International Aero Engines

SERVICE BULLETIN

ENGINE - FUEL AND CONTROL - ENGINE FUEL AND CONTROL - FUEL METERING UNIT - INTRODUCTION OF FUEL METERING UNIT WITH REVISED HP SOV TORQUEMOTOR - CATEGORY CODE 7 - MOD.ENG-73-0107

1. Planning Information

A. Effectivity

(1) Aircraft:
(a) Airbus A320
(b) Airbus A321
(c) Boeing-Douglas Product Division MD-90

(2) Engines:
(a) V2500-A1 Engines prior to Serial No.V0362
(b) V2527-A5 Engines prior to Serial No.V10273
(c) V2530-A5 Engines prior to Serial No.V10273
(d) V2533-A5 Engines prior to Serial No.V10273
(e) V2525-D5 Engines prior to Serial No.V20156
(f) V2528-D5 Engines prior to Serial No.V20156

B. Concurrent Requirements

None.

C. Reason

(1) Problem

The torquemotor cockpit or pilot coils of the HP Shut-Off Valve (SOV) of the Fuel Metering Unit (FMU) can overheat. If this occurs it can cause a short circuit condition. The circuit breakers of the SOV, which are in the flight compartment, will then open.

(2) Evidence

The problem has occurred on in-service engines during engine shut-down.

(3) Substantiation

A satisfactory engineering analysis and a rig test have been done on the changes contained in this Service Bulletin.

(4) Objective

The purpose of this Service Bulletin is to maintain unit serviceability.

(5) Effect of Bulletin:

(a) Operation

Not affected.

(b) Maintenance

Not affected.

(c) Overhaul

Not affected.

(d) Repair Schemes

Not affected.

(e) Interchangeability

Not affected.

(f) Fits and Clearances

Not affected.

D. Description

(1) A1 Model

(a) This Service Bulletin contains the installation of an FMU which has the Lucas Aerospace modification CP8052.

(b) The changes are as follows:

(i) The new FMU has a better HP SOV Torquemotor. The resistance of the torquemotor cockpit or pilot coils has increased.

(ii) The damper fluid has been changed, the new fluid has a viscosity of 500cSt.

(c) CP8052 must be put on the modification plate of the FMU when this Service Bulletin has been embodied.

(2) A5 Model and D5 Model

(a) This Service Bulletin contains the installation of an FMU which has the Lucas Aerospace Modification CP8037.

(b) The changes are as follows:

(i) The new FMU has a better HP SOV Torquemotor. The resistance of the torquemotor cockpit or pilot coils has increased.

(ii) The damper fluid has been changed, the new fluid has a viscosity of 500cSt.

(iii) The magnetic material has changed. The new material has a better surface finish when machined.

(iv) The torquemotor cap has changed. The sharp edges have been removed from the internal surface. To make sure there is as continuous supply of gas, there is a new discharge-tube lightening suppressor.

(c) CP8037 must be put on the modification plate of the FMU when this Service Bulletin has been embodied.

E. Compliance

Category Code 7.

This Service Bulletin must be embodied when there are no original parts remaining.

F. Approval

The part number changes and/or part modification are given in Section 2 and 3 of this Service Bulletin. They obey the applicable Federal Aviation Regulations and are FAA-APPROVED for the engine model listed.

G. Manpower

Estimate of man-hours necessary to embody this Service Bulletin in full:

	Venue	Estimated Man-hours
(1)	In service	Refer to vendor Service Bulletin - 500-73-8052 (A1) or 530-73-8037 (A5/D5)
(2)	At overhaul	Refer to vendor Service Bulletin - 500-73-8052 (A1) or 530-73-8037 (A5/D5)

H. Material - Price and Availability

(1) A modification kit is not necessary.

(2) Refer to 3. Material Information for the prices and availability of future spares.

I. Tooling - Price and Availability

Special tools are not necessary.

J. Weight and Balance

(1) Weight Change

Not affected.

(2) Moment Arm

Not affected.

(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 Nos.

EC97VI003

EC97VI003A

(2) Other References

Refer to the vendor Service Bulletin 500-73-8052 (A1) or 530-73-8037 (A5/D5).

Aircraft Modification No.27033.

M. Other Publications Affected

Illustrated Parts Catalog (IPC), Chapter/Section 73-22-52.

