

# TELEDYNE CONTINENTAL® AIRCRAFT ENGINE

## SERVICE INFORMATION LETTER

Contains Useful Information Pertaining To The Continental Aircraft Engine

Category 5

**SIL05-4A**

Technical Portions FAA

Approved

Supersedes SIL05-4

**SUBJECT: IO240-SERIES ENGINES P/N 656859 INLINE FUEL FILTER INSTALLATION AND INSPECTION PROCEDURES**

**PURPOSE:** To provide installation instructions for an additional fuel system filter and provide Instructions For Continued Airworthiness for the filter once it is placed in service.

**COMPLIANCE:** Optional, recommended to be performed in conjunction with SIL04-9 or SIL05-8

### MODELS

**AFFECTED: IO240-B Series Engines**

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### GENERAL INFORMATION

Teledyne Continental Motors has received approval for the installation of an additional fuel system filter, to be installed in-line between the engine driven fuel pump and the throttle and control assembly. The P/N 656859 filter assembly incorporates a 32-micron screen and a built-in bypass valve that opens at approximately 3.5 PSID.

**NOTE:** The P/N 656143-1 fuel pump inlet filter is to be installed in addition to the P/N 656859 Inline Fuel Filter Installation, reference the latest revision of SIL05-6.

**NOTE:** Modifications found in this bulletin are specific to the IO-240-B as installed in the Diamond DA-20. Owners wishing to incorporate engine upgrades in other applications should contact TCM Technical Customer Service at 888-826-5465 or 1-251-438-3411.

### PARTS

TCM has issued a kit in support of the fuel filter installation

#### EQ7463

(A) 656859A1	Fuel Filter Assembly with Fittings	1 Each
(B) 646644S4Y6.50	Hose Assembly	2 Each
(C) AN500-10-8	Screw #10-24	2 Each
(D) AN960-10	Washer, Plain	2 Each
(E) MS35338-43	Washer – Lock	2 Each
(F) 656892-1	Sleeve – Heat 6 Inches Long	1 Each
(G) 10-620013	Cable Tie	2 Each

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## INSTALLATION 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 upper and lower engine cowlings from the aircraft
  - (c) Shutoff the fuel supply to the engine by closing the fuel shutoff valve.
- (2) Remove the existing P/N 646644S4Y13.00 fuel line running from the engine driven fuel pump to the throttle and control assembly and discard this line. Cap both the fuel pump outlet fitting and the throttle and control assembly inlet fitting to protect them from contamination during the engine cooling baffle modification.
  - (3) Drill and deburr two .198" (#10 drill) holes in the engine cooling baffle, 0.80" apart, in the position shown in Figure 1 and Photo 1.
  - (4) Trim the lower edge of the engine cooling baffle assembly as required, reference photo 1, to allow the fuel line to be routed to the front of the cooling baffle assembly.
  - (5) Install the P/N 656859A1 filter assembly onto the cooling baffle assembly using two AN500-10-8 screws, two MS35338-43 lock washers and two AN960-10 plain washers. Torque the screws to 21-25 In-Lbs.

