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

RR-DERBY

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DATE: Aug.14/01

V2500-A5 PROPULSION SYSTEMS SERVICE BULLETIN

This document transmits the Initial Issue of Service Bulletin EV2500-73-0173

Bulletin Initial Issue

Remove	Incorporate	Reason for change
	Pages 1 to 12 of the Service Bulletin	Initial issue

V2500-ENG-73-0173

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LIST OF EFFECTIVE PAGES

The effective pages to this Service Bulletin are as follows:

Page	Revision Number	Revision Date
Bulletin		
1		Aug.14/01
2		Aug.14/01
3		Aug.14/01
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ENGINE FUEL AND CONTROL - FUEL METERING UNIT - INTRODUCTION OF A TRW LUCAS AEROSPACE SWITCHABLE FUEL METERING UNIT SUITABLE FOR ALL V2500-A5 ENGINE MODELS

1. Planning Information

A. Effectivity

(1) Airbus A319

V2522-A5, V2524-A5 and V2527M-A5 Engines prior to Serial No.V11025 and including V11036.

(2) Airbus A320

V2527-A5, V2527E-A5 Engines prior to Serial No.V11025 and including V11036.

(3) Airbus A321

V2530-A5, V2533-A5 Engines prior to Serial No.V11025 and including V11036.

(4) ATA locator 73-22-52

B. Concurrent Requirements

V2522-A5, V2524-A5 & V2527M-A5 engines only

This Service Bulletin must only be fitted to engines which embody as a minimum IAE V2500 EEC software to Service Bullein 73-0159 (see N.1). Higher standards of EEC software are also acceptable.

C. Reason

(1) Condition

There is a customer requirement to introduce a common TRW Lucas Aerospace Fuel Metering Unit (FMU) with switchable Common Flow/High Flow maximum flow stop.

This allows the commonisation of the Airbus A319, A320 and A321 standards of FMU, which is considered logistically advantageous for mixed fleet operators.

(2) Background

See (1) Condition.

(3) Substantiation

The changes introduced by this Service Bulletin have been the subject of satisfactory engineering analysis, vendor rig testing and trial engine installation of a representative unit.

(4) Objective

Incorporation of the changes introduced by this Service Bulletin (Modification) is designed to satisfy customer requirements.

(5) Effect of Bulletin on:

(a) Operation

Not affected

(b) Maintenance

Affected

(c) Overhaul

Affected

(d) Repair Schemes

Not affected

(e) Interchangeability

Affected (See 1.N)

(f) Fits and Clearances

Not affected

D. Description

(1) This Service Bulletin introduces a TRW Lucas Aerospace FMU similar to the existing unit except for a switchable Common Flow/High Flow maximum fuel flow stop assembly, which allows the unit to be switched to suit all V2500-A5 model applications.

The changes introduced are:

(a) The external single set fuel flow stop mechanism has been deleted.

(b) An external switchable two position maximum fuel flow stop has been introduced which can be set for either A319/A320 or A321 aircraft applications.

(c) A single reversible nameplate is introduced which, in conjunction with the stop setting letter and FMU dataplate directive, will facilitate clear unambiguous identification of each flow setting.

(d) A security seal system onto the above switchable fuel flow stop and the reversible nameplate.

(e) To facilitate installation of the security seal lock wire, the four existing retaining bolts have been replaced by lock wire compatible replacements.

(2) Existing FMUs may be reworked - refer to TRW Lucas Service Bulletin FMU 550-73-8215.

(3) Units incorporating this Service Bulletin will be identified by a new type number (see 2.A.).

E. Compliance

Category Code 7

Accomplish when supply of superseded parts has been depleted.

F. 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 models listed.

G. Manpower

(1) In service

Not affected

(2) At overhaul

Not affected

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

H. Material Price and Availability

For prices and availability of future spares, refer to 2. Material Information

I. Tooling Price and Availability

Special tools are not required to accomplish this Service Bulletin

J. Industry Support Information

Not applicable

K. Weight and Balance

(1) Weight Change

Plus 0.2 lb (+0.08 kg)

(2) Moment Arm

16.5 in (419 mm) forwards of datum.

(3) Datum

Engine Front Mount Centreline (Power Plant Station PPS 100).

L. Electrical Load Data

This Service Bulletin has no effect on the aircraft electrical load

M. Software Accomplishment Summary

Not applicable

N. References

(1) Internal reference 99VI005

(2) The following IAE V2500 Service Bulletin must be fitted prior to or concurrently with this Service Bulletin as the minimum technical standard of EEC software:

73-0159 PROVIDE A NEW ELECTRONIC ENGINE CONTROL WITH SCN14/S SOFTWARE

(3) Engine Manual, 72-00-60, Removal-06, Config-02 and Installation-06, Config-02

(4) Aircraft Maintenance Manual, 73-22-52, Removal/Installation, Config-02

(5) TRW Lucas Service Bulletin FMU 550-73-8215

(6) Aircraft Modification No's. 31491 and 31493.

(7) Airbus Service Bulletin A320-73-1074.

O. Other Publications Affected

(1) Illustrated Parts Catalogue (IPC), 2IA, 5IA, 6IA, 7IA, 73-22-52 will be revised.

(2) Airbus Illustrated Parts Catalogue, 73-22-52

(3) Engine Manual, 72-00-60, Rework 002

(4) Aircraft Maintenance Manual, 73-22-52, Adjustment/Test Config-3

P. Interchangeability of Parts

Not affected.

2. Material Information

A. New production parts

PART NO.	QTY	UNIT PRICE US DOLLARS
FMU56OMK1	1	Price on application
FMU57OMK1	1	Price on application

B. Vendor units affected by this bulletin:

Applicability: For each V25OO engine to incorporate this Bulletin.

The type of equipment affected by this modification is listed below for information only:

V2522-A5, V2524-A5, V2527-A5, V2527E-A5 and V2527M-A5 Models only

73-22-52

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
O11OO	FMU56OMK1	1	Meter, fuel (VKO131)	-	FMU55OMK1	(A)(S1) (1D)

V253O-A5 and V2533-A5 Models only

73-22-52

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
O11OO	FMU57OMK1	1	Meter, fuel (VKO131)	-	FMU53OMK2	(A)(S1) (1D)

C. Instructions disposition codes:

(A) New standard of unit will be made available from July 2OO1.

(S1) Old and new units are freely and fully interchangeable.

(1D) Old standard of unit may be reworked.

3. Accomplishment Instructions

A. Rework Instructions

Refer to TRW Lucas Vendor Service Bulletin FMU 550-73-8215

B. FMU switching Instructions

CAUTION: LOCKWIRE FRAGMENTS WILL BE LIBERATED DURING THE REWORK PROCEDURE. ALL SUCH FRAGMENTS MUST BE RECOVERED

(1) FMU switching on engine installed FMU

It is recommended that the engine harness is disconnected from the FMU and flowmeter to provide sufficient working space (Refer to Engine Manual, 72-00-60, Removal-06.

Before you change the setting, make sure that the FMU part number and stop setting letter correctly match each other. Report mismatch to your local quality representative.

FMU PART NUMBER	POSITION SETTING LETTER
FMU560MK1	O
FMU570MK1	X

(a) To switch FMU560MK1 to FMU570MK1, carry out switch procedure in accordance with TRW Lucas Vendor Service Bulletin FMU 550-73-8215, supplement 2

(b) To switch FMU570MK1 to FMU560MK1, carry out switch procedure in accordance with TRW Lucas Vendor Service Bulletin FMU 550-73-8215, supplement 3

(c) Re-connect harness (Refer to Engine Manual, 72-00-60, Installation-06)

(2) FMU switching on aircraft engine installed FMU

(a) Gain access to the engine (Refer to AMM 71-13-00). Take associated protective actions to avoid injury to persons and damage to engine.

(b) It is recommended that the engine harness be disconnected from the FMU and flowmeter to allow sufficient working space (Refer to AMM 73-22-52)

Before you change the setting, make sure that the FMU part number and stop setting letter correctly match each other. Report mismatch to your local quality representative.

FMU PART NUMBER	POSITION SETTING LETTER
FMU560MK1	O
FMU570MK1	X

(i) To switch FMU560MK1 to FMU570MK1, carry out switch procedure in accordance with TRW Lucas Vendor Service Bulletin FMU 550-73-8215, supplement 2

(ii) To switch FMU570MK1 to FMU560MK1, carry out switch procedure in accordance with TRW Lucas Vendor Service Bulletin FMU 550-73-8215, supplement 3

(c) Re-connect engine harness (Refer to AMM 73-22-51)

(d) Close access to the engine (Refer to AMM 71-13-00)

(e) Do the operational test of starter valve and FMU (Refer to AMM TASK 80-13-51).

(f) Do the operational FADEC test as per AMM 73-22-00.