2. Accomplishment Instructions

A. Rework Instructions

None.

B. Assembly Instructions

Refer to vendor Service Bulletins, 500-73-8052 (A1)or 530-73-8037 (A5/D5).

C. Recording Instructions

(1) A record of accomplishment is necessary. Refer to vendor Service Bulletins, 500-73-8052 (A1) or530-73-8037 (A5/D5).

3. Material Information

Applicability: For each V2500 engine for which this Service Bulletin is necessary.

A. Kits necessary for this Bulletin:

None

B. Parts affected by this Bulletin:

New Part No. (ATA No.)	Qty	Est'd Unit Price ($)	Part Title	Old Part No. (IPC No.)	Instructions Disposition
A1 Model					
FMU500MK4 (73-22-52)	1		Meter - Unit Fuel	FMU500MK4 (01.100)	(A)(B)(S1)
A5 Model and D5 Models					
FMU530MK2 (73-22-52)	1		Meter - Unit, Fuel	FMU530MK2 (01.100)	(A)(B)(S1)

NOTE: The unit prices if shown, are an estimate and they are given for the purpose of planning only. For information about actual prices, refer to the IAE Price Catalog or contact IAE's Spare Parts Sales Department.

C. Instructions Disposition Code Statements:

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

SERVICE BULLETIN

PUBLICATION TRANSMITTAL

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

TELEPHONE 0121-707-7111

FACSIMILE 0121-707-8826

FUEL METERING UNIT, TYPE FMU 530

This document transmits the initial issue of Service Bulletin FMU 530-73-8037 together with the relevant Bulletin Index Sheet.

Remove	Insert	Reason
-	Page 1 of 6, 2, 3, 4, 5 and 6 all dated Jul 8/97	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.

Lucas Aerospace
SERVICE BULLETIN

Date 8th July 1997

NUMBER FMU 530-73-8037

ENGINE - FUEL AND CONTROL - FUEL METERING UNIT - INTRODUCTION OF THE SERVOVALVE-SOV WITH 87 OHM MINIMUM COCKPIT COIL WINDINGS

1. Planning Information

A. Effectivity

(1) Aircraft:

(a) Airbus A320.

(b) Airbus A321

(c) McDonnell Douglas MD-90

(2) Engine:

(a) V2500-A5

(b) V2500-D5

(3) Fuel Metering Units Type FMU 530 Mk 2 which do not have CP8037 on the modification plate.

B. Reason

(1) Condition

The resistance of the two parallel cockpit/pilot coils of the servovalve-SOV (shut off valve) can change. It is possible for the engine not to stop or the circuit breakers can trip.

(2) Background

There have been 34 instances of the servovalve-SOV failures in service.

(3) Objective

Incorporation of this Service Bulletin (Modification) is 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.

V2500-A5/D5
EDL 205874 IH

C. Description

This Service Bulletin (Modification) introduces a servovalve-SOV with an increased number of winding turns on the two parallel "cockpit/pilot" coils. Each coil has a minimum resistance of 87 Ohm.

D. Approval

Service Bulletin No FMU 530-73-8037 was technically approved by IAE on 30/06/97. 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 7

Accomplish at the first visit of the engine or module to a maintenance base capable of compliance with the accomplishment instructions. This is regardless of the planned maintenance action or the reason for engine removal.

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 unit to flyable status ..... No change

G. Material - Price and Availability

Modification CP8037 required (see Section 3 of this bulletin for details).

H. Tooling

Additional speciual 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 Service Bulletin ENG 73-0107 REV 1

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 CP8037 parts to the FMU in accordance with the CMM (1.K. References) and Figures of this Service Bulletin.

D. Recording Action

(1) Fuel Metering Unit (FMU)

On accomplishment of this Modification, endorse the modification plate with the Mod No CP8037.

(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 PN	Qty	Unit Price	Lead Time	Nomenclature	Old PN	I/D Code
77878758	1	TBA	TBA	Servovalve (SOV)	77875858	2

B. Parts to be Reworked and Re-identified

None.

