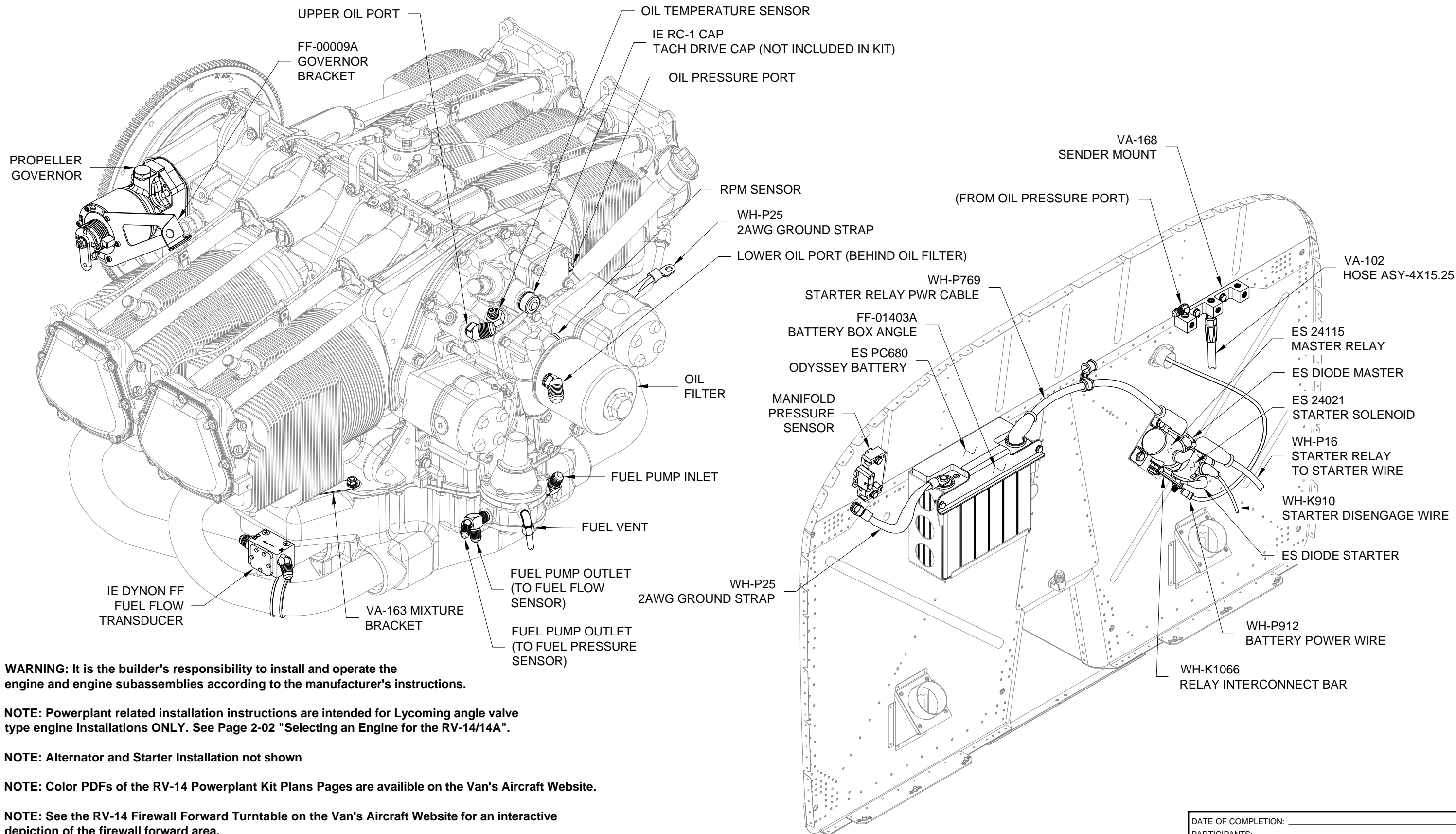


SECTION 43: ENGINE INSTALLATION



WARNING: It is the builder's responsibility to install and operate the engine and engine subassemblies according to the manufacturer's instructions.

NOTE: Powerplant related installation instructions are intended for Lycoming angle valve type engine installations ONLY. See Page 2-02 "Selecting an Engine for the RV-14/14A".

NOTE: Alternator and Starter Installation not shown

NOTE: Color PDFs of the RV-14 Powerplant Kit Plans Pages are available on the Van's Aircraft Website.

NOTE: See the RV-14 Firewall Forward Turntable on the Van's Aircraft Website for an interactive depiction of the firewall forward area.

DATE OF COMPLETION:	_____
PARTICIPANTS:	_____
DATE: 12/15/15	REVISION: 0
RV-14	PAGE 43-01



Step 1: Fabricate the FF-01411 Battery Box Angle Seal from VA-204 (foam) material as shown in Figure 1.

Step 2: Remove the adhesive backing and adhere the battery box angle seal to the underside of the FF-01403A Battery Box Angle. See Figure 2.

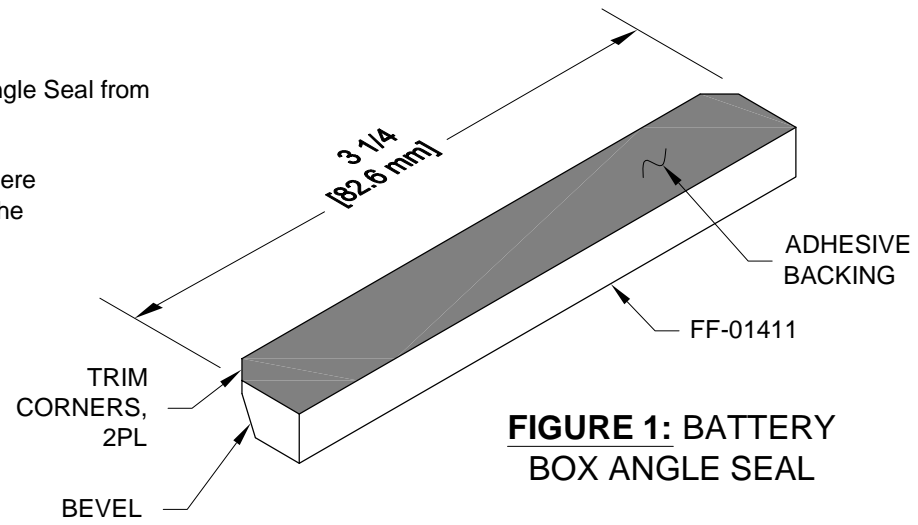


FIGURE 1: BATTERY BOX ANGLE SEAL

Step 3: Install the ES PC680 Odyssey Battery as shown in Figure 2.

Step 4: Fabricate the FF-01410 Battery Box Guard by cutting a 1 1/8 in [28.6 mm] length of MS21266-1N Nylon Grommet Strip material.

Step 5: Use RTV High Temp. Sealant to attach the battery box guard to the battery box where indicated in Figure 2.

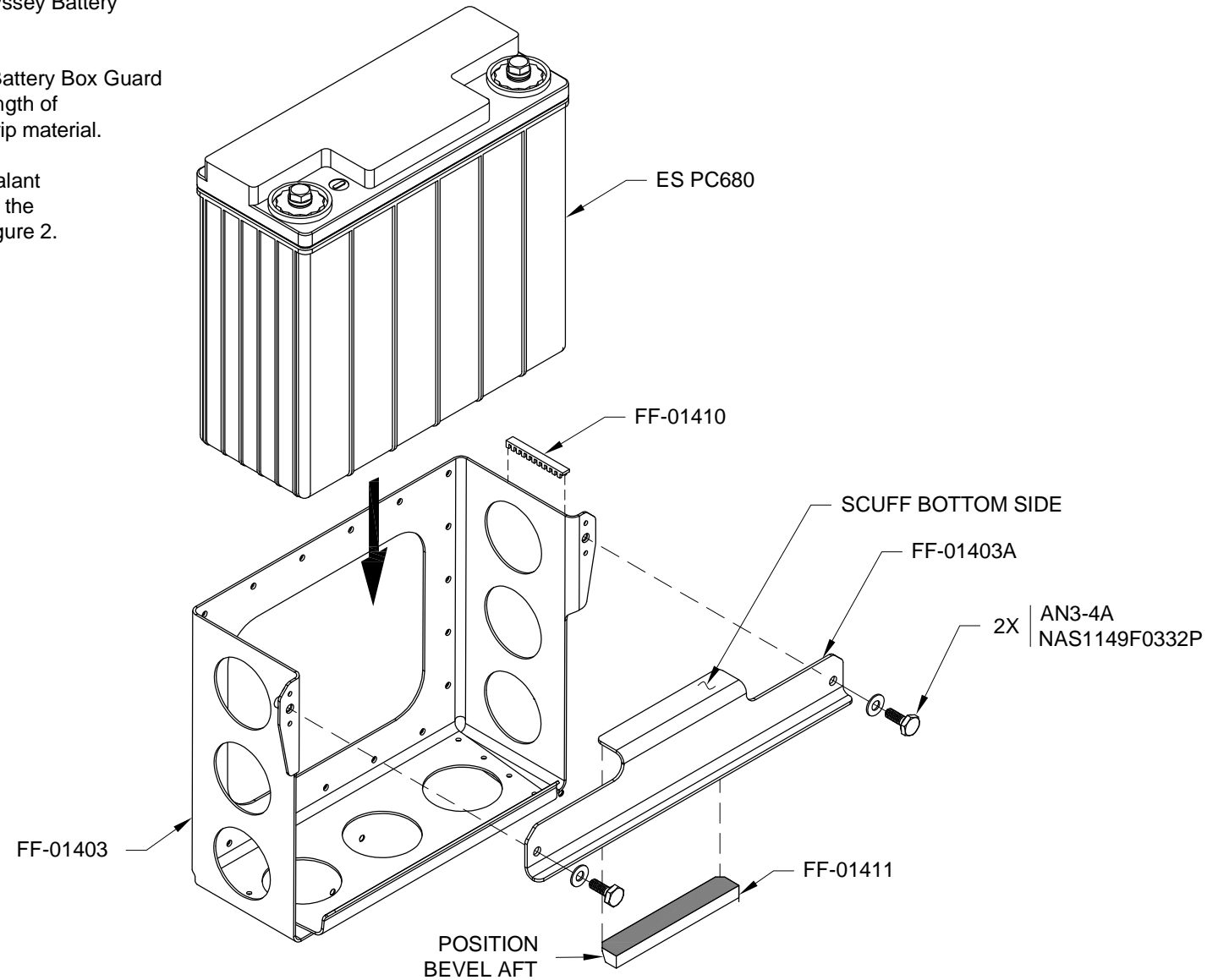
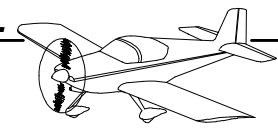


FIGURE 2: BATTERY INSTALLATION



WARNING: For safety, disconnect the WH-P25 Ground Strap from the battery terminal while performing any electrical installation work.

Step 1: Install the WH-P25 2AWG Ground Strap. Leave the ground strap disconnected from the battery for now. See Figure 1.

Step 2: Install the WH-P769 Starter Relay Power Cable.

Step 3: Add the insulated boot where indicated.

Step 4: Install the clamps as shown.

NOTE: The sensors shown in this section are shown for convenience. These may be ordered from the chosen EFIS supplier and installed at this time.

It is the responsibility of the builder to ensure that the sensors are compatible with their choice in avionics.

Step 5: Depending on the type of avionics, install the manifold pressure sensor shown in Figure 2 or Figure 3.

