

International Aero Engines SERVICE BULLETIN

Apr.11/97

Subject: Transmittal of Revision 1 to Service Bulletin No. V2500-ENG-75-0052

Service Bulletin Revision History:

Event	Date
Basic Issue	June 28/96
Revision 1	Apr.11/97

Reason for Issuance of Revision:

Changes to planning information and material information

Effect on Past Compliance:

None

List of Effective Pages:

Bulletin Page No.	Rev. No.	Effective Date
1 to 3	1	Apr.11/97
4 to 6	Basic issue	June 28/96
7	1	Apr.11/97
8	Basic issue	June 28/96

V2500-ENG-75-0052

Transmittal
Page 1 of 1



International Aero Engines SERVICE BULLETIN

ENGINE - AIR - INTRODUCE A VARIABLE
STATOR VANE ACTUATOR (VSVA) HAVING
A LINEAR VARIABLE DIFFERENTIAL TRANSDUCER
WITH EXTENDED TRAVEL

MODEL APPLICATION

V2527-A5
V2530-A5
V2525-D5
V2528-D5

BULLETIN INDEX LOCATOR

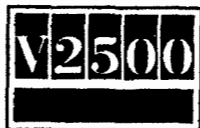
75-00-00

Compliance Category Code

6

Internal Reference No.

94VR005-02



International Aero Engines SERVICE BULLETIN

ENGINE - AIR - INTRODUCE A VARIABLE STATOR VANE ACTUATOR (VSVA) HAVING A
LINEAR VARIABLE DIFFERENTIAL TRANSDUCER WITH EXTENDED TRAVEL

1. Planning Information

A. Effectivity

(1) Aircraft:

- (a) Airbus A320
- (b) Airbus A321
- (c) McDonnell Douglas MD90

(2) Engines:

- R (a) V2527-A5 Engines prior to Serial No.V10123
- R (b) V2530-A5 Engines prior to Serial No.V10123
- R (c) V2525-D5 Engines prior to Serial No.V20026
- R (d) V2528-D5 Engines prior to Serial No.V20026

B. Concurrent Requirements

- R None.

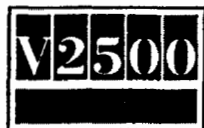
C. Reason

(1) Condition

The current standard of Variable Stator Vane Actuator does not have sufficient ram travel in the extended direction to meet a new closed vane start-up requirement for the HP compressor.

(2) Background

During engine certification testing it was established that the HP compressor required to close an additional 4 degrees to eliminate possible starting difficulties.



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(3) Objective

Incorporation of the changes introduced by this Service Bulletin are designed to enhance the engine starting performance.

(4) Substantiation

The changes introduced by this Service Bulletin have been shown by unit rig testing and engine trial assembly to alleviate this condition.

(5) Effect of Bulletin on Workshop Procedures

Removal/Installation	Not affected
Disassembly/Assembly	Not affected
Cleaning	Not affected
Inspection/Check	Not affected
Repair	Not affected
Testing	Not affected

(6) Supplemental Information

R None.

D. Description

- (1) This Service Bulletin covers the fitment to engines of a Variable Stator Vane Actuator unit incorporating Lucas Modification DTV052.
- (2) This Service Bulletin introduces a new Linear Variable Differential Transformer with an increased stroke capability and a revised internal stop, to increase the ram travel of the Variable Stator Vane Actuator.
- (3) Units incorporating this Service Bulletin will be identified by the type number 2607MK1.

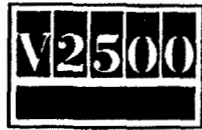
E. Approval

The part number changes and/or part modifications described in Section 2 and 3 of this Service Bulletin have been shown to comply with the applicable Federal Aviation Regulations and are FAA-APPROVED for the Engine Module listed.

F. Compliance

Category Code 6

Accomplish when the sub-assembly (ie modules, accessories, components build groups) is disassembled sufficiently to afford access to the affected parts and to all affected spare parts.



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G. Manpower

Estimated manhours to incorporate the full intent of this Bulletin:

<u>Venue</u>	<u>Estimated Manhours</u>
(1) In Service	Not Applicable
(2) At Overhaul	Refer to Lucas Service Bulletin 1685-75-006

H. Material - Price and Availability

- (1) Modification Kit not required
- (2) See "Material Information" section for prices and availability of future spares.

I. Tooling - Price and Availability

Special tools are not required.

