International Aero Engines

SERVICE BULLETIN

ENGINE - HIGH PRESSURE SYSTEM MODULE - DO A CLEARANCE INSPECTION BETWEEN THE FUEL FLOW DIVIDER VALVE REAR BRACKET ASSEMBLY AND THE FUEL NOZZLE SUPPLY MANIFOLD - CATEGORY CODE 3 - MOD.ENG-72-0135

1. Planning Information

A. Effectivity

(1) Aircraft: Airbus A320

(2) Engine: V2500-A1 Engine Serial Numbers V0018, V0029, V0035, V0042, V0048, V0066, V0075, V0083, V0099, V0101, V0104, V0106 and Vo111

B. Reason

The clearance between the Fuel Flow Divider Valve Rear Bracket Assembly and the 2A0513-01 Fuel Nozzle Supply Manifold on specified engines can be insufficient.

C. Compliance

Category Code 3.

Comply with this Service Bulletin in 40 flight hours or less.

D. Approval

The "compliance" statement and the procedures described in paragraph F. of this Service Bulletin have been shown to comply with the applicable Federal Aviation Regulations and are FAA-APPROVED for the Engine Model listed.

E. References

(1) Internal Reference No.

92VC017

(2) Other References

V2500-ENG-72-0078 (Engine - HP Compressor - Rework the Fuel Flow Divider Mount Bracket Assemblies to Provide Additional Clearance).

A320/V2500 Aircraft Maintenance Manual.

F. Action

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

(2) On the aircraft panel 50VU, make sure that the ON legend on the EDG FADEC GND PWR push button switch is OFF and install a warning notice.

(3) Open the Fan Cowls by the use of the approved procedures in Reference (2), Control No./TASK No. 71-13-00-010-010.

(4) Open the Thrust Reverser Halves by the use of the approved procedures in Reference (2), Control No./TASK No. 78-32-00-010-010.

(5) Inspect the clearance between the 2A2073-01 Fuel Flow Divider Valve Rear Bracket Assembly and the 2A0513-01 Fuel Nozzle Supply Manifold. Refer to Figure 1.

(a) If the clearance is between 0.000 and 0.005in (0,000 and 0,127 mm) and the fuel manifold is chafed 0.004in. (0,102 mm) or more.

1 Replace the 2A0513-01 fuel supply manifold before the next flight. Do the approved procedure in Reference (2), Control No./TASK No. 73-11-41-400-010.

2 Replace the 2A2073-01 fuel flow divider valve rear bracket assembly before the next flight. Do the procedure given in this Service Bulletin.

(b) If the clearance is between 0.000 and 0.005in. (0,000 and 0,127 mm) and the fuel manifold is chafed less than 0.004in. (0,102 mm).

1 Do an inspection each day for chafed parts.

2 Replace the fuel flow divider valve rear bracket assembly at the first capable facility but not more than 25 flight hours. Do the procedure given in this Service Bulletin.

3 If the 2A0513-01 fuel supply manifold is chafed, replace the manifold at the first capable facility but not more than 25 flight hours. Do the approved procedure in Reference (2), Control No./TASK No. 73-11-41-400-010.

(c) If the clearance is 0.005in. (0,127 mm) or more and the fuel manifold is chafed 0.004in. (0,102 mm) or more.

1 Replace the 2A0513-01 fuel supply manifold before the next flight. Do the approved procedure in Reference (2), Control No./TASK No. 73-11-41-400-010.

2 Replace the 2A2073-01 fuel flow divider valve rear bracket assembly before the next flight. Do the procedure given in this service bulletin.

(d) If the clearance is 0.005in. (0,127 mm) or more and the fuel manifold is chafed less than 0.004in. (0,102 mm).

1 Do an inspection each day for chafed parts.

2 Replace the flow flow divider valve rear bracket assembly at the first capable facility but not more than 100 flight hours. Do the procedure given in this Service Bulletin.

