TELEDYNE CONTINENTAL ® AIRCRAFT ENGINE

SERVICE INFORMATION LETTER

Contains Useful Information Pertaining To Your Aircraft Engine

CATEGORY 5

SIL 04-9

Technical Portions FAA Approved
Supercedes SIL04-3A

SUBJECT: **IO240B13B Manifold Valve Replacement, Heat Isolation Modifications and Throttle Body Modification.**

PURPOSE: To reduce heat on the engine fuel system components and enhance idle stability

COMPLIANCE: Optional

MODELS AFFECTED: All IO240B13B Engines and any IO240B-Series engine which has previously complied with SIL04-1 "Installation of the Altitude Compensating Pump".

PART 1 MANIFOLD VALVE REPLACEMENT AND HEAT ISOLATION MODIFICATIONS

Teledyne Continental Motors has introduced fuel system product enhancements in order to reduce the possibility of heat build up in the engine fuel system components. The changes include a new manifold valve assembly installed on a heat-insulating manifold valve mount assembly. The existing Diamond Aircraft® fuel pressure transducer will be relocated. In order to enhance idle stability, a modification to drill an air bleed hole in the throttle plate has been introduced.

REQUIRED PARTS

(1) TCM has issued kit EQ 7462 in support of this bulletin. Contents of the kit are as follows:

Part Number	Nomenclature	Quantity
656832-1A1	Manifold Valve assembly	1
656849	Bracket Assembly – Fuel Manifold Valve	1
656839	Plate – Isolator	1
656840	Spacer	3
AN500-8-12	Screw- Isolator to Mount Assembly	2
AN500-8-18	Screw- Manifold Valve to Isolator Assembly	3
AN960-8	Washer	8
MS21044N08	Nut, Self Locking	3
646644R4S13.00	Hose- Throttle Body Outlet to "Tee" Fitting	1
MS51513B4	"Tee" Fitting- Pressure Transducer	1
646644S4S8.50	Hose- "Tee" Fitting to Manifold Valve	1
MS21919WF27	Clamp, Cushioned	1
MS21919WCF10	Clamp, Cushioned	1
AN3-4A	Bolt	1
AN960-10	Washer, Flat	1
MS21044N3	Nut, Self Locking	1
653900	Gasket, Throttle Body	1
656842	Twist Drill, .161 Dia.	1

Part Number	Nomenclature	Quantity
656837	Template, Throttle Plate	1

(2) Additional Parts Required for Aft Baffle Assembly Repair:
(a) 22-2441-62-01 Blanking Plate 1 Each (Procure from Diamond Aircraft)
(b) BSPQ-50-02 Cherry Q Rivets 2 Each (Local Procure)
(c) AN960-8 Washer 2 Each (Local Procure)
(d) MS21919WDG12 Clamp 1 Each (Local Procure)
(e) MS21919WDG2 Clamp 1 Each (Local Procure)
(f) AN526-832R8 Screw 1 Each (Local Procure)
(g) AN960-8 Washers 2 Each (Local Procure)
(h) AN365-832 Self Locking Nut 1 Each (Local Procure)

PART 1 MANIFOLD VALVE REPLACEMENT AND HEAT ISOLATION MODIFICATIONS

(1) Referring to the airframe manufacturers maintenance instructions:

WARNING

Magnetos must be verified to be in the off position and grounded and fuel must be selected to the off position when moving the propeller by hand, or personal injury may result.

(a) Remove electrical power from the aircraft.
(a) Remove the upper engine cowling from the aircraft.
(b) Shut off the fuel supply from the engine by closing the fuel shutoff valve.

(2) Remove the fuel pressure transducer and retain for re-installation. Remove the existing fuel pressure transducer hose and discard. Remove and retain the grommet from the aft baffle installation and retain for re-installation.

(3) Using one blanking plate P/N 22-2441-62-01, two Cherry Q rivets P/N BSPQ-05-02 and two AN960-8 washers, plug the existing hole in the RH aft baffle assembly. (The washers are to be placed under the shop head of the cherry rivets prior to pulling the rivets)

(4) Referring to the latest revision of the X30622 IO240 Series Overhaul Manual, Section 9, remove the existing fuel system manifold valve assembly, the manifold valve bracket assembly, and the fuel injector lines. Retain the manifold valve assembly and mounting bracket for core return to TCM. Retain the fuel injector lines for reinstallation.