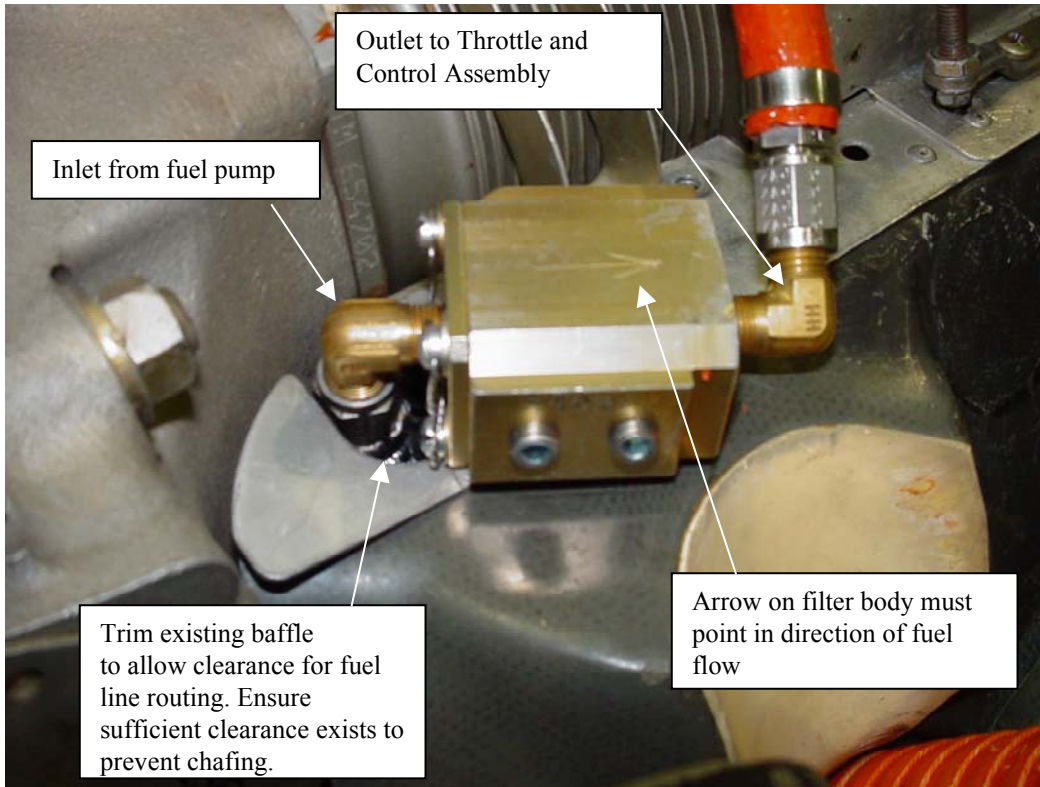
**CAUTION:** *Ensure that the arrow on the filter assembly housing is pointing in the direction of fuel system flow from the fuel pump to the throttle and control assembly.*

- (6) Install the P/N 656892-1 fire-sleeve on one P/N 646644S4Y6.50 hose assembly and secure on both ends with the P/N 10-620013 cable ties. Install the P/N 646644S4Y6.50 hose assembly protected with fire-sleeve from the pump to the filter and the other P/N 646644S4Y6.50 hose assembly from the filter to the throttle and control assembly. Torque the fittings to 135-190 In-Lbs. using the following procedures:
  - (a) Select the proper size open-end wrenches that will fit the fitting body and hose or tubing end fitting.
  - (b) Torque the hose or tubing end fitting to the specified torque using a properly certified calibrated torque wrench while maintaining sufficient force on the component fitting to prevent twisting and shear loads.
  - (c) Support the last fitting in the assembly on components that contain multiple fittings coupled in one location. DO NOT over torque fittings.
- (7) Open the fuel shutoff valve and static leak check the fuel filter assembly. Correct any discrepancies noted before proceeding to the next step.
- (8) Restore electrical power to the aircraft. Using the fuel boost pump, leak-check the fuel system. Correct any defects noted before proceeding to the next step.