(3) FMU switching on removed unit

(a) To switch FMU560MK1 to FMU570MK1, carry out switch procedure in accordance with TRW Lucas Vendor Service Bulletin FMU 550-73-8215, supplement 2

(b) To switch FMU570MK1 to FMU560MK1, carry out switch procedure in accordance with TRW Lucas Vendor Service Bulletin FMU 550-73-8215, supplement 3

C. Assembly Instructions

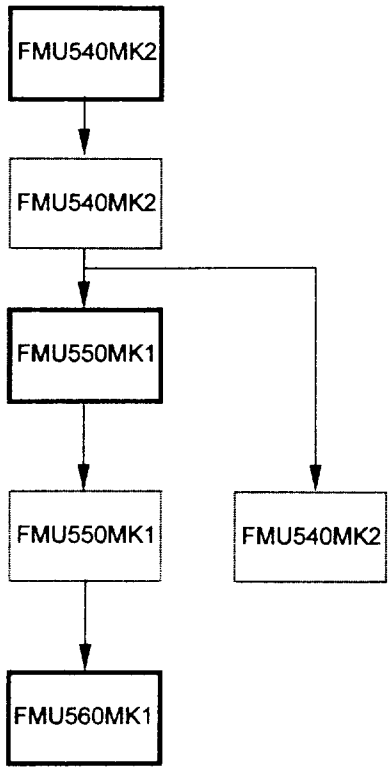
The part introduced by this Service Bulletin is interchangeable. Remove and install in accordance with current overhaul procedures and maintenance practices (Engine Manual, 72-00-60, Removal-06, Config-2 and Installation-06, Config-2 and Aircraft Maintenance Manual, 73-22-52, Removal/Installation, Config-2).

D. Recording Instructions

A record of accomplishment is required.

V2522-A5 and V2524-A5 FMU Family Tree *

Service Bulletin Number	Unit Mod Plate Endorsement
V2500-ENG-73-0117 Introduction of revised Fuel Meter with reduced fuel flow	**None**
V2500-ENG-73-0123 Introduction of a revised Fuel Metering Unit with Tungsten/Carbide coated SOV/PRSOV push rods	**CP8061**
V2500-ENG-73-0127 Introduction of a Lucas Fuel Metering Unit with revised maximum fuel flow stop (Airbus A319-131/132/133 apps)	**None**
V2500-ENG-73-0171 Introduction of a revised Fuel Metering Unit with supplementary SOV torque motor cap clamping	**CP8189**
V2500-ENG-73-0173 Introduction of a TRW Lucas Aerospace switchable Fuel Metering Unit suitable for all V2500-A5 Engine Models	**None**



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

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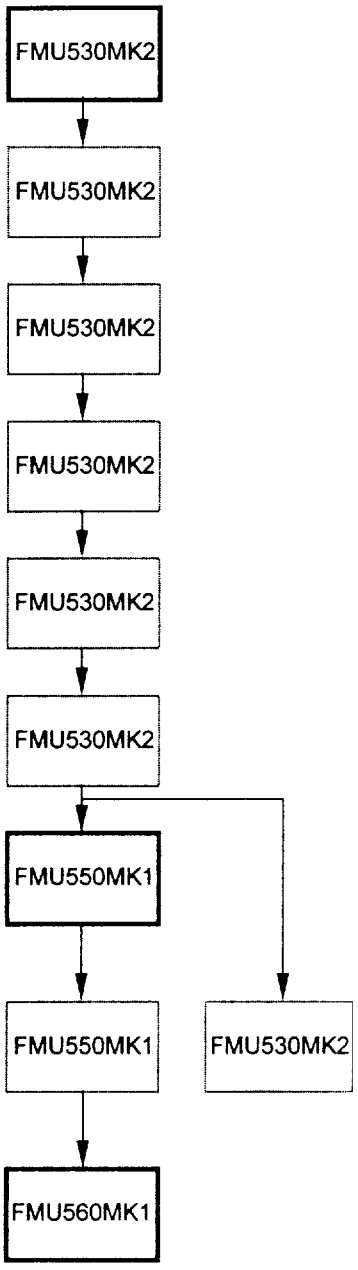
V2522-A5 and V2524-A5 FMU family tree
Fig 1

V2527-A5 and V2527E-A5 FMU Family Tree *

Service Bulletin Number	Unit Mod Plate Endorsement
V2500-ENG-73-0057 Introduction of revised push rod seal, bearing-pressure and overspeed valves	**None**
None Introduction of a desensitised overspeed valve	**CP6935**
V2500-ENG-73-0091 Introduction of revised overspeed valve with increased bypass flow	**CP6938**
V2500-ENG-73-0099 Introduction of Fuel Metering Unit with revised microswitch and plunger return spring	**CP8002**
V2500-ENG-73-0107 Introduction of Fuel Metering Unit with revised HP SOV torquemotor	**CP8037**
V2500-ENG-73-0123 Introduction of a revised Fuel Metering Unit with Tungsten/Carbide coated SOV/PRSOV push rods	**CP8061**
V2500-ENG-73-0150 Introduction of a Lucas Fuel Metering Unit with revised maximum fuel flow stop (Airbus A320-232/233 applications)	**None**
V2500-ENG-73-0171 Introduction of a revised Fuel Metering Unit with supplementary SOV torque motor cap clamping	**CP8189**
V2500-ENG-73-0173 Introduction of a TRW Lucas Aerospace switchable Fuel Metering Unit suitable for all V2500-A5 Engine Models	**None**



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

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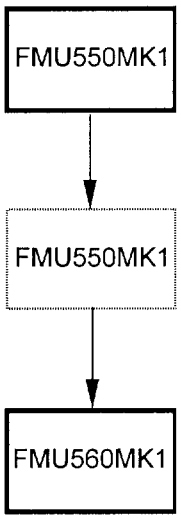
V2527-A5 and V2527E-A5 FMU family tree
Fig 2

V2527M-A5 FMU Family Tree *

Service Bulletin Number	Unit Mod Plate Endorsement
V2500-ENG-73-0127 Introduction of a Lucas Fuel Metering Unit with revised maximum fuel flow stop (Airbus A319-131/132/133 apps)	**None**
V2500-ENG-73-0171 Introduction of a revised Fuel Metering Unit with supplementary SOV torque motor cap clamping	**CP8189**
V2500-ENG-73-0173 Introduction of a TRW Lucas Aerospace switchable Fuel Metering Unit suitable for all V2500-A5 Engine Models	**None**



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

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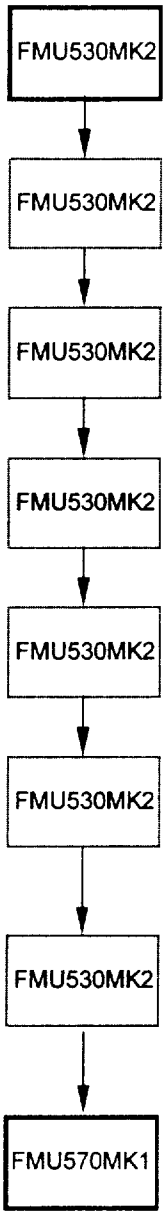
V2527M-A5 FMU family tree
Fig 3

V2530-A5 and V2533-A5 FMU Family Tree *

Service Bulletin Number	Unit Mod Plate Endorsement
V2500-ENG-73-0057 Introduction of revised push rod seal, bearing-pressure and overspeed valves	**None**
None Introduction of a desensitised overspeed valve	**CP6935**
V2500-ENG-73-0091 Introduction of revised overspeed valve with increased bypass flow	**CP6938**
V2500-ENG-73-0099 Introduction of Fuel Metering Unit with revised microswitch and plunger return spring	**CP8002**
V2500-ENG-73-0107 Introduction of Fuel Metering Unit with revised HP SOV torquemotor	**CP8037**
V2500-ENG-73-0123 Introduction of a revised Fuel Metering Unit with Tungsten/Carbide coated SOV/PRSOV push rods	**CP8061**
V2500-ENG-73-0171 Introduction of a revised Fuel Metering Unit with supplementary SOV torque motor cap clamping	**CP8189**
V2500-ENG-73-0173 Introduction of a TRW Lucas Aerospace switchable Fuel Metering Unit suitable for all V2500-A5 Engine Models	**None**



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

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V2530-A5 and V2533-A5 FMU family tree
Fig 4

TRW Aeronautical Systems - Lucas Aerospace

SERVICE BULLETIN

PUBLICATION TRANSMITTAL

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TELEPHONE: 0121-707-7111
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Date: Aug 16/01

FUEL METERING UNIT TYPE FMU 550

This document transmits Service Bulletin FMU 550-73-8215 together with the Bulletin Index Sheet.

Remove	Incorporate	Reason
-	Bulletin Index Sheet Pages 1 and 2 dated Aug 16/01	First Issue
-	SB FMU 550-73-8215 Pages 1 thru 26	First Issue

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TRW Aeronautical Systems - Lucas Aerospace

SERVICE BULLETINS

FUEL METERING UNIT, TYPE FMU 550

BULLETIN INDEX SHEET

SERVICE BULLETIN NUMBER	MOD CP NUMBER	DESCRIPTION	DATE OF ISSUE	DATE OF LAST REVISION
FMU 550-73-8215	8215	Conversion from FMU 550 Mk1 to FMU 560 Mk1/FMU 570 Mk1	Aug 16/01	-

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TRW Aeronautical Systems - Lucas Aerospace

SERVICE BULLETIN

This Service Bulletin complies with British Civil Airworthiness Requirements, Section A Chapter A5-3

Date: Aug 16/2001

Signed

CAA Approval No. DAI/2878/49

SERVICE BULLETIN NUMBER FMU 550-73-8215

ENGINE - FUEL AND CONTROL - FUEL METERING UNIT - CONVERSION FROM FMU 550 MK1 TO FMU 560 MK1/FMU 570 MK1

MOD NO CP8215

1. Planning Information

A. Effectivity

(1) Engine:

(a) V2500 A5.