J. Weight and Balance

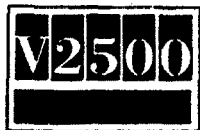
- | | |
|-------------------|---|
| (1) Weight change | None |
| (2) Moment arm | No effect |
| (3) Datum | Engine front mount centreline
(Power Plant Station (P.P.S.) 100) |

K. Electrical Load Data

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

L. References

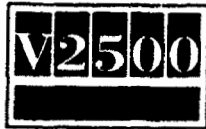
- (1) Lucas Modification DTV052
- (2) V2500 Engine Manual (E-V2500-1IA)
- (3) V2500 Engine Manual (E-V2500-3IA)



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M. Other Publications Affected

- (1) The V2500 Engine Illustrated Parts Catalogs (E-V2500-1IA and E-V2500-3IA), Chapter/Section 75-32-41.
- (2) The V2500 Aircraft Maintenance Manual (E-V2500-1IA), Chapter/Section 75-32-41.
- (3) The V2500 Aircraft Maintenance Manual (E-V2500-3IA), Chapter/Section 75-32-41.



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2. Accomplishment Instructions

A. Rework Instructions

- (1) Refer to Lucas Service Bulletin 1685-75-006 part 1.

B. Assembly Instructions

- (1) Install the new or reworked 2607 MK 1 Variable Stator Vane Actuator unit by use of approved procedures in References (2) and (3) Engine Manual, 75-32-41 Assembly.

C. Recording Instructions

- (1) A record of accomplishment is necessary.

Printed in Great Britain



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3. Material Information

Applicability: For each V2500 Engine to incorporate this Bulletin.

A. Kits associated with this Bulletin:

None

B. Parts affected by this Bulletin:

New Part No. (ATA No.)	Qty	Est'd Unit Price (\$)	Keyword	Old Part No. (IPC No.)	Instructions Disposition
2607MK1 (75-32-41)	1		Variable Stator Vane Actuator	1685MK6 (01-100)	(A)(B) (1D)(S1)

C. Instructions/Disposition Code Statements:

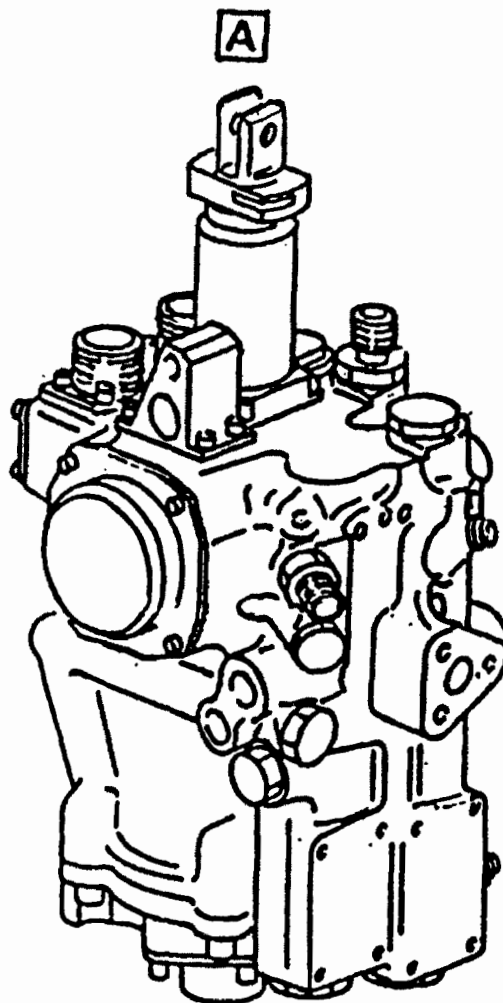
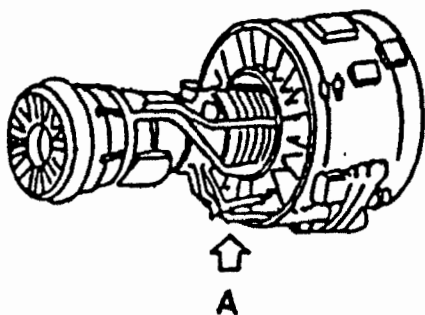
- (A) New part is currently available for sale.
- (B) Old part can be reworked to new standard.
- (1D) Old part is capable of being reworked and re-identified to the new part number.
- (S1) Old and new parts are freely and fully interchangeable.

R

NOTE: Consult vendor for price information.



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General view
Fig.1

June 28/96

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V2500-ENG-75-0052

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Not subject to the EAR per 15 C.F.R. Chapter 1, Part 734.3(b)(3).

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SERVICE BULLETIN

1685-75-006

**ENGINE COMPRESSOR CONTROL - VARIABLE
STATOR VANE ACTUATOR - INTRODUCTION
OF NEW LVDT WITH INCREASED STROKE CAPABILITY INTO
VARIABLE STATOR VANE ACTUATOR JACK & REVISED
PISTON STOP.**

**(IAE SB V2500-ENG-75-0052)
(LUCAS ENGINE CONTROL SYSTEMS MOD. D.TV.052)**

1. Planning Information

A. Effectivity

(1) Airbus - A320

V2500-A1100000. Not Applicable.

