International Aero Engines

SERVICE BULLETIN

ENGINE - FUEL AND CONTROL - ENGINE FUEL AND CONTROL - FUEL METERING UNIT - INTRODUCTION OF REVISED OVERSPEED VALVE WITH INCREASED BYPASS FLOW - LUCAS FUEL SYSTEMS S.B.500-73-6968, 530-73-6968 - CATEGORY CODE 7 - MOD.ENG-73-0091

See Vendor Bulletin 500-73-6968
See Vendor Bulletin 530-73-6968

1. Planning Information

A. Effectivity

(1) Aircraft:
(a) Airbus A319
(b) Airbus A320
(c) Airbus A321
(d) McDonnell Douglas MD-90

(2) Engine:
(a) V2500-A1 Engines prior to Serial No V0362
(b) V2522-A5 Engines prior to Serial No V10220
(c) V2524-A5 Engines prior to Serial No V10220
(d) V2527-A5 Engines prior to Serial No V10220
(e) V2530-A5 Engines prior to Serial No V10220
(f) V2525-D5 Engines prior to Serial No V20115
(g) V2528-D5 Engines prior to Serial No V20115

B. Concurrent Requirements

None.

C. Reason

(1) Condition

Concerns have arisen regarding the fuel flow from the Fuel Metering Unit (FMU) Overspeed Valve (OSV) when the valve is in the closed position following an engine overspeed event.

(2) Background

The condition was highlighted during an investigation by an operator of a V2500-A5 in-service engine following an overspeed event.

(3) Objective

Incorporation of the changes introduced by this Service Bulletin is designed to maintain reliability.

(4) Substantiation

The changes introduced by this Service Bulletin have been the subject of satisfactory engineering analysis and supportive rig testing.

(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

None.

D. Description

(1) This Service Bulletin covers the fitment to engines of an FMU incorporating Lucas Mod CP6968 (Refer to 1.L.).

(2) In order to provide sufficient OSV by-pass fuel flow to maintain satisfactory engine idle at all points of the flight envelope the changes introduced are:

(a) A revised OSV assembly is introduced similar to the existing item except the number of holes in the OSV sleeve has been increased from 1 to 4 (equally spaced).

(3) Units incorporating this modification will be identified by endorsement of the modification plate with CP6968.

E. Approval

The part number changes and/or part modification 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 Model Listed.

F. Compliance

Category Code 7.

Accomplish when supply of superseded parts have been depleted.

G. Manpower

Estimated man hours to incorporate the full intent of this bulletin:

	Venue	Estimated Manhours
(1)	In service	Not applicable
(2)	At overhaul	Not affected

H. Material - Price and Availability

(1) Modification kit is 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 - PPS 100)

K. Electrical Load Data

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

L. References

(1) Internal Reference No.

95VR003

(2) Other References

Refer to Vendor Service Bulletin 500-73-6968 or 530-73-6968

Air Modification No.25754

M. Other Publications Affected

None.

2. Accomplishment Instructions

A. Rework Instructions

None.

B. Assembly Instructions

(1) Refer to Vendor Service Bulletin 500-73-6968 or 530-73-6968

C. Recording Instructions

(1) A record of accomplishment is necessary (see 1.D.(3)). Refer to Vendor Service Bulletin 500-73-6968 or 530-73-6968.

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
A1 Model					
FMU500MK4 (73-22-52)	1	Vendor	Meter-unit, fuel	FMU500MK4 (01-100)	(A)(B)(S1)
A5 and D5 Models					
FMU530MK2 (73-22-52)	1	Vendor	Meter-unit, fuel	FMU530MK2 (01-100)	(A)(B)(S1)

C. Instructions/Disposition Code Statement:

(A) New part is currently available.
(B) Old part will be discontinued.
(S1) Old and new parts are freely and fully interchangeable.

SERVICE BULLETIN

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FUEL METERING UNIT, TYPE FMU 530

This document transmits the initial issue of Service Bulletin FMU 530-73-6968 together with the relevant Bulletin Index Sheet.