3 If the 2A0513-01 fuel supply manifold is chafed, replace the manifold at the first capable facility but not more than 100 flight hours. Do the approved procedure in Reference (2), Control No./TASK No. 73-11-41-400-010.

(6) Close the Thrust Reverser Halves by the use of the approved procedures in Reference (2), Control No./TASK No. 78-32-00-410-010.

(7) Close the Fan Cowls by the use of the approved procedures in Reference (1), Control No./TASK No. 71-13-00-410-010.

(8) Remove the warning notices.

G. Removal Instructions for the Fuel Flow Divider Valve Rear Bracket Assembly.

(1) Disconnect the ten Fuel Nozzle Supply Manifolds from the Fuel Flow Divider Valve Adapters. Refer to Figure 2.

(a) Remove the wire from the tube nuts.

(b) Disconnect the tube nuts from the adapters.

(c) Remove the transfer tubes from the adapters or manifolds.

(d) Remove the twenty packings from the ten transfer tubes and discard the packings.

(e) Remove the ten metal gaskets from the adapters or manifolds and discard the gaskets.

(2) Remove the front Fuel Supply Tube from the engine. Refer to Figure 3.

(a) Remove the three bolts at the front of the Fuel Flow Divider Valve.

(b) Remove the nut, washer and bolt that attaches the two loop clamps to the clip position 5700 above the Bifurcation Panel. Do not remove the loop clamps.

(c) Remove the wire from the tube nut.

(d) Disconnect the tube nut from the adapter.

(e) Remove the tube from the engine.

(f) Remove the packing from the adapter and discard the packing.

(g) Remove the seal ring from the fuel supply tube and discard the seal ring.

(3) Remove the Fuel Flow Divider Valve from the engine.

(a) Remove the two bolts which attach the valve to the rear bracket. Refer to Figure 2.

(b) Remove the four bolts that attach the support to the stage 7D support flange. Refer to Figure 4.

(c) Remove the valve.

(4) Remove the 2A2073-01 Fuel Flow Divider Valve Rear Bracket Assembly. Refer to Figure 4.

(a) Remove the five nuts and bolts that hold the bracket to Flange K.

(b) Remove the bracket.

H. Installation Instructions for the Fuel Flow Divider Valve Rear Bracket Assembly.

(1) Install the Fuel Flow Divider Valve Rear Bracket.

(a) Install a reworked 2A2073-01 Fuel Flow Divider Valve Rear Bracket Assembly (1 off) and the bolts (5 off) on Flange K. Attach the nuts (5 off) to the bolts, finger tight. Refer to Figure 4.

NOTE: Use a bracket which incorporates Reference (2).

(2) Install the Transfer Tubes to the Fuel Flow Divider Valve. Refer to Figure 2.

(a) Apply CoMat 10-041 white petrolatum to the AS3209-010 transfer tube packings (20 off). Refer to the approved procedure in Reference (2) Control No./TASK No. 70-23-13-911-010.

(b) Install two packings to each of the transfer tubes. Refer to the approved procedure in Reference (2), Control No./TASK No. 70-23-13-911-010.

(c) Install each transfer tube to each of the adapters on the fuel flow divider valve.

(3) Install the new Gaskets on the Fuel Flow Divider Valve Adapters. Refer to Figure 2.

(a) Install the new ST2229-07 gaskets (10 off), one each to the adapter conical seats. Refer to the approved procedure in Reference (2), Control No./TASK No. 70-23-13-911-010.

NOTE: Petrolatum can be used to hold the gaskets in place.

(4) Install the Fuel Flow Divider Valve. Refer to Figures 2 and 4.

(a) Install the valve to the rear bracket located on Flange K and the Stage 7D HPC Air Bleed Valve Flange.

(b) Lubricate the rear flange valve mount bolt threads (2 off) with CoMat 10-039 Lubricant (engine oil). Refer to Reference (2), Control No./TASK No. 70-30-00.

(c) Install the bolts which attaches the valve to the rear bracket, located on Flange K. Tighten the bolts until all the parts touch. Loosen the bolts three complete turns.

