International Aero Engines
SERVICE BULLETIN

ENGINE - FUEL AND CONTROL - INTRODUCE NEW FUEL PUMP TO FUEL COOLED OIL COOLER TUBES WITH A REPOSITIONED RESTRICTOR ORIFICE

MODEL APPLICATION

V2500-A1

BULLETIN INDEX LOCATOR

73-00-00

Compliance Category Code	Internal Reference No.
4	EC93VR079 EC93VR079A

ENGINE - FUEL AND CONTROL - INTRODUCE NEW FUEL PUMP TO FUEL COOLED OIL COOLER TUBES WITH A REPOSITIONED RESTRICTOR ORIFICE

1. Planning Information

A. Effectivity

(1) Aircraft:

(a) Airbus A320

(2) Engine:

(a) V2500-A1 Engines before Serial No.V0361

B. Concurrent Requirements

None

C. Reason

(1) Condition

Erosion of the fuel cooled oil cooler (F.C.O.C.) matrix.

(2) Background

Instances of F.C.O.C. matrix erosion have occurred in service. Under extreme circumstances this may result in fuel contamination of the oil system. In addition the fuel flow restrictor at the inlet to the F.C.O.C. can currently be fitted incorrectly and there is insufficient clearance between the F.C.O.C. fuel inlet tube and the scavenge oil filter assembly.

Flow visualisation testing of the F.C.O.C. has indicated that matrix erosion is caused by direct impingement of fuel borne foreign objects, such as wires and metal chips, due to the close proximity of the fuel flow restrictor.

(3) Objective

To reduce direct impingement of foreign objects on the F.C.O.C. matrix; to prevent incorrect assembly of the fuel flow restrictor thereby ensuring correct fuel flow characteristics and to alleviate a foul condition.

(4) Substantiation

A trial assembly on a mock-up engine has demonstrated adequate clearance throughout the tube run. Rig tests have established that the new position of the fuel flow restrictor will alleviate the effects of direct debris impingement on the F.C.O.C. matrix. The addition of spigots on the pipe end connector and the fuel flow restrictor ensures against incorrect fitment.

(5) Effect of Bulletin on Workshop Procedures:

Removal/Installation	Affected (see Supplemental Information)
Disassembly/Assembly	Not affected
Cleaning	Not affected
Inspection/Check	Not affected
Repair	Not affected
Testing	Not affected

(6) Supplemental Information

The Removal/Installation will be revised to add the new configuration of this Bulletin.

D. Description

The existing L.P. fuel pump to F.C.O.C. fuel inlet tube assembly is replaced by two tube assemblies. The first tube runs from the L.P. fuel pump to the connector for the return to tank valve tube and the second tube runs from this connector to the F.C.O.C. fuel inlet. The fuel flow restrictor has been redesigned to prevent incorrect assembly and its location changed from the F.C.O.C. inlet end of the existing tube to the return to tank valve tube connector end of the new F.C.O.C. fuel inlet tube. Clipping Points 0304, 0306 and 0319 have been modified to accommodate the new tube. Clipping Points 0304 and 0319 have had spacers added and Clipping Point 0306 has been moved forward from the rear face to the front face of its existing bracket.

E. Approval

The part number changes and/or part modifications described in Section 2 and 3 of this Service Bulletin have been shown to comply with the applicable Federal Aviation Regulations and are FAA-APPROVED for the Engine Model listed.

F. Compliance

Category Code 4

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

G. Manpower

Estimated manhours to incorporate the full intent of this Bulletin:

Venue	Estimated Manhours
(1) In Service	
(a) To gain access	11 mins
(b) To embody	27 mins
(c) To return to flyable status	12 mins
TOTAL :	50 mins
(2) At Overhaul	
(a) To embody	5 mins
Note: This is the additional time required to maintain the new configuration.	
TOTAL :	5 mins

H. Material - Price and Availability

(1) Modification Kit not required

(2) See "Material Information" section for prices and availability of future spares.

I. Tooling - Price and Availability

The following tool is required to accomplish this Service Bulletin.

Tool No.	Qty	Description	Function	Avail.
1R18003	1	Wrench	Release and Tightening tube nut	(1)(2)

(1) Tool design aperture cards are currently available from IAE
(2) Tool can be procured from IAE on a full lead time of 60 days for a price to be quoted upon request.

J. Weight and Balance

(1)	Weight change	Plus 1.6 lb (0,726 kg)
(2)	Moment arm	17.2 in. (437 mm) forward of datum
(3)	Datum	Engine front mount centerline (Power Plant Station (PPS) 100)

K. Electrical Load Data

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

L. References

(1) A320 Aircraft Maintenance Manual.

(2) Service Bulletin V2500-ENG-73-0045 (Engine - Fuel and Control - Introduction of Tubes made of Improved Frettage Resistant Material).