(2) Equipment:

(a) Fuel Metering Unit - Type FMU 550.

(3) Concurrent requirements

The mods that follow must be embodied before the conversion:

— CP 8189, clamps to reinforce SOV torque motor flange

— Non Mod Service bulletin FMU 550-73-101, rework instructions for machining the main metering valve plunger.

B. Reason

(1) Condition

Customer request to have the ability to convert any FMU 550 Mk1 to the FMU 560 Mk1/FMU 570 Mk1 standard.

(2) Objective

Incorporation of this modification is designed to convert any FMU 550 Mk1 to the FMU 560 Mk1/FMU 570 Mk1 standard.

C. Description

The conversion is effected by ensuring modification CP 8189 (clamps to reinforce SOV torque motor flange) and Non Mod Service Bulletin FMU 550-73-101 (rework instructions for machining the main metering valve plunger) have already been embodied. If not, then Mod. CP 8189 and Non Mod Service Bulletin FMU 550-73-101 must be embodied at the time of conversion and then embody Scheme 57991/0057 (maximum flow stop switchable datum mechanism) and scheme 57991/0059 (switchable datum additional anti-tamper device).

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The unit is re-calibrated as an FMU 560 MK1/FMU 570 MK1 to provide a single FMU capable of being switched between FMU 560 MK1 (the **O** setting) and FMU 570 MK1 (the **X** setting) calibrations. After calibration the max flow stop can be readily switched between its two pre-set positions (shown as **O** or **X** visible on the mechanism). The nameplate on the unit can be reversed to also display an **O** or **X** to denote which calibration has been set. Despatch setting will be in accordance with customer instructions.

NOTE: To comply with this Service Bulletin, all FMU must first be converted to FMU 550 Mk1 standard.
To convert FMU 530 Mk2 to FMU 550 Mk1, refer to Service Bulletin FMU 530-73-8060.
To convert FMU 540 Mk2 to FMU 530 Mk2, refer to Service Bulletin FMU 540-73-8059.

D. Approval

Service Bulletin No. FMU 550-73-8215 (Mod CP8215) was technically agreed by IAE on Aug 13/2001. 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

Modification kit CP8215 is required (for details see Section 4 of this Bulletin).

Modification kit	Qty	Nomenclature	Unit price
CP 8215	1	Conversion kit	4634.22 US $

H. Tooling - Price and Availability

The special tools that follow are required.

Part Number	Description	Qty Required	Unit price
T.700186	Special spanner	1	TBA
T.700187	Special torque spanner	1	TBA
T.611645	Combination spanner	1	Existing

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I. Weight

(1) Unit weight change.....+ 0.21 lbs.

(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 550 Chapter 73-28-08.

(2) IAE Service Bulletin V2500-ENG-73-0173.

L. Other Publications Affected

None.

M. Family Tree Charts

Not applicable.

2. Accomplishment Instructions

A. Install the Switchable Datum Assembly (Ref. Figs 1 to 4)

(1) Refer to CMM FMU 550, 73-28-08, DISASSEMBLY, Page Block 301 to 399 and do as follows:

WARNING: BE CAREFUL WHEN YOU REMOVE THE FOUR BOLTS (AS21516) FROM THE SPILL VALVE COVER (77139323). THE SPILL VALVE COVER (77139323) HAS A SPRING LOAD WHICH MAY CAUSE INJURY TO PERSONS.

(a) Use finger pressure to hold the spill valve cover (77139323) in position, and then release and remove the four bolts (AS21516).

(b) Discard the four bolts (AS21516) and the four washers (GTS 51-8H).

(c) Install the information plate (77153675) to the spill valve cover (77139323).

(d) Secure the spill valve cover (77139323) with four bolts (AS21517) and four new washers (GTS51-8H). Torque the four bolts (AS21517) to 92 lbf in. (10,39 Nm).

(e) Release and remove the two bolts (AS21510) that secure the maximum flow stop housing assembly (77139314). Keep the two bolts (AS21510).

(f) Refer to the CMM FMU 550, 73-28-08, Illustrated Parts List, Page Block 1001 to 1099 and remove the maximum flow stop housing assembly (77139314) and the associated items.

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(g) Use special spanner T.700186 to set the maximum flow stop adjuster (77153667) position on the switchable datum assembly (77154070) to nominally the same projection as the maximum flow stop adjuster (77139316) on the maximum flow stop assembly (77139314) just removed.

(h) Install a new self-locking nut (GTS149-2) on the maximum flow stop adjuster (77153667) to keep the maximum flow stop adjuster (77153667) in this position.

(i) Install a new O-ring seal (GTS345-113) to the switchable datum assembly (77154070). Install the switchable datum assembly (77154070) in position on the FMU.

(j) Check that the spirol pin that makes the pivot for the spring latch is next to a bolt (AS21517) on the spill valve cover (77139323), Ref. Fig 2.

(k) Use the two bolts (AS21510) and two new washers (GTS51-8H) to secure the switchable datum assembly (77154070) in position. Torque the two bolts (AS21510) to 92 lbf in. (10,39 Nm).

(l) Torque the self-locking nut (GTS149-2) on the maximum flow stop adjuster (77153667) to 92 lbf in. (10,39 Nm). Use special torque spanner T.700187.

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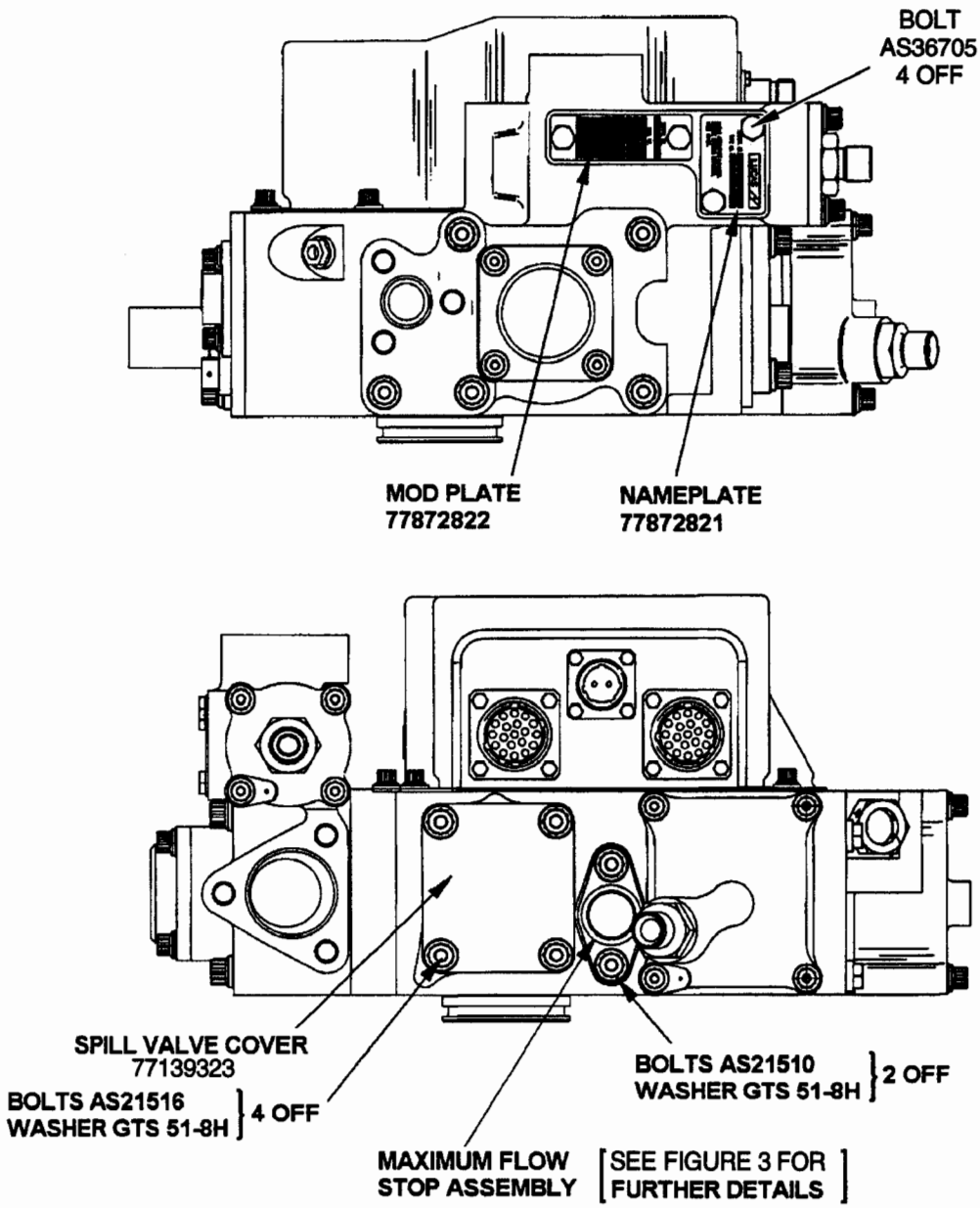