(2) Airbus - A320/A321

V2500-A5100000. All 1685 Mk6 Units.

(3) McDonnell - Douglas MD90

V2500-D5100000. All 1685 Mk6 Units.

(4) Variable Stator Vane Actuator Units

This bulletin applies to new manufacture. The modification introduces a new Variable Stator Vane Actuator, type number 2607; the point of modification embodiment is unit serial number 2607001.

B. Reason

(1) Condition

The current standard of Variable Stator Vane Actuator (type 1685 Mk6), does not have sufficient ram travel in the extend direction to meet a new closed vane start-up requirement for the V2500 A5/D5 H.P. Compressor.

(2) Background

The condition was identified during development of the V2500 A5/D5 engine variants, where it was established that additional ram travel was necessary to achieve the revised closed vane start-up requirement.

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(3) Objective

This Service Bulletin (Modification) introduces a Linear Variable Differential Transformer (LVDT) with a longer calibrated stroke and a shorter piston stop in the extend mode. The stroke of the Actuator is increased by 2,08 mm (0.082 in.).

(4) Substantiation

The current standard of Variable Stator Vane Actuator fitted with this Service Bulletin (Modification) is not interchangeable with the V2500 A1 version and therefore the introduction of a new type number for the Variable Stator Vane Actuator is required.

C. Description

- (1) This Service Bulletin (Modification) introduces a new LVDT with an increased stroke capability and a revised internal stop, to increase the ram travel of the Variable Stator Vane Actuator.
- (2) This Service Bulletin is in two parts. Part 1 is to accomplish this Service Bulletin at Component Maintenance level. Part 2 is to accomplish this Service Bulletin by unit replacement.

D. Compliance

Category Code 6.

Accomplish when the sub-assembly (i.e. Module, Accessory, Component, Build Group), is disassembled sufficiently to afford access to the affected part and to all affected spare parts.

E. Approval

Service Bulletin No. 1685-75-006 (Mod. D.TV.052), was technically approved by IAE on Jun 3/96. The part number changes and/or part modifications described in this Service Bulletin have been shown to comply with the appropriate Federal Aviation Administration (FAA), Regulations and are FAA approved for those units listed in this Bulletin.

F. Manpower

No additional man hours are necessary to accomplish this Service Bulletin (Modification), at Component Maintenance Level (Part 1). 1.73 man hours are necessary to accomplish this Service Bulletin (Modification), by unit replacement.

G. Material - Price and Availability

See the supplement to this Bulletin.

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H. Tooling - Price and Availability

(1) Additional tools:

None.

(2) Tools made redundant:

None.

I. Weight and Balance

(1) Weight change Nil

(2) Moment arm No effect

(3) Datum Engine front mount
centerline (Power
Plant Station) (PPS)

J. References

(1) Dowty & Smiths Industries Controls Limited, Component Maintenance Manual 75-32-41.

(2) Lucas Engine Control Systems, Component Maintenance Manual 75-32-61 (to be issued).

(3) Lucas Engine Control Systems Mod. D.TV.052.

(4) IAE Service Bulletin V2500-ENG-75-0052.

K. Other Publications Affected

Nil.

2. Accomplishment Instructions

This Service Bulletin can be accomplished by change of parts at component maintenance level or by unit replacement. 2.A are the component maintenance accomplishment instructions. 2.B are the unit replacement instructions.

A. The component maintenance level accomplishment instructions (Part 1), of this Service Bulletin are as follows:

(1) Disassemble the Variable Stator Vane Actuator in accordance with reference J. (1).

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- (2) From the disassembled kit of parts, remove the LVDT (2-160), reference J.(1).
- (3) Replace the LVDT with item part number 1685-4053 (See the Note at Para. 3. C.), and the piston stop with item part number 1685-9006, from the modification kit.
- (4) Re-assemble and test the Variable Stator Vane Actuator in accordance with reference J.(2) (use the new self-locking nut AS20625 if required). Alternatively, test the Variable Stator Vane Actuator in accordance with reference J.(1). If this standard of test procedure is used, the limits of LVDT output voltage at the fully extended position must be 0.261v Min to 0.362v Max.
- (5) When Assembly is complete, get the new identification plate, part number 215-4012, from the modification kit and mark it as given below. Use 1,6 mm (1/16 in.) letter/number stamps, with the identification plate held on a flat surface and refer to the information marked on the first identification plate (1-30).

TYPE No. - Mark: **2607 Mk1**

SERIAL No. - Mark: **2607 + C** + last three digits from the first serial no.

Example: 1685186 becomes **2607C186**

Note: The letter **C** shows that the unit has been converted from a 1685 type.

MOD No. - Keep blank

TEST - Keep blank

INSP. - Add local inspection authority, identity

- (6) Fill the stamped letters and numbers with black paint and wipe away the surplus.
- (7) A record of accomplishment is required.