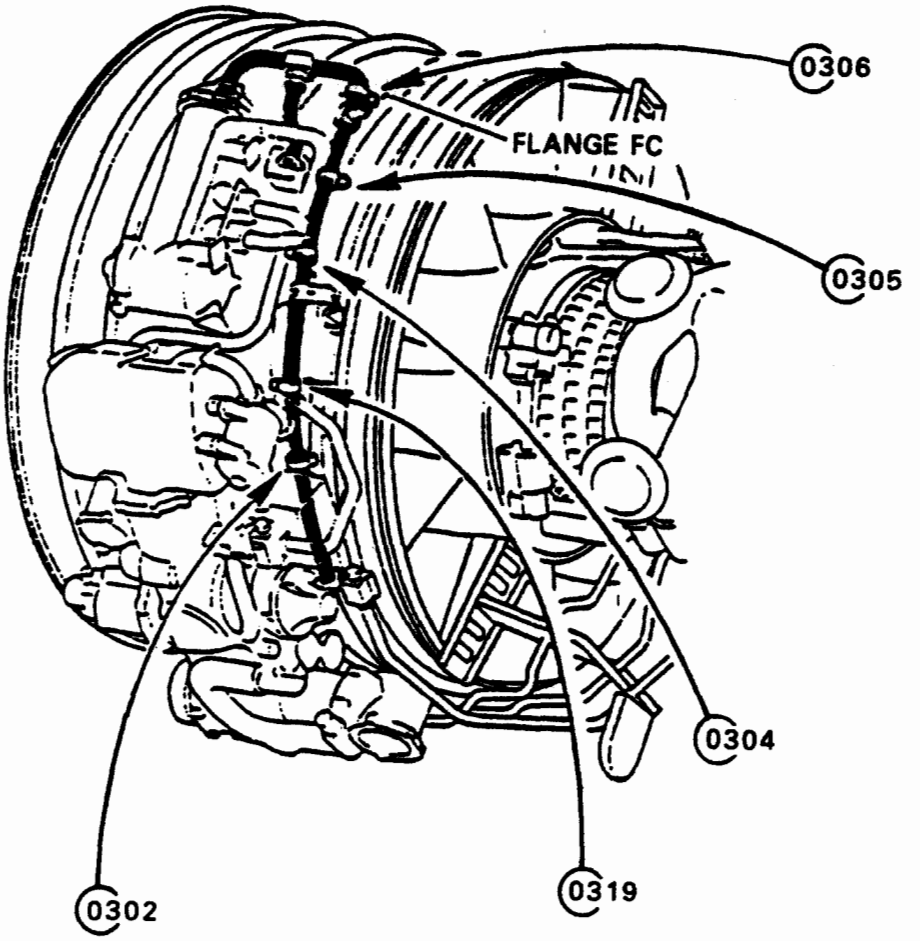
M. Other Publications Affected

(1) V2500 Engine Illustrated Parts Catalog (S-V2500-1IA), Chapter/Section, 73-11-49.

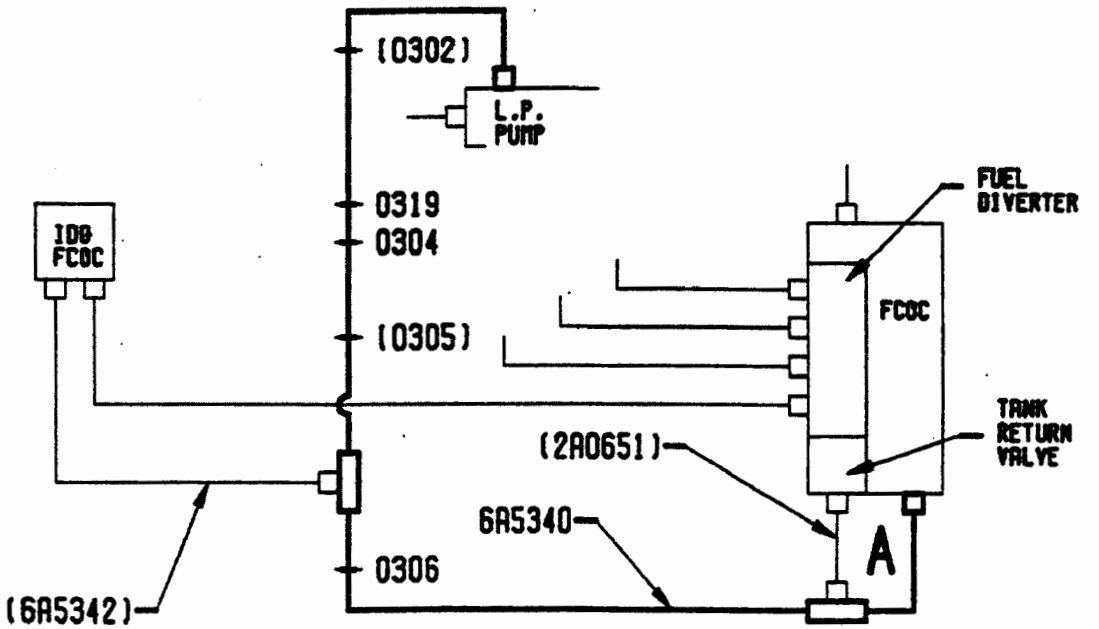
(2) V2500 Engine Manual (E-V2500-1IA), ~~72-00-32~~, Removal-03 CONFIG-1, Installation-03 CONFIG-1, Removal-20 and Installation-29.

(3) V2500 Component Maintenance Manual (CMM-THD-V2500-1IA), 73-11-49, Cleaning-00 and -01, Inspection/Check-00 and -02, and Repair-04.