Remove	Insert	Reason
Bulletin Index Sheet Page 2	Bulletin Index Sheet Page 2, Revision No 1 dated Feb 21/97	Index revised to current standard.
-	Page 1 of 6, 2, 3, 4, 5 and 6 all dated Feb 21/97	Initial issue.

CHECK THAT ANY PREVIOUS REVISIONS HAVE BEEN INCORPORATED
If any have not been received please advise Technical Publications Department, Lucas Aerospace, Birmingham B28 8SW, ENGLAND - Telephone: 0121-707-7111.

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SERVICE BULLETIN

FUEL METERING UNIT, TYPE FMU 530

BULLETIN INDEX SHEET

SERVICE BULLETIN NUMBER	MOD CP NUMBER	DESCRIPTION	DATE OF ISSUE	DATE OF LAST REVISION
FMU 530-73-101	Non-Mod	Metering Valve Torque Motor Integrity Check	Mar 4/94	-
FMU 530-73-6932	6932	Introduction of a Revised Servo Switching Valve (SSV) Piston and Sleeve Mating Assembly	Mar 4/94	Feb 28 /96
FMU 530-73-6947	6947	Introduction of a Revised Metering Valve Torque Motor	Mar 4/94	-
FMU 530-73-6903	6903	Introduction of MOOG Torque Motors with Improved Filtration, a Revised Spill Valve Assembly and revised Pressure Raising Valve Sealing Rings	May 20/94	Mar 27/95
FMU 530-73-6877	6877	Introduction of a Muirhead Vactric Resolver	May 20/94	-
FMU 530-73-6946	6946	Introduction of Revised Seal and Bearing Assemblies in the Pressure Raising Valve and the Overspeed Valve	May 20/94	-
FMU 530-73-6935	6935	Introduction of an Overspeed Valve with a Reduced Leakage Path from the HP Latching Ports	Nov 4/94	-
FMU 530-73-6883	6883	Introduction of an Increased Clearance between the Overspeed Valve (OSV) Cover Assembly and FMU Body, and Revised Pressure Raising Valve (PRV) and OSV Micoswitch Covers	Nov 4/94	Jan 4/95
FMU 530-73-102	Non-Mod	To replace Shut Off Valve Torque Motors with Torque Motors that have the correct Motorcap Retention Screws fitted	Jan 10/95	-

May 20/94
Revision No 6 Feb 28/96
Printed in Great Britain L.SB.V2500-A5/D5
BDC 205336 DM

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SERVICE BULLETIN

FUEL METERING UNIT, TYPE FMU 530

BULLETIN INDEX SHEET

SERVICE BULLETIN NUMBER	MOD CP NUMBER	DESCRIPTION	DATE OF ISSUE	DATE OF LAST REVISION
FMU 530-73-6884	6884	Introduction of a Servo Switching Valve (SSV) Filter with Increased Filtration	Aug 10/95	-
FMU 530-73-6968	6968	Introduction of an Overspeed Valve with an Increased Bypass Flow	Feb 21/97	-

Printed in Great Britain L.SB.V2500-A5/D5
EDL 205813 DM

Lucas Aerospace

SERVICE BULLETIN

Date 21 February 1997

NUMBER FMU 530-73-6968

ENGINE - FUEL AND CONTROL - FUEL METERING UNIT - INTRODUCTION

OF AN OVERSPEED VALVE WITH AN INCREASED BYPASS FLOW

1. Planning Information

A. Effectivity

(1) Aircraft:

(a) Airbus A320.

(b) Airbus A321.

(c) McDonell Douglas MD-90

(2) Engine:

(a) V2500-A5.

(b) V2500-D5.

(3) Fuel Metering Units Type FMU 530 Mk 1 and 2 which do not have CP 6968 on the modification plate.

B. Reason

(1) Condition

In the event of overspeed valve operation, insufficient fuel flow to the engine would preclude the engine from maintaining electrical power.

(2) Background

This condition was identified through engineering assessment.

(3) Objective

Incorporation of the changes introduced by this Service Bulletin (Modification) are designed to maintain unit reliability.

(4) Substantiation

The change introduced by this Service Bulletin (Modification) has been shown, by engineering assessment and extensive rig testing, to alleviate the condition.