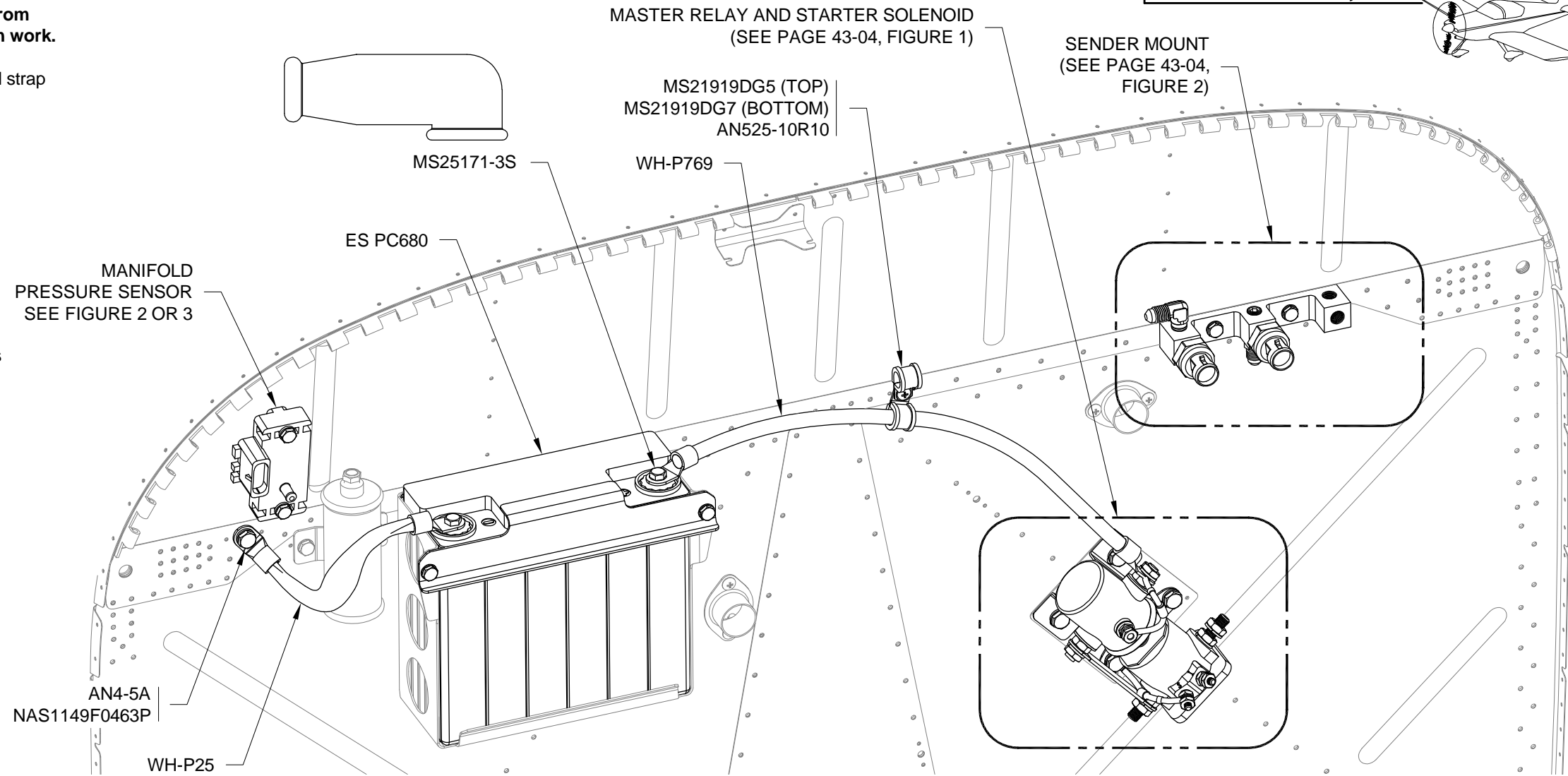


FIGURE 1: FIREWALL COMPONENTS

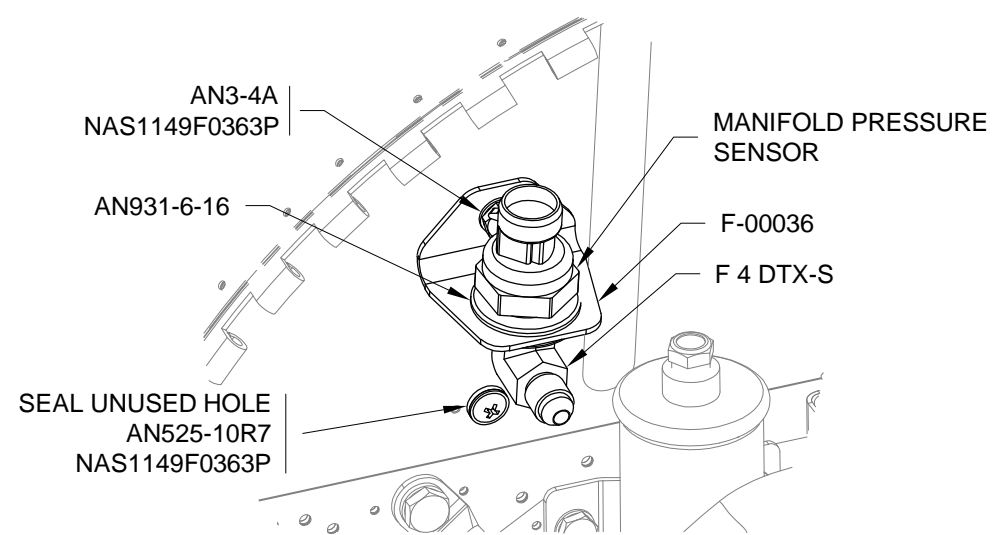


FIGURE 2: GARMIN MANIFOLD PRESSURE SENSOR

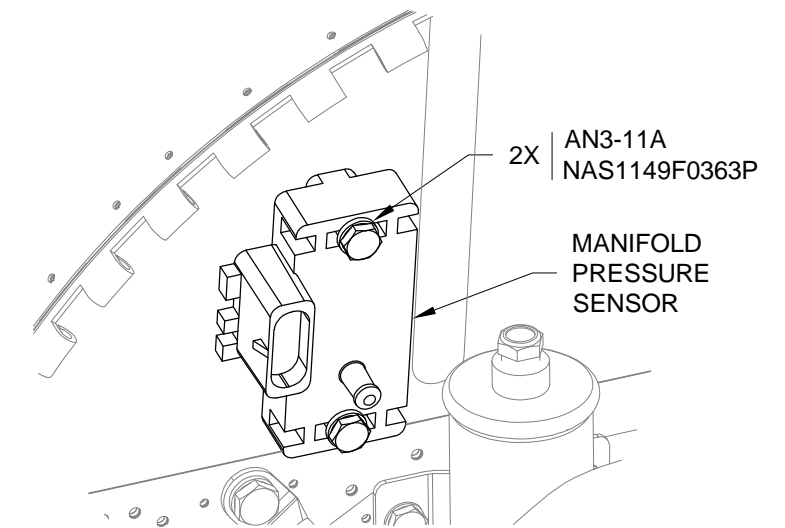
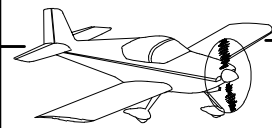


FIGURE 3: AFS-DYNON MANIFOLD PRESSURE SENSOR



Step 1: Cover the center of the WH-K1066 Relay Interconnect Bar with the provided length of ES HST 1/2 Heat Shrink as shown in Figure 1.

Step 2: Install the ES 24115 Master Relay and ES 24021 Starter Solenoid to the firewall.

Step 3: Add insulated boots where indicated.

Step 4: Connect the WH-K1066 Relay Interconnect Bar, WH-P912 Battery Power Wire, WH-P769 Starter Relay Power Cable, ES Diode Master, ES Diode Starter, WH-P16 Starter Relay to Starter Wire and WH-K910 Starter Disengage Wire to the relays.

Use a back-up wrench on the jam nuts to prevent the studs from rotating.

Route the opposite end of the battery power wire through the nearest FF-00001 Firewall Penetration Fitting. See Page 43-01.

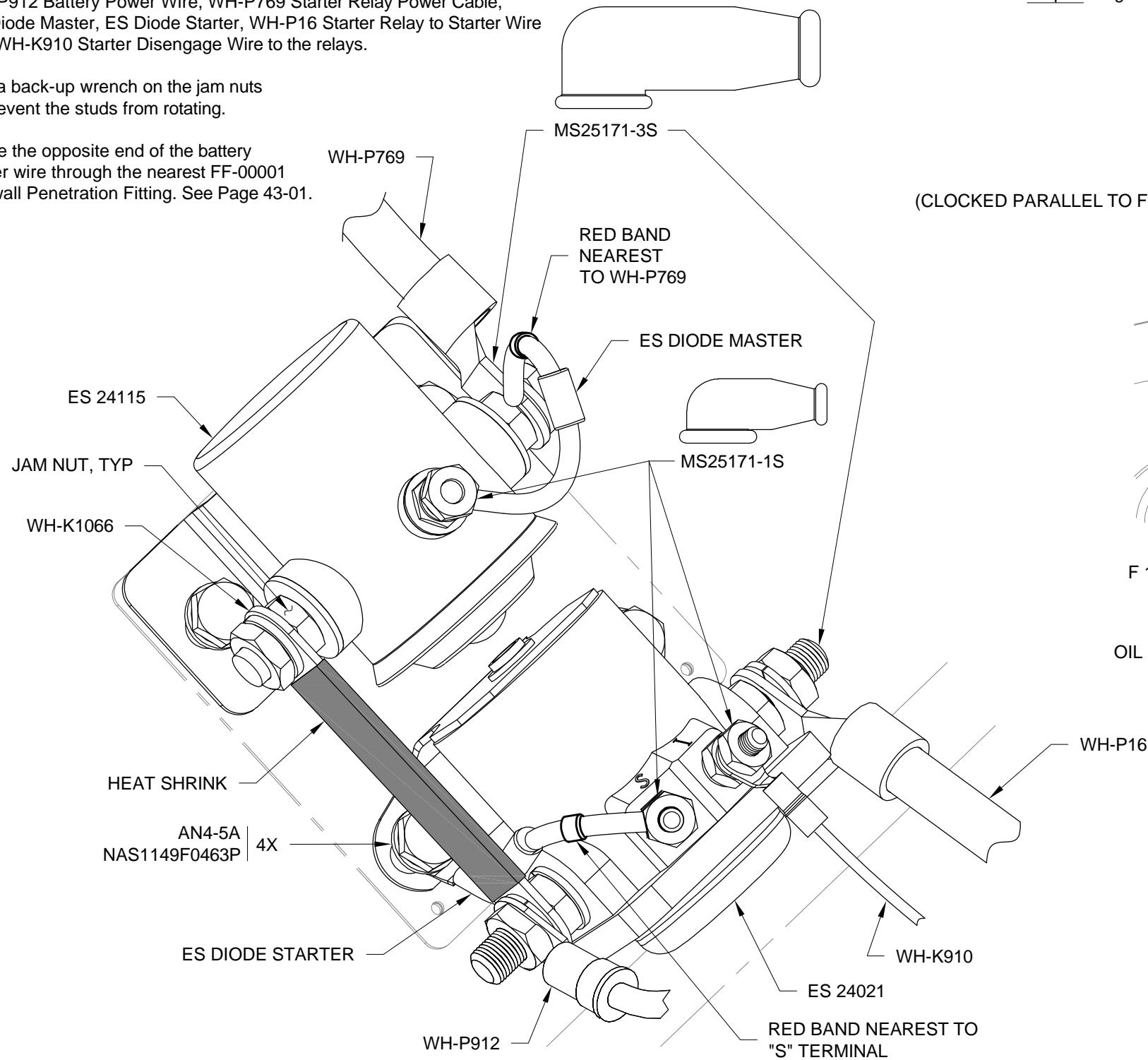


FIGURE 1: MASTER RELAY AND STARTER SOLENOID INSTALLATION

NOTE: For the following steps, refer to Figure 2.

Step 5: Install the sensors, AN fittings, and plugs to the VA-168 Sender Mount. For more information on installing NPT and straight thread fluid fittings, see Section 5.27.

Step 6: Install the sender mount to the firewall.

Step 7: Connect the VA-102 Hose Asy-4X15.25 to the sender mount.

Step 8: Plug the free ends of the hoses to prevent debris from entering.

