliance has been done, (refer to Para. 1.E.) record that fact on the applicable unit documentation.

(4) When this Non Modification Service Bulletin has been completed, put the Non Modification Service Bulletin number on an identification label. Use the procedure that follows:

(a) Use the applicable procedure to make sure that Non Modification Service Bulletin number is shown on the identification label as follows:

005 MM YYYY

WARNING: REFER TO THE CHEMICAL WARNING AT THE START OF THIS SECTION.

(b) Use a cloth that has no lint and Iso-propyl Alchohol to clean the surface where the identification label will be installed.

(c) Install the identification label to the VSVA 2607 assembly body. Refer to Figure 1.

(d) If an identification label has been installed before, it will be necessary to remove it. The installed identification label can be removed with the use of an applicable tool. If the surface of the VSVA is damaged during removal of the identification label, use process LP-5 to repair the damaged surface, ref. Goodrich Processes and Standard Practices Manual L-OP.

TP25627

Identification Label Position
Figure 1

APPENDIX 1

Filter Equipment Supplier:

Millipore (UK) Limited

Units 3 and 5 The Courtyards

Hatters Lane

Watford, WD18 8YH

England

The Paint materials are available from:

Indestructible Paint Ltd.,

23 - 25 Pentos Drive

Sparkhill,

Birmingham

B11 3TA