(5) Remove the existing fuel line from the throttle and control unit to the manifold valve assembly (P/N 646644S4S15.00 pre SIL04-3 or 646644S4Y11.50 post SIL04-3) and discard.

(6) Measure 4 inches horizontally from the outboard edge of the LH aft baffle and place a vertical mark at this location. Measure vertically down 1.250 inches from the top of the aft baffle at the previously marked 4-inch location and place a horizontal mark. Inspect the marked location for interference with the oil cooler duct or baffle rivets. If location is satisfactory, drill a 7/8 inch hole at this location. A Uni-bit® is recommended for the drilling operation.

(7) Install the previously retained fuel pressure switch transducer rubber grommet into the new hole in the LH aft baffle.

(8) Install the new 656849 manifold valve bracket on the engine using the previously retained AN4-14A bolts, 20522 washers and 646605 plain nuts. The bolt threads must be lubricated with 50 weight motor oil and the nuts torqued to 100-125 In-Lbs.

(9) Install the new 656839 isolator assembly to the 656849 bracket assembly using 2 each P/N AN500-8-12 screws and AN960-8 washers. Torque the screws to 17.5 – 22.5 In-Lbs.

(10) Install the new 656832-1A1 manifold valve assembly to the isolator plate using 3 each 656840 spacers, AN500-8-18 screw, AN960-8 washers and MS21044N08 self locking nuts. Torque the nuts to 17.5 – 22.5 In-Lbs.

(11) Install the retained fuel pressure transducer from the aft side of the LH aft baffle through the rubber grommet into the MS51513B4 “T” fitting center port. Reference the airframe manufacturer’s manual for proper torque.

(12) Reroute the two fuel pressure transducer electrical wires from their existing routing on the RH side of the engine mount to their new position on the aft side of the LH baffle. Cut tywraps holding transducer wires in place on wire bundle across firewall. Open up adel clamps on wire bundle as required to free up transducer wires for rerouting under adel clamps on the RH side of the bundle with sufficient length to reach the new location of the transducer. Secure any excess wire to the wire bundle using tywraps. Secure the wires to the upper LH engine mount strut with one MS21919WDG12 clamp on the engine mount strut and one MS21919WDG2 clamp around the fuel pressure transducer wires, secured with one AN526-832R8 screw, two AN960-8 washers and one AN365-832 lock nut.