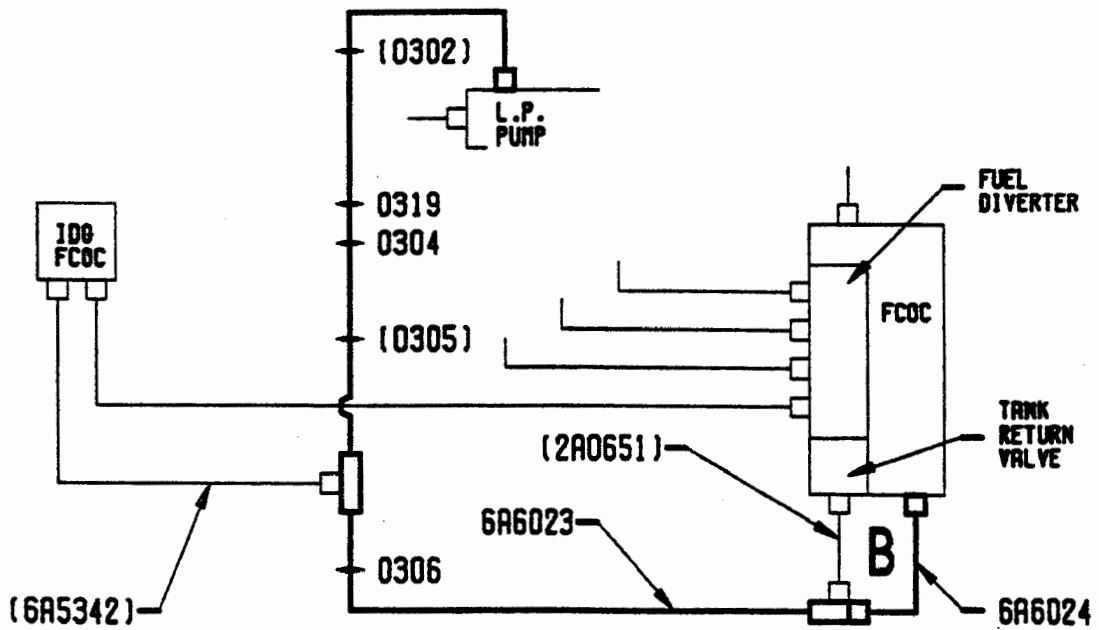
(4) A320 Aircraft Maintenance Manual, 79-21-43, Removal and Installation.