Printed in Great Britain - V2500-A5/D5
EDL205813 DM

C. Description

This Service Bulletin (Modification) is raised to introduce a revised overspeed valve piston and sleeve assembly.

The number of bypass holes in the overspeed valve sleeve has been increased from one to four. Each hole measures 1,23/1,20mm dia (0.0485/0.0475in dia) supplying a flow rate that will conform to the customer requirement of 850 to 1050 pph at operating temperatures of -50°C to 155°C.

The additional holes will reduce the possibility of complete blockage of the overspeed valve in the event of fuel contamination.

D. Approval

Service Bulletin No FMU 530-73-6968 (Mod CP 6968) was technically approved by IAE on Jan 17/97. The part number changes and/or part modifications described in this bulletin have been shown to comply with the appropriate Federal Aviation Regulations, and are FAA approved for those units listed in this bulletin.

E. Compliance

Category Code 6.

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

F. Manpower

Estimated manhours:-

(1) In Service.....Not applicable

(2) At Overhaul Facility:-

(a) To gain access.....No change

(b) To embody.....No change

(c) To return the unit to flyable status.....No change

G. Material - Price and Availability

Modification Kit CP6968 is required (see Section 3 of this bulletin for details).

H. Tooling

Additional special tools are not required.

I. Weight and Balance

(1) Weight change ..... None

(2) Moment arm ..... Not affected

(3) Datum ..... Engine front mount centreline (Power Plant Station (PPS) 100)

J. Electrical Load Data

No change.

K. References

(1) Lucas FMU 530 Component Maintenance Manual (CMM) Ref FMU 530, Chapter 73-28-02.

(2) IAE EC 95VR003 V2500-ENG-73-0091.

(3) The following Lucas Service Bulletin (Modification) is superseded in full:

FMU 530-73-6935 ENGINE - FUEL AND CONTROL - FUEL METERING UNIT - INTRODUCTION OF AN OVERSPEED VALVE WITH A REDUCED LEAKAGE PATH FROM THE HP LATCHING PORTS.

L. Other Publications Affected

None.

M. Family Tree Charts

Not applicable.

2. Accomplishment Instructions

A. Disassembly

Disassemble the unit as detailed in the CMM (see 1.K. References).

B. Re-assembly

Assemble post CP6968 parts to the FMU in accordance with the CMM (1.K. References) and Figure 1 of this Service Bulletin.

NOTE: The overspeed valve piston and the overspeed valve sleeve are a mated assembly and must be retained as a set.

C. Testing

Test the FMU in accordance with the CMM (1.K. References) and the instructions below.

(1) Maintenance Test Schedule

Disregard sub-para 13.E., 13.F. and 13.G. and substitute the following:

(a) Decrease the pump flow to 5910 l/h (1300 gph) (10270 pph) (1561 US gph) and record the fuel flow when the OSV is fully closed. The limits are 527 to 582 l/h (116 to 128 gph) (916 to 1011 pph) (139 to 153 US gph) Fuel A: 531 to 586 l/h (117 to 129 gph) (916 to 1011 pph) (140 to 155 US gph) Fuel B.

(b) Switch the overspeed Lane 1/Lane 2 selector switch SW1 to 'OFF' and monitor 'TRIP OFF'.

(c) Make sure the lights (D2, D3) are on, record their status.

(2) Recertification Test schedule

Disregard sub-para 11.E., 11.F. and 11.G. and substitute the following:

(a) Decrease the pump flow to 5910 l/h (1300 gph) (10270 pph) (1561 US gph) and record the fuel flow when the OSV is fully closed. The limits are 527 to 582 l/h (116 to 128 gph) (916 to 1011 pph) (139 to 153 US gph) Fuel A: 531 to 586 l/h (117 to 129 gph) (916 to 1011 pph) (140 to 155 US gph) Fuel B.

(b) Switch the overspeed Lane 1/Lane 2 selector switch SW1 to 'OFF' and monitor 'TRIP OFF'.

(c) Make sure the lights (D2, D3) are on, record their status.

D. Recording Action

(1) Fuel Metering Unit (FMU)

On accomplishment of this Modification, endorse the modification plate with the Mod No CP6968.