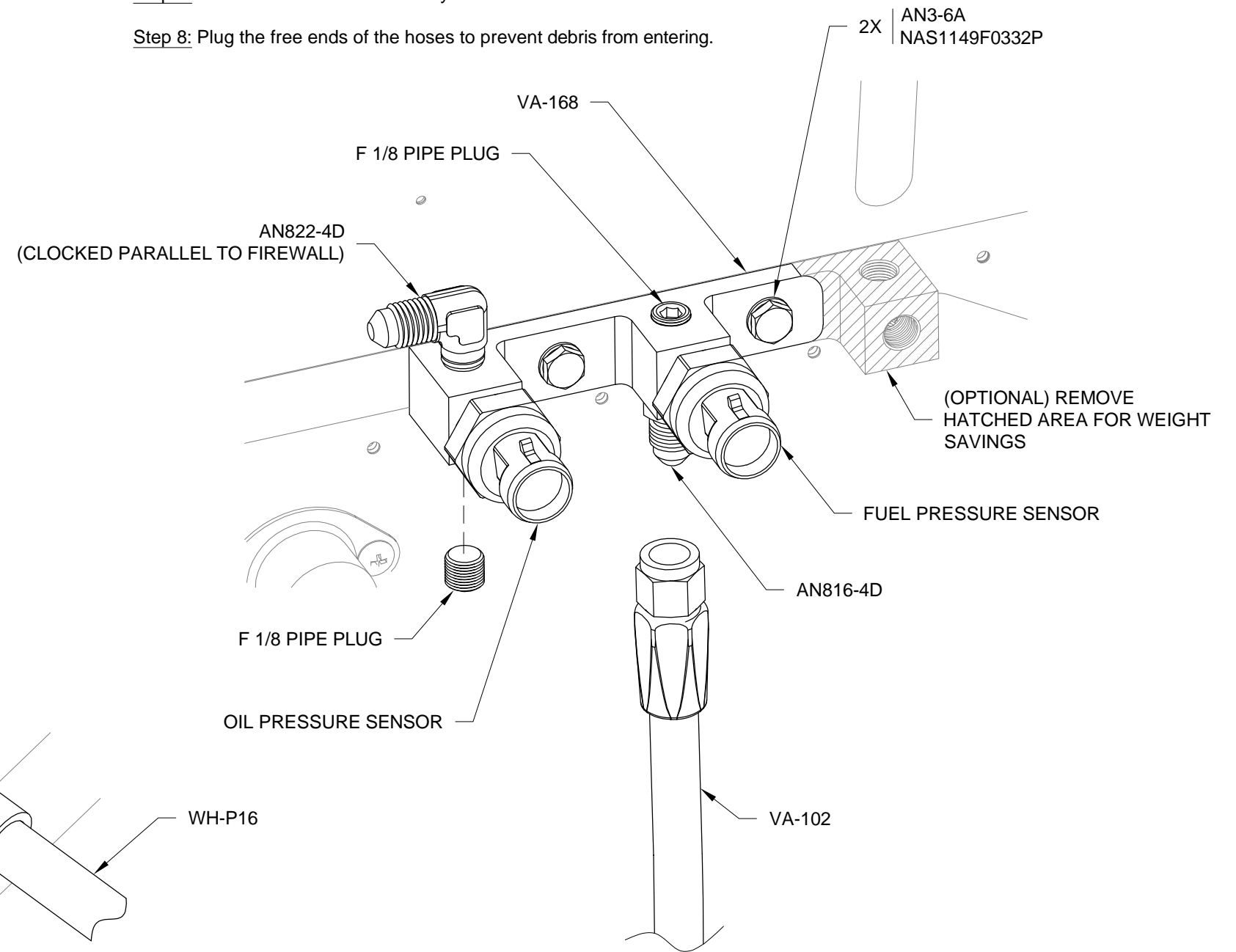
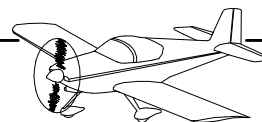


FIGURE 2: SENDER MOUNT INSTALLATION



NOTE: Install the fluid fittings as described in Section 5.27.

Step 1: Install the lower oil port fluid fitting. Verify the FF-00017 Hose Assembly can be installed without the nut interfering with the vernatherm. See Page 43-06, Figure 6.

Step 2: Install all fluid fittings and sensors shown in Figure 1 and Page 43-06.

Step 3: Fabricate the FF-00013 Fuel Overflow Tube by cutting a piece of PT-030X1/4 to a length of 18 inches.

Step 4: Connect the fuel overflow tube to the elbow fitting on the back of the engine driven fuel pump. For more information on the installation of compression fittings, see Section 5.22.

Step 5: Use sandpaper to remove the paint on the engine where the WH-P25 2AWG Ground Strap will be installed.

Step 6: Install one end of the ground strap to the engine as shown in Figure 1.

Step 7: If required, order one IE RC-1 CAP Tach Drive Cap from Van's and install where shown in Figure 1.

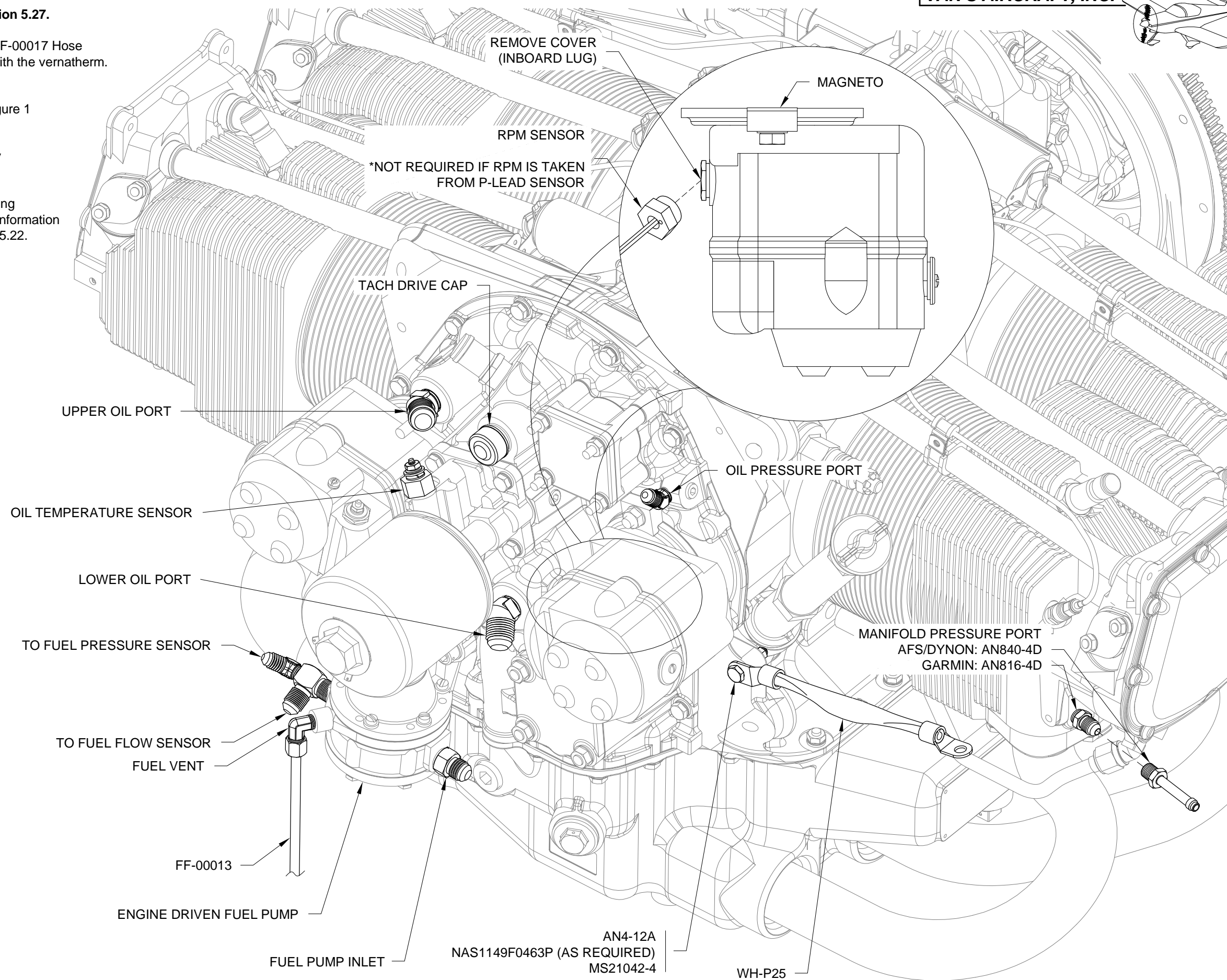


FIGURE 1: ENGINE PREPARATION

NOTE: All clocking angles are approximate, ensure hoses do not interfere with or rub on any component.

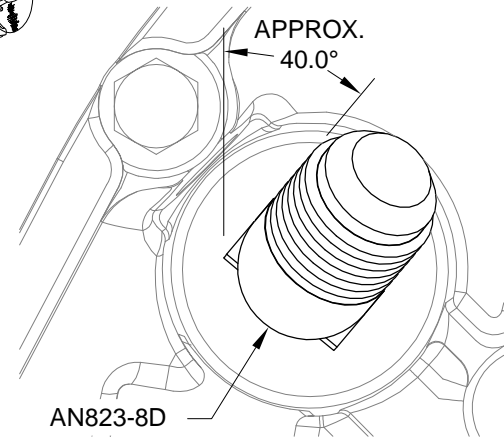


FIGURE 1: UPPER OIL PORT FITTING
(TRI-GEAR ONLY)

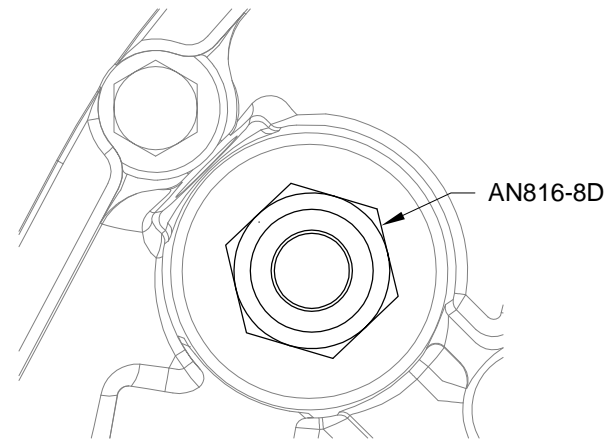


FIGURE 2: UPPER OIL PORT FITTING
(TAIL DRAGGER ONLY)

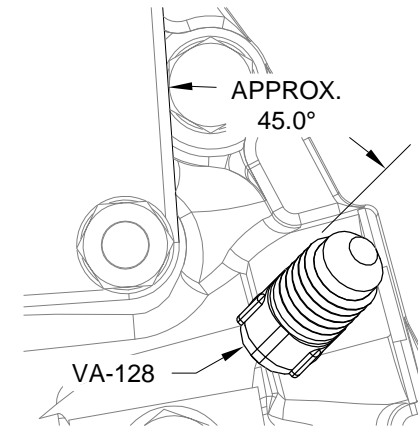


FIGURE 3: OIL PRESSURE PORT

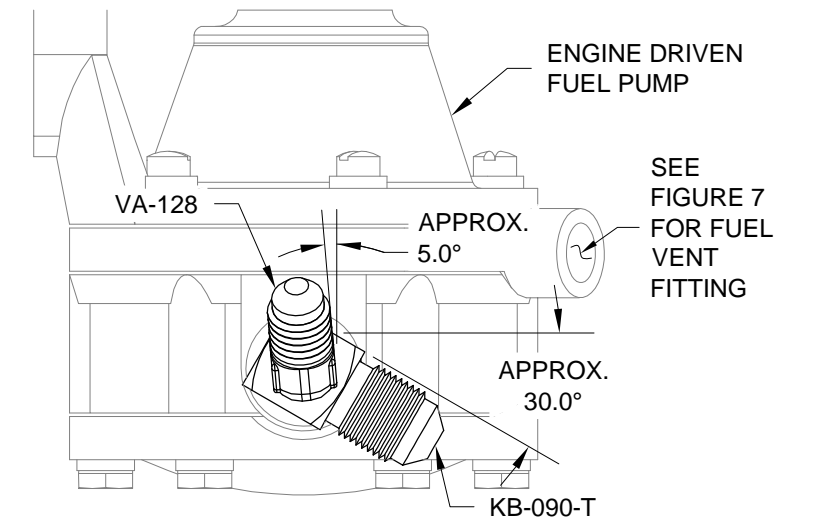


FIGURE 4: FUEL PUMP OUTLET FITTINGS
(LEFT SIDE VIEW, TRI-GEAR ONLY)