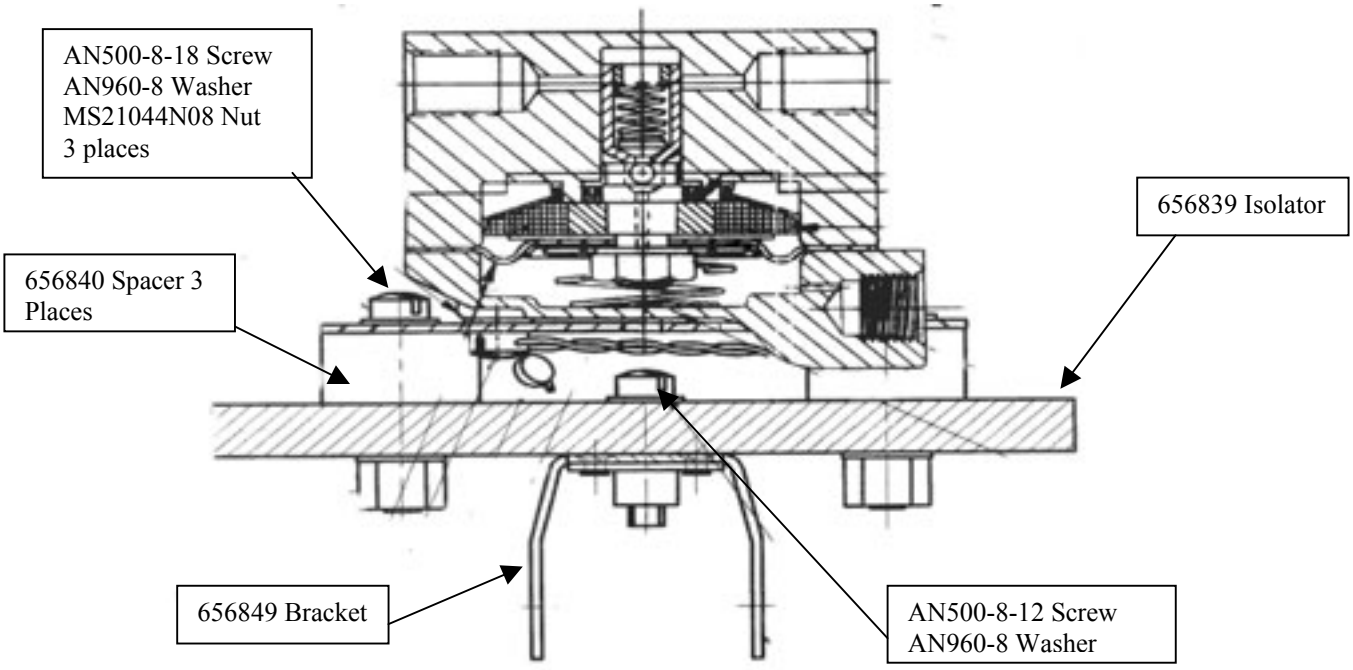
(13) Reinstall the previously removed fuel injector lines. Torque the fitting at the manifold valve to 55-60 In-Lbs. Torque the fitting at the fuel injector nozzle to 40-45 In-Lbs.

(14) Install the 646644R4S13.00 hose assembly from the throttle and control assembly to the outboard connection of the fuel pressure transducer "Tee" fitting. Install the 646644S4S7.00 hose assembly from the fuel pressure transducer "Tee" fitting to the manifold valve inlet fitting. Torque newly installed hose connections to 100-140 In-Lbs.

(15) Position the "Tee" fitting snug against the rubber grommet in the baffle assembly. Clamp the 646644R4S13.00 line to the #2 intake tube using one MS21919WF27 clamp, one MS21919WCF10 clamp, one AN3-4A bolt, one AN960-10 washer and one MS21044N3 nut. Position the clamp so that the "Tee" fitting retains it's position snug against the rubber grommet.

(16) Proceed to Part 2 of this bulletin.

