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

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DATE: Mar.31/04

V2500-A1 SERIES PROPULSION SYSTEM SERVICE BULLETIN

This document transmits the Initial Issue of Service Bulletin EV2500-73-0181

Bulletin Initial Issue

Remove	Incorporate	Reason for change
	Pages 1 to 7 of the Service Bulletin	Initial issue

V2500-ENG-73-0181

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 are as follows:

Page	Revision Number	Revision Date
Bulletin		
1		Mar.31/04
2		Mar.31/04
3		Mar.31/04
4		Mar.31/04
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6		Mar.31/04
7		Mar.31/04

ENGINE FUEL AND CONTROL - FUEL METERING UNIT - INTRODUCTION OF A REVISED MAIN METERING VALVE (MMV) END COVER

1. Planning Information

A. Effectivity

(1) Airbus A320

V2500-A1 Engines prior to Serial No. V0362

B. Concurrent Requirements

None.

C. Reason

(1) Problem

Cracking may occur in the Main Metering Valve (MMV) end cover mounting flange which forms part of minimum flow stop assembly of the FMU. This can result in mild fuel weepage which may adversely influence metering valve operation.

The problem has been attributed to insufficient fatigue margin at the fillet radius between the cover body and mounting flange.

(2) Evidence

The problem has been observed on units in service.

(3) Objective

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

(4) Substantiation

The changes introduced by this Service Bulletin have been the subject of satisfactory engineering assessment, a FE analysis has demonstrated that the proposed cover offers a more adequate fatigue life improvement over the original cover design.

(5) Effect of Bulletin on:

(a) Operation

Not affected.

(b) Maintenance

Not affected.

(c) Overhaul

Not affected.

(d) Repair Schemes

Not affected.

(e) Interchangeability

Affected (see 1.N. References).

(f) Fits and Clearances

Not affected.

D. Description

(1) This Service Bulletin covers the fitment to engines of a FMU incorporating design changes to prevent mild fuel weepage from the unit.

(2) A revised FMU is introduced similar to the existing unit except for the following change:

(a) A revised minimum flow stop cover is introduced featuring an increased thickness cap to flange fillet radius

(3) Existing units may be reworked. Refer to vendor Service Bulletin Goodrich Engine Control Systems FMU-500-73-8200.

(4) Units incorporating this Service Bulletin (Modification) will be identified by endorsement of the modification plate with CP8200.

E. Compliance

Category Code 6

Accomplish when the sub-assembly (i.e. 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 modifications 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

In service

Not affected.

At overhaul

Not affected.

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

H. Material Price and Availability

Modification kit not required; parts supplied as single line items.

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

No effect.

(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. Software Accomplishment Summary

Not applicable.

N. References

(1) Service Bulletin Goodrich Engine Control Systems FMU-500-73-8200.

(2) Airbus aircraft Modification No. 21820/P7924.

(3) Internal reference number 01VI007.

(4) ATA locator 73-22-52.

O. Other Publications Affected

(1) Illustrated Parts Catalogue (IPC) S-V2500-1IA Chapter/Section 73-22-52 will be revised.

(2) Aircraft Maintenance Manual, 73-22-52, Removal/Installation, Config-01.

(3) Engine Manual, 72-00-60, Removal-06, Config-01, Installation-06, Config-01.

P. Interchangeability of Parts

Affected (see 2. Material Information).

2. Material Information

A. Prices and availability:

For prices and availability of parts refer to vendor Service Bulletin Goodrich Engine Control Systems FMU-500-73-8200.

B. Vendor units affected by this bulletin:

Applicability: - For each V2500 engine to incorporate this bulletin

The type of equipment affected by this Service Bulletin (Modification) is listed below for information only:

All Engines

73-22-52

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	OLD PART NO.	INSTR DISP
01100	FMU500MK4	1	Meter, fuel (VK031)	FMU500MK4	(A)(S1)(1D)

C. Instructions disposition codes:

(A) New standard of unit is available.

(S1) Old standard of unit will be discontinued.

(1D) Old and new standards of unit are freely and fully interchangeable.