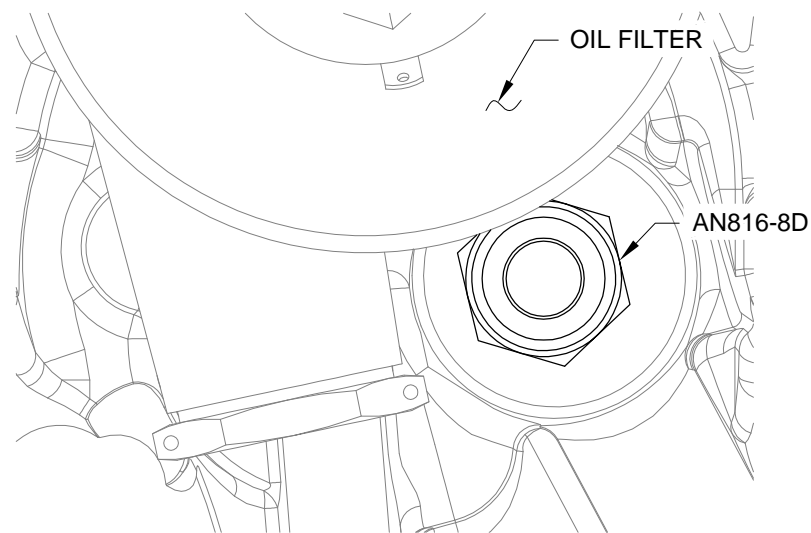


FIGURE 5: LOWER OIL PORT
(TRI-GEAR ONLY)

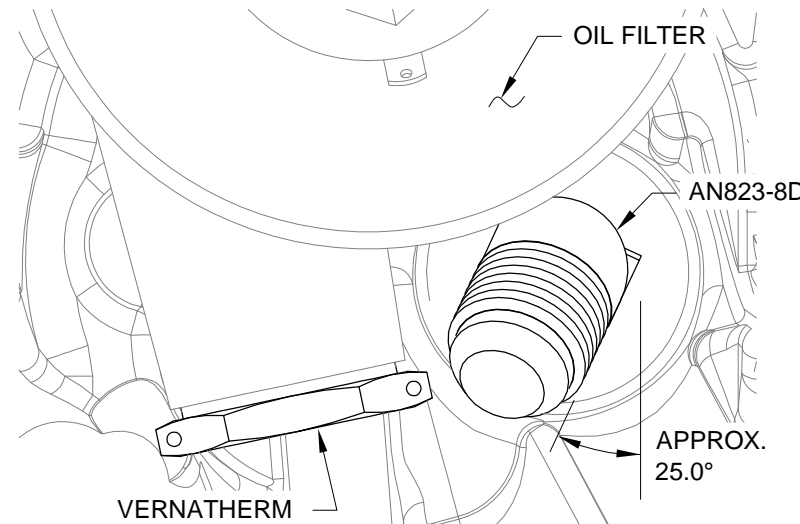


FIGURE 6: LOWER OIL PORT
(TAIL DRAGGER ONLY)

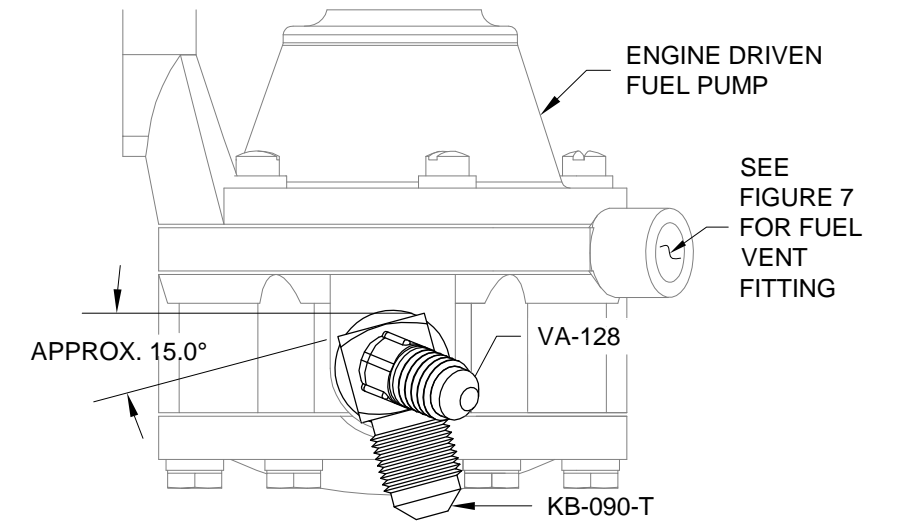


FIGURE 7: FUEL PUMP OUTLET FITTINGS
(LEFT SIDE VIEW, TAIL DRAGGER ONLY)

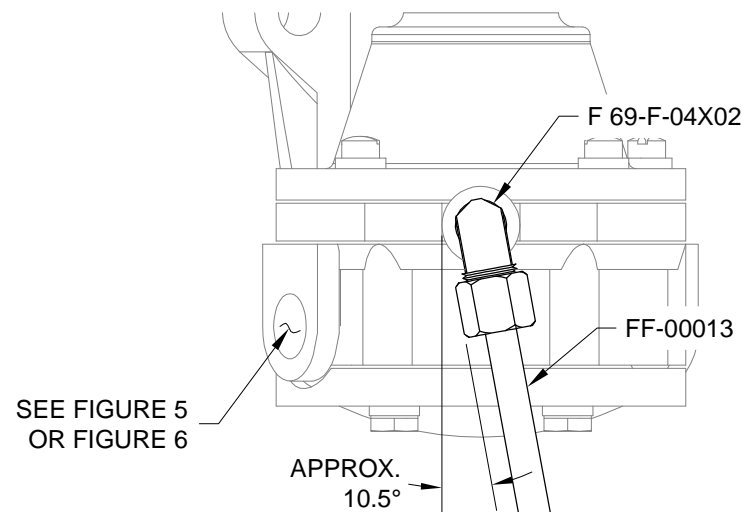


FIGURE 8: FUEL VENT FITTING

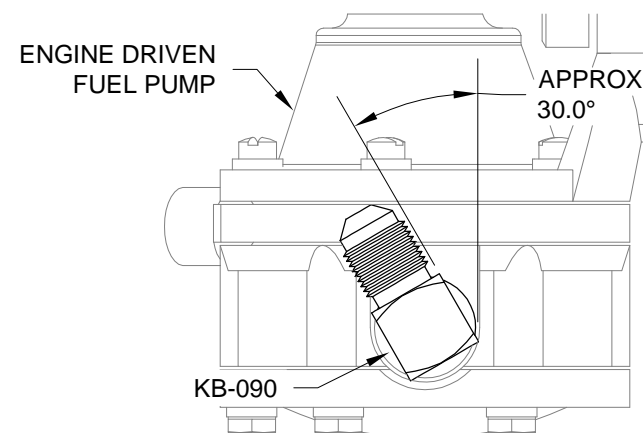


FIGURE 9: FUEL PUMP INLET FITTING
(RIGHT SIDE VIEW, TAIL DRAGGER ONLY)

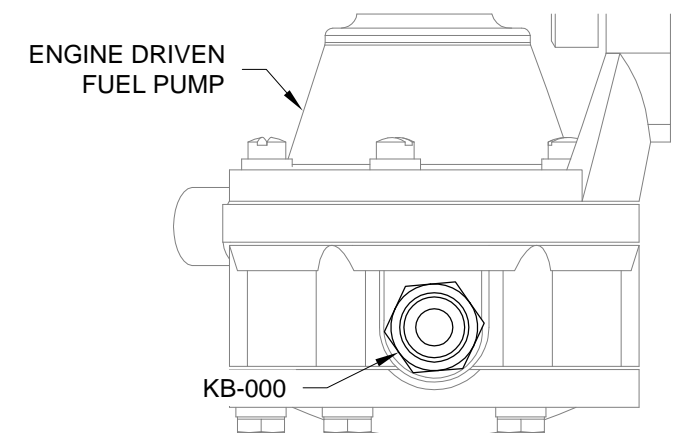
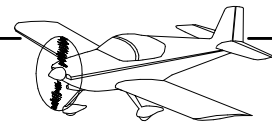


FIGURE 10: FUEL PUMP INLET FITTING
(RIGHT SIDE VIEW, TRI-GEAR ONLY)



Step 1: Separate and carefully deburr the FF-00009A Governor Bracket and FF-00009B Governor Bracket Plate.

Step 2: Rivet the Propeller Governor Bracket Assembly together as shown in Figure 1.

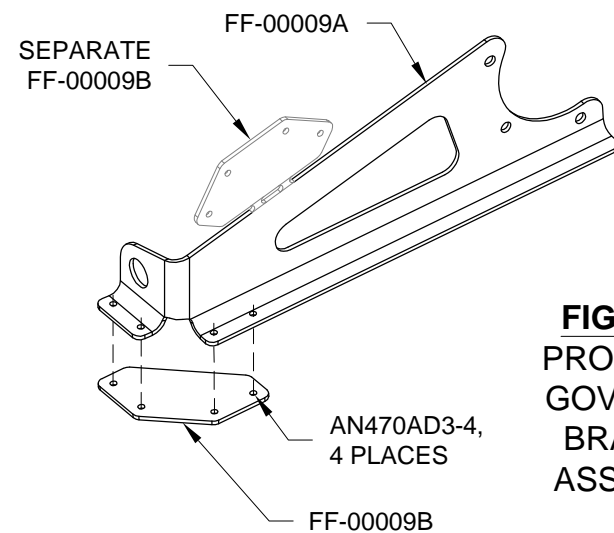


FIGURE 1:
PROPELLER GOVERNOR BRACKET ASSEMBLY

NOTE: Hartzell S-1-79 Propeller Governor Shown. Supplied governor may vary. Consult the propeller governor installation manual for complete installation instructions.

Step 3: Using the hardware and instructions supplied with the propeller governor, install the Propeller Governor, propeller governor gasket, and Propeller Governor Bracket Assembly onto the engine as shown in Figure 2 and Figure 3.

Step 4: Observe the arm as it swings through its travel arc. Loosen the faceplate screws. Adjust the clocking of the faceplate so at 50% of travel the arm is approximately 90° to the bottom flange of the Propeller Governor Bracket Assembly. See Figure 2.

If a larger adjustment is necessary, loosen the nut, adjust the clocking of the arm, then re-tighten the nut.

Step 5: Tighten the forward three faceplate screws to secure the face.

Step 6: Remove the Propeller Governor Bracket Assembly until after the completion of Section 47. Reinstall the aft three faceplate screws and leave them finger tight for now.