FIGURE 1



Manifold Valve and Heat Isolator Assembly

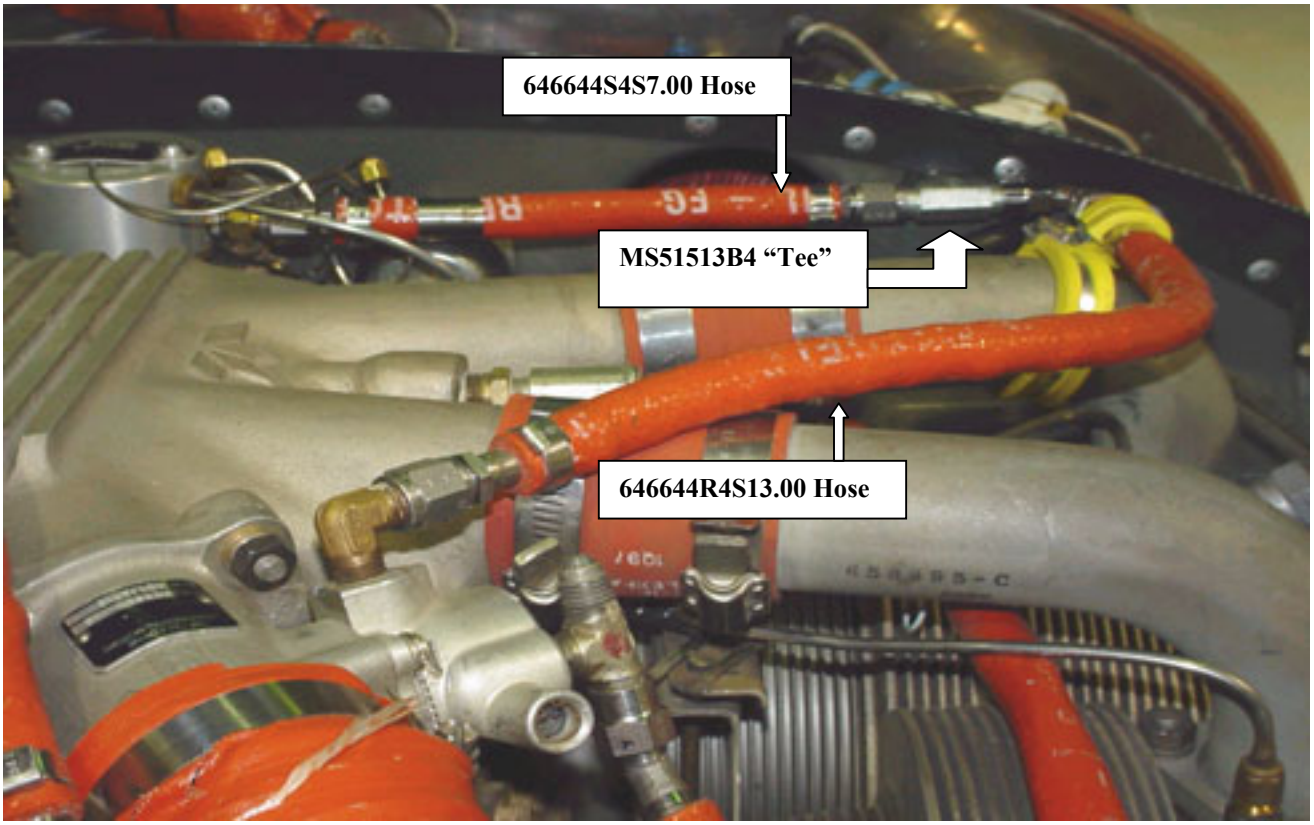


PHOTO 1

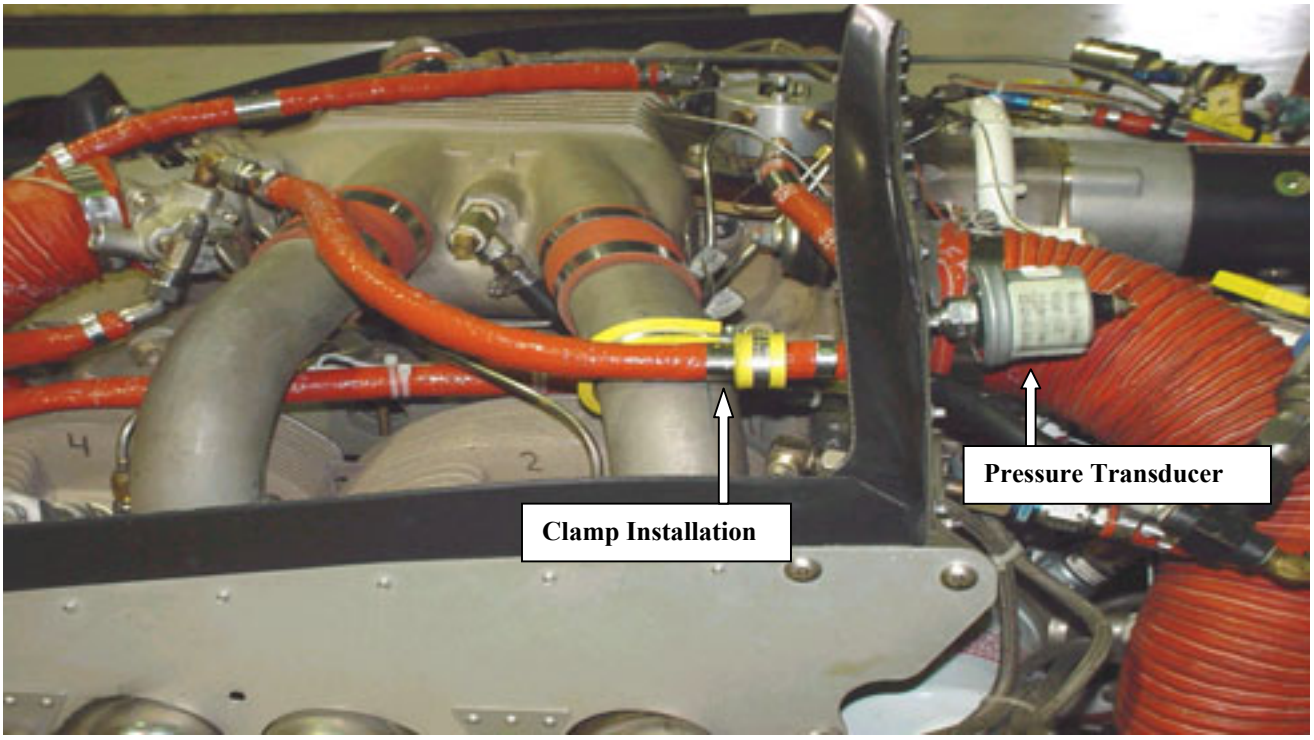


PHOTO 2

PART 2 THROTTLE PLATE MODIFICATION

In order to further enhance engine idle characteristics, Teledyne Continental Motors has introduced a modification to the throttle plate located in the fuel injection system Throttle and Control Assembly. This modification utilizes a drill guide template to allow precise placement of a hole in the throttle plate.

MODIFICATION INSTRUCTIONS

(1) Referring to the airframe manufacturers maintenance instructions:

WARNING

Magnetos must be verified to be in the off position and grounded and fuel must be selected to the off position when moving the propeller by hand, or personal injury may result.

(a) Remove electrical power from the aircraft.
(b) Remove the upper engine cowling from the aircraft.
(c) Shut off the fuel supply from the engine by closing the fuel shutoff valve.

(2) Remove the Throttle and Control Unit using the instructions contained in the latest revision of the IO240-Series Overhaul Manual X30622. Retain the removed hardware for re-installation, discard the gasket. (Reference Figure 1)

(3) Support the Throttle and Control Assembly with the flange on a suitable flat work surface.

CAUTION

Do not clamp the Throttle and Control assembly in a vise. Damage to the Throttle and Control Assembly may result.