(d) Lubricate the front support bolts threads (4 off) with CoMat 10-039 Lubricant (engine oil). Refer to Reference (2), Control No./TASK No. 70-30-00.

(e) Install the bolts through the support and the Stage 7D support flange. Align the bolts hole on the support with the bolts holes on the stage 7 HPC air bleed valve flange and tighten with your fingers.

(5) Connect the Fuel Nozzle Supply Manifolds to the Fuel Flow Divider Valve Adapters. Refer to Figure 2.

(a) Apply CoMat 10-031 Anti-galling Compound to the shoulder on each of the ten fuel manifold tubes. Refer to Reference (2), Control No./TASK No. 70-30-00.

(b) Connect the tubes to the adapter and tighten the tube nuts with your fingers.

CAUTION: THIS PRESSURE TEST MUST BE DONE TO MAKE SURE THAT THE TRANSFER TUBE PACKINGS ARE NOT DAMAGED AND THAT NO LEAKS RESULT FROM DAMAGED PACKINGS. THIS PROCEDURE IS MANDATORY. UNLESS THIS PROCEDURE IS DONE, IT IS NOT POSSIBLE TO FIND DEFECTS CAUSED BY IMPROPER ASSEMBLY.

(6) Pressurize the system and check for leaks.

(a) Install the IAE 1P16042 Test Adapter to the front end of the fuel flow divider valve and attach with the bolts. Tighten the bolts with your hand.

(b) Attach a 100 PSIG (689,5 kPa) air source to the test adapter.

(c) Pressurize the system to 95 to 105 PSIG (655,0 to 723,9 kPa).

(d) Check the fuel manifold coupling nuts for leaks at the fuel flow divider valve with CoMat 10-045 Leak Tec Fluid. Refer to Reference (2), Control No./TASK No. 70-30-00.

(e) Hold the pressure for 5 minutes. No leakage from any surface, or joint, or connection is permitted. Repair any leaks you find.

(f) Decrease the air pressure to zero and remove the air pressure source from the test adapter.

(g) Remove the three bolts which secure the test adapter and remove the test adapter from the valve.

(7) Torque the five Fuel Flow Divider Valve Rear Bracket Bolts on Flange K to between 180 and 200 lbfin (2,03 and 2,26 mdaN). Refer to the approved procedure in Reference (2), Control No./TASK No. 70-23-11-911-010. Refer to Figure 4.

(8) Torque the two Fuel Flow Divider Valve Rear Mount Bolts to between 180 and 200 lbfin (2,04 and 2,226 mdaN). Refer to the approved procedure in Reference (2), Control No./TASK No. 70-23-11-911-010. Refer to Figure 2.

(9) Torque the four Fuel Flow Divider Valve Support Bolts on the Stage 7D Air Bleed Valve Flange to between 85 and 105 lbfin (1,0 and 1,2 mdaN). Refer to the approved procedure in Reference (2), Control No./TASK No. 70-23-11-911-010. Refer to Figure 4.

(10) Torque and safety the ten Fuel Manifold Coupling Nuts on the Fuel Flow Divider Valve Adapters. Refer to Figure 2.

CAUTION: MAKE SURE YOU USE THE PROCEDURE THAT FOLLOWS TO CORRECTLY TORQUE THE FUEL MANIFOLD COUPLING NUTS. INCORRECT TORQUE COULD RESULT IN DAMAGE TO ENGINE PARTS.

(a) Torque the coupling nuts by the following steps:

1 Torque the coupling nuts with the IAE 1P16139 Wrench to between 150 and 165 lbfin (1,69 and 1,86 mdaN). Refer to the approved procedure in Reference (2), Control No./TASK No. 70-23-11-911-010 for the use of torque wrenches with adapters.

2 Continue to torque the applicable coupling nuts until the nuts hold the necessary torque. If a nut will not hold torque after four torque procedures, replace or repair the tubes or seats.