BEFORE MODIFICATION

TP 18274

Details of Pre Mod CP8215 Assembly
Figure 1

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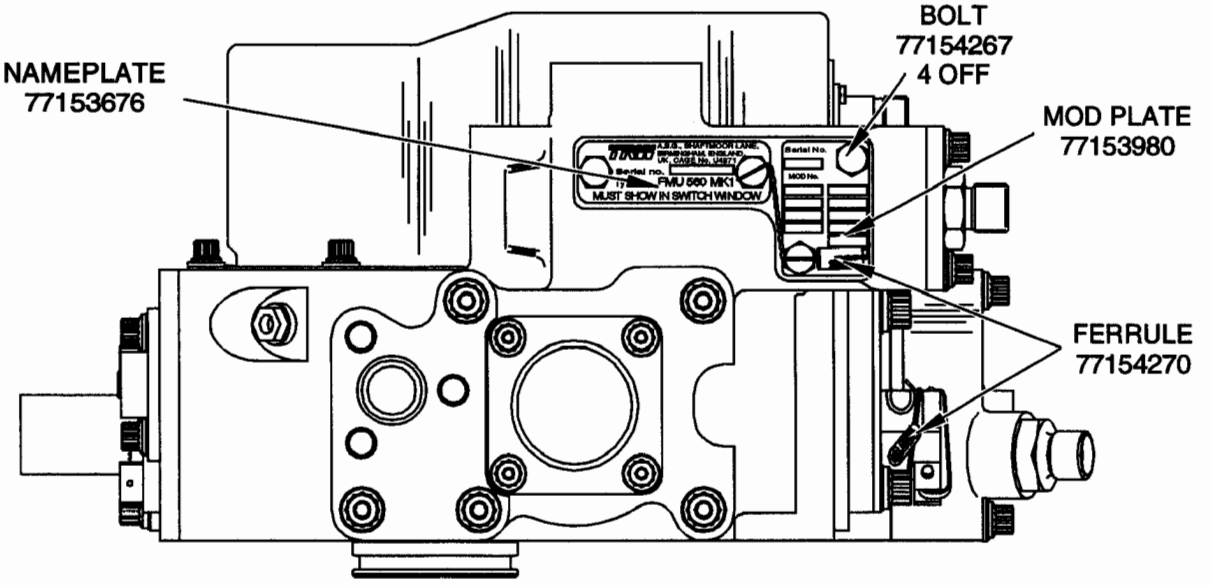
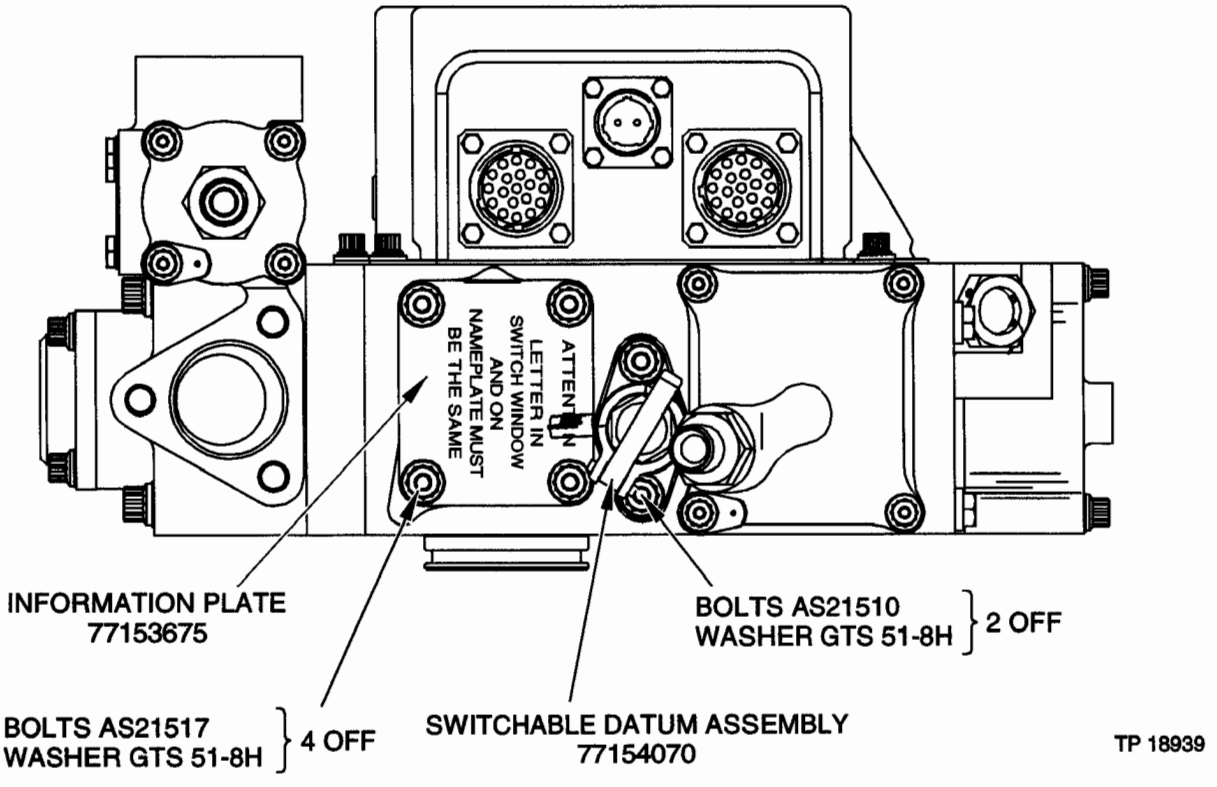


AFTER MODIFICATION



Details of Mod CP8215 Assembly
Figure 2

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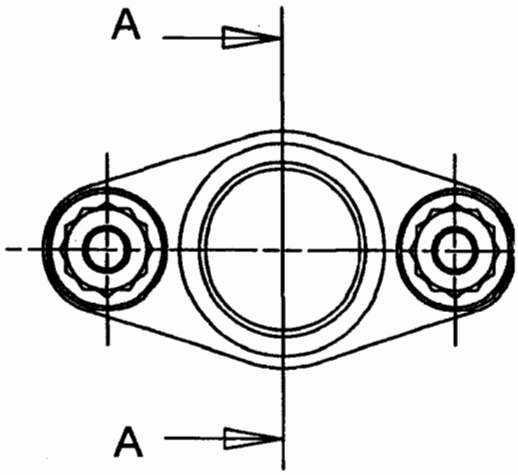

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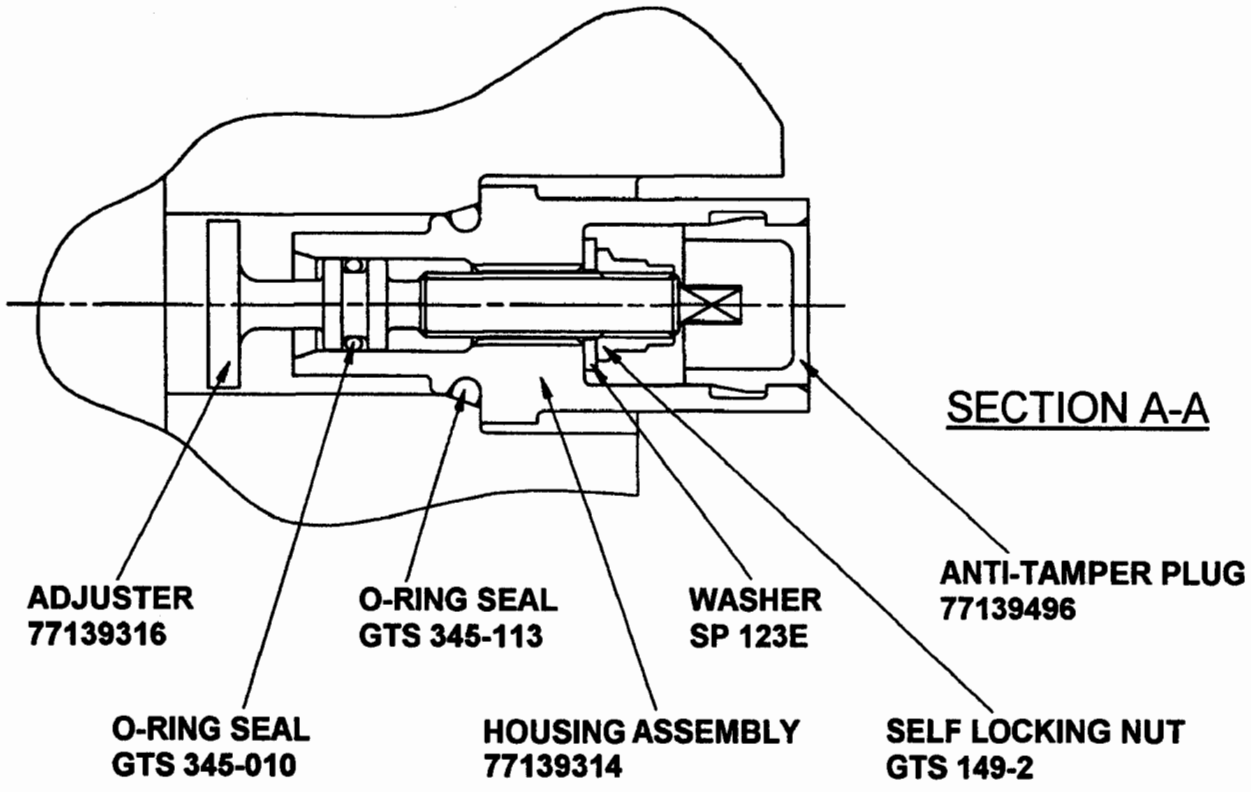

