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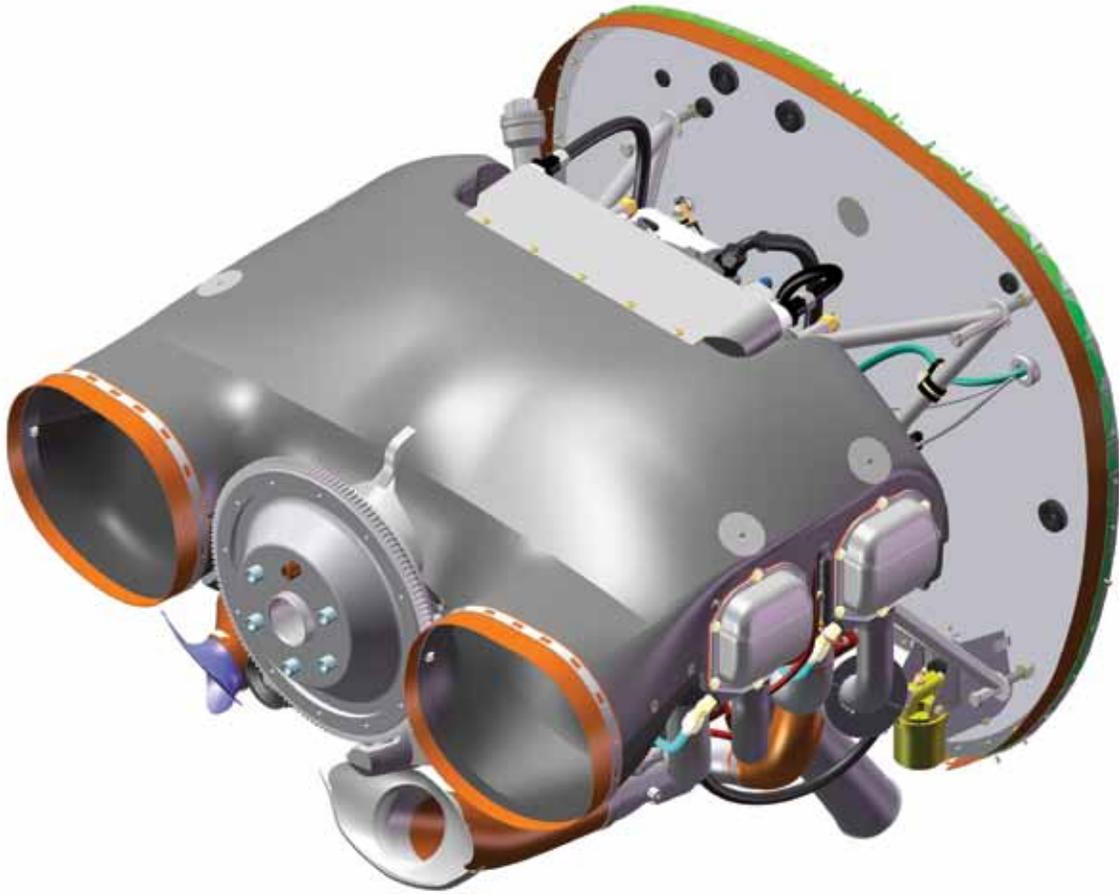
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SECTION 1 ACCESSORY CASE FITTINGS

Install the three accessory drive fittings per Figure FF1. You will install three fittings that will screw directly into the accessory drive case. These fittings should be coated with Loctite 567 or similar thread lubricant per Photo 002. **DO NOT OVER TIGHTEN THESE FITTINGS.** These three fittings should be snug only. Ensure the two 90 degree fittings are pointed in the directions shown in Photo 001.

SOME OF THESE FITTINGS MAY BE INSTALLED OR MAY NEED TO BE REPLACED WITH THE CORRECT FITTINGS.