(4) With the throttle lever in the closed position, insert the P/N 656837 drill guide template into the induction end of the Throttle and Control Assembly, matching the angle of the template to the angle of the throttle plate. (Reference Figure 2)

(5) Use drill guide hole as shown in Figure 2 to drill through the throttle plate using the P/N 656742 twist drill. A slight downward pressure on the drill template will keep the template properly seated against the throttle plate during the drilling operation. After the drilling procedure is completed remove all burrs, metal shavings and contaminants.

(6) Reinstall the throttle and control assembly using a new P/N 653900 gasket in accordance with the procedures contained in the overhaul manual. Torque the retaining nuts to 90-100 In-LBS, using 50 weight engine oil as thread lubricant.

(7) Restore electrical power to the aircraft and open the fuel supply valve. Using the boost pump, leak check the fuel system. Correct any discrepancies before the engine is operated.

WARNING

Over priming can cause a flooded intake resulting in a hydraulic lock condition and subsequent engine damage of failure. If the engine is over primed, or flooded, make sure that all fuel has drained from the intake and cylinder prior to engine start.

(8) Perform the fuel system setup in accordance with the procedures contained in the latest revisions of SID97-3 and the IO240 Engine Maintenance Manual.

(9) Restore the aircraft to it's original configuration by reinstalling all airframe parts removed in step 1 using the airframe manufacturers maintenance manual.

(10) Make appropriate log entries for compliance with this bulletin.