(b) Safety the coupling nuts in pairs with CoMat 02-141 wire. Refer to the approved procedure in Reference (2), Control No./TASK No. 70-40-11-911-010 and Control No./TASK No. 70-30-00.

(11) Install the Fuel Supply Tube to the Fuel Flow Divider Valve and the Bifurcation Panel. Refer to Figure 3.

(a) Apply CoMat 10-041 white petrolatum to the new AS43013-116 Ring (1 off). Refer to the approved procedure in Reference (2), Control No./TASK No. 70-23-13-911-010 and Control No./TASK No. 70-30-00.

(b) Install the new ring in the groove on the flanged end of the fuel supply tube.

(c) Apply CoMat 10-041 White Petrolatum to the MS9966-10 Packing (1 off). Refer to the approved procedure in Reference (2), Control No./TASK No. 70-23-13-911-010 and Control No./TASK No. 70-30-00.

(d) Install a MS9966-10 packing to adapter at the bifurcation panel.

(e) Connect the supply tube nut to the adapter and tighten with your hand.

(f) Install the fuel supply tube to the front end of the fuel flow divider valve.

(g) Lubricate the bolt threads (3 off) with CoMat 10-039 Lubricant (engine oil). Refer to Reference (2), Control No./TASK No. 70-30-00.

(h) Install the bolts.

(i) Torque the bolts to between 85 to 105 lbfin (1,0 and 1,2 mdaN. Refer to the approved procedure in Reference (2), Control No./TASK No. 70-23-11-911-010.

(j) Tighten and torque the supply tube nut to between 1150 and 1250 lbfin (13,0 to 14,1 mdaN). Refer to the approved procedure in Reference (1), Control No./TASK No. 70-23-11-911-010.

(k) Safety the tube nut with CoMat 02-141 wire. Refer to Reference (2), Control No./TASK No. 70-40-11-911-010.

(l) Attach the tube at clip position 5700.

1 Install the bolt (1 off) and washer (1 off) through the two loop clamps and raceway clip and attach with the nut (1 off)

2 Torque the nut to between 36 and 45 lbfin (0,4 and 0,5 mdaN. Refer to the approved procedure in Reference (2), Control No./TASK No. 70-23-11-911-010.

(12) Do a fuel leak test. Refer to the approved procedures given in Reference (2), Control No./TASK No. 71-00-00-710-012 or Control No./TASK No. 71-00-00-710-046.

I. Recording Instructions

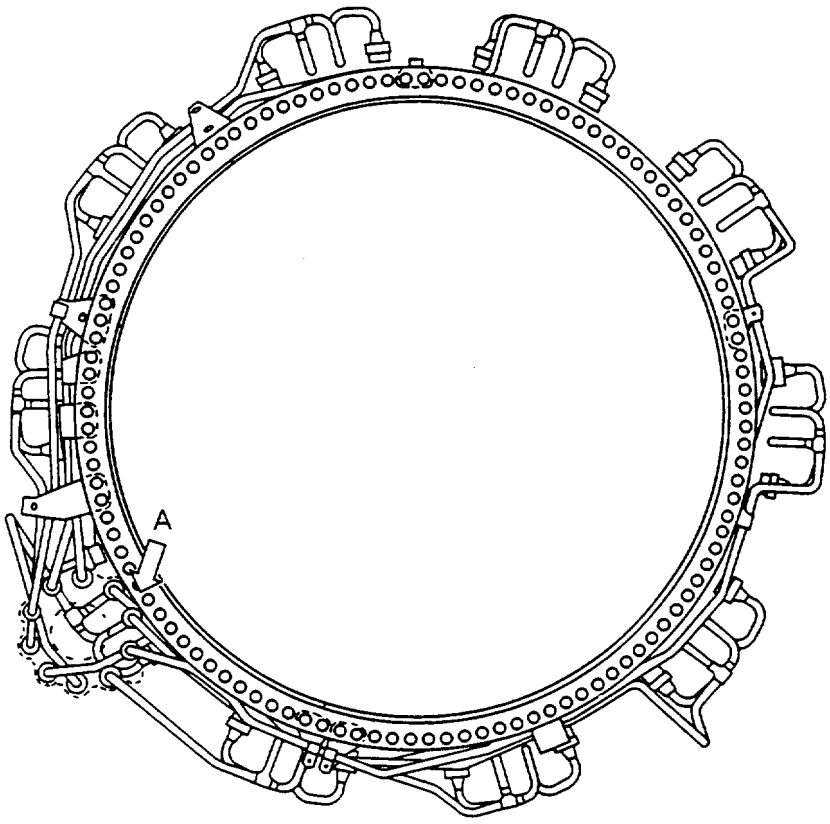
(1) A record of accomplishment is necessary.