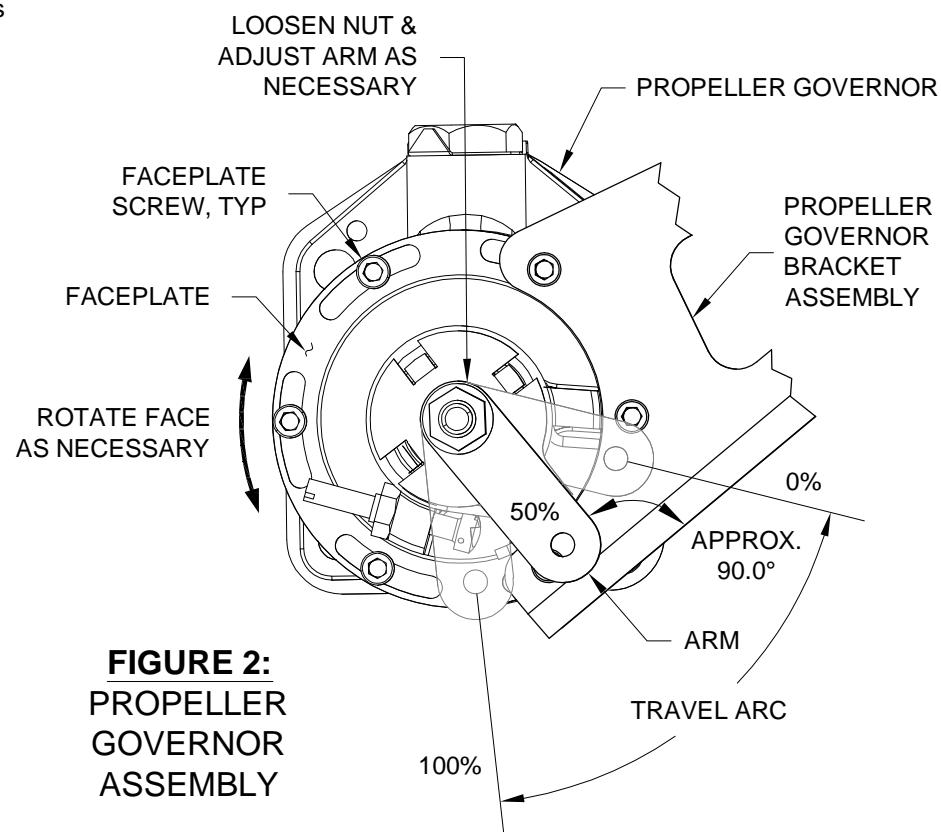


FIGURE 2:
PROPELLER GOVERNOR ASSEMBLY

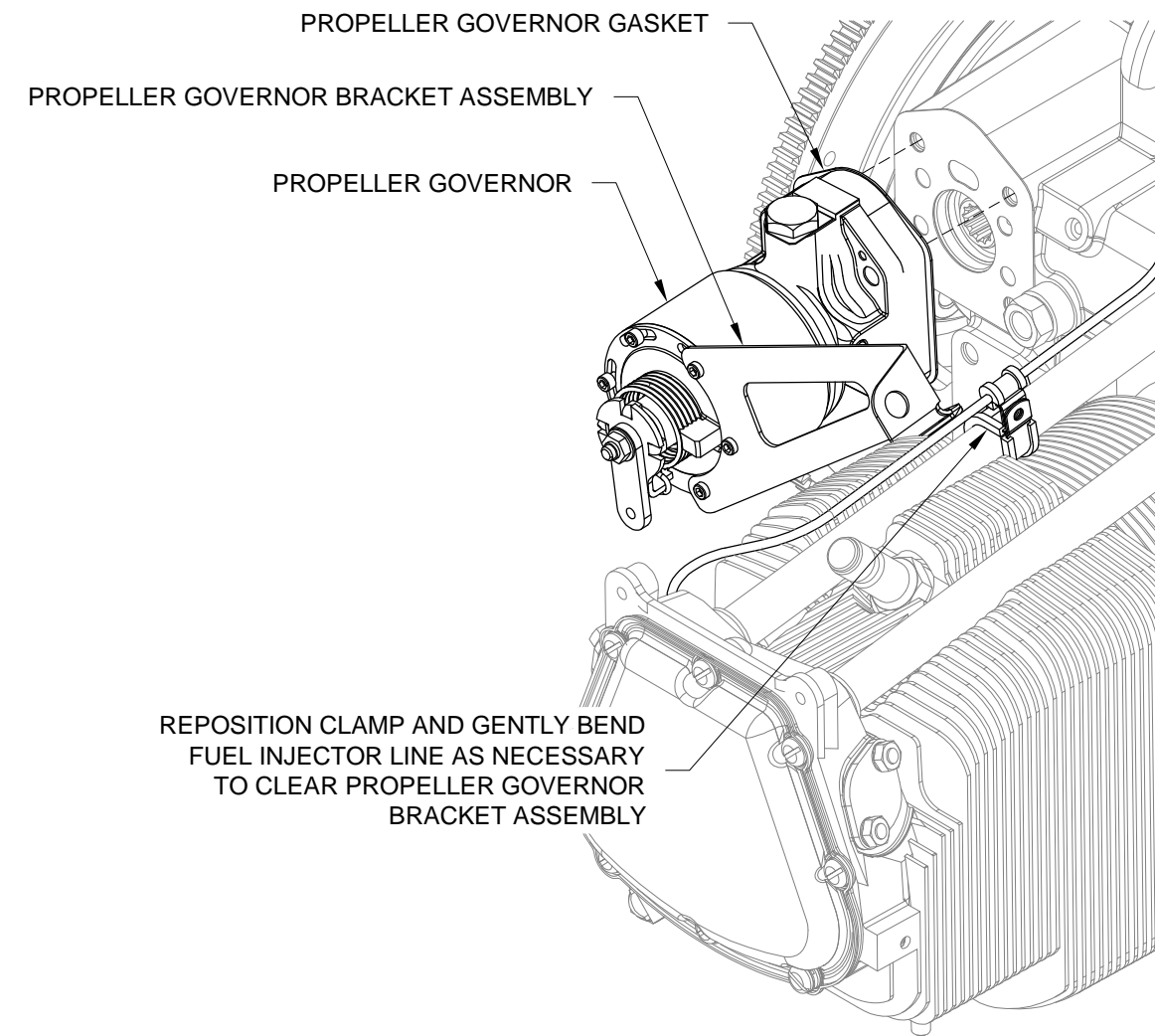


FIGURE 3: PROPELLER GOVERNOR ASSEMBLY INSTALLATION

Step 1: Mount the engine to the engine mount using the hardware included in the EA DYNA BOLT Dynafocal Engine Mounting Bolt Kit. See Figure 1.

Use the engine mount wrench described in Section 3 to hold the nuts while tightening and torquing the bolts.

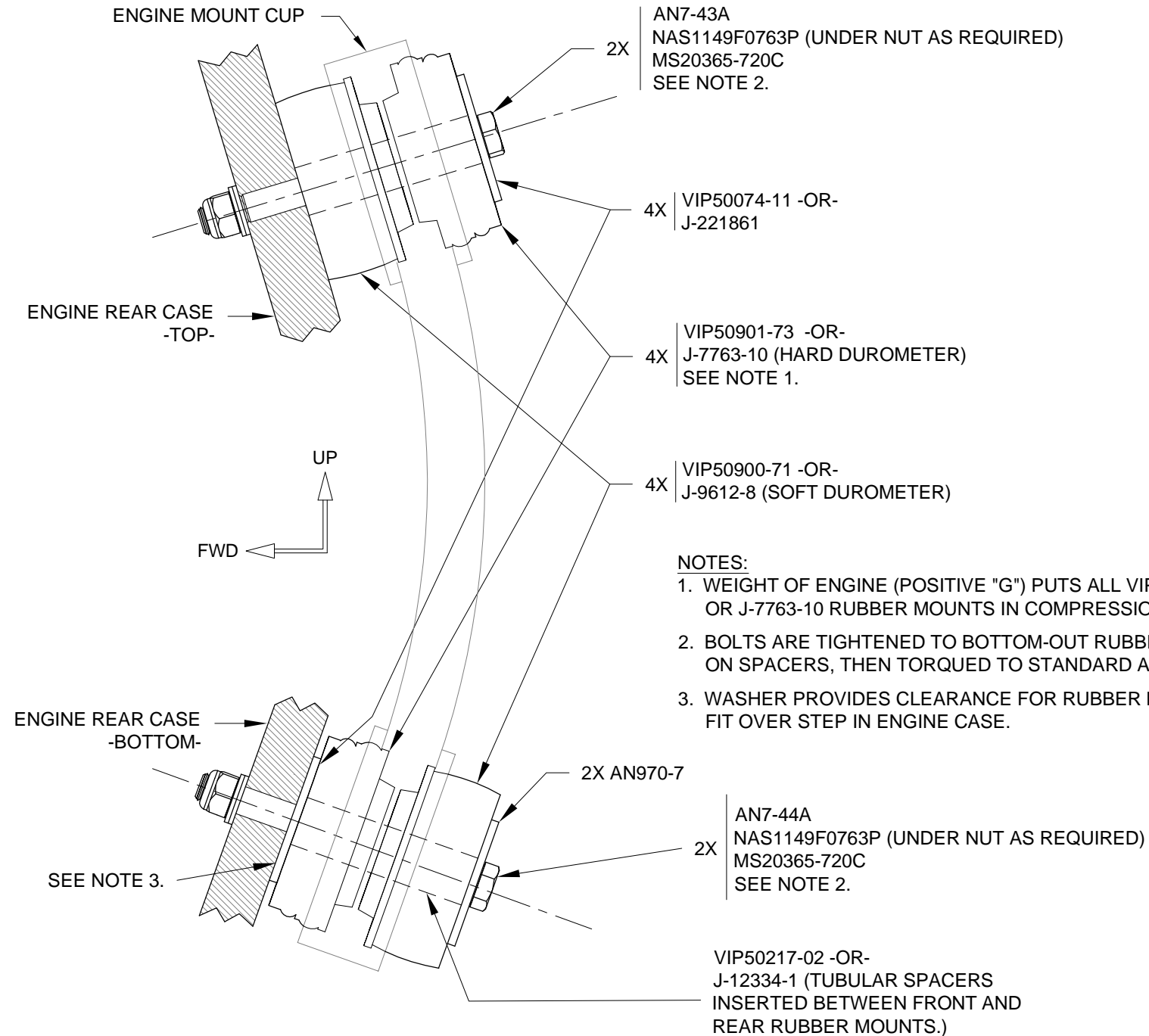


FIGURE 1: TYPICAL INSTALLATION OF DYNAFOCAL MOUNTING KIT

Step 2: Verify that there is bare metal where the WH-P25 2AWG Ground Strap will connect to the engine mount as shown in Figure 2.

If necessary, sand away any powder coating from the connection area.

Step 3: Connect the loose end of the WH-P25 2AWG Ground Strap to the right side of the engine mount near the right lower mount cup as shown in Figure 2.

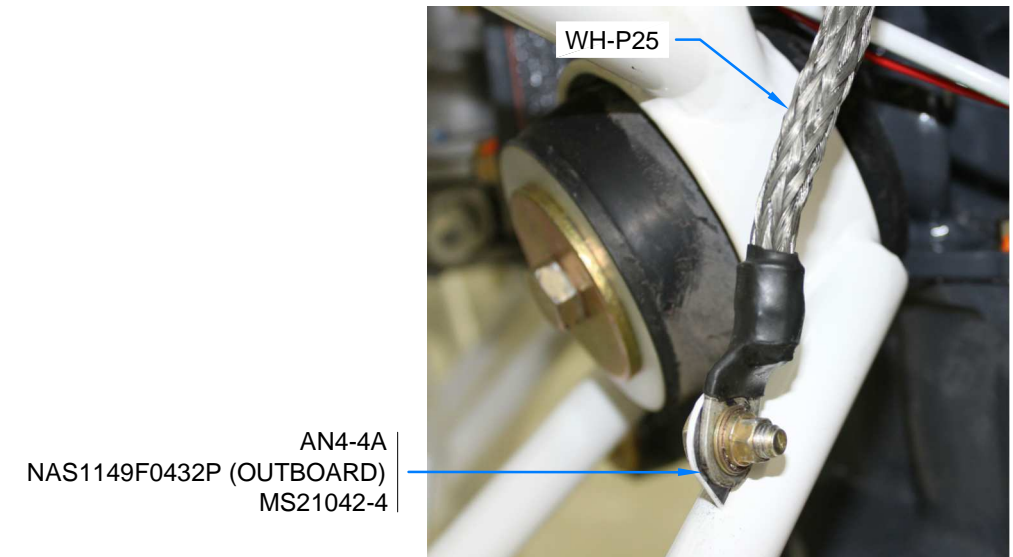
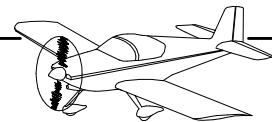


FIGURE 2: ENGINE GROUND STRAP



NOTE: If installing the IO-390-EXP119 engine, refer to KAI Section OP-62 for alternate instructions pertaining to components on this page.

NOTE: Steps performed on this and subsequent pages in this section may be performed at any time, but will be most easily accomplished now.