Location of clipping points 0302, 0304, 0305, 0306 and 0319
Figure 1

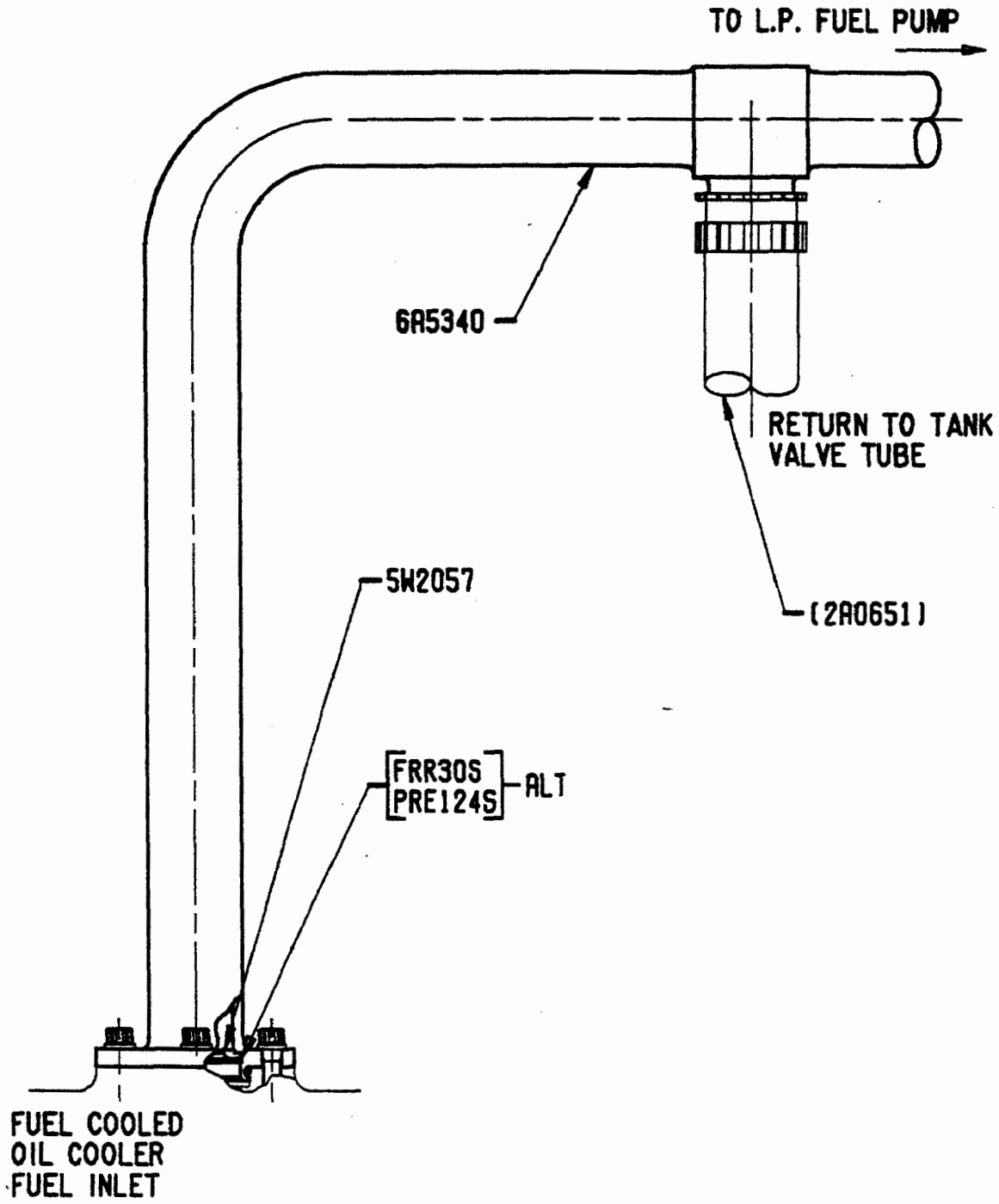


SCHEMATIC VIEW OF FUEL TUBES
BEFORE ALTERATION

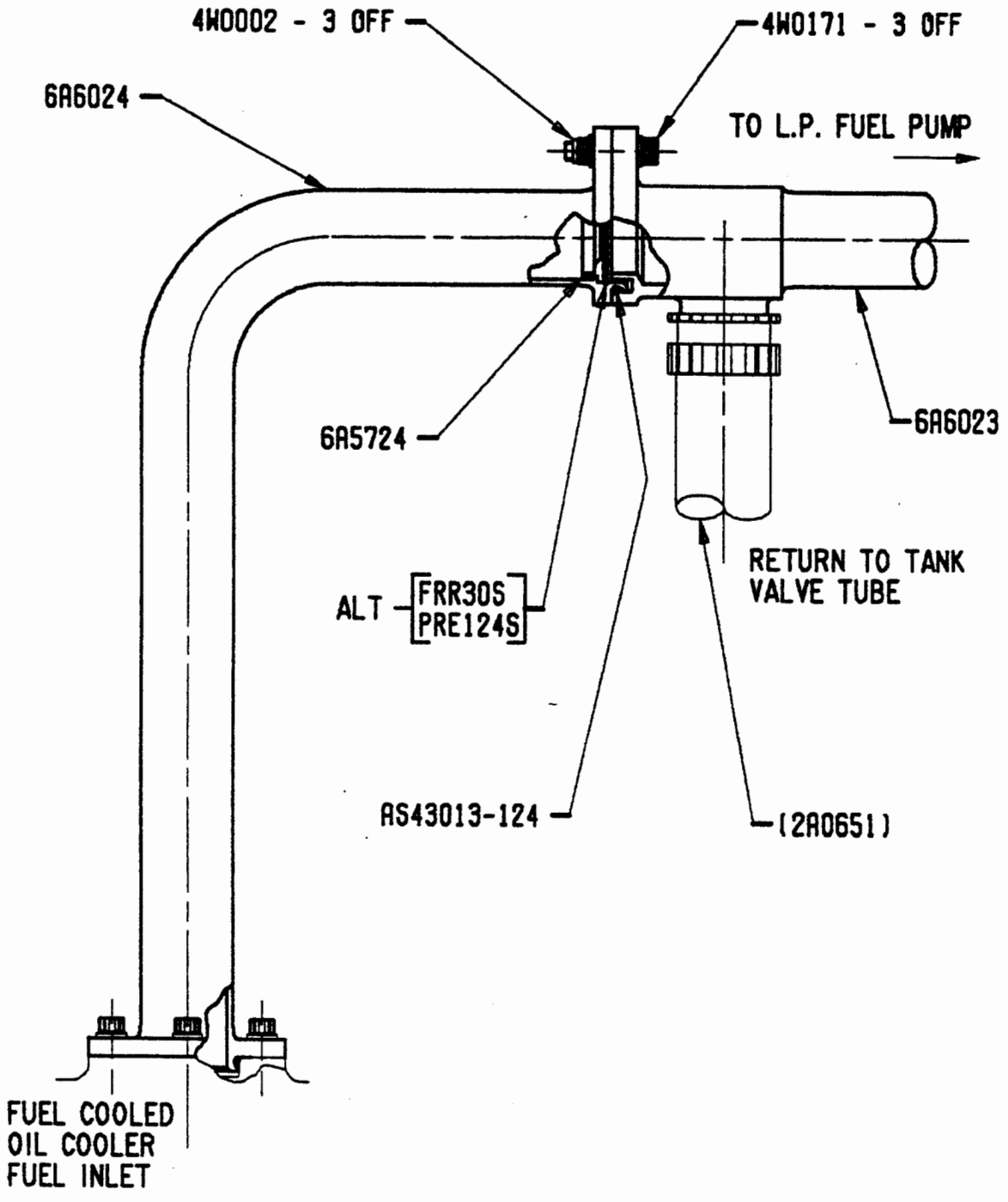


SCHEMATIC VIEW OF FUEL TUBES