Photo 001



Photo 002

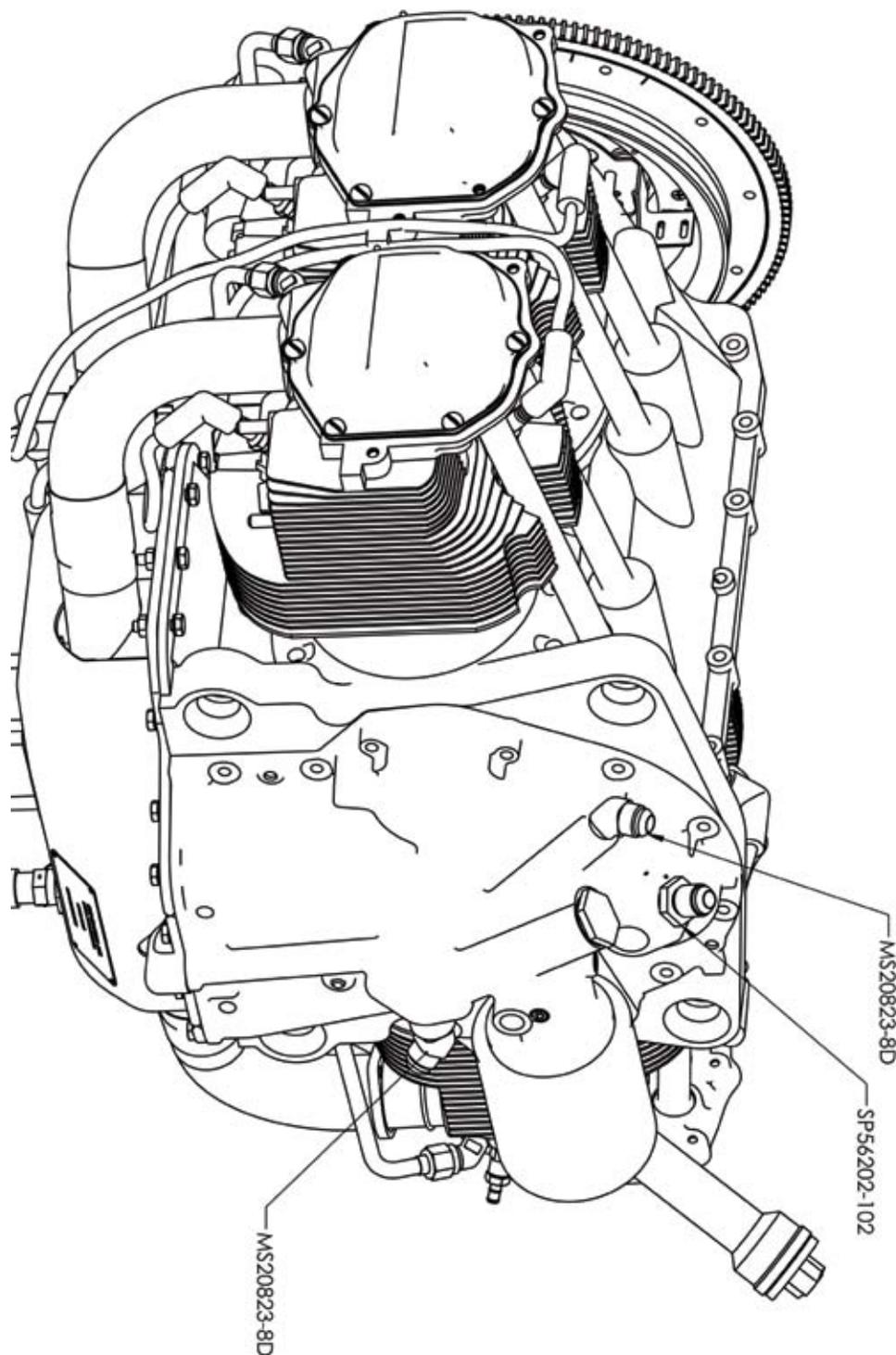


Figure FF1

SECTION 2 EXHAUST SPRING BRACKETS**Photo 003**

Remove two bolts in the oil sump as shown in Figure FF2 and install the two exhaust collector spring brackets SC57303-001. Reinstall the oil sump bolts and torque to 96 in.lbs. Ensure the brackets are installed as shown in Photo 003.

OLD STYLE ACCESSORY DRIVE CASE SHOWN.

**Photo 004**