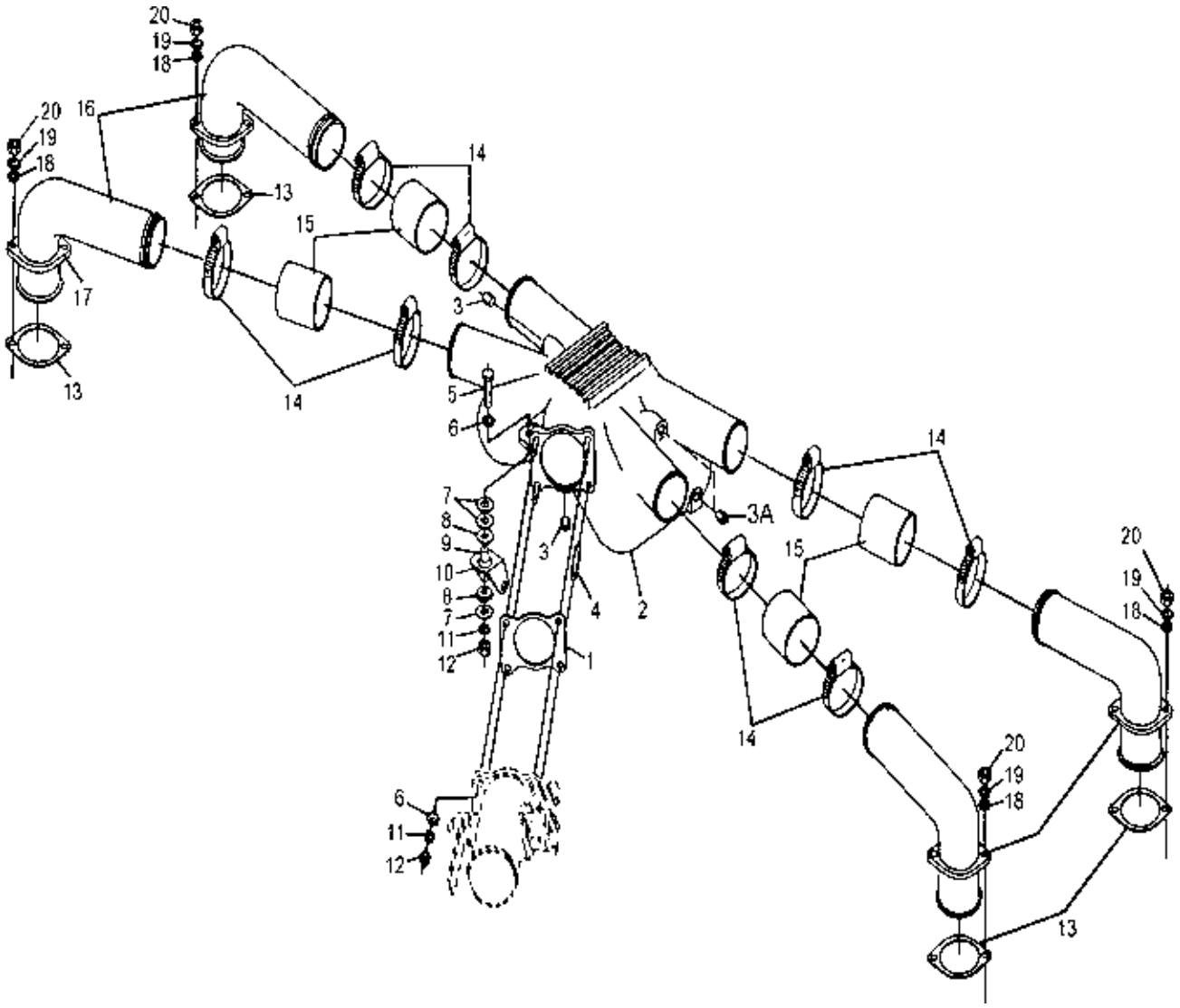


FIGURE 2
INDUCTION SYSTEM ON IOF-240-B3B, B9B & B13B SERIES ENGINES

1. Gasket
2. Plenum Assembly
3. Plug
3A. Plug
4. Stud
5. Screw
6. Washer
7. Washer
8. Spacer
9. Sleeve
10. Plenum Bracket
11. Lock Washer
12. Plain Nut
13. Intake Gasket
14. Clamp
15. Intake Hose
16. Induction Tube
17. Induction Flange
18. Washer
19. Lock Washer
20. Nut