AFTER ALTERATION

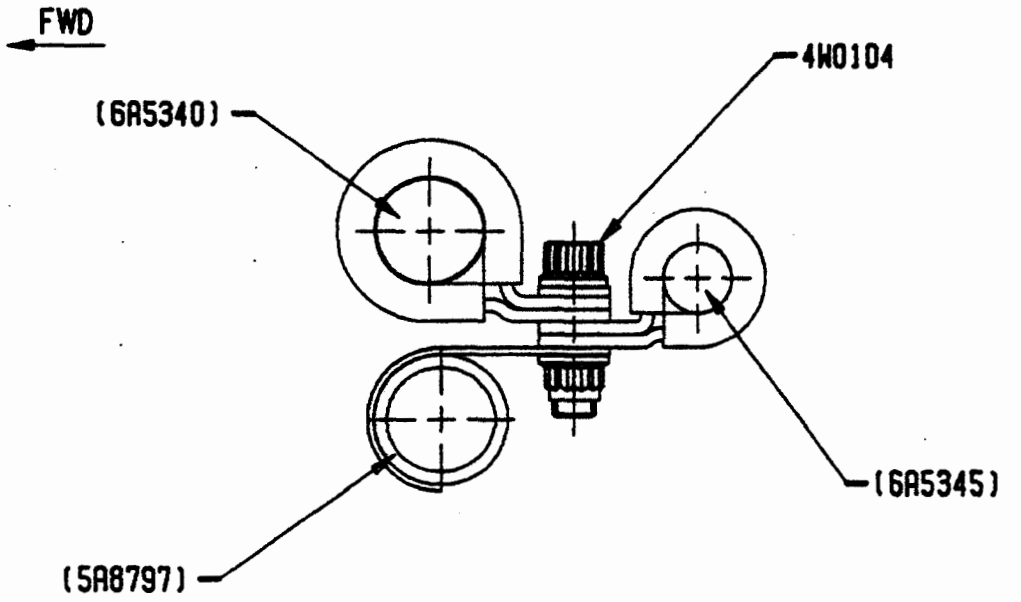
Schematic view of fuel tubes - Before and after alteration
Figure 2



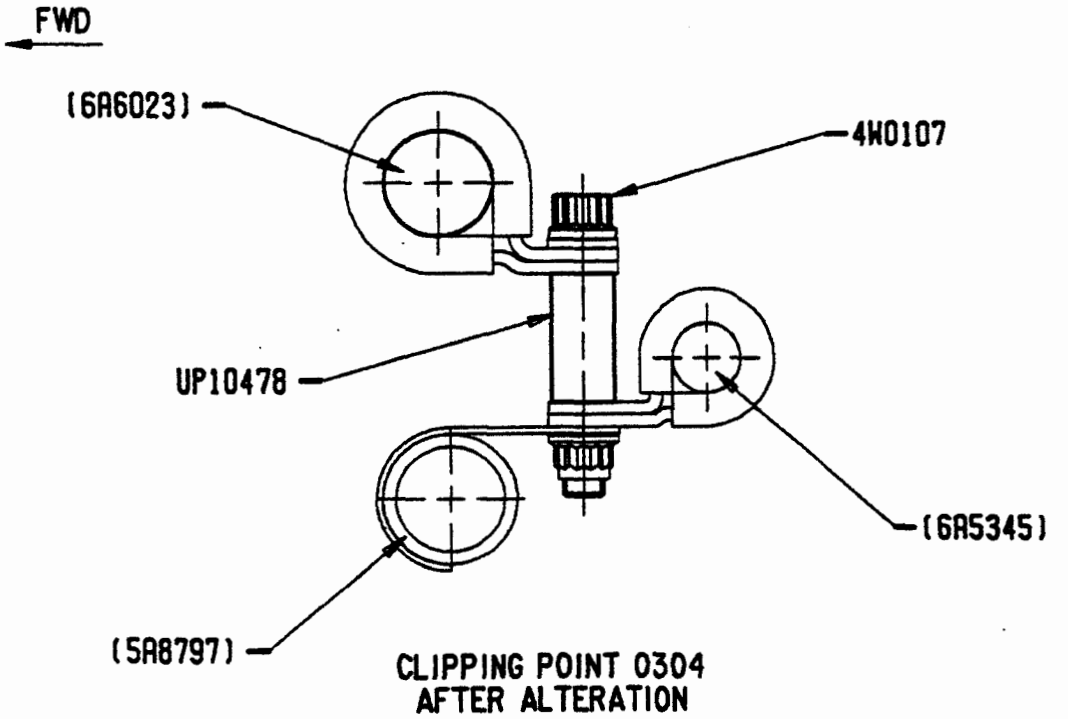
View at A (see Figure 2) - Before alteration
Figure 3