Step 1: Install the loose end of the VA-102 Fuel Pressure Hose-4X15.25 and the FF-00019 Hose Assembly-6X19 to the fuel pump fluid fittings as described on Page 49-04.

Step 2: Orient and install the IE DYNON FF Fuel Flow Transducer and fittings as shown in Figure 1. See Figure 2 or Figure 3 for the clocking of the inlet fluid fitting. For more information on installing fluid fittings, see Section 5.27.

Step 3: Route and install the FF-00015 and FF-00019 Hose Assemblies as described on Page 49-03, 49-04, and 49-05.

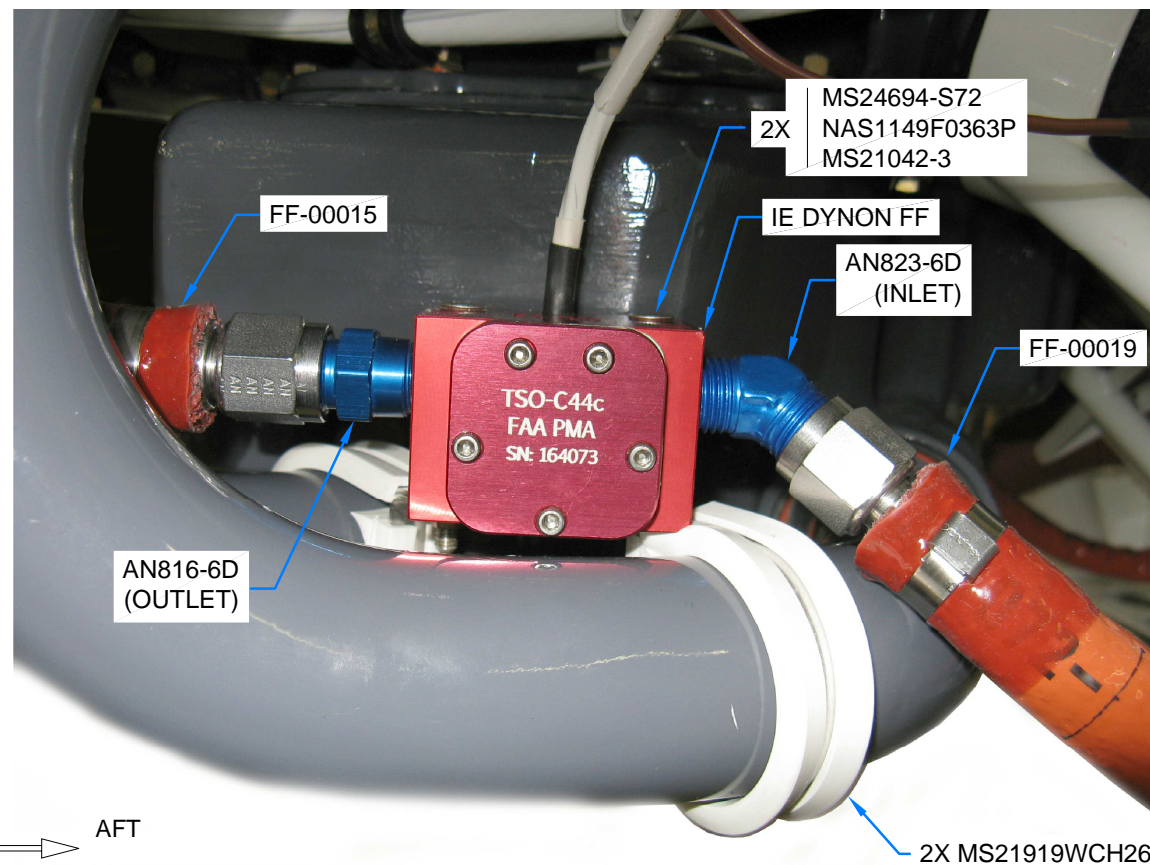


FIGURE 1: FUEL FLOW TRANSDUCER INSTALLATION

Step 4: Install the EA LW-75444 Sniffle Valve to the bottom of the oil sump where shown in Figure 4.

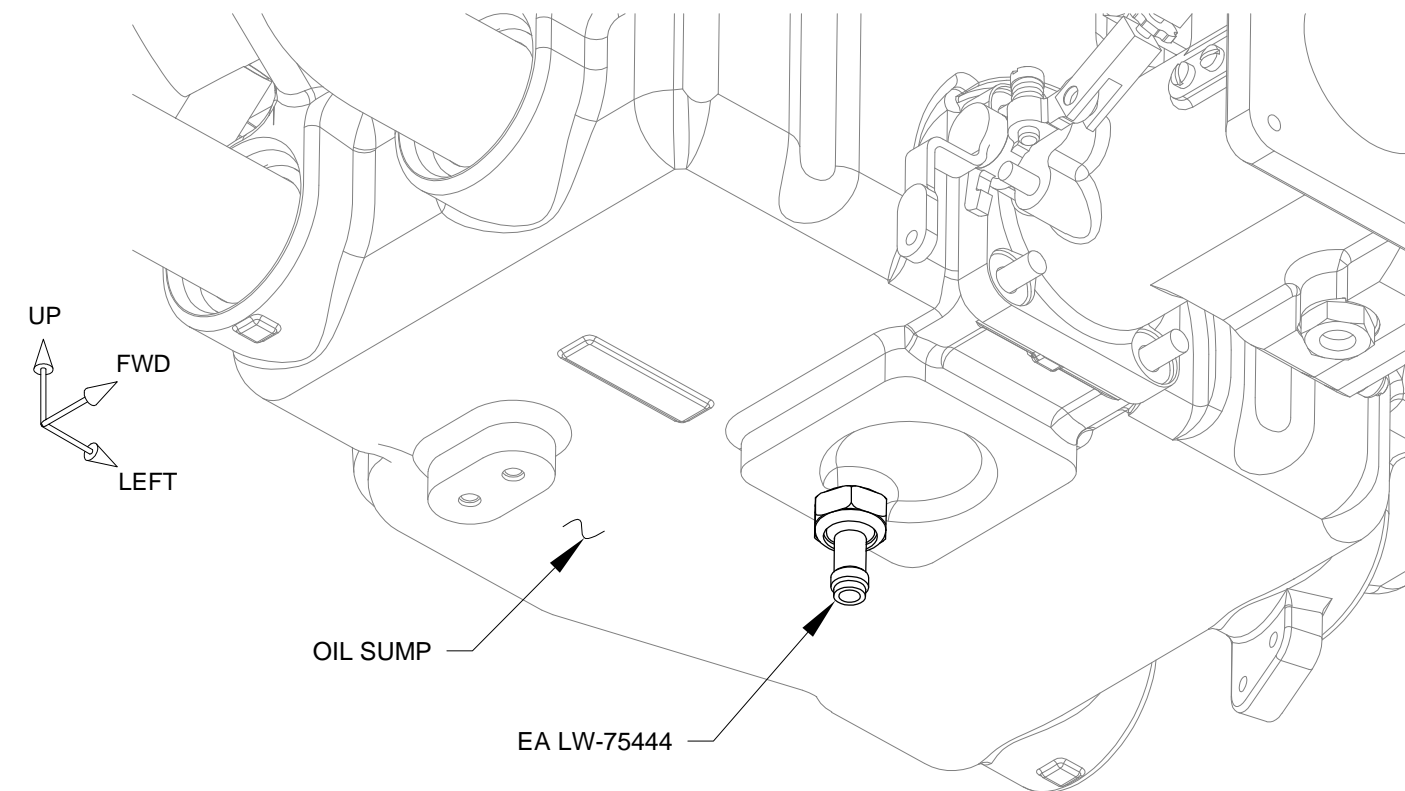


FIGURE 4: SNIFFLE VALVE INSTALLATION

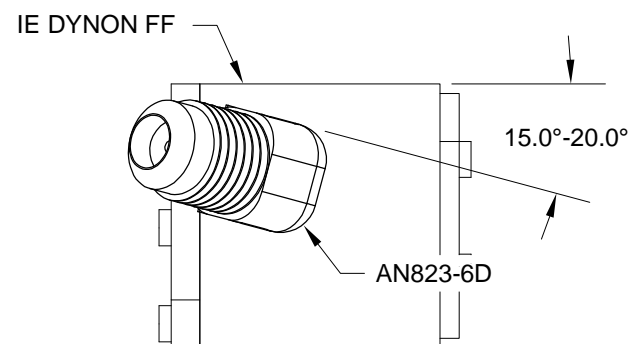


FIGURE 2: INLET FLUID FITTING CLOCKING REAR VIEW, TRI-GEAR

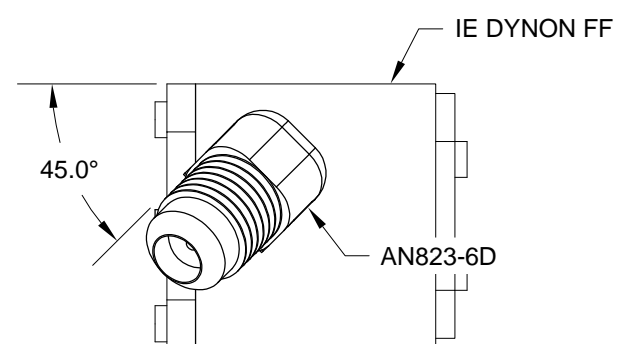


FIGURE 3: INLET FLUID FITTING CLOCKING REAR VIEW, TAIL DRAGGER

NOTE: All clamps on this page noted with a "modified" call-out must be attached to the engine as shown in Figure 2.

Step 1: Install the clamps as called out in Figures 1-5. Leave the clamps loose for now.

Some clamps may appear oversized, this is to accommodate systems not yet installed.

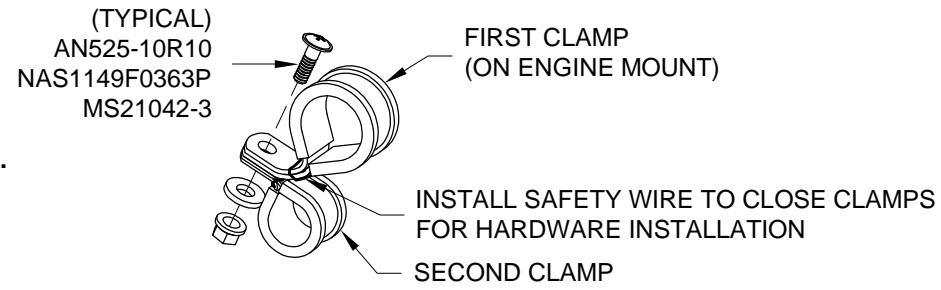


FIGURE 1: TYPICAL CLAMP INSTALLATION (ON ENGINE MOUNT)

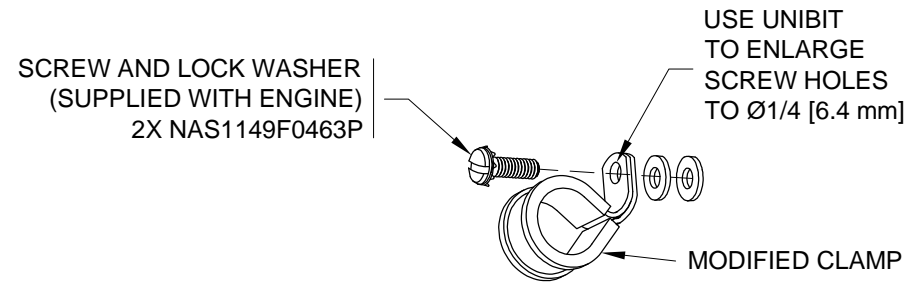


FIGURE 2: MODIFIED CLAMP INSTALLATION (ON ENGINE)