Details of Pre Mod CP8215 Switchable Datum Assembly
Figure 3

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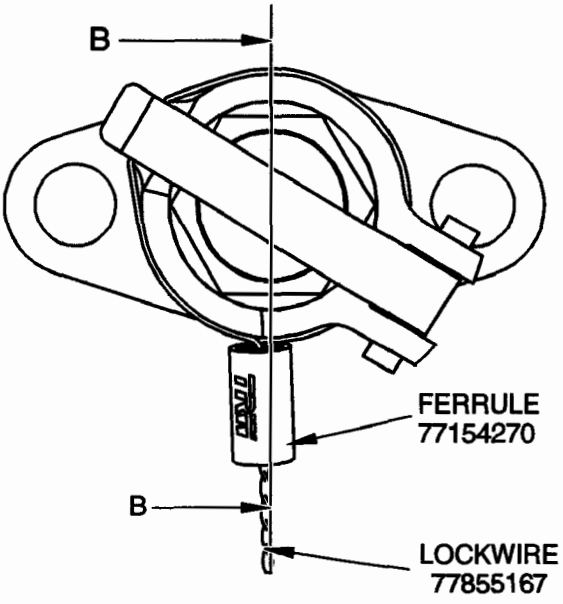
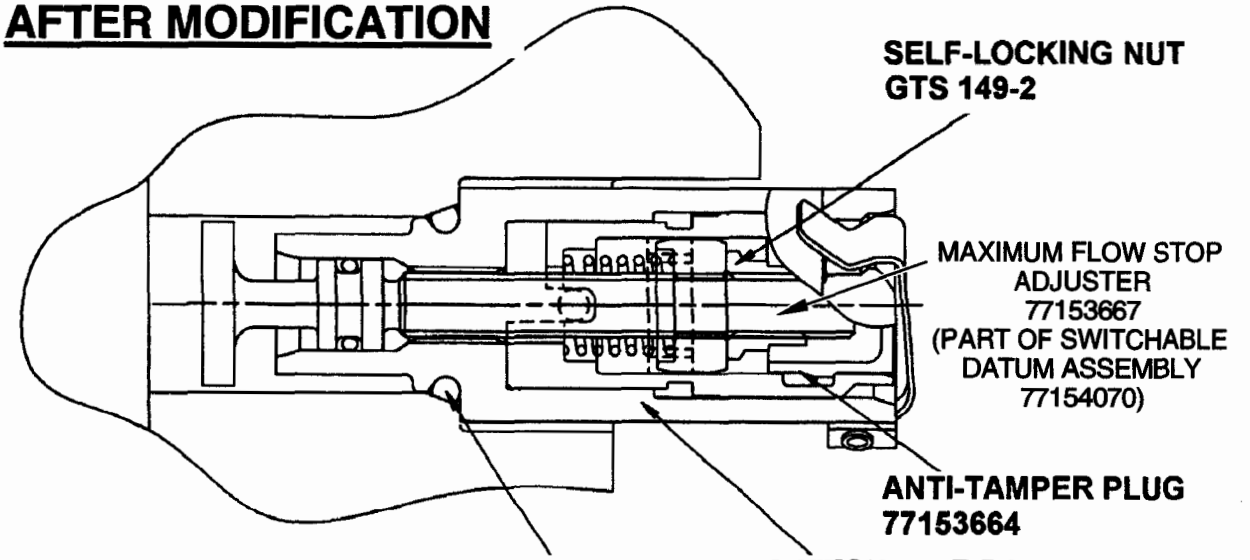


AFTER MODIFICATION



SECTION B-B

NOTE: WIRE-LOCKING NOT SHOWN ON SECTION B-B

NOTE: ANTI-TAMPER PLUG, WIRE LOCKING AND FERRULES ARE INSTALLED ONLY AFTER FINAL CALIBRATION

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Details of Mod CP8215 Switchable Datum Assembly
Figure 4

3. Do a Test of the FMU

A. Procedure

(1) Refer to CMM FMU 550, 73-28-08, TESTING, Page Block 101 to 199 to do a test and calibrate the FMU. Refer to the test that follows for details on setting the Max and Min Flow Stop.

(2) Set the MAX AND MIN FLOW STOP

(a) Make a record of the Corrected SG value which is defined as

Corrected SG = (0.00074 x (T-20)) + SG_R

Where T = Recorded rig fuel temperature (^{o} C) at which rig fuel SG was measured

and

SG_R = Recorded rig fuel SG value.

When the Corrected SG value is recorded do as follows.

(b) Set the Max Flow Stop Setting 'O' (FMU 560 - Common Flow)

1 Open restrictor valve 'A' then set the conditions that follow:

Pump Flow	= 2875 gph
Resolver Position	= 80.3 deg to 80.9 deg
Spill Return Pressure	= 245 psig
FMU Back Pressure	= 940 psig

2 Use the recorded Corrected SG value to get the maximum flow limits, Ref. Table 1.

3 Screw in the maximum flow stop to set the flow to these limits with the conditions as above.

4 Use special torque spanner T.700187 to make sure the locknut (GTS149-2) is tightened to the correct torque, Ref. CMM FMU 550, 73-28-08, ASSEMBLY, Page Block 701 to 799.

5 Reduce the resolver position to 75 deg then increase the position until the metering valve TM current reads +20mA. Record the parameters that follow:

— the metering valve position.

— the flow.

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Corrected SG range	Flow Limits on Max Stop Setting 'O'	
	Min (gph)	Max (gph)
0.771 - 0.775	1515	1533
0.776 - 0.779	1510	1529
0.780 - 0.783	1506	1525
0.784 - 0.787	1502	1521
0.788 - 0.791	1498	1518
0.792 - 0.795	1495	1514
0.796 - 0.799	1491	1510
0.800 - 0.803	1487	1506
0.804 - 0.807	1483	1502
0.808 - 0.811	1480	1499
0.812 - 0.815	1476	1495
0.816 - 0.819	1473	1491
0.820 - 0.823	1469	1488
0.824 - 0.827	1465	1484
0.828 - 0.831	1462	1481
0.832 - 0.836	1458	1476

Table 1

(c) Set the Max Flow Stop Setting 'X' (FMU 570 - High Flow)

1 Reduce the resolver position to 75 deg.

Switch the Switchable Datum as follows, Ref. Fig 5:

2 Unclip the spring latch from the housing.

CAUTION: DO NOT USE A SCREWDRIVER WHOSE DIMENSIONS ARE MORE THAN 1/2 IN. BLADE WIDTH AND MORE THAN 8 IN. LONG.

3 Place the flat bladed screwdriver in the slot on the sleeve and move the sleeve up as far as it will travel.

NOTE: Careful use of the edge of the information plate as a lever for the screwdriver is acceptable.

4 Keep the sleeve raised and at the same time, use a $^{5}/_{8}$ in. socket wrench to turn the exposed hexagon 5 deg counterclockwise. Remove the screwdriver from the sleeve slot.

NOTE: Turn the exposed hexagon counterclockwise as viewed from the hexagon end of the device.

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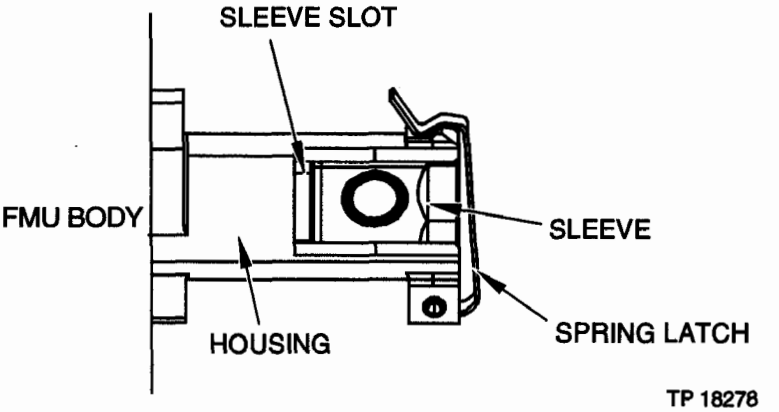

Switchable Datum Assembly
Figure 5

5 Use the $^{5}/_{8}$ in. socket wrench and continue to turn the sleeve until the device is set into the alternative setting position.

6 Check that the sleeve hexagon has returned to the fully down position and the position setting letter '**X**' is visible in the housing window.

7 Clip the spring latch back onto the housing.

8 Increase the resolver position until the metering valve TM current reads +20mA. Make a record of

— the metering valve position.

— the flow.