J. Expendable parts required to incorporate this Service Bulletin

Part No.	ATA/IPC No.	Qty	Keyword
MS9966-10	73-11-49-08-090	1	Packing, Preformed
AS43013-116	73-11-49-09-116	1	Ring
AS3209-010	73-11-41-01-010	6	Packing, Preformed
AS3209-010	73-11-41-02-001	6	Packing, Preformed
AS3209-010	73-11-41-03-001	8	Packing, Preformed
ST2229-07	73-11-41-01-040	3	Gasket Option
ST2229-07	73-11-41-01-040	3	Gasket Option
ST2229-07	73-11-41-01-040	4	Gasket Option

K. Consumable parts required to incorporate this Service Bulletin

CoMat 02-141 Lockwire
CoMat 10-031 Anti-galling Compound
CoMat 10-039 Lubricant (engine oil)
CoMat 10-041 White Petrolatum
CoMat 10-045 Leak Tec Fluid



FRONT VIEW OF FLANGE K

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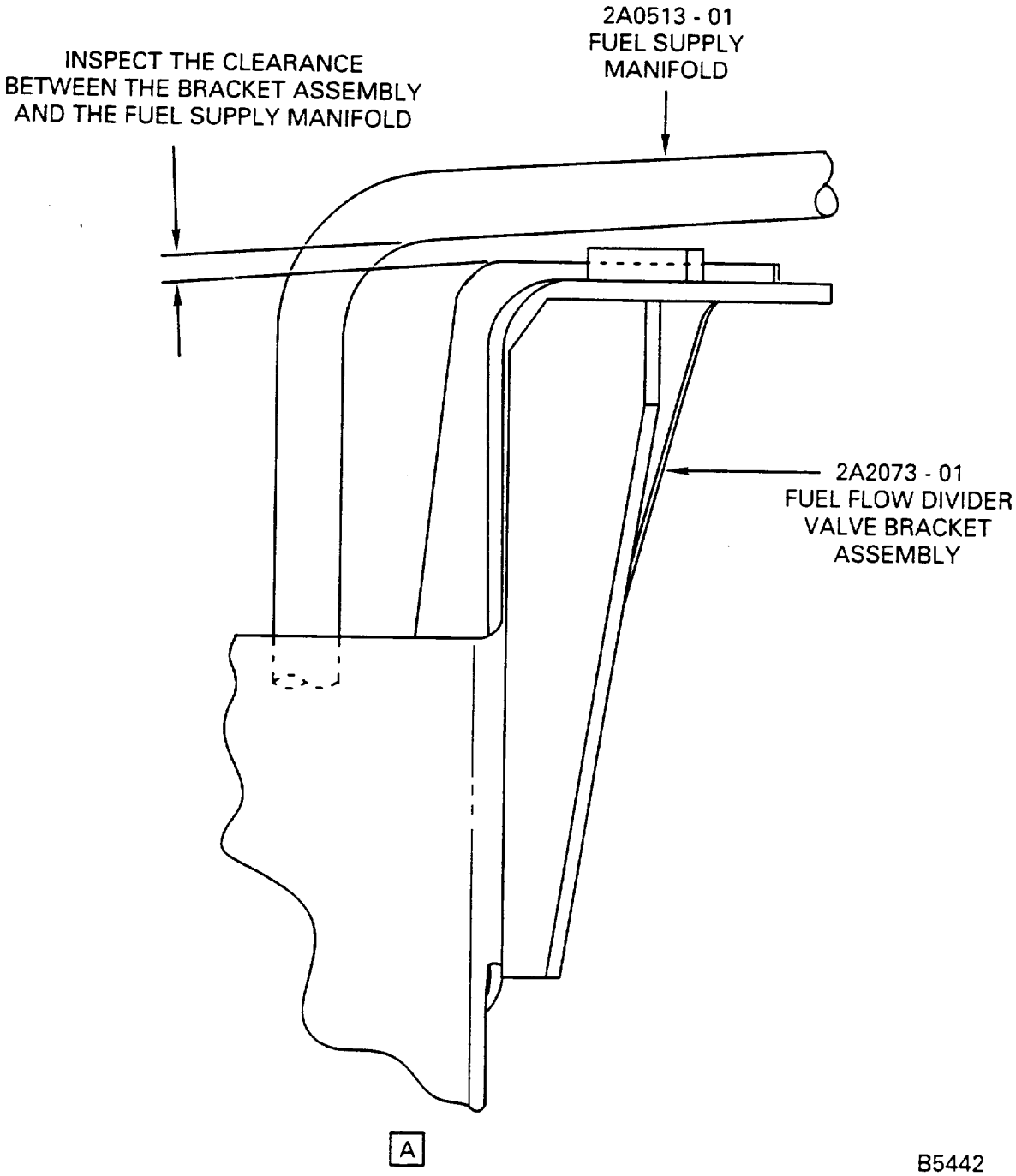
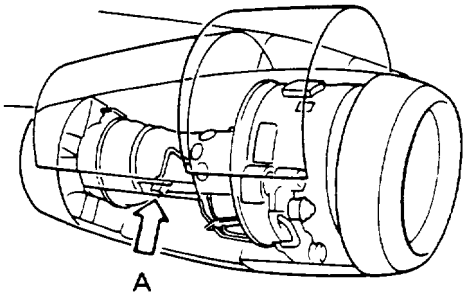
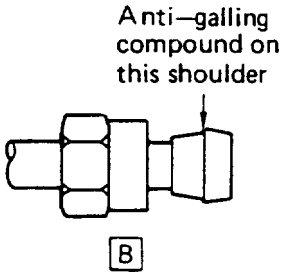
Fuel flow divider valve rear bracket assembly and fuel nozzle supply manifold inspection location
Fig.1 Sheet 1 of 2

