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

RR-DERBY

V2500 International Aero Engines

400 MAIN STREET, MAIL STOP 121-10
EAST HARTFORD, CT 06108, USA.
TELEPHONE: 860 565 5515
FAX: 860 565 0600

P.O. BOX 31, DERBY
TELEGRAMS - 'ROYCAR' DERBY
TELEX - 37645
TELEPHONE - DERBY 242424

DATE R Nov.19/02

V2500-A5 PROPULSION SYSTEMS SERVICE BULLETIN

This document transmits Revision 2 to Service Bulletin EV2500-73-0150

Document History

Service Bulletin Revision Status		Supplement Revision Status
Initial Issue	May 16/99	
Revision 1	Jun.21/02	

Bulletin Revision 2

Remove	Incorporate	Reason for change
All pages of the Service Bulletin	Pages 1 to 6 of the Service Bulletin	To revise 1.C. Reason and 1.M. References

V2500-ENG-73-0150

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

LIST OF EFFECTIVE PAGES

The effective pages to this Service Bulletin following incorporation of Revision 2 are as follows:

Page		Revision Number	Revision Date
	Bulletin		
R	1	2	Nov.19/02
R	2	2	Nov.19/02
R	3	2	Nov.19/02
R	4	2	Nov.19/02
R	5	2	Nov.19/02
R	6	2	Nov.19/02

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ENGINE FUEL AND CONTROL - FUEL METERING UNIT - INTRODUCTION OF A LUCAS FUEL METERING UNIT WITH REVISED MAXIMUM FUEL FLOW STOP (AIRBUS A320-232/233 APPLICATIONS)

1. Planning Information

A. Effectivity

(1) Airbus A320

(a) V2527-A5 Engines prior to Serial No. V10650, excluding V10520, V10523, V10526, V10527, V10540, V10541, V10544, V10548, V10569, V10570, V10586, V10589, V10593, V10596, V10604, V10606, V10613, V10614, V10617, V10618, V10620, V10621, V10636 and V10641,

but including engine serial numbers V10678 and V10681

(b) V2527E-A5 Engines prior to Serial No. V10650, excluding V10520, V10523, V10526, V10527, V10540, V10541, V10544, V10548, V10569, V10570, V10586, V10589, V10593, V10596, V10604, V10606, V10613, V10614, V10617, V10618, V10620, V10621, V10636 and V10641,

but including engine serial numbers V10678 and V10681

(2) ATA Locator 73-22-00

B. Concurrent Requirements

None

C. Reason

(1) Problem

R (a) There is an Airbus requirement to introduce a Lucas Fuel Metering Unit (FMU) with a reduced maximum flow potential.

R (b) This would also allow the commonisation of the Airbus A319 and A320
R standards of FMU, which is considered logistically advantageous for
R mixed fleet operators.

(2) Evidence

Refer to (1) Problem.

(3) Objective

R Incorporation of this Service Bulletin (Modification) is designed to
R satisfy airframe requirements.

(4) Effect of Bulletin on:

(a) Operation

Not affected

(b) Maintenance

Not affected

(c) Overhaul

Not affected

(d) Repair Schemes

Not affected.

(e) Interchangeability

R Affected (see 1.M. References)

(f) Fits and Clearances

Not affected.

D. Description

This Service Bulletin introduces a revised Lucas Aerospace FMU for revenue service, the changes are as follows:

(1) To limit the potential of a thrust overboost of the engine, the pre-set maximum flow stop has been reduced.

(2) Existing FMU's can be reworked - Refer to Lucas vendor Service Bulletin at 1.M.(5).

(3) Units that embody this Service Bulletin will be identified by a new type number (Refer to 2.B.).

E. Compliance

Category Code 6

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

F. Approval

The part number changes and/or part modification described in sections 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 models listed.

G. Manpower

(1) In Service

(a) To get access	16 minutes
(b) To embody	3 hours 06 minutes
(c) To return engine to a serviceable status	20 minutes
Total	3 hours 42 minutes

(2) At Overhaul

To embody	2 hours 10 minutes

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

H. Material Price and Availability

A modification kit is not necessary

For prices and availability of future spares refer to the IAE Price Catalogue or contact the IAE spare parts sales department

I. Tooling Price and Availability

Special tools are not required

J. Industry Support Information

None

K. Weight and Balance

(1) Weight Change

None

(2) Moment Arm

Not affected

(3) Datum

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

L. Electrical Load Data

The aircraft electrical load is not affected by this Service Bulletin

M. References

(1) A5 Engine Manual (EM), 72-00-60, Removal/Installation-06, Config-02

(2) A320 Aircraft Maintenance Manual (AMM), 73-22-52, Removal/installation, Config-02

(3) The IAE Service Bulletins that follow can be embodied on the new vendor unit introduced by this Service Bulletin:

73-0091 Engine fuel and control - Fuel metering unit - Introduction of revised overspeed valve with increased bypass flow - EC95VR003

73-0099 Engine fuel and control - Fuel metering unit - Introduction of fuel metering unit with revised microswitch and plunger return spring - EC96VI006

73-0107 Engine fuel and control - Fuel metering unit - Introduction of fuel metering unit with revised HP SOV torqumeter - EC97VI003

73-0123 Engine fuel and control - Fuel metering unit - introduction of a revised fuel metering unit with tungsten/carbide coated SOV/PRSOV push rods - EC97VI009

(4) Lucas Vendor Service Bulletin:

FMU-530-73-8060 - Conversion from FMU 530 Mk2 to FMU 550 Mk1

R (5) Refer to Airbus Service Bulletin A320-73-1067.