9 Use the recorded Corrected SG value and set the maximum flow limits, Ref. Table 2.

— Record the position

— Record the flow

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Corrected SG range	Flow Limits on Max Stop Setting 'X'	
	Min (gph)	Max (gph)
0.771 - 0.775	1900	2069
0.776 - 0.779	1894	2063
0.780 - 0.783	1889	2058
0.784 - 0.787	1884	2053
0.788 - 0.791	1880	2048
0.792 - 0.795	1875	2043
0.796 - 0.799	1870	2037
0.800 - 0.803	1865	2032
0.804 - 0.807	1861	2027
0.808 - 0.811	1856	2022
0.812 - 0.815	1852	2017
0.816 - 0.819	1847	2012
0.820 - 0.823	1843	2008
0.824 - 0.827	1838	2003
0.828 - 0.831	1834	1998
0.832 - 0.836	1829	1992

Table 2

(d) Set the Switchable Datum back to the original setting as follows Ref. Fig 5:

1 Reduce the resolver position to 75 degrees.

2 Unclip the spring latch from the housing.

CAUTION: DO NOT USE A SCREWDRIVER WHOSE DIMENSIONS ARE MORE THAN 1/2 IN. BLADE WIDTH AND MORE THAN 8 IN. LONG.

3 Place the flat bladed screwdriver in the slot on the sleeve and move the sleeve up as far as it will travel.

NOTE: Careful use of the edge of the information plate as a lever for the screwdriver is acceptable.

4 Keep the sleeve raised and at the same time, use a $^{5}/_{8}$ in. socket wrench to turn the exposed hexagon 5 deg clockwise. Remove the screwdriver from the sleeve slot.

NOTE: Turn the exposed hexagon clockwise as viewed from the hexagon end of the device.

5 Using the $^{5}/_{8}$ in. socket wrench continue to turn the sleeve until the device is set into the alternative setting position.

6 Check that the sleeve hexagon has returned to the fully down position and the position setting letter 'O' is visible in the housing window.

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7 Clip the spring latch back onto the housing.

(e) To Set the Minimum Flow Stop Setting

1 Set the conditions that follow:

Pump Flow	= 800 gph
Resolver Position	= 2.1 deg
Spill Return Pressure	= 65 psig
FMU Back Pressure	= 35 psig

2 Use the tool T.611645 to adjust the minimum flow stop until it limits the flow to 28.7 to 30.3 gph.

3 Check that the TM current is minus 5 mA, if not, adjust the resolver position to reset the TM current to minus 5mA.

4 Adjust the resolver position to 18 deg.

5 Make sure that the flow is 28.7 to 30.3 gph.

6 Record the flow and the resolver position.

(f) After final calibration of the unit, unclip the spring latch, install the anti-tamper plug (77153664) and clip the spring latch back onto the housing, Ref. Fig 4.

B. Recording Action

(1) Fuel Metering Unit

(a) Replace the Name Plate (77872821) and Modification Plate (77872822)

1 Remove the two bolts (AS36705) and remove the nameplate (77872821).

2 Record all the mod numbers on the modification plate (77872822) but do not record the mod number CP8189. Remove the two bolts (AS36705) and remove the modification plate (77872822).

3 Endorse the unit serial number on BOTH SIDES of nameplate (77153676). Install the name plate (77153676) on the unit in place of the modification plate (77872822) and secure with two bolts (77154267). Torque the two bolts (77154267) to 20 lbf in. (2,3 Nm).

NOTE: The type number displayed will be in accordance with customer instructions.

4 Endorse the modification plate (77153980) with the unit serial number and all the CP mod numbers recorded.

NOTE: Modification CP 8189 is included in the minimum technical standard of the FMU 560 MK1/FMU 570 MK1 the mod number itself does not appear on the mod plate.

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5 Install the modification plate (77153980) in place of the name plate (77872821). Secure the modification plate (77153980) with two bolts (77154267) and torque the two bolts (77154267) to 20 lbf in. (2,3 Nm).

(2) Wire Lock the Switchable Datum Assembly and the Name Plate/Modification Plate Bolts

(a) Refer to supplement No. 1 to this service bulletin for details of the wire locking procedure.

(3) Final Checks - FMU 560 Mk1

(a) Do a check of the name plate, make sure part number FMU 560 Mk1 is visible.

(b) Make sure that the stop setting letter '**O**' is visible in the housing window.

(c) Make sure that the spring latch is locked down and fully engaged on the housing.

(d) Make sure that the two ferrules are correctly crimped and secure.

(e) Make sure that the FMU serial number on the name plate (77153676) and the modification plate (77153980) are the same.

(4) Final Checks - FMU 570 Mk1

(a) Do a check of the name plate, make sure part number FMU 570 Mk1 is visible.

(b) Make sure that the stop setting letter '**X**' is visible in the housing window.

(c) Make sure that the spring latch is locked down and fully engaged on the housing.

(d) Make sure that the two ferrules are correctly crimped and secure.

(e) Make sure that the FMU serial number on the name plate (77153676) and the modification plate (77153980) are the same.

(5) Record the FMU setting on the despatch paperwork.

NOTE: The final despatch setting of the unit FMU 560 MK1 or FMU 570 MK1 will be in accordance with customer Purchase Order requirements. If the Purchase Order does not define which setting (FMU 560 Mk1 or FMU 570 Mk1), then the unit shall be set to the FMU 560 Mk1 position.

NOTE: To convert the FMU 560 Mk1 to FMU 570 Mk1, refer to Supplement No. 2 to this Service Bulletin .

NOTE: To convert the FMU 570 Mk1 to FMU 560 Mk1, refer to Supplement No. 3 to this Service Bulletin

(6) Engine

A record of accomplishment is required.

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4. 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 table 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
77154070	1	TBA	TBA	Assembly, Switchable Datum	-	1
-	-	-	-	Assembly, Maximum Flow Stop Housing	77139314	2
-	-	-	-	Adjuster, Maximum Flow Stop	77139316	2
-	-	-	-	Washer	SP 123E	2
-	-	-	-	O-Ring Seal	GTS 345-010	2
GTS 345-113	1	TBA	TBA	O-Ring Seal	GTS 345-113	1
GTS 149-2	1	TBA	TBA	Nut, Self-Locking	GTS 149-2	1
77153676	1	TBA	TBA	Nameplate	77872821	1
77153980	1	TBA	TBA	Modification Plate	77872822	1
77153675	1	TBA	TBA	Information Plate	-	1
GTS 51-8H	6	TBA	TBA	Washer	GTS 51-8H	2
AS21517	4	TBA	TBA	Bolt	AS21516	2
77153664	1	TBA	TBA	Anti-tamper Plug	77139496	1
77154267	4	TBA	TBA	Bolt, Hex Head	AS36705	2
77154270	2	TBA	TBA	Ferrule	-	1

B. Parts to be reworked and re-identified:

None

C. Consumable Parts

(1) The replacement parts that follow are required to complete the embodiment of the mod, which are not part of the modification kit.

Part No.	Qty. Per Unit	Key Word	Remarks
77855167	AR	Lock Wire	22 SWG (0.028 in. (0,071 mm)) dia stainless steel

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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 550 Mk1

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SUPPLEMENT NO 1 TO SERVICE BULLETIN NUMBER FMU 550-73-8215

ENGINE - FUEL AND CONTROL - FUEL METERING UNIT - CONVERSION FROM FMU 550 MK1 TO FMU 560 MK1/FMU 570 MK1

PROCEDURE TO WIRE LOCK THE SWITCHABLE DATUM ASSEMBLY AND THE NAME PLATE/MODIFICATION PLATE BOLTS

1. Wire Locking Procedure

A. Wire Lock the Switchable Datum Assembly (Ref. Fig 1)

(1) Wrap the lock wire around the base of the hinge and the base of the spring latch twice. Use a single piece of lock wire 22 SWG (0.028 in. (0,071 mm)) dia stainless steel (77855167), Ref. Fig 1 stages 1 thru 5.

(2) Make sure that the lock wire tail, length 0.708 in. to 0.866 in. (18 mm to 22 mm), is formed to the right of the maximum flow stop setting display window ('**X**' or '**O**'), Ref. Fig 1 stages 5 and 7.

NOTE: Make sure that the completed wire lock cannot move more than 0.08 in. (2,0 mm) in a direction parallel to the axis of the switchable datum assembly.

(3) Put the ferrule (77154270) on to the tail of the lock wire to touch the switchable datum assembly, Ref. Fig 1 stage 6.

(4) Crimp the ferrule on to the lock wire. Use a crimping tool with jaws of minimum width 0.393 in. (10 mm).

NOTE: Make sure that the thickness of the ferrule between the crimped faces is between 0.110 in. and 0.098 in. (2,8 mm and 2,5 mm).

(5) Bend the lock wire tail back over the ferrule (77154270), Ref. Fig 1 stage 7.