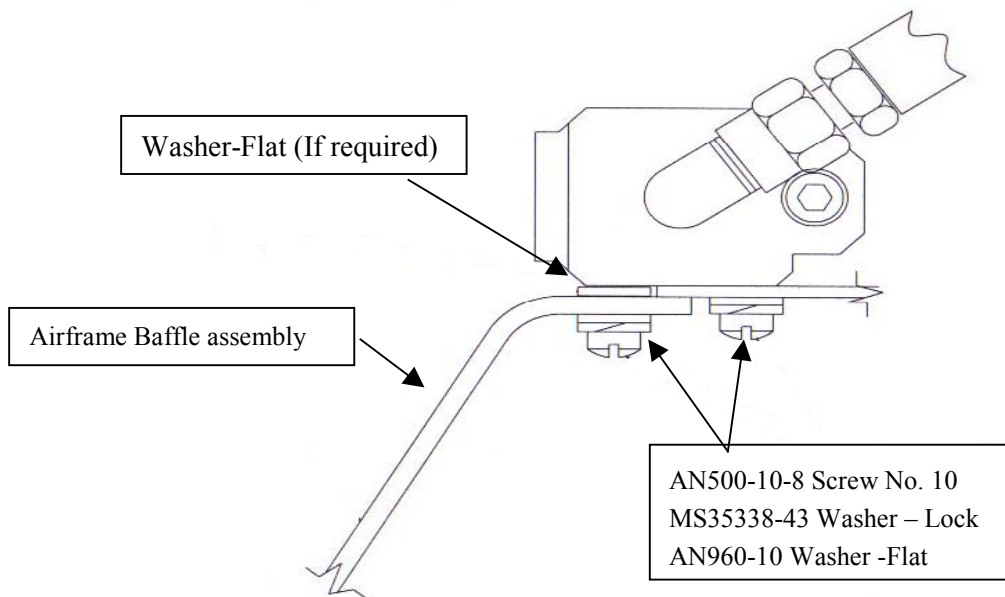
#### **WARNING**

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

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**PHOTO 1**



**FIGURE 1**

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(9) Perform the fuel system verification in accordance with the procedures contained in the latest revision of TCM bulletin SID97-3 and the procedures contained in the latest revision of the IO-240 Maintenance Manual TCM Form X30621A.

(10) Reinstall the cowlings in accordance with the airframe manufacturer's maintenance instructions.