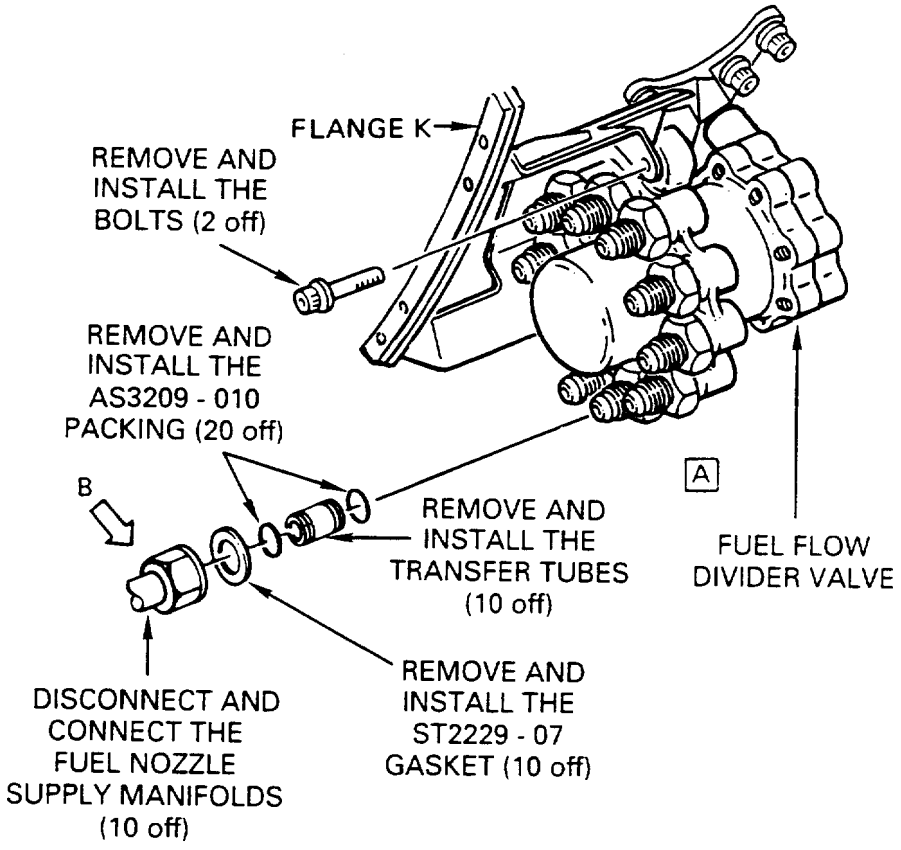


Fuel flow divider valve rear bracket assembly and fuel nozzle supply manifold inspection location
Fig.1 Sheet 2 of 2