C. Consumable Materials Required

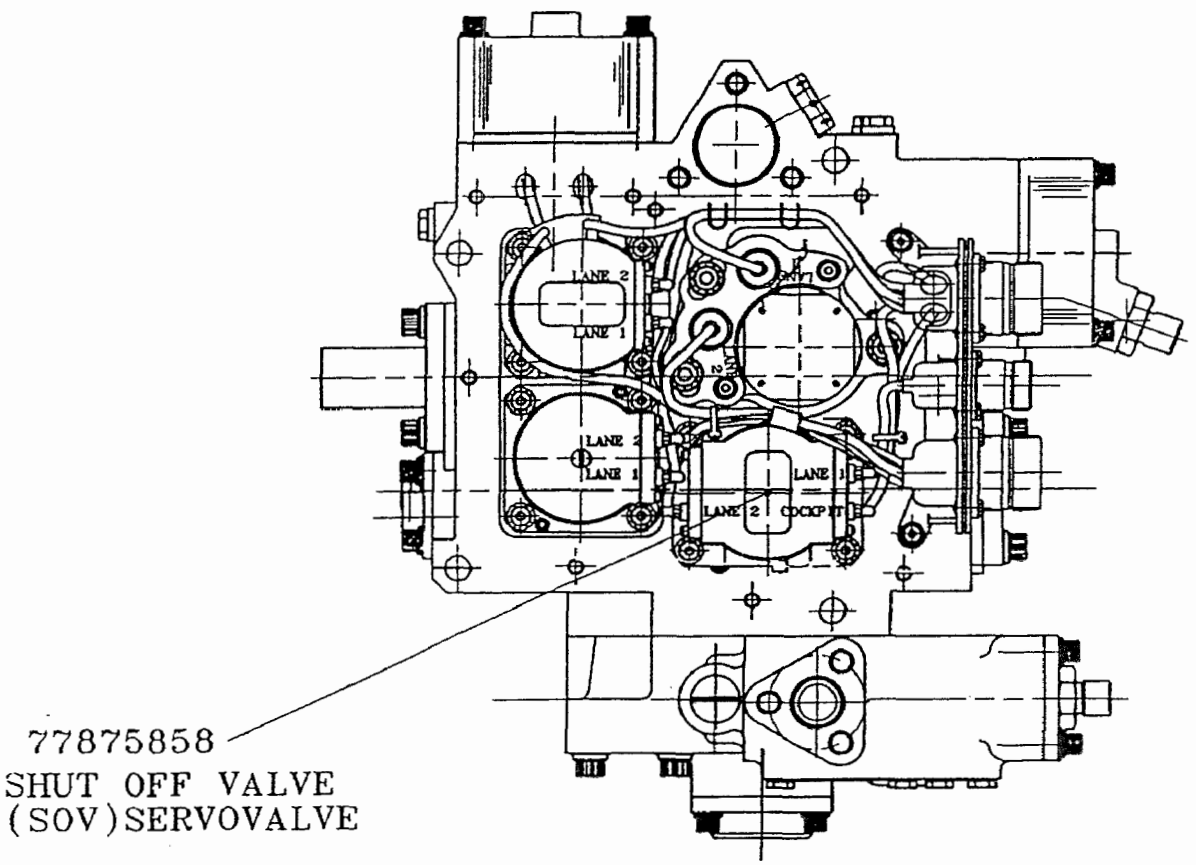
None.

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

None.