### FILTER INSTALLATION

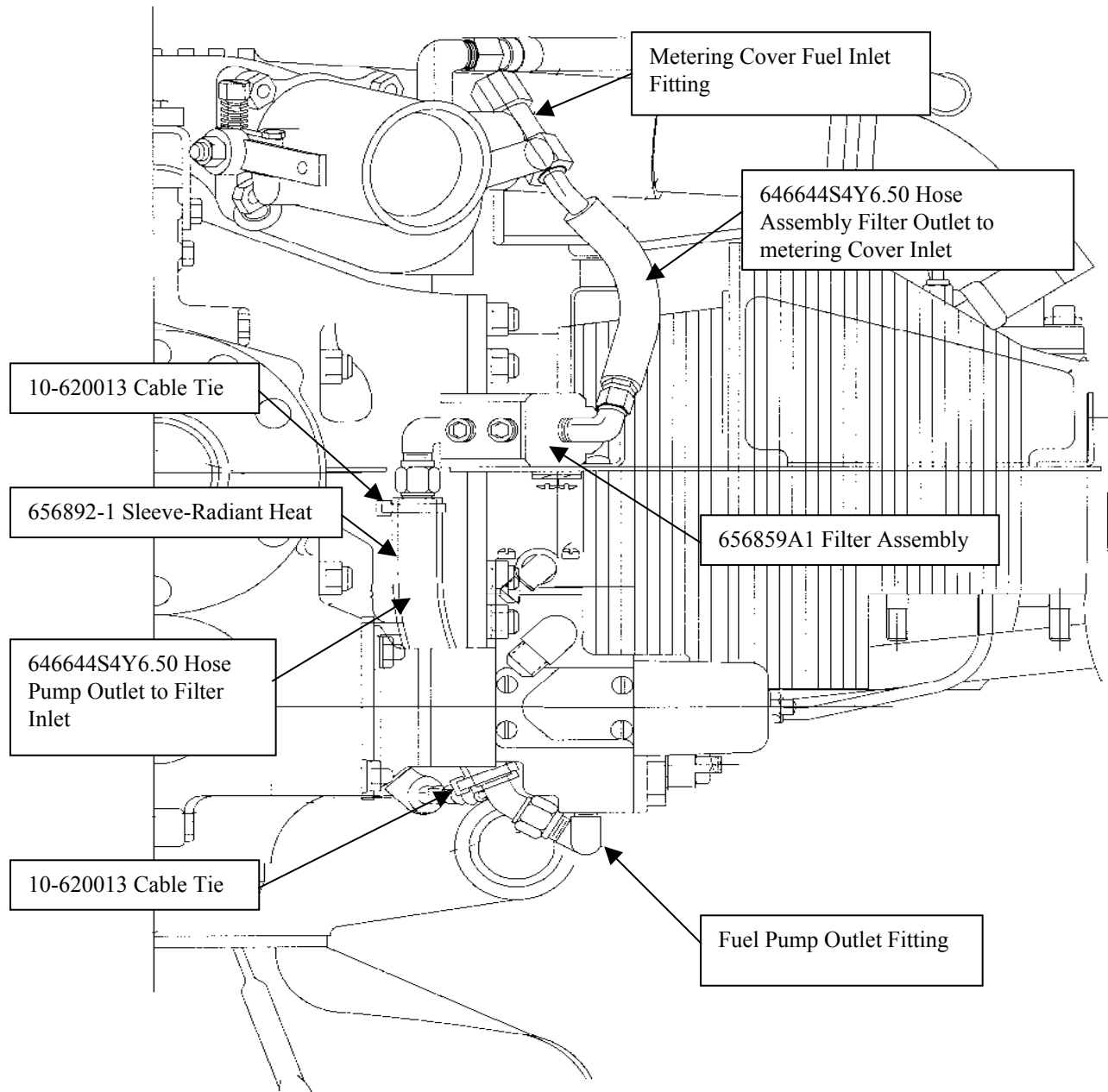



FIGURE 2

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## INSTRUCTIONS FOR CONTINUED AIRWORTHINESS

Teledyne Continental Motors requires the P/N 656859A1 filter assembly to be inspected after each 200 hours in service using the following instructions and referencing Figure 2.

- (1) Referring to the airframe manufacturers maintenance instructions:

### **WARNING**

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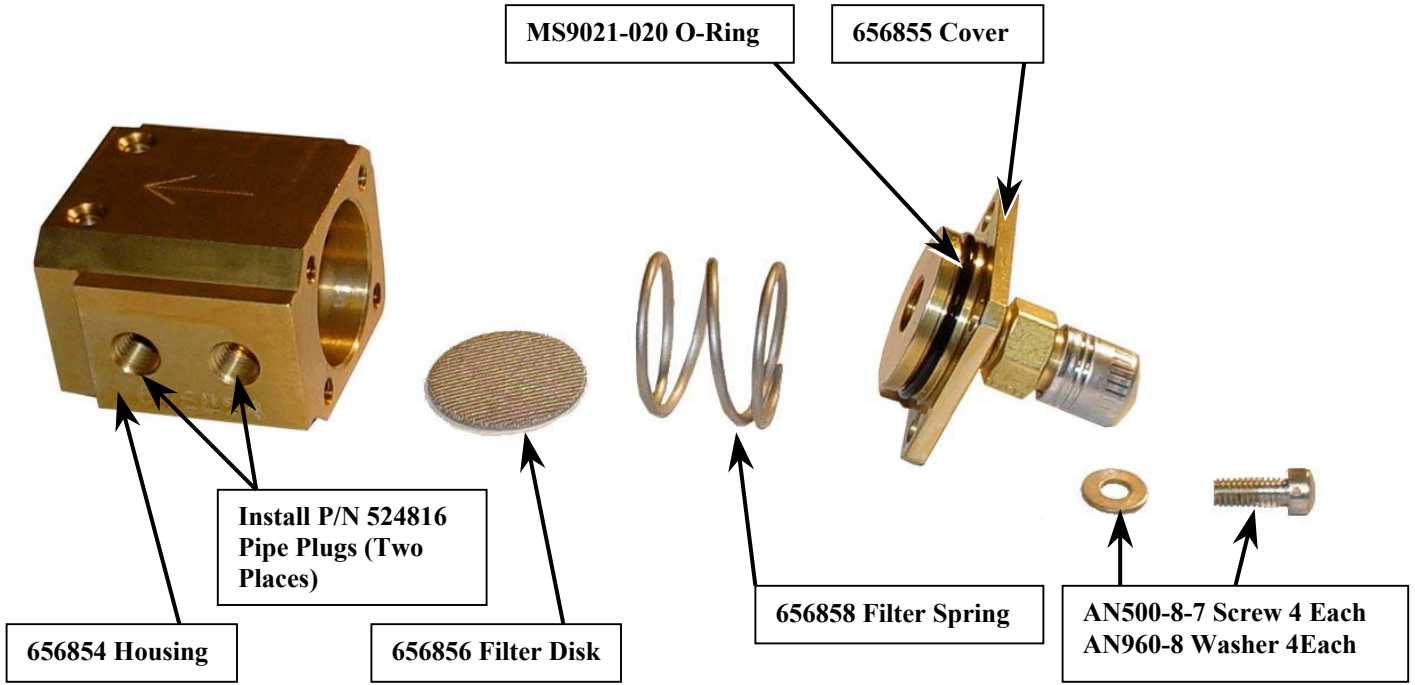
- (a) Remove electrical power from the aircraft.
  - (b) Remove the upper engine cowling from the aircraft
  - (c) Shutoff the fuel supply to the engine by closing the fuel shutoff valve.
- (2) Remove the P/N 656859A1 filter assembly. Cut the safety wire on the four screws holding the P/N 656855 cover on the inlet side of the fuel filter assembly. Remove the four screws and remove the cover. Remove the P/N MS9021-020 o-ring from the cover and discard.
  - (3) Remove the P/N 656858 filter spring from the filter housing, then remove the P/N 656856 filter disc from the housing.
  - (4) Clean the filter disc by soaking in lacquer thinner or acetone for several hours. Blow the filter disc dry with clean, filtered dry compressed air. If any physical damage is noted to the filter disc, it must be replaced.
  - (5) Install the filter disc and then the spring into the filter housing assembly. Install a new P/N MS9021-020 o-ring onto the cover. Lubricate the o-ring with clean engine oil and install the cover onto the filter housing assembly. Secure the cover using the four P/N AN500-A8-7 screws and AN960-8 washers. Torque the cover retaining screws to 17.5 to 22.5 In-Lbs. Lockwire the screws in pairs using 0.032" stainless steel lockwire conforming to MS20995 Condition A.
  - (6) Install the P/N 656859A1 filter assembly onto the cooling baffle assembly using two AN500-10-8 screws, two new MS35338-43 lock washers and two AN960-10 plain washers. Torque the screws to 21-25 In-Lbs.
  - (7) Reconnect the hose fittings to the filter assembly. Torque the fittings to 135-190 In-Lbs. using the following procedures:
    - (a) Select the proper size open end wrenches that will fit the fitting body and hose or tubing end fitting.
    - (b) Torque the hose or tubing end fitting to the specified torque while maintaining sufficient force on the component fitting to prevent twisting and shear loads.
    - (c) Support the last fitting in the assembly on components that contain multiple fittings coupled in one location. DO NOT over torque fittings.
  - (8) Open the fuel shutoff valve and static leak check the fuel filter assembly. Correct any discrepancies noted before proceeding to the next step.
  - (9) Restore electrical power to the aircraft. Using the fuel boost pump, leak check the complete engine fuel system. Correct any defects noted before proceeding to the next step.

### **WARNING**

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

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- (10) Perform the fuel system verification in accordance with the procedures contained in the latest revision of TCM bulletin SID97-3 and the procedures contained in the latest revision of the IO-240 Maintenance Manual TCM Form X30621A.
- (11) Reinstall the cowlings in accordance with the airframe manufacturer's maintenance instructions.



**PHOTO 2  
FUEL FILTER ASSEMBLY**

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