3. Accomplishment Instructions

A. Rework Instructions

Refer to Vendor Service Bulletin Goodrich Engine Control Systems FMU-500-73-8200.

B. Assembly Instructions

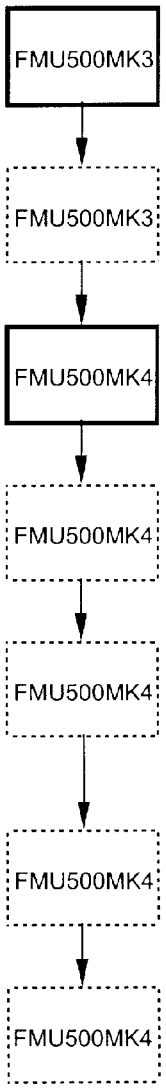
The revised FMU introduced by this Service Bulletin is freely and fully interchangeable with the existing. Remove and install in accordance with current overhaul procedures and maintenance practices (Engine Manual, 72-00-60, Removal-06, Config-01, Installation-06, Config-01. Aircraft Maintenance Manual, 73-22-52, Removal/Installation, Config-01).

C. Recording Instructions

A record of accomplishment is necessary. Refer to vendor Service Bulletin Goodrich Engine Control Systems FMU-500-73-8200.

V2500-A1 FMU Family Tree*

Service Bulletin Number	Unit Mod Plate Endorsement
BASELINE.	**NONE**
V2500-ENG-73-0017 Introduction of a FMU with a strengthened spill valve cover.	**CP6619**
V2500-ENG-73-0047 Introduction of MOOG torque motors with revised filter housing.	**NONE**
V2500-ENG-73-0091 Overspeed valve with increased Bypass flow.	**CP6968**
V2500-ENG-73-0107 Introduction of Lucas FMU with revised HP SOV torque motor.	**CP8037**
V2500-ENG-73-0122 Introduction of Lucas FMU with revised microswitch mechanism and tungsten/ carbide pushrods.	**CP8062**
V2500-ENG-73-0181 Introduction of a Lucas FMU with revised main metering valve end cover.	**CP8200**



* This family tree is not intended to represent the combination of modifications fitted to units in service

Family Tree
Fig.1

GOODRICH ENGINE CONTROL SYSTEMS
SHAFTMOOR LANE
HALL GREEN
BIRMINGHAM B28 8SW
ENGLAND
TELEPHONE: 44 121 707 7111
FAX: 44 121 707 8948

SERVICE BULLETIN TRANSMITTAL

FUEL METERING UNIT, TYPE: FMU 500

ATA REF 73-22-52

THIS PAGE TRANSMITS THE INITIAL ISSUE OF SERVICE BULLETIN FMU 500-73-8200

Please note the company name has changed from TRW Aeronautical Systems - Lucas Aerospace to Goodrich Engine Control Systems.

Reason for issue

Modification CP8200 introduces a metering valve end cover (77154080) with an increased flange fillet radius.

Action

Action 1:

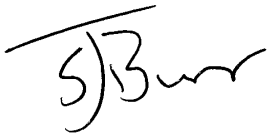
Keep this SB with the omponent Maintenance Manual. Put in this SB Transmittal page and the SB pages 1 thru 6 dated Mar 12/03.

Action 2:

Put the Bulletin Index Sheet pages 1 and 2 in the Service Bulletins Publication Ref L.SB V2500.

Remove	Incorporate	Reason
Bulletin Index Sheet, Pages 1 and 2.	Bulletin Index Sheet, Pages 1 and 2, Revision 1 dated Dec 10/03.	To include the latest information.