(2) Engine

A record of accomplishment is required.

3. Material Information

This is a technical document, not a quotation. Prices are FOB UK and are for budgetary purposes only and are in US dollars ($).

NOTE: The tabulation below includes code numbers in the 'Instructions/Dispositions' column identified as 'I/D Code'. These code numbers designate the following dispositions:

1 - Added Part
2 - Scrap Part
3 - Return to Lucas for Rework and Re-identify the Part
4 - Use for Other Applications.

A. New Parts Required for Modification Only

Pre Modification CP6935

New Part Number	Qty	Unit Price	Lead Time	Nomenclature	Old Part Number	I/D Code
77152546	1	$3785.12	115 Days	Overspeed Valve Piston and Sleeve Mating Assembly	77138503	3

Post Modification CP6935

New Part Number	Qty	Unit Price	Lead Time	Nomenclature	Old Part Number	I/D Code
77152546	1	$3785.12	115 Days	Overspeed Valve Piston and Sleeve Mating Assembly	77151734	3

B. Parts to be Reworked and Re-identified

None.

C. Consumable Materials Required

None.

D. New Production Parts Available as Future Spares in Addition to those Listed under A

None.

E. The Type of Equipment Affected by this Modification is:-

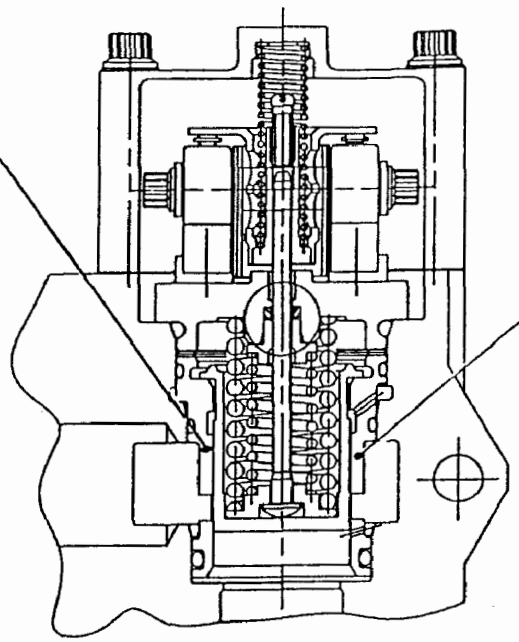
Unit	Type Number
Fuel Metering Unit	FMU 530 Mk 1
Fuel Metering Unit	FMU 530 Mk 2

PRE MOD CP6935

77138503 ASSY
77136381 PISTON (REF)
77138504 SLEEVE (REF)

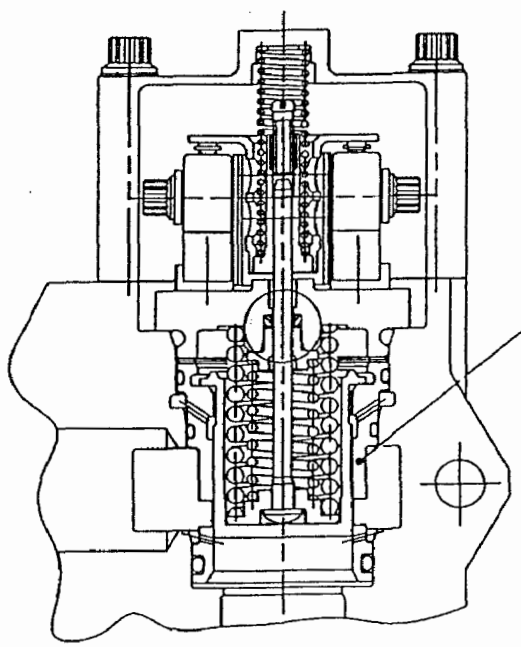
POST MOD CP6935

77151734 ASSY
77151705 PISTON (REF)
77151703 SLEEVE (REF)



BEFORE MODIFICATION

77152546 ASSY
77151705 PISTON (REF)
77151705 PISTON (REF)



AFTER MODIFICATION

Identification of Pre and Post CP6968 Assemblies
Figure 1