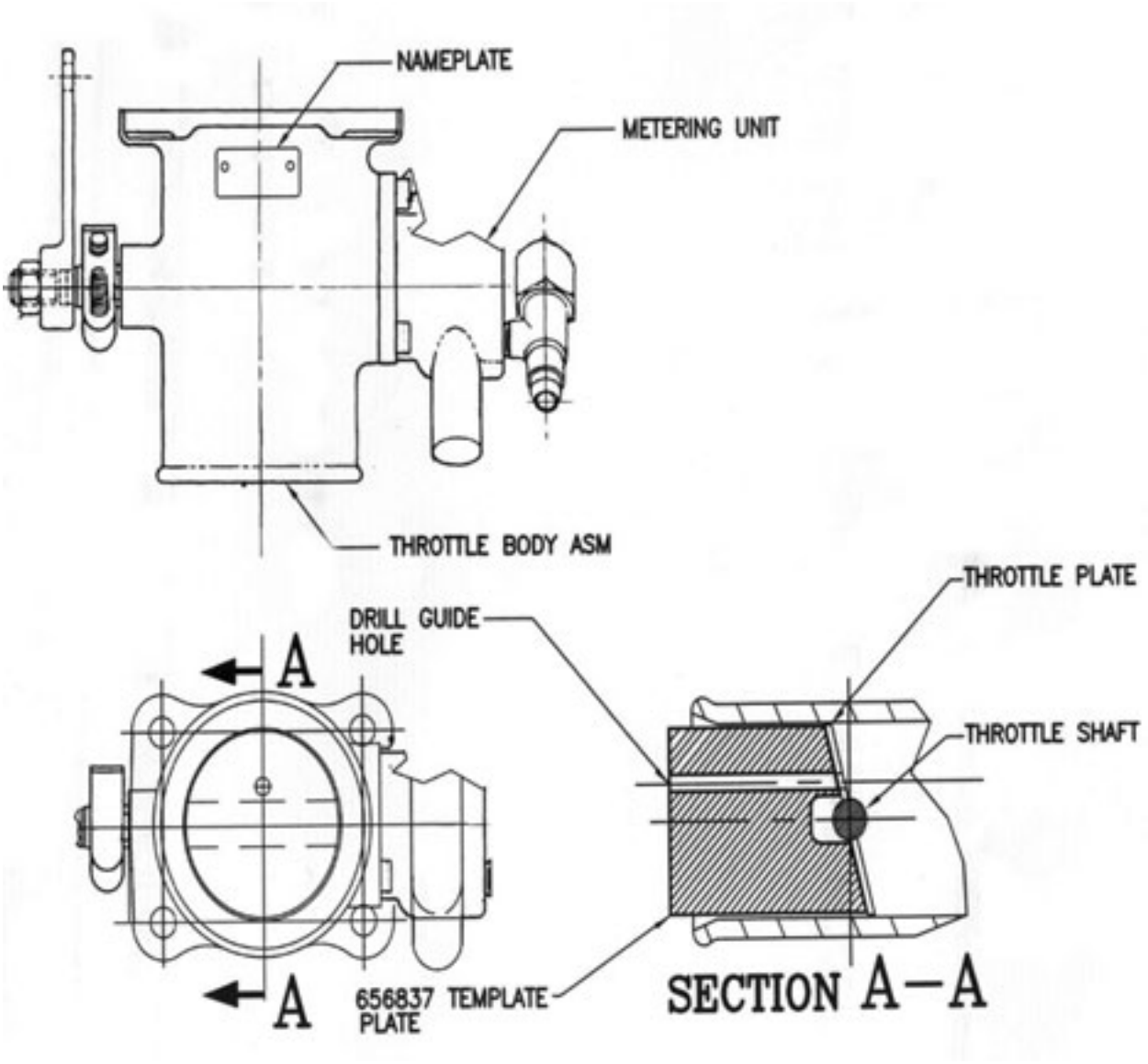


FIGURE 3
THROTTLE PLATE MODIFICATION