APPROVED FOR GOODRICH ENGINE CONTROL SYSTEMS

Signed:  Date: Mar 12/03

FAA APPROVED

SERVICE BULLETIN

FUEL METERING UNIT, TYPE FMU 500

BULLETIN INDEX SHEET

SERVICE BULLETIN NUMBER	MOD CP NUMBER	DESCRIPTION	DATE OF ISSUE	DATE OF LAST REVISION
FMU 500-73-6647	6647	Introduction of a revised metering sleeve and end cover.	May 17/90	Sep 11/90
FMU 500-73-6619	6619	Introduction of strengthened spill valve cover.	Jun 8/90	Aug 14/90
FMU 500-73-6645	6645	Deletion of specific gravity (SG) adjuster.	Nov 6/90	
FMU 500-73-6646	6646	Introduction of a Baltec 'C' seal on pressure drop piston.	Jan 2/91	
FMU 500-73-6687	6687	CANCELLED	Mar 1/91	
FMU 500-73-6734	6734	Introduction of thicker microswitch mounting in place of the guards.	May 2/94	
FMU 500-73-6800	6800	Introduction of an increased radius to the orifice edge on the spill valve piston.	Mar 24/92	
FMU 500-73-6876	6876	Introduction of improved Muirhead Vatric brushless tandem resolver.	Apr29/93	Oct 25/94
FMU 500-73-6847	6847	Introduction of a filter for the servo switching valve.	Sep 24/93	
FMU 500-73-6874	6874	Introduction of a guided poppet valve to the pressure drop and spill valve.	Sep 30/93	
FMU 500-73-6902	6902	Introduction of improved contamination protection in MOOG servo valves. Revised testing procedure.	Jan 10/95	Feb 28/95
FMU 500-73-6935	6935	Introduction of an overspeed valve with a reduced leakage path from the HP latching ports.	Nov 4/94	
FMU 500-73-6968	6968	Introduction of a overspeed valve with a increased by-pass flow.	Feb 21/97	
FMU 500-73-8052 Revision 1	8052	Introduction of a servo valve (SOV) with minimum cockpit windings.	Jul 14/97	May 02/01
FMU 500-73-8062	8062	Introduction of Direct Actuation Microswitches with Gold Alloy Contacts and new PRV and OSV Pushrods.	Jun 19/98	Feb 9/99
-	NOTE: THIS INDEX WAS TERMINATED ON DEC 10/03. ALL SERVICE BULLETINS ISSUED AFTER THIS DATE WILL BE PUT IN THE COMPONENT MAINTENANCE MANUAL.		-	-

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SERVICE BULLETIN

ENGINE - FUEL AND CONTROL - FUEL METERING UNIT, TYPE FMU 500
INTRODUCTION OF A METERING VALVE END COVER (77154080)
WITH AN INCREASED FLANGE FILLET RADIUS

1. Planning information

   A. Effectivity

      Fuel Metering Unit (FMU) Type:

      FMU 500 Mk 3 and Mk 4.

   B. Concurrent Requirements

      None.

   C. Reason

      Problem

      There have been four occurrences of cracks in the metering valve end cover (77138581) flange.

      Substantiation

      Stress analysis has show that an increase in the flange fillet radius on the metering valve end cover will increase the flange strength sufficiently to prevent cracks.

      Objective

      The strengthened metering valve end cover introduced by this Service Bulletin will keep the reliability of the unit at an acceptable level.

   D. Description

      The flange fillet radius on the metering valve end cover (77138581) has been increased from the limits 0.020 to 0.030 in. (0,51 to 0,76 mm) to the limits 0.195 to 0.215 in. (4,95 to 5,46 mm), Ref Fig 1.

      This Service Bulletin gives the accomplishment instructions for the maintenance facility to replace the installed metering valve end cover assembly (77138583) with the new metering valve end cover assembly (77154080).

E. Compliance

Category Code 6.

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

F. Approval

Service Bulletin No. FMU 500-73-8200 (Mod CP 8200) was technically agreed by IAE on Jan 20/2003. The part number changes and/or part modifications described in this Service Bulletin have been shown to comply with the applicable Federal Aviation Regulations and are FAA approved for those units listed in this Service Bulletin.

G. Manpower

(1) In Service

Not affected.

(2) At Repair

Not affected.

H. Weight and Balance

Unit weight change - None.

Engine weight arm change - No effect.

I. Electrical Load Data

Not affected.

J. Software Accomplishment Summary

Not applicable.

K. References

Component Maintenence Manual - FMU 500, Chapter 73-22-52.

IAE Service Bulletin V2500 ENG73-0181

L. Other Publications Affected

None.