R (6) Refer to Airbus Aircraft Modification 27146.

(7) Internal reference 97VI007A

N. Other Publications Affected

V2500 Engine Illustrated Parts Catalogue (IPC), 73-22-52

O. Interchangeability of Parts

Not affected (Refer to 2. Material Information)

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2. Material Information

A. The kit required consists of the following parts:

None

B. Units affected by this Bulletin:

73-22-52

The type of equipment affected by this Service Bulletin is listed for information only

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
01100	FMU550MK1	1	Meter, fuel unit (VK0131)	-	FMU530MK2	(A)(S1) (1D)

C. Instructions disposition codes:

(A) New standard of unit will be available from April 1999

R (S1) Old and new standards of unit are freely and fully interchangeable, until
R the limitations described in Airbus aircraft modification apply (see 1.M.
R References)

(1D) Old unit can be reworked and re-identified to the new part number

3. Accomplishment Instructions

A. Rework Instructions

Refer to the Lucas Vendor Service Bulletin at 1.M. Lucas units FMU530 Mk2 can be modified free of charge to FMU550 Mk1 by returning the units to any of the addresses listed below for the attention of the Customer Support Manager.

The free of charge purchase order must quote the IAE tracking number S481U1 and write 'For upgrade to FMU550Mk1'

Lucas Aerospace Customer Support Centers

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

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

Lucas Aerospace Customer Support Asia Pacific
Xiamen Repair Base - China
Taeco Maintenance Hanger
Gaoqi International Airport
Xiamen
Fujian
Peoples Republic of China

B. Assembly Instructions

For the correct Removal/Installation procedures refer to the:

(1) A5 Engine Manual (EM), 72-00-60, Removal/Installation-06, Config-02 or

(2) A320 Aircraft Maintenance Manual (AMM), 73-22-52, Removal/installation, Config-02

C. Recording Instructions

A record of accomplishment is required. Refer to the Lucas vendor Service Bulletin

Lucas Aerospace

SERVICE BULLETIN

PUBLICATION TRANSMITTAL

LUCAS AEROSPACE
SHAFTMOOR LANE, BIRMINGHAM, B28 8SW
ENGLAND.

TELEPHONE: 0121-707-7111
FACSIMILE: 0121-707-8826

Date: 7th May1999

FUEL METERING UNIT
TYPE FMU 530

THIS DOCUMENT TRANSMITS SERVICE BULLETIN FMU 530-73-8060.

Remove	Insert	Reason
Bulletin Index Sheet Page 1	Bulletin Index Sheet Page 1 dated May 7/99	Index revised to current standard.
	Service Bulletin FMU 530-73-8060 Pages 1 thru 6 dated May 7/99	This Modification Introduces the conversion of the FMU 530MK2 to FMU 550MK1.

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 BULLETINS

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	-

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SERVICE BULLETINS

FUEL METERING UNIT, TYPE FMU 530

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 Fiftration	Aug 10/95	-
FMU 530-73-6968	6968	Introduction of an Overspeed Valve with an Increased Bypass Flow	Feb 21/97	-
FMU 530-73-8002	8002	Introduction of Gold Alloy Contact Microswitches and Replacement of the Return Spring	Jul 8/97	-
FMU 530-73-8037	8037	Introduction of the Servovalve-SOV with 87 Ohm Minimum Cockpit Coil Windings	Jul 8/97	-
FMU 530-73-8061	8061	This Modification Introduces Tungsten/ Chromimum Carbide coated push rods and seals. Ground spacer replaces the multiple shims	May 22/98	-
FMU 530-73-8060	8060	This Modification Introduces the conversion of the FMU 530MK2 to FMU 550MK1	May 7/99	-

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SERVICE BULLETIN

Date May 7/99

NUMBER FMU 530-73-8060

ENGINE - FUEL AND CONTROL - FUEL METERING UNIT - CONVERSION FROM FMU 530MK2 TO FMU 550MK1

MOD NO CP8060

1. Planning Information

A. Effectivity

(1) Engine:

(a) V2522-A5, V2524-A5, V2527-A5 and V2527E-A5.

(2) Equipment:

(a) Fuel Metering Unit - Type FMU 530 Mk 2.