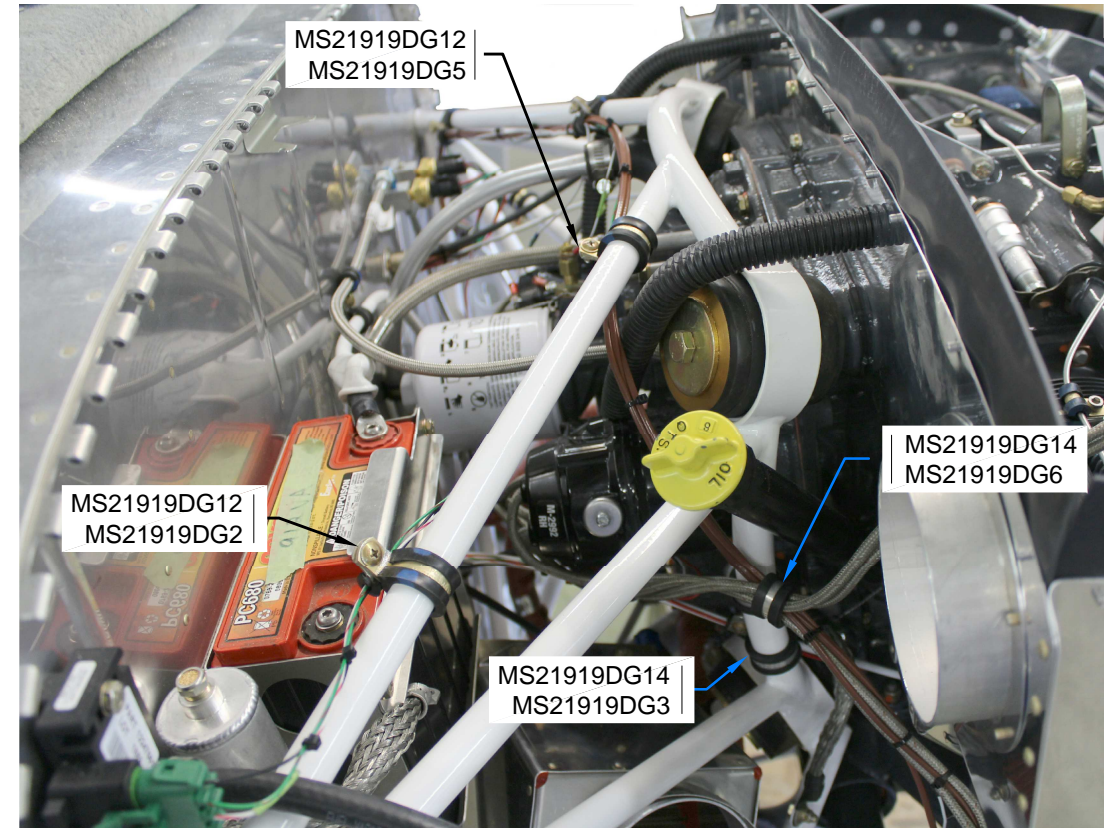


FIGURE 4: AFT RIGHT SIDE CLAMP LOCATIONS

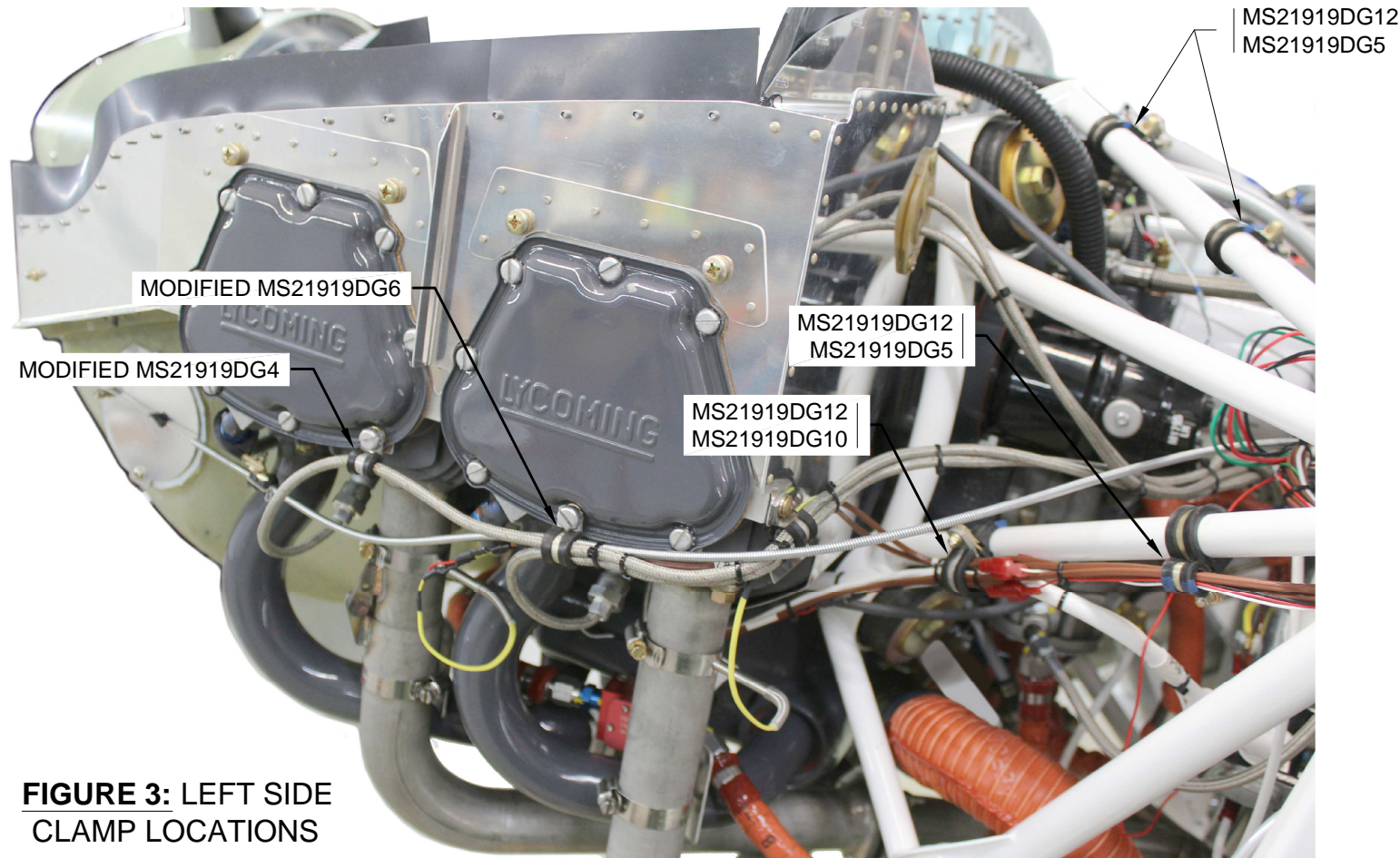


FIGURE 3: LEFT SIDE CLAMP LOCATIONS

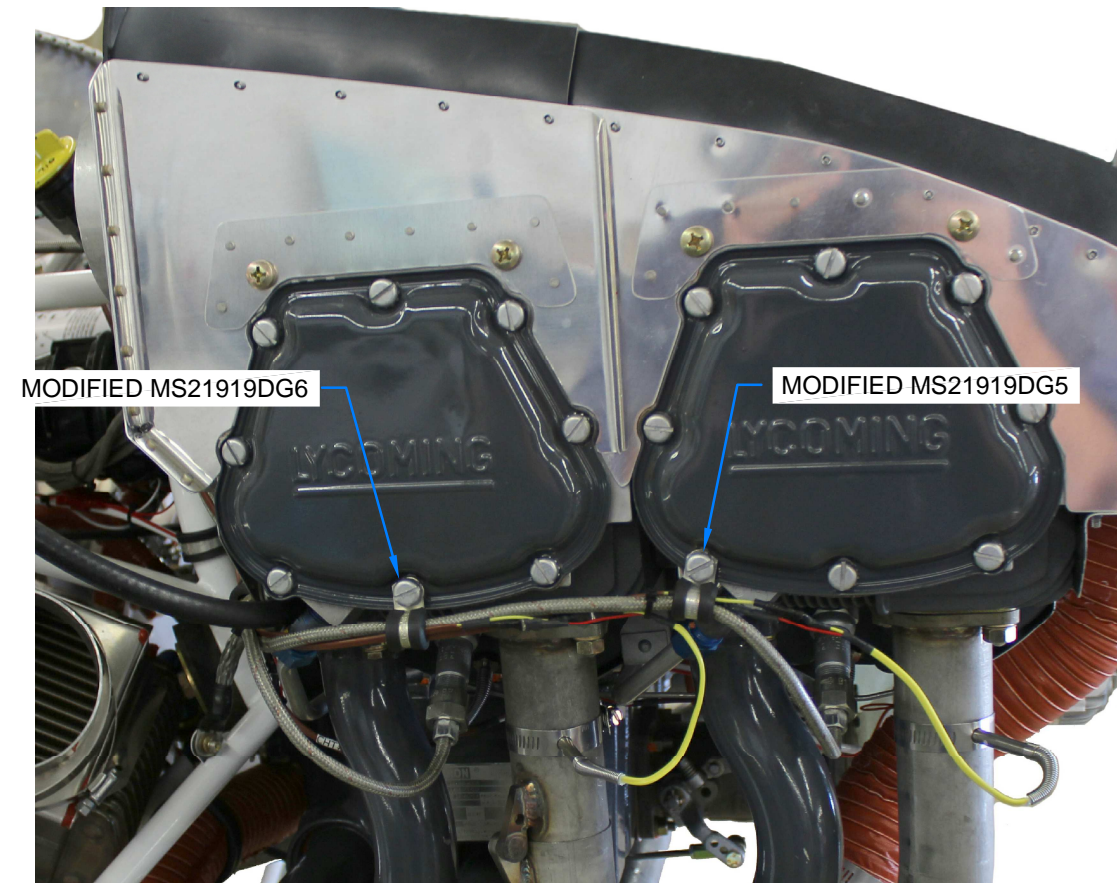
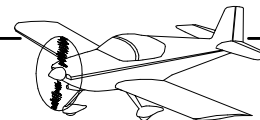


FIGURE 5: FORWARD RIGHT SIDE CLAMP LOCATIONS



NOTE: If installing the IO-390-EXP119 engine, refer to KAI Section OP-62 for alternate instructions pertaining to components on this page.

Step 1: If necessary, install a starter onto the engine.
See the starter manufacturer's documentation for more information.

Step 2: Use a hand seamer to gently bend the forward (loose) spade connector on the WH-P16 Starter Relay to Starter Wire as shown in Figure 1.

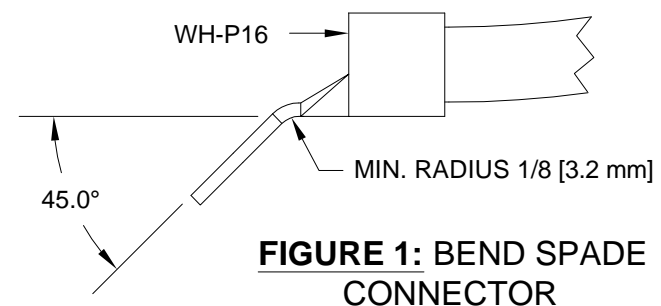


FIGURE 1: BEND SPADE CONNECTOR

Step 3: If installed, remove the factory installed jumper from the starter.

Step 4: Add insulated boots where called-out in Figure 2.

Step 5: Route then connect the starter wires as shown in Figure 2.
See the starter manufacturer's documentation for nut torque values.

Step 6: Use the clamp called out in Detail A to secure the starter wires.

Step 7: Install the VA-163 Mixture Bracket
(part of the IO-360 Throttle/Mix Kit) as shown in Detail A.