M. Interchangeability or Intermixability of Parts

Not affected.

2. Material Information

A. Material - Price and Availability

Modification Kit CP8200 is necessary (Refer to Para 2.C. for details).

B. Industry Support Information

Not applicable.

C. Parts specified for replacement.

Parts to be replaced are as follows:

New P/N	Description	Old P/N	Qty	Unit Price	Instruction
77154080	Metering Valve End Cover Assembly	77138583	1	TBA	Scrap

D. Consumable Parts

Consumable parts to be purchased are as follows:

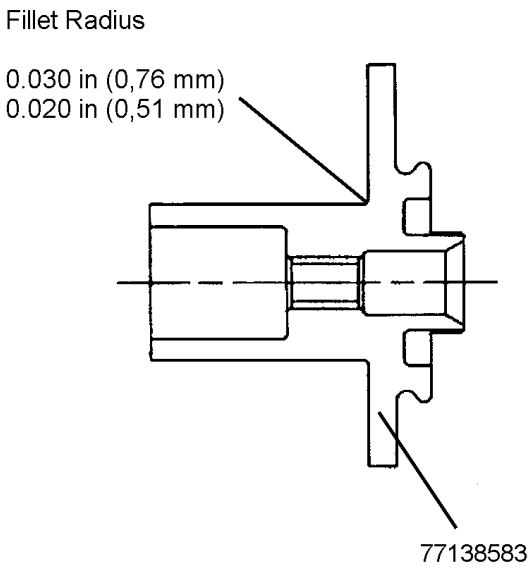
P/N	Description	Qty	Unit Price	Instruction
GTS345-124	Sealing Ring	1	TBA	Scrap
GTS345-106	Sealing Ring	1	TBA	Scrap

E. Reidentified Parts

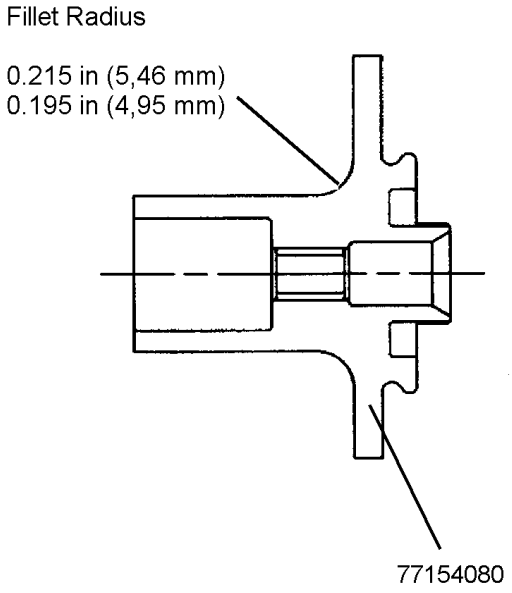
None.

F. Tooling - Price and Availability

Not applicable.



Before Mod CP8200



After Mod CP8200

Pre and Post Modification CP8200 Metering Valve End Cover Assembly
Figure 1

3. Accomplishment Instructions

A. General.

(1) Replace the metering valve end cover assembly (77138583), Ref Fig 1.

(2) When the metering valve end cover assembly (77138583) is replaced you must

— record the unit type, serial number and reason for removal on a label and attach the label to the rejected metering valve end cover assembly (77138583)

— send the rejected cover to Goodrich at the address that follows:

Product Support
Project Leader - V2500
Goodrich Control Systems Ltd
Engine Control Systems
Shaftmoor Lane
Hall Green
Birmingham, B28 8SW

B. Procedure.

(1) Remove the metering valve end cover assembly (77138583), Ref Component Maintenance Manual 73-22-52 DISASSEMBLY, Page Block 301.

(2) Install the post mod CP8200 metering valve end cover assembly (77154080), Ref Component Maintenance Manual 73-22-52 ASSEMBLY, Page Block 701 and Fig 1.

(3) Test the unit, Ref Component Maintenance Manual 73-22-52 TEST AND FAULT ISOLATION, Page Block 101.

C. Recording action.

(1) When the modification has been completed put the modification number CP8200 on the unit modification plate.

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