View at B (see Figure 2) - After alteration
Figure 4

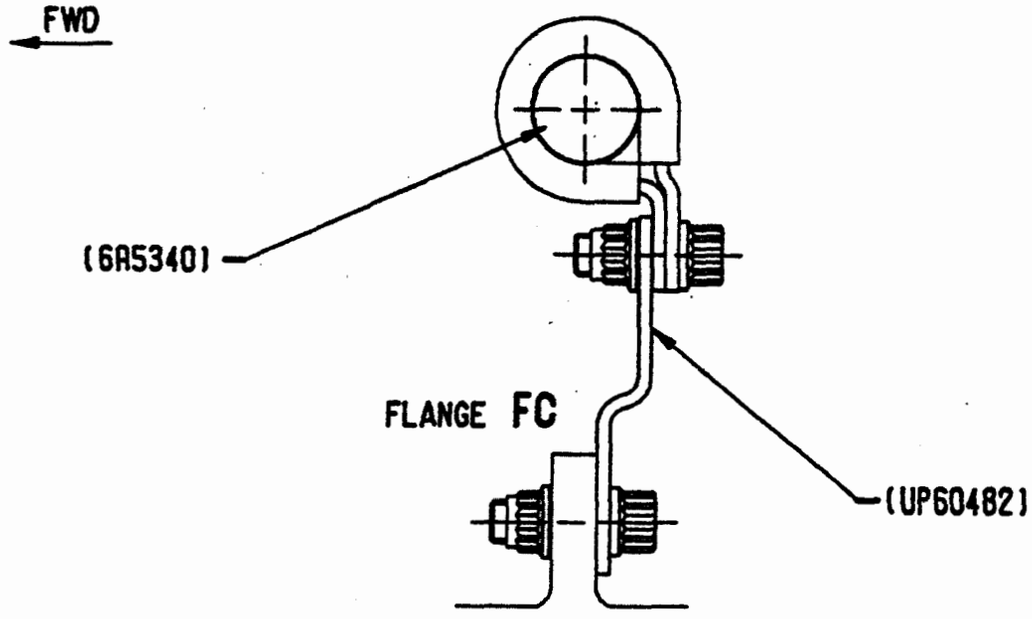


CLIPPING POINT 0304
BEFORE ALTERATION

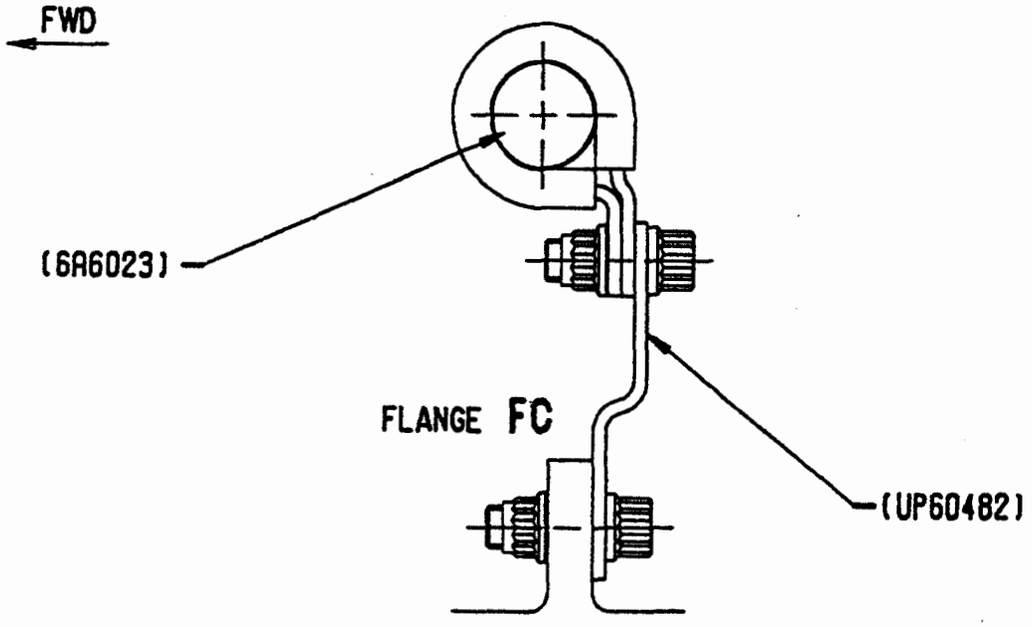


CLIPPING POINT 0304
AFTER ALTERATION

Clipping point 0304 - Before and after alteration
Figure 5

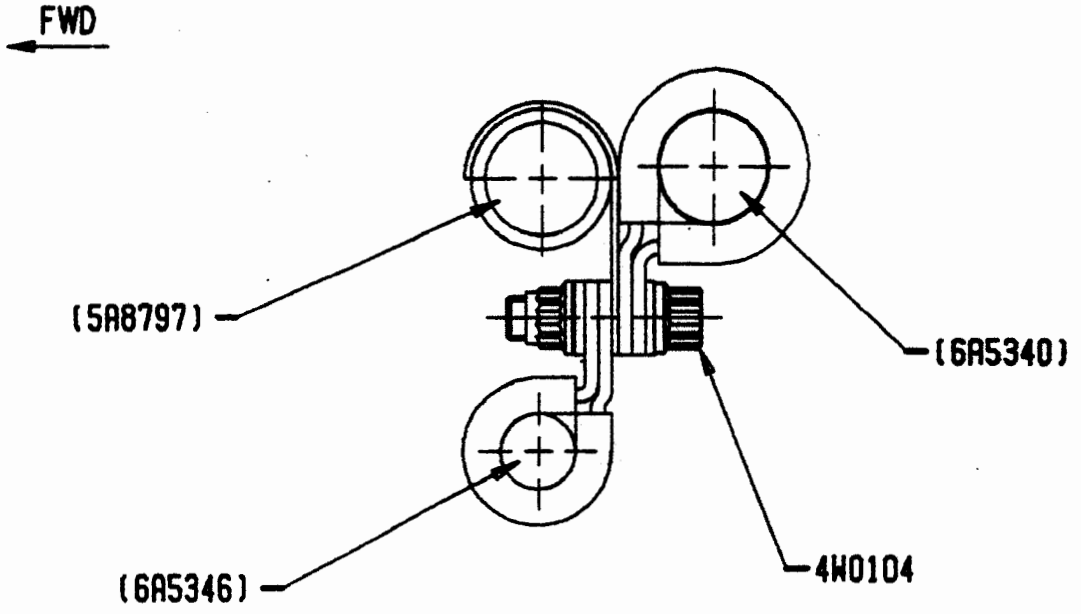


CLIPPING POINT 0306
BEFORE ALTERATION

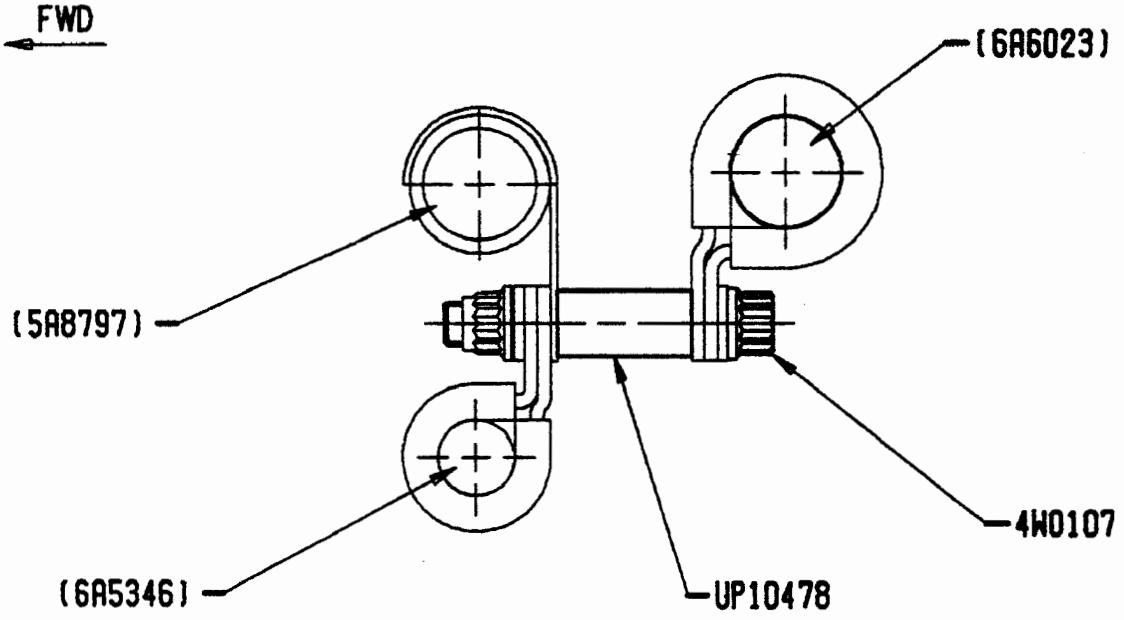


CLIPPING POINT 0306
AFTER ALTERATION

Clipping point 0306 - Before and after alteration
Figure 6



CLIPPING POINT 0319
BEFORE ALTERATION



CLIPPING POINT 0319
AFTER ALTERATION

Clipping point 0319 - Before and after alteration
Figure 7

2. Accomplishment Instructions

A. Prerequisite Instructions

(1) On the aircraft panel 115VU put a warning notice to tell persons not to start the engine.

(2) Make sure that the engine has been shut down for at least 5 minutes.

(3) On the aircraft panel 50VU make sure that the ON legend of the ENG FADEC GND PWR push button switch is OFF and install a warning notice.

(4) Open the left and right fan cowl doors with the instructions given in Reference (1), Chapter/Section 71-13-00.

B. Disassembly Instructions

(1) Disassemble clipping points 0302, 0304, 0305, 0306 and 0319 sufficiently to remove the 6A5340 (SBE 73-0045) or 2A0616 (pre SBE 73-0045) fuel tube assembly. Refer to Figures 1 and 2.