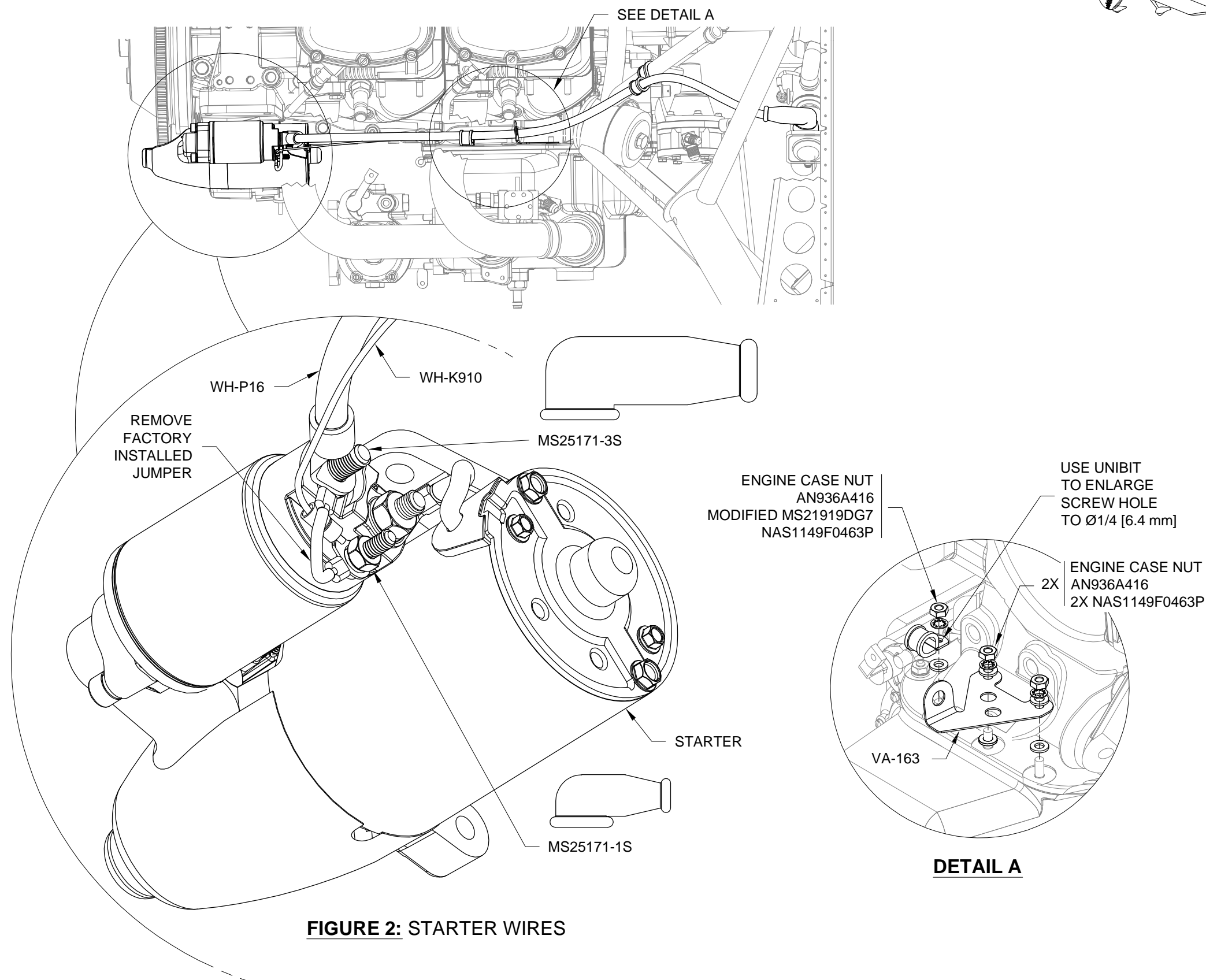
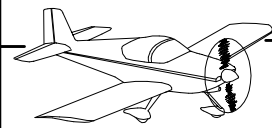


FIGURE 2: STARTER WIRES

DETAIL A



Step 1: Except as noted in Figure 1, install an alternator and alternator belt onto the engine as described in the alternator documentation.

Step 2: Connect the V-1002 to the starter as shown Figure 1.

Step 3: Use safety wire to secure the alternator bolts to the V-1004 where called out in Figure 1.

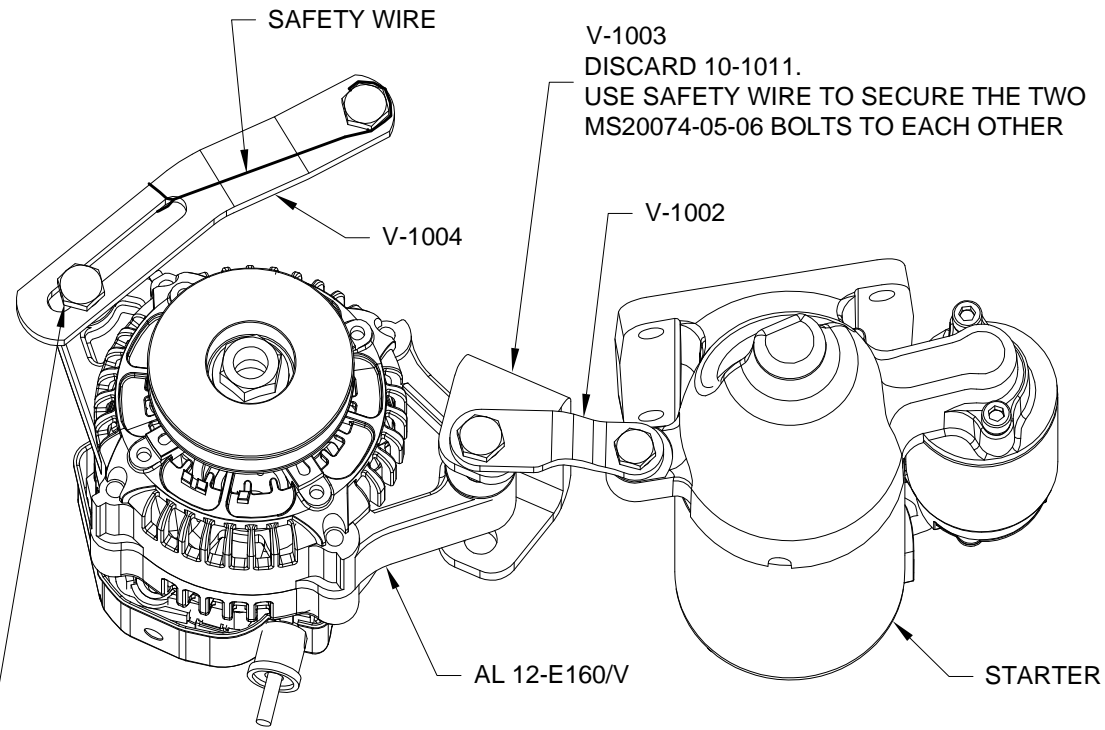


FIGURE 1: ALTERNATOR TO STARTER LINK

DELAY INSTALLATION OF ALTERNATOR BELT TENSION LOCK BOLT UNTIL ALTERNATOR BELT TENSION IS SET (REQUIRES PROPELLER INSTALLATION)

Step 5: Add the insulated boot where called out in Figure 3.

Step 6: Connect the WH-P909 Alternator Power Wire to the bottom of the alternator as shown in Figure 3.

NOTE: Connection of Alternator Regulator is not covered in the Powerplant Kit.

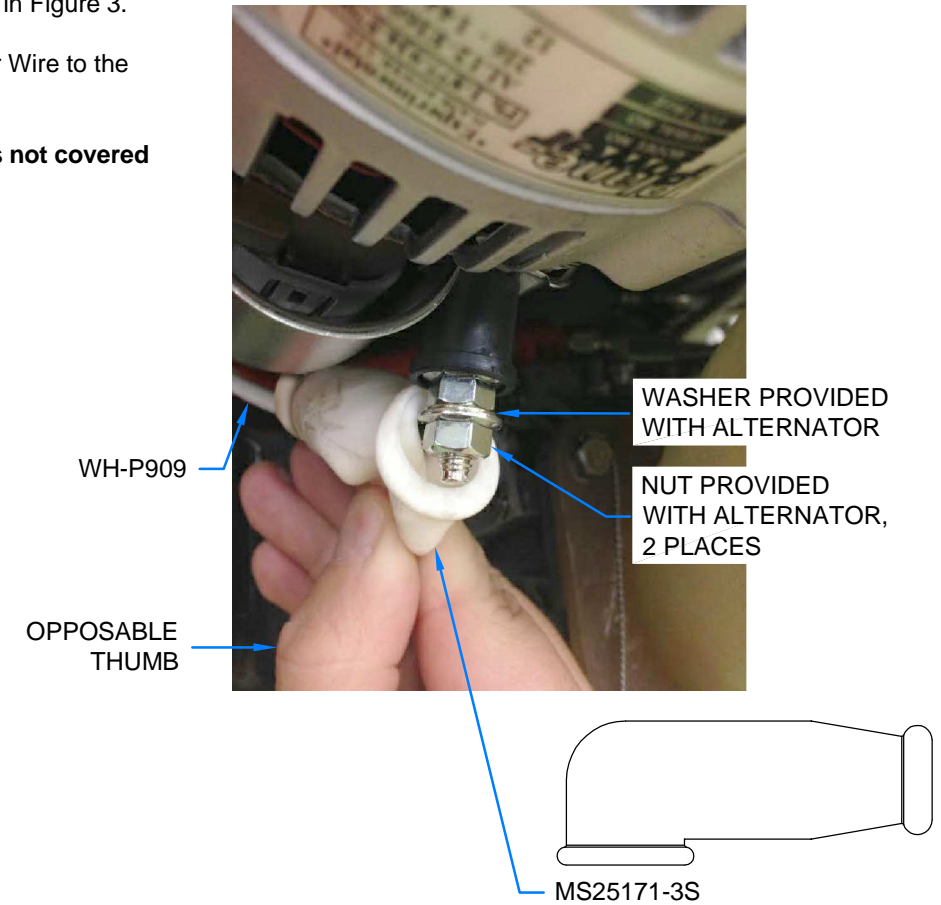


FIGURE 3: CONNECT ALTERNATOR POWER WIRE

Step 4: Route the WH-P909 Alternator Power Wire as shown in Figure 2.

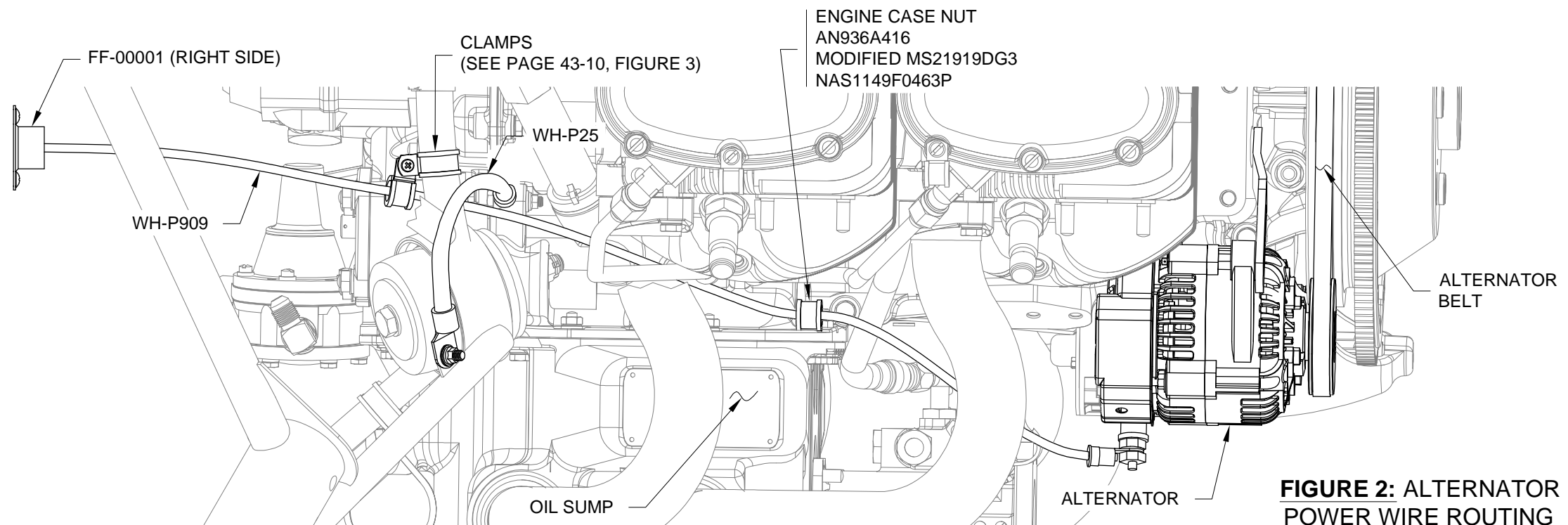


FIGURE 2: ALTERNATOR POWER WIRE ROUTING