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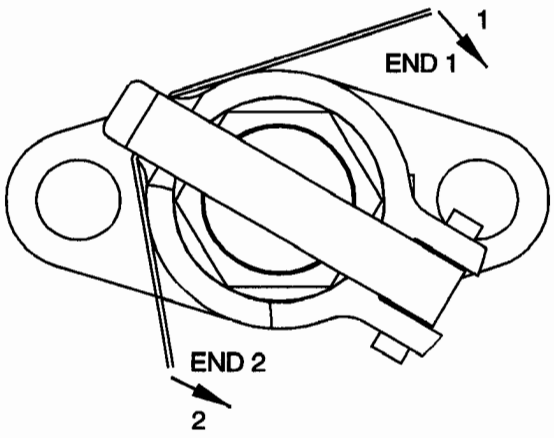
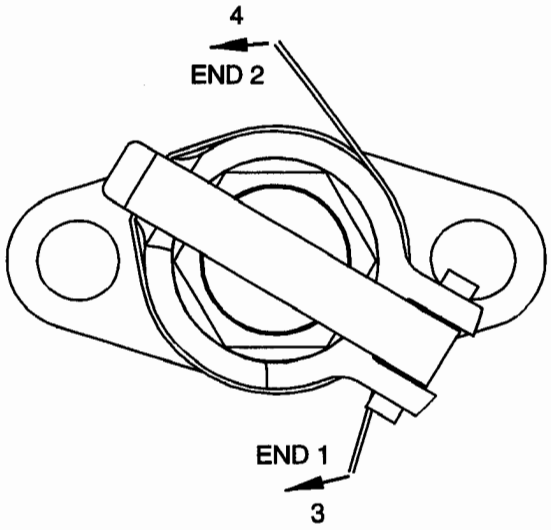


STAGE 1



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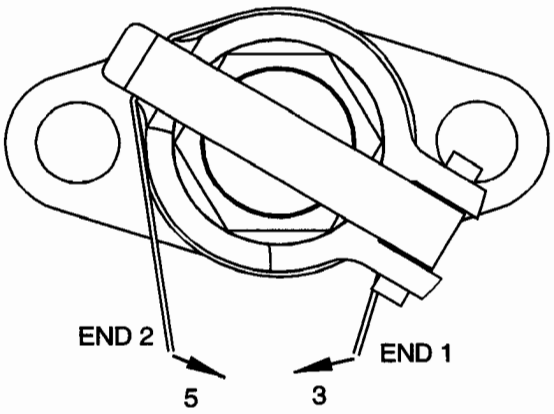

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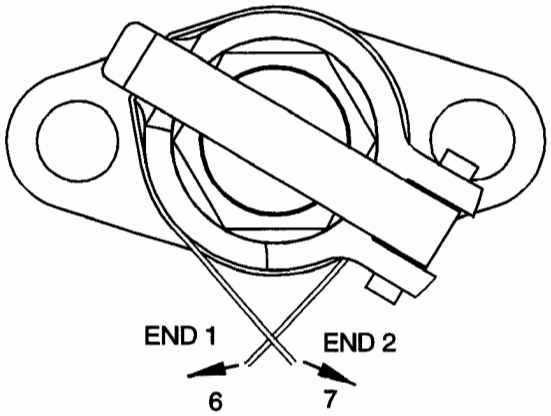

STAGE 4

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Switchable Datum Assembly Wire Locking Detail
Figure 1 (Sheet 1 of 2)

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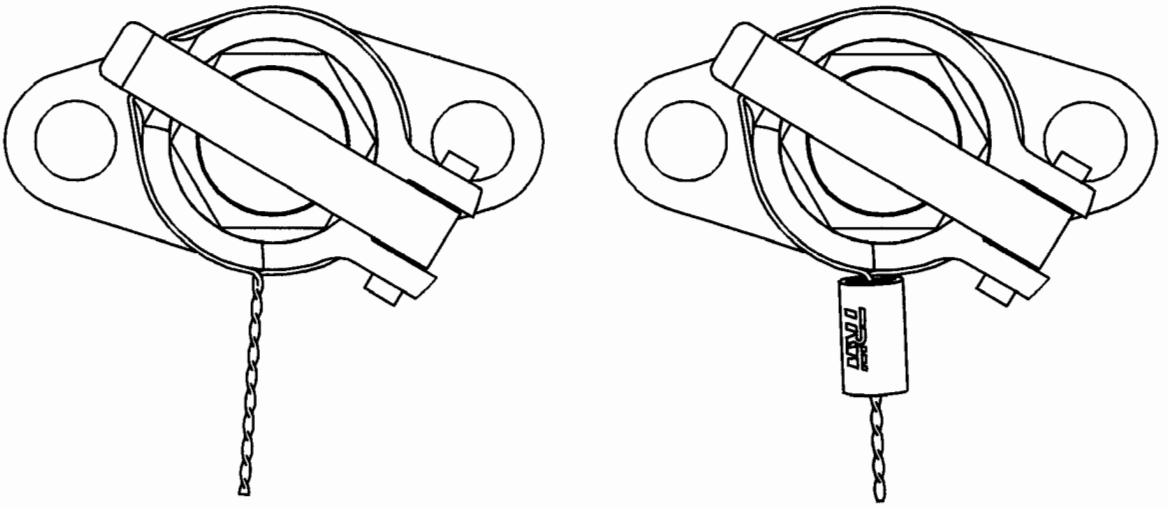
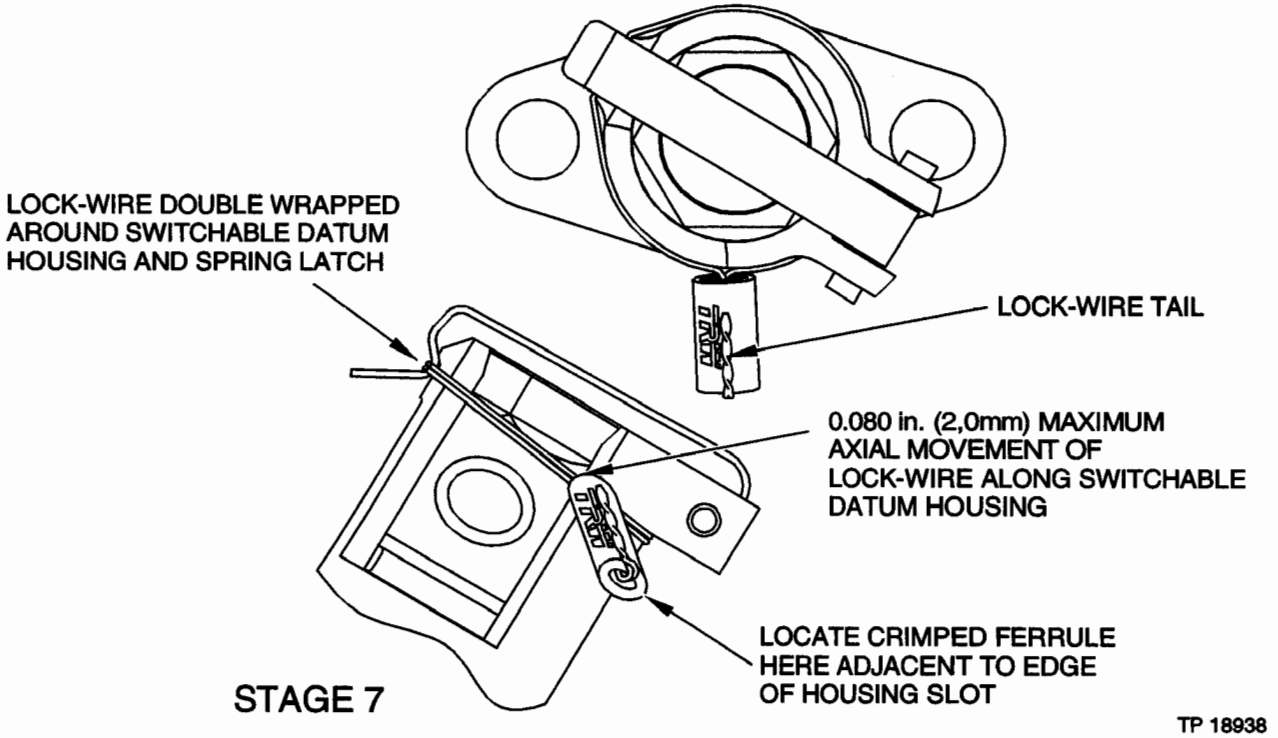


STAGE 5 STAGE 6



Switchable Datum Assembly Wire Locking Detail
Figure 1 (Sheet 2 of 2)

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B. Wire Lock the Name Plate/Modification Plate Bolts, Ref. Fig 2

(1) Wire lock the two bolts (77154267) together with a single piece of lock wire. Use 22 SWG (0.028 in. (0,071 mm)) dia stainless steel lock wire (77855167).

NOTE: The lock wire routing may be around the bolt heads or as shown in Figure 2. The lock wire in this application is a visual anti-tamper indication only. The two bolts (77154267) are locked in position by self-locking wire thread inserts.

(2) Cut the lock wire tail to length 0.708 in. to 0.866 in. (18 mm to 22 mm) from the head of the bolt (77154267).

(3) Put the ferrule (77154270) on to the tail of the lock wire to touch the head of the bolt (77154267).

(4) Crimp the ferrule on to the lock wire. Use a crimping tool with jaws of minimum width 0.393 in. (10 mm).

NOTE: Make sure that the thickness of the ferrule between the crimped faces is between 0.110 in. and 0.098 in. (2,8 mm and 2,5 mm).

(5) Bend the lock wire tail back over the ferrule (77154270), Ref. Fig 2.