(2) Remove the bolts attaching the 6A5340 (SBE 73-0045) or 2A0616 (pre SBE 73-0045) fuel tube to the LP fuel pump and the F.C.O.C. Disconnect the union between the 2A0651 and 6A5340 fuel tubes using an IAE 1R18003 wrench. Disconnect the union between the 6A5342 (SBE73-0045) or 2A0649 (pre SBE 73-0045) fuel tube and the 6A5340 (SBE 73-0045) or 2A0616 (pre SBE 73-0045) (SBE 73-0045) or 2A0616 (pre SBE 73-0045) fuel tube and remove the 6A5340 (SBE 73-0045) or 2A0616 (pre SBE 73-0045) fuel tube. Refer to Figure 2.

(3) Remove the sealing rings, the FRR30S or PRE124S retainer and the 5W2057 restrictor from the 6A5340 (SBE 73-0045) or 2A0616 (pre SBE 73-0045) fuel tube. Discard the sealing rings. Refer to Figure 3.

B. Rework Instructions

(1) There are no rework instructions necessary to accomplish this Service Bulletin.

C. Assembly Instructions

(1) Install a new AS43013-124 sealing ring, lubricated with V10-038 Petroleum Jelly or V10-060 Liquid Paraffin (Reference (1), Chapter/Section 70-30-00), onto the 6A6023 fuel tube. Using the bolts removed at (2) install the 6A6023 fuel tube on to the LP fuel pump. Connect the 2A0651 fuel tube to the 6A6023 fuel tube and torque the union nut to 566 to 611 lbfin (64 to 69 Nm) using an IAE 1R18003 wrench. Connect the 6A5342 (SBE 73-0045) or 2A0649 (pre SBE 73-0045) fuel tube to the 6A6023 fuel tube and torque the union nut to 566 to 611 lbfin (64 to 69 Nm). Safety the tube union nut with V02-126 lockwire (Reference (1), Chapter/Section 70-30-00). Torque the bolts at the LP fuel pump to 85 to 105 lbfin (10 to 12 Nm). Refer to Figure 4.