DETAIL AT 10 POSITIONS



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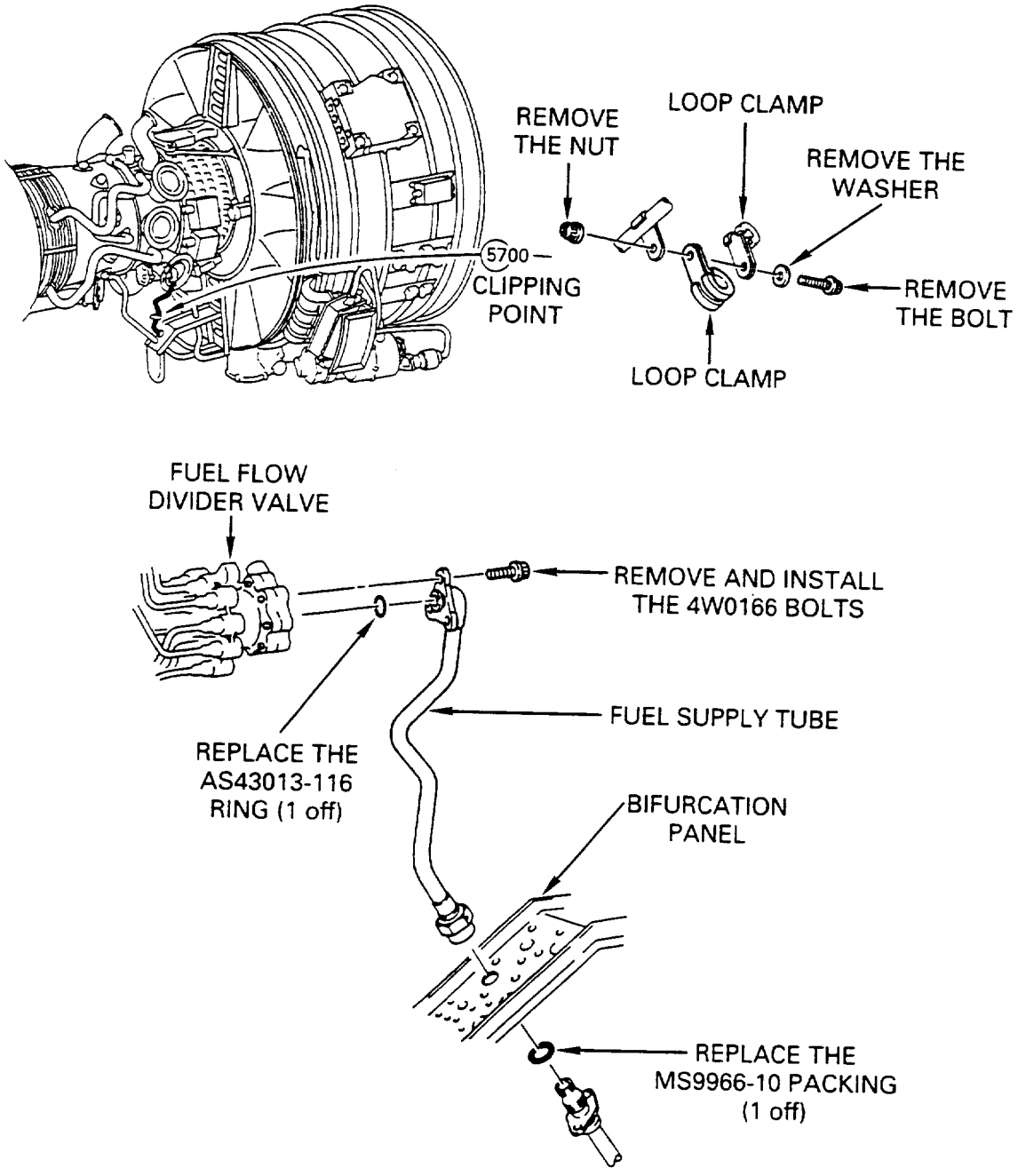
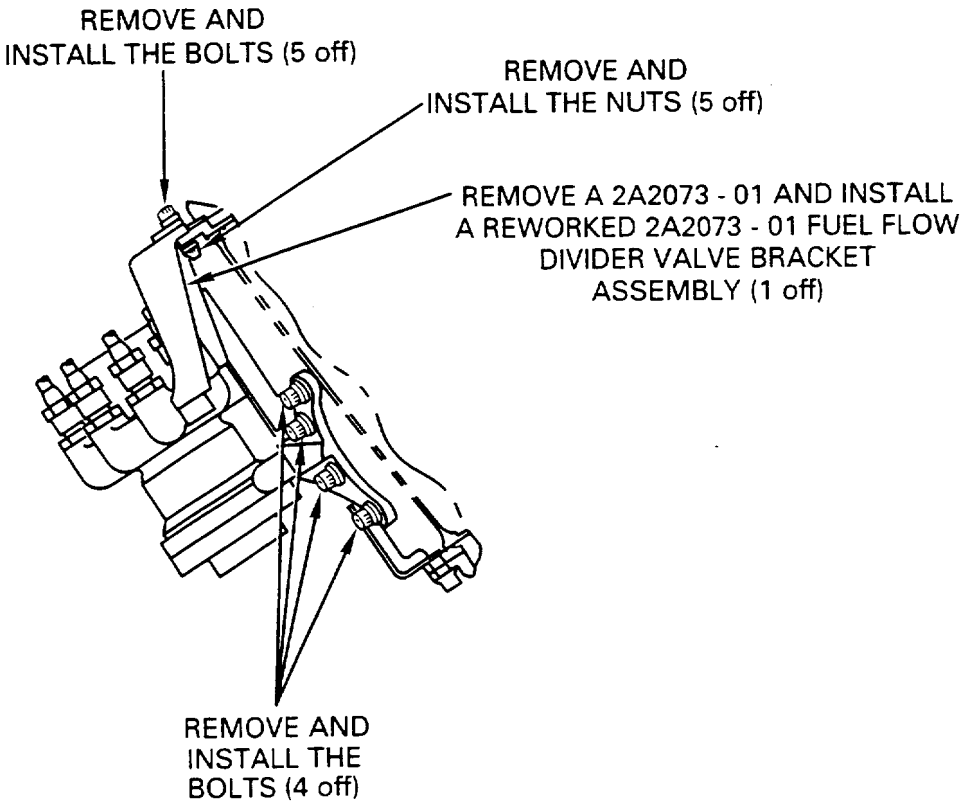
Removal and installation of the fuel flow divider valve and rear bracket assembly
Fig.2



Removal and installation of the fuel supply tube
Fig.3



Removal and installation of the fuel flow divider valve and rear bracket assembly
Fig.4