B. Reason

(1) Condition

Airbus have declared that they will require the ability to convert any FMU 530 Mk 2 to the FMU 550 Mk1 standard.

(2) Background

Ref IAE SIL. To provide a common FMU for the Airbus A319/A320 operators. In addition this requirement is due to a recently identified potential overboost situation on A320's in certain flight conditions with the calibration for the maximum fuel flow on the current FMU 530Mk2.

(3) Objective

Incorporation of this modification is designed to convert any FMU 530 Mk 2 to the FMU 550 Mk1 standard.

(4) Substantiation

The change introduced by this Service Bulletin (Modification has shown, by engineering assessment and extensive rig testing.

C. Description

This modification recalibrates the FMU 530 Mk2 to a FMU 550 Mk1

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D. Approval

Service Bulletin No. FMU 530-73-8060 (Mod CP8060) was technically agreed by IAE Apr 28/99. The procedures 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 8

In accordance with the customer request.

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

None

H. Tooling - Price and Availability

Additional special tools are not required.

I. Weight

(1) Unit weight change ..... None.

(2) Engine weight arm change ..... Not affected.

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

J. Electrical Load Data

No change.

K. References

(1) Lucas Fuel Metering Unit Component Maintenance Manual Ref FMU 530 Chapter 73-28-02.

(2) IAE Service Bulletin V2500-ENG 73-0150.

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L. Other Publications Affected

None.

M. Family Tree Charts

Not applicable.

2. Accomplishment Instructions

A. Testing

Test the FMU as detailed in the CMM (Ref 1. K. References) and the instructions below:

(1) Disregard sub-para 6. A, 6. B, 6. C, 6. D and 6. E. and substitute the following:

6. A Use the PVR to set the resolver position to 80.3 - 80.9 degrees.

6. B Open restrictor 'L' and set rig conditions to :

HP Pump Flow = 2875 gph
FMU Back Pressure= 940 psig
FMU Spill Pressure= 245 psig

6. C Use the spanner T.611646 and adjust the maximum flow stop to give a fuel flow of 1488 - 1513 gph.
Lock the locknut

6. D Use the PVR2 to decrease the resolver position to 75 degrees then increase the position until the MV current is + 20 mA (MT 2).

6. E Write the resolver position
Write the burner flow (limit 1488 - 1513 gph)

(2) Disregard sub-para 9. Test Point 8. limits and substitute the following:

Control Status	Lane 1
HP Pump Flow	2680 gph
Resolver Position	77 degrees
FMU Spill Pressure	225 psig
FMU Back Pressure	900 psig
Burner Flow	Write down (Burner flow limit 1282 - 1362)
PDR Pressure Difference	Write down

(3) Delete Test Point 9 in sub-para 9.

(4) Disregard sub-para 13. C limits and substitute the following:

'Cock off' gauges 'F' and 'P'

HP Pump Flow	2750 gph
Burner Flow	1291 gph
FMU Spill Pressure	20 - 55 psig
FMU Back Pressure	900 psig

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(5) Disregard the Limits in sub-para 13. E and substitute the following:

Pre mod CP6968 burner flow limits (35 - 45 gph)
Post mod CP6968 burner flow limits (116 - 128 gph)

(6) Disregard sub-para 14. L limits and substitute the following:

HP Pump Flow	2750 gph
FMU Spill Pressure	20 - 55 psig
FMU Back Pressure	900 psig
Burner Flow	1291 gph

(7) Disregard sub-para 14. Q limits and substitute the following:

HP Pump Flow	2750 gph
FMU Spill Pressure	20 - 55 psig
FMU Back Pressure	900 psig
Burner Flow	1291 gph

(8) Disregard sub-para 14. U limits and substitute the following:

HP Pump Flow	2750 gph
FMU Spill Pressure	20 - 55 psig
FMU Back Pressure	900 psig
Burner Flow	1291 gph

(9) Disregard sub-para 16. C limits and substitute the following:

HP Pump Flow	2750 gph
FMU Spill Pressure	20 - 55 psig
FMU Back Pressure	900 psig
Burner Flow	1291 gph

(10) Disregard sub-para 17. C limits and substitute the following:

HP Pump Flow	2800 gph
FMU Spill Pressure	347 psig
FMU Back Pressure	1080 psig
Burner Flow	1291 gph

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B. Recording Action

(1) Fuel Metering Unit

(a) Replace the Name Plate

1 Remove the two bolts (160), then remove the name plate (170).

2 Mark the new name plate to read FMU 550 Mk1.

3 Attach the new nameplate (170) to the FMU body assembly with two bolts (160). Torque the bolts to 2,3 N.m (20 lbf in.).

(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

New P/N	Qty	Unit Price	Lead Time	Nomenclature	Old P/N	I/D Code
77872821	1	TBA	TBA	Plate, Name	77872821	2

B. Parts to be reworked and re-identified:

None

C. Consumable Parts

None

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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:

Description	Type No
Fuel Metering Unit	FMU 530 Mk 2

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