(2) Install the new 6A5724 restrictor, FRR30S or PRE124S retainer and two new AS43013-124 sealing rings lubricated with V10-038 Petroleum Jelly or V10-060 Liquid Paraffin (Reference (1), Chapter/Section 70-30-00), on to the new 6A6024 fuel tube. Connect the 6A6024 fuel tube to the 6A6023 fuel tube using the 4W0171 bolts (3 off) and 4W0002 nuts (3 off). Install the 6A6024 fuel tube on to the F.C.O.C. using the bolts removed at (2). Torque these and the 4W0171 bolts to 85 to 105 lbfin (10 to 12 Nm). Refer to Figure 4.

(3) Reassemble clipping points 0302 and 0305 using the material removed at B.(1). Torque the bolts to 36 to 45 lbfin (4 to 5 Nm).

(4) Reassemble clipping points 0304 and 0319 using the material removed at B.(1) and incorporating the new UP10478 spacers and 4W0107 bolts. Torque the bolts to 36 to 45 lbfin (4 to 5 Nm). Refer to Figures 5 and 7.

(5) Reassemble clipping point 0306 on the forward face of the UP60482 bracket using the material removed at B.(1). Torque the bolt to 36 to 45 lbfin (4 to 5 Nm). Refer to Figure 6.

E. Post-requisite Instructions

(1) Close the left and right hand fan cowl doors with the instructions given in Reference (1), Chapter/Section 71-13-00.

(2) Remove the warning notices from the aircraft panels 115 VU and 50 VU.

F. Recording Instructions

(1) A record of accomplishment is necessary.

3. Material Information

Applicability: For each V2500 Engine to incorporate this Bulletin.

A. Kits associated with this Bulletin:

None

B. Parts affected by this Bulletin:

New Part No. (ATA No.)	Qty	Est'd Unit Price ($)	Keyword	Old Part No. (IPC No.)	Instructions Disposition
- (73-11-49)	1		Ring, Retainer Restrictor	FRR30S (02-088)	(B)(F)(S1)
- (73-11-49)	Ref		Ring, Retainer Restrictor	PRE124S (02-088)	(B)(F)(S1)
- (73-11-49)	1		Restrictor	5W2057 (02-090)	(2D)(S1)
6A6023 (73-11-49)	1	1514.00	Tube, L.P. Fuel, L.P. pump to disconnect - assy of	6A5340 (02-100)	(2D)(S1)
- (73-11-49)	3		Bolt	4W0166 (02-106)	(4D)(E)(S1)
- (73-11-49)	1		Ring, Sealing Toroidal	AS43013-124 (02-108)	(C)(3D)(S1)
4W0107 (73-11-49)	1	4.54	Bolt)))CP0319	4W0104 (02-133)	(1D)(S1)
UP10478 (73-11-49)	1	9.77	Spacer))	- (02-138)	(A)(S1)
4W0107 (73-11-49)	1	4.54	Bolt)))CP0304	4W0104 (02-141)	(1D)(S1)
UP10478 (73-11-49)	1	9.81	Spacer))	- (02-145)	(A)(S1)
6A5724 (73-11-49)	1	37.00	Restrictor	- (02-288)	(A)(S1)
PRE124S (73-11-49)	1	3.30	Ring, Retaining Restrictor	- (02-290)	(A)(G)(S1)

New Part No. (ATA No.)	Qty	Est'd Unit Price ($)	Keyword	Old Part No. (IPC No.)	Instructions Disposition
FRR30S (73-11-49)	Ref	3.28	Ring, Retaining Restrictor	- (02-290)	(A)(G)(S1)
6A6024 (73-11-49)	1	644.00	Tube, L.P. fuel, disconnect to F.C.O.C. - assy of	- (02-300)	(A)(S1)
4W0171 (73-11-49)	3	8.06	Bolt	- (02-305)	(A)(S1)
4W0002 (73-11-49)	3	8.02	Nut	- (02-306)	(A)(S1)
AS43013-124 (73-11-49)	1	1.98	Ring, Sealing Toroidal	- (02-308)	(A)(S1)
AS43013-124 (73-11-49)	1	1.98	Ring, Sealing Toroidal	- (02-314)	(A)(S1)
4W0166 (73-11-49)	3	4.72	Bolt	- (02-316)	(A)(S1)

C. Instructions/Disposition Code Statements:

(A) Added
(B) Re-itemised (02-290)
(C) Re-itemised (02-308)
(1D) Old part can be used up on other applications
(2D) Old part becomes redundant on embodiment of this modification
(3D) Qty decreased from 2 to 1
(4D) Qty decreased from 6 to 3
(E) Re-itemised (02-316)
(F) Alternative parts
(G) Alternative parts
(S1) New parts to replace old parts as a set

D. Consumable Materials

V02-126 Lockwire
V10-038 Petroleum Jelly
or
V10-060 Liquid Paraffin

NOTE: The estimated 1995 unit prices shown are provided for planning purposes only and do not constitute a firm quotation. Consult the IAE Price Catalog or contact IAE's Spare Parts Sales Department for information concerning firm prices.