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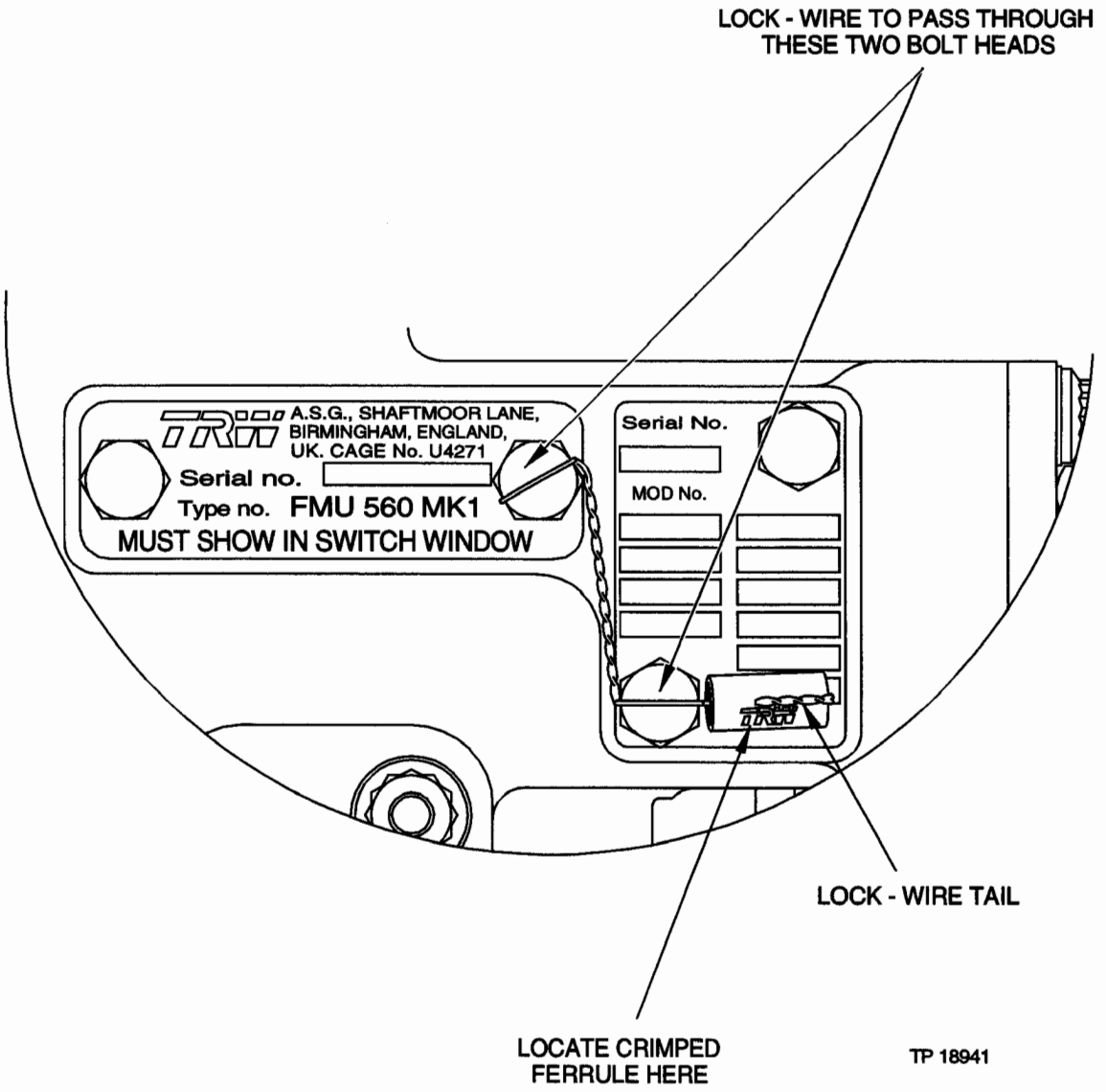

Name Plate/Modification Plate Wire Locking Detail
Figure 2

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SUPPLEMENT NO 2 TO SERVICE BULLETIN NUMBER FMU 550-73-8215

ENGINE - FUEL AND CONTROL - FUEL METERING UNIT - CONVERSION FROM FMU 550 MK1 TO FMU 560 MK1/FMU 570 MK1

PROCEDURE TO CONVERT FMU 560 MK1 TO FMU 570 MK1

1. Convert FMU 560 Mk1 to FMU 570 Mk1

A. Procedure

WARNING: TAKE CARE WHEN REMOVING THE LOCKWIRE. IF THE LOCKWIRE IS PULLED WITH FORCE FROM THE COMPONENTS, IT CAN CAUSE INJURY TO PERSONS.

(1) Remove the lock wire from the spring latch.

(a) Unclip the spring latch.

1 Unclip the spring latch from the housing.

CAUTION: DO NOT USE A SCREWDRIVER WHOSE DIMENSIONS ARE MORE THAN 1/2 IN. BLADE WIDTH AND MORE THAN 8 IN. LONG.

2 Place the flat bladed screwdriver in the slot on the sleeve and move the sleeve up as far as it will travel.

NOTE: Careful use of the edge of the information plate as a lever for the screwdriver is acceptable.

3 Keep the sleeve raised and at the same time, use a $^{5}/_{8}$ in. socket wrench to turn the exposed hexagon 5 deg counterclockwise. Remove the screwdriver from the sleeve slot.

NOTE: Turn the exposed hexagon counterclockwise as viewed from the hexagon end of the device.

(b) Using the $^{5}/_{8}$ in. socket wrench continue to turn the sleeve until the device is set in the alternative setting position.

(c) Check that the sleeve hexagon has returned to the fully down position and the position setting letter '**X**' is visible in the housing window.

(d) Clip the spring latch back onto the housing.

(e) Wire lock the spring latch. Refer to Supplement No 1, Section 1.A. to this service bulletin for details of the wire locking procedure.

(f) Install the name plate to correctly identify the FMU.

1 Remove the lock wire from the bolts (77154267).

2 Remove the two screws (77154267) that hold the name plate (77153676) and remove the name plate (77153676).

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3 Turn the name plate (77153676) over to show the part number 'FMU 570 Mk1'.

4 Install the name plate (77153676) to the FMU.

5 Install the two screws (77154267). Torque the screws to 20 lbf in. (2,2 Nm).

6 Refer to Supplement No 1, Section 1.B. to this service bulletin for details of the wire locking procedure and wire lock one nameplate screw and one modification plate screw (77154267).

(g) Final Checks

1 Do a check of the name plate, make sure part number FMU 570 Mk1 is visible.

2 Make sure that the stop setting letter '**X**' is visible in the housing window.

3 Make sure that the spring latch is locked down and fully engaged on the housing.

4 Make sure that the two ferrules are correctly crimped and secure.

5 Make sure that the FMU serial number on the name plate (77153676) and the modification plate (77153980) are the same.

6 Where applicable, refer to IAE SB73-0173 for additional engine related checks.

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SUPPLEMENT NO 3 TO SERVICE BULLETIN NUMBER FMU 550-73-8215

ENGINE - FUEL AND CONTROL - FUEL METERING UNIT - CONVERSION FROM FMU 550 MK1 TO FMU 560 MK1/FMU 570 MK1

PROCEDURE TO CONVERT FMU 570 MK1 TO FMU 560 MK1

1. Convert FMU 570 Mk1 to FMU 560 Mk1

A. Procedure

WARNING: TAKE CARE WHEN REMOVING THE LOCKWIRE. IF THE LOCKWIRE IS PULLED WITH FORCE FROM THE COMPONENTS, IT CAN CAUSE INJURY TO PERSONS.

(1) Remove the lock wire from the spring latch.

(a) Unclip the spring latch.

1 Unclip the spring latch from the housing.

CAUTION: DO NOT USE A SCREWDRIVER WHOSE DIMENSIONS ARE MORE THAN 1/2 IN. BLADE WIDTH AND MORE THAN 8 IN. LONG.

2 Place the flat bladed screwdriver in the slot on the sleeve and move the sleeve up as far as it will travel.

NOTE: Careful use of the edge of the information plate as a lever for the screwdriver is acceptable.

3 Keep the sleeve raised and at the same time, use a $^{5}/_{8}$ in. socket wrench to turn the exposed hexagon 5 deg clockwise. Remove the screwdriver from the sleeve slot.

NOTE: Turn the exposed hexagon clockwise as viewed from the hexagon end of the device.

(b) Using the $^{5}/_{8}$ in. socket wrench continue to turn the sleeve until the device is set in the alternative setting position.

(c) Check that the sleeve hexagon has returned to the fully down position and the position setting letter '**O**' is visible in the housing window.

(d) Clip the spring latch back onto the housing.

(e) Wire lock the spring latch. Refer to Supplement No 1, Section 1.A. to this service bulletin for details of the wire locking procedure.

(f) Install the name plate to correctly identify the FMU.

1 Remove the lock wire from the bolts (77154267).

2 Remove the two screws (77154267) that hold the name plate (77153676) and remove the name plate (77153676).

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3 Turn the name plate (77153676) over to show the part number 'FMU 560 Mk1'.

4 Install the name plate (77153676) to the FMU.

5 Install the two screws (77154267). Torque the screws to 20 lbf in. (2,2 Nm).

6 Refer to Supplement No 1, Section 1.B. to this service bulletin for details of the wire locking procedure and wire lock one nameplate screw and one modification plate screw (77154267).

(g) Final Checks

1 Do a check of the name plate, make sure part number FMU 560 Mk1 is visible.

2 Make sure that the stop setting letter '**O**' is visible in the housing window.

3 Make sure that the spring latch is locked down and fully engaged on the housing.

4 Make sure that the two ferrules are correctly crimped and secure.

5 Make sure that the FMU serial number on the name plate (77153676) and the modification plate (77153980) are the same.

6 Where applicable, refer to IAE SB73-0173 for additional engine related checks.

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