B. Part 2 of this Service Bulletin is by unit replacement only:

- (1) Remove the Variable Stator Vane Actuator (VSVA), Unit as instructed by IAE Service Bulletin V2500-ENG-75-0052.

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Note: Removed VSVA units should be returned to either:

Lucas Aerospace Customer Support Europe
Marston Green Repair Base
The Radleys,
Marston Green,
Birmingham B33 0HZ
England.

or:

Lucas Aerospace Customer Support Americas
30 Van Nostrand Avenue
Englewood
New Jersey 07631
USA

- (2) Install the replacement VSVA unit as instructed by IAE Service Bulletin V2500-ENG-75-0052. The part number identification, 2607 Mk1, will show that this Service Bulletin has been incorporated.
- (3) A record of accomplishment is required.

3. Material Information

A. Modification Kit

Modification kit D.TV.052 (comprises the parts given in Para. C.).

B. Parts to be Re-worked

None.

C. New Production Parts

The following new parts will be available as spares:

<u>New Part No.</u>	<u>Qty.</u>	<u>Keyword</u>	<u>Old part No.</u>
1685-4053	1	LVDT	1685-4046
1685-9006	1	Stop, piston	1685-4006
AS20625	1	Nut, self-locking	AS20625
STD1017-4121	1	Ring, sealing	STD1017-4121
STD831-28	1	Ring, sealing	STD831-28
215-410	1	Strap, label retaining	215-410
215-4012	1	Plate, identification	215-408 or 215-4012

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Note: If the specified standard of LVDT is not available, install the LVDT introduced by Service Bulletin (modification) 1685-75-007.

D. Redundant Parts

IPL

<u>Fig./Item</u>	<u>New Part No.</u>	<u>Qty.</u>	<u>Keyword</u>	<u>Old Part No.</u>
2-160	1685-4053	1	LVDT	1685-4046
3-150	1685-9006	1	Stop, piston	1685-4006

E. Identification of Units

The type of equipment affected by this Service Bulletin (Modification), is:

Unit

Type No.

Variable Stator Vane Actuator

1685 Mk6
(Becomes 2607 Mk1).

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1685-75-006 (SUPPLEMENT)

ENGINE COMPRESSOR CONTROL - VARIABLE
STATOR VANE ACTUATOR - INTRODUCTION
OF NEW LVDT WITH INCREASED STROKE CAPABILITY INTO
VARIABLE STATOR VANE ACTUATOR JACK & REVISED
PISTON STOP.

(IAE SB V2500-ENG-75-0052)
(LUCAS ENGINE CONTROL SYSTEMS MOD. D.TV.052)

1. Modification Kit

Not applicable.

2. New Production Parts

<u>Part No.</u>	<u>Qty per unit</u>	<u>Keyword</u>	<u>Gross World List Price (Dollars)</u>	<u>Availability on Receipt of Order</u>
1685-4053	1	LVDT	\$6800.51	30 days
1685-9006	1	Stop, piston	\$ 181.09	30 days
AS20625	1	Nut, self-locking	\$ 26.27	30 days
STD1017-4121	1	Ring, sealing	\$ 22.91	15 days
STD831-28	1	Ring, sealing	\$ 23.57	15 days
215-410	1	Strap, label retaining	\$ 6.11	15 days
215-4012	1	Plate, identification	\$ 17.48	15 days

Note: If this standard of LVDT is not available, install the LVDT introduced by Service Bulletin (modification) 1685-75-007.

3. New Tooling

None.

4. Spare Parts Supply

Spares distribution and Customer Service is available from the following Lucas Aerospace Customer Support Centres (See Page 2 of Supplement):

SUPPLEMENT
1685-75-006
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<u>REGION</u>	<u>ADDRESS</u>	<u>COMMUNICATION</u>
AMERICAS	LUCAS AEROSPACE CUSTOMER SUPPORT, AMERICAS ONE CIRCLE WEST STAMFORD CONNECTICUT 06912	PHONE/AOG (1) 203 351 8400 TELEX 4750339 FAX (1) 203 351 8444 SITA/ARINCBDRU7X
EUROPE/MIDDLE- EAST/AFRICA	LUCAS AEROSPACE CUSTOMER SUPPORT, EUROPE BRUETON HOUSE NEW ROAD SOLIHULL B91 3TX ENGLAND	PHONE/AOG (44) 121 627 6767 TELEX 334174 FAX (44) 121 500 6405 SITA/ARINCBHXLW7X
ASIA/PACIFIC	LUCAS AEROSPACE CUSTOMER SUPPORT, ASIA/PACIFIC 35 - 37 LOYANG WAY SINGAPORE 1750	PHONE (65) 545 9975 FAX (65) 545 9965 SITA/ARINCSINLU7X AOG (65) 545 6253