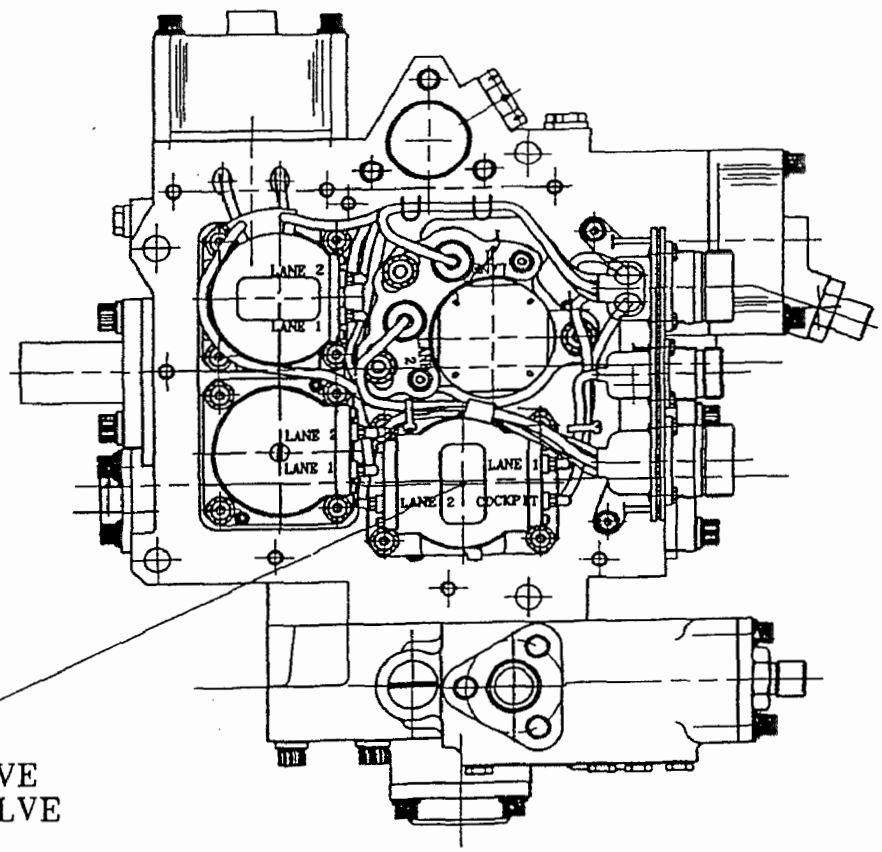
E. The Type of Equipment Affected by this Modification is:-

Unit	Type No
Fuel Metering Unit	FMU 530 Mk2



77875858
SHUT OFF VALVE
(SOV)SERVOVALVE

BEFORE MODIFICATION



77878758
SHUT OFF VALVE
(SOV)SERVOVALVE

AFTER MODIFICATION

SERVICE BULLETIN

PUBLICATION TRANSMITTAL

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FUEL METERING UNIT, TYPE FMU 500

This document transmits the initial issue of Service Bulletin FMU 500-73-8052 together with the relevant Bulletin Index Sheet.

Remove	Insert	Reason
-	Page 1 of 6, 2, 3, 4, 5 and 6 all dated Jul 14/97	Initial issue.

CHECK THAT ANY PREVIOUS REVISIONS HAVE BEEN INCORPORATED

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Lucas Aerospace
SERVICE BULLETIN

Date 14th July 1997

NUMBER FMU 500-73-8052

ENGINE - FUEL AND CONTROL - FUEL METERING UNIT - INTRODUCTION OF THE SERVOVALVE-SOV WITH 87 OHM MINIMUM COCKPIT COIL WINDINGS

1. Planning Information

A. Effectivity

(1) Aircraft:

(a) Airbus A320.

(2) Engine:

(a) V2500-A1

(3) Fuel Metering Units Type FMU 500 Mk 3 which do not have CP8052 on the modification plate.

B. Reason

(1) Condition

The resistance of the two parallel cockpit/pilot coils of the servovalve-SOV (shut-off valve) can change. It is possible for the engine not to stop or the circuit breakers can trip.

(2) Background

There have been instances of the servovalve-SOV failures in service.

(3) Objective

Incorporation of this Service Bulletin (Modification) is 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.

C. Description

This Service Bulletin (Modification) introduces a servovalve-SOV with an increased number of winding turns on the two parallel "cockpit/pilot" coils. Each coil has a minimum resistance of 87 Ohm.

V2500-A1
EDL 205878 IH

D. Approval

Service Bulletin No FMU 530-73-8052 was technically approved by IAE on 30/06/97. 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 7

Accomplish at the first visit of the engine or module to a maintenance base capable of compliance with the accomplishment instructions, this is regardless of the planned maintenance action or the reason for engine removal.

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 unit to flyable status ..... No change

G. Material - Price and Availability

Modification CP8052 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 500 Component Maintenance Manual (CMM) Ref FMU 500, Chapter 73-22-52.

(2) IAE EC Service Bulletin ENG 73-0107-REV1

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 CP8052 parts to the FMU in accordance with the CMM (1.K. References) and Figures of this Service Bulletin.

D. Recording Action

(1) Fuel Metering Unit (FMU)

On accomplishment of this Modification, endorse the modification plate with the Mod No CP8052.

(2) Engine

A record of accomplishment is required.

3. Material Information

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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 PN	Qty	Unit Price	Lead Time	Nomenclature	Old PN	I/D Code
77878781	1	TBA	TBA	Servovalve (SOV)	77878502	2

B. Parts to be Reworked and Re-identified

None.

C. Consumable Materials Required

None.

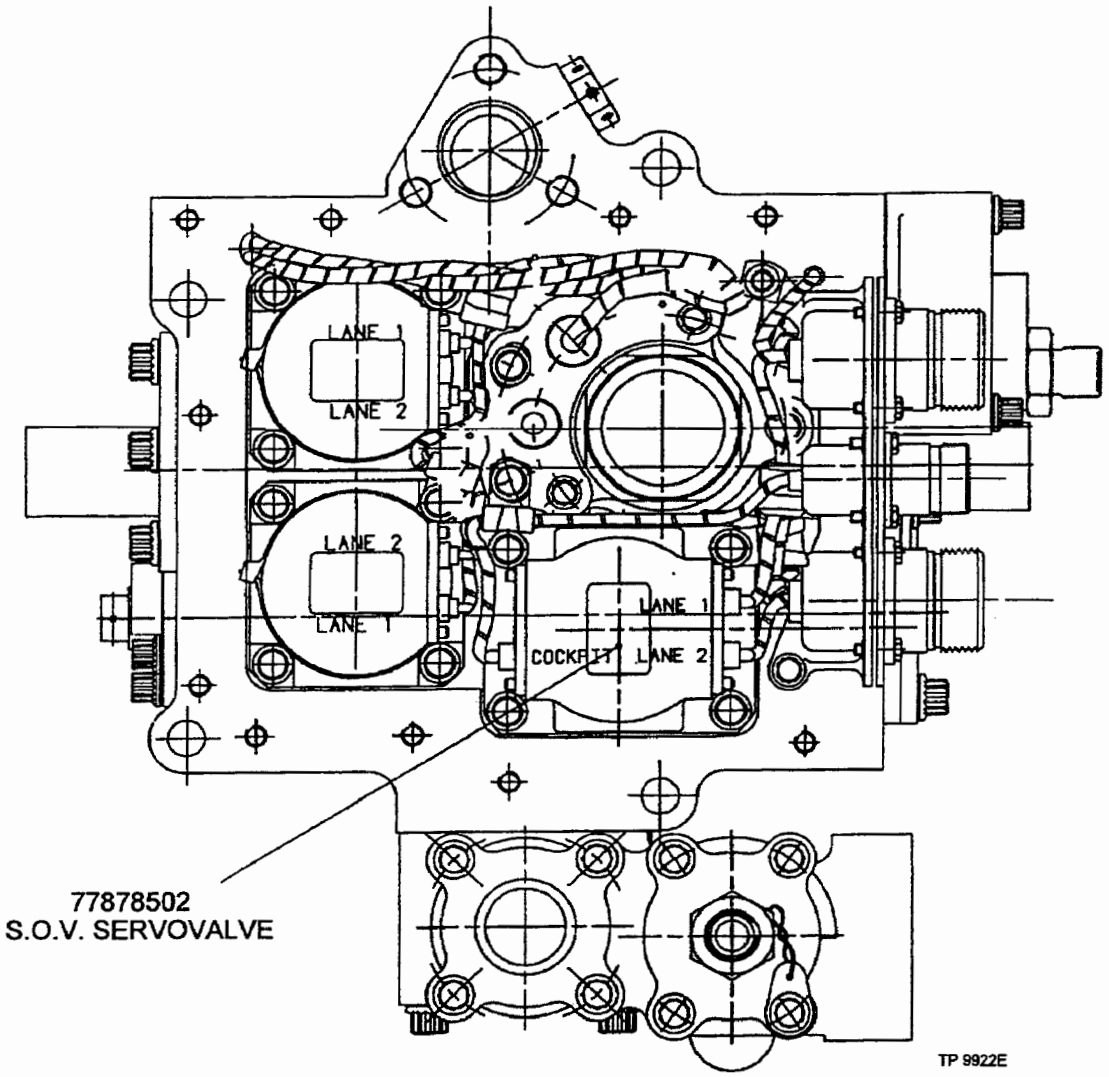
D. New Production Parts Available as Future Spares in Addition to those Listed under A

None.

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

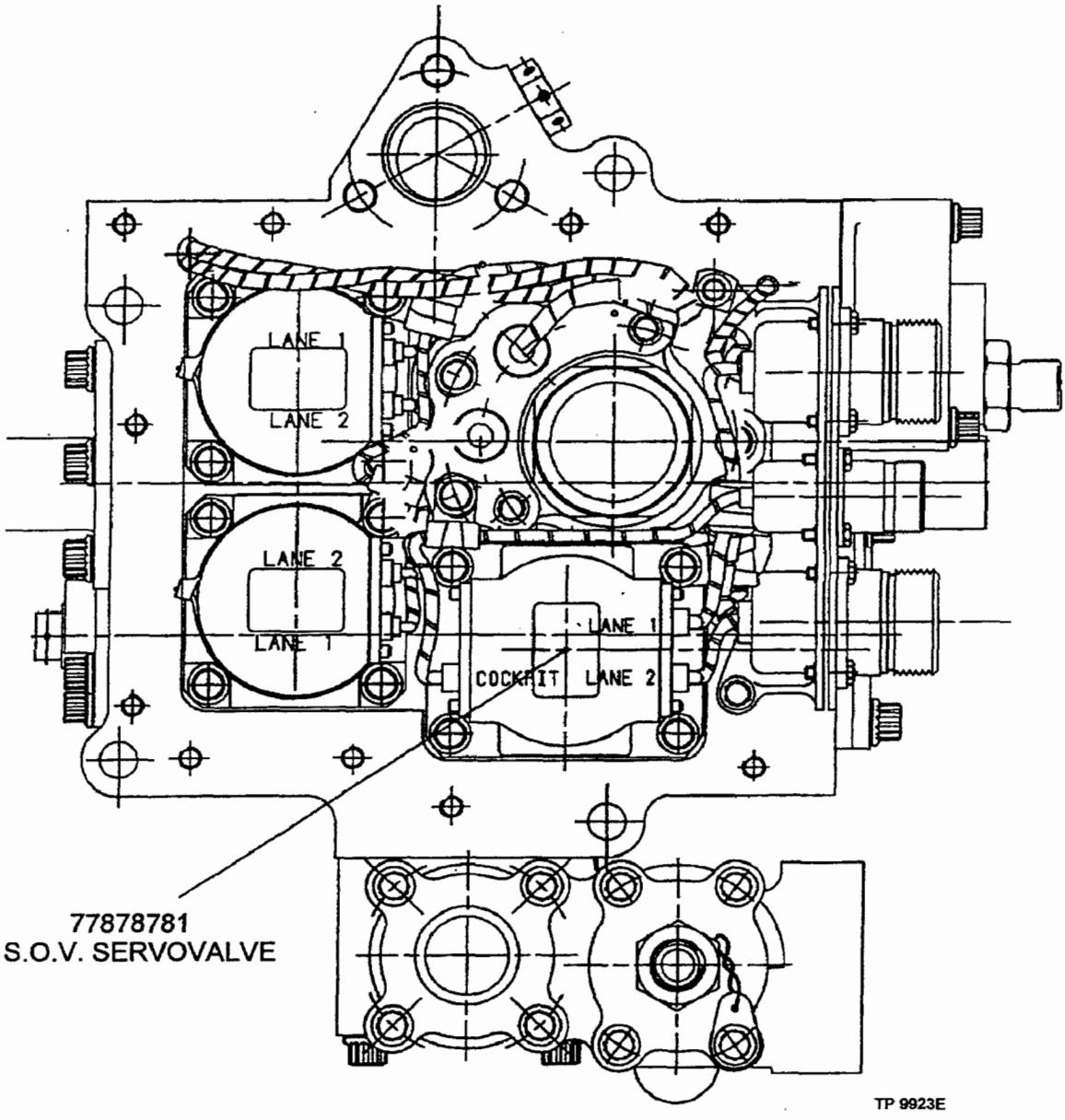
Unit	Type No
Fuel Metering Unit	FMU 500 Mk4

BEFORE MODIFICATION



BEFORE MODIFICATION

AFTER MODIFICATION



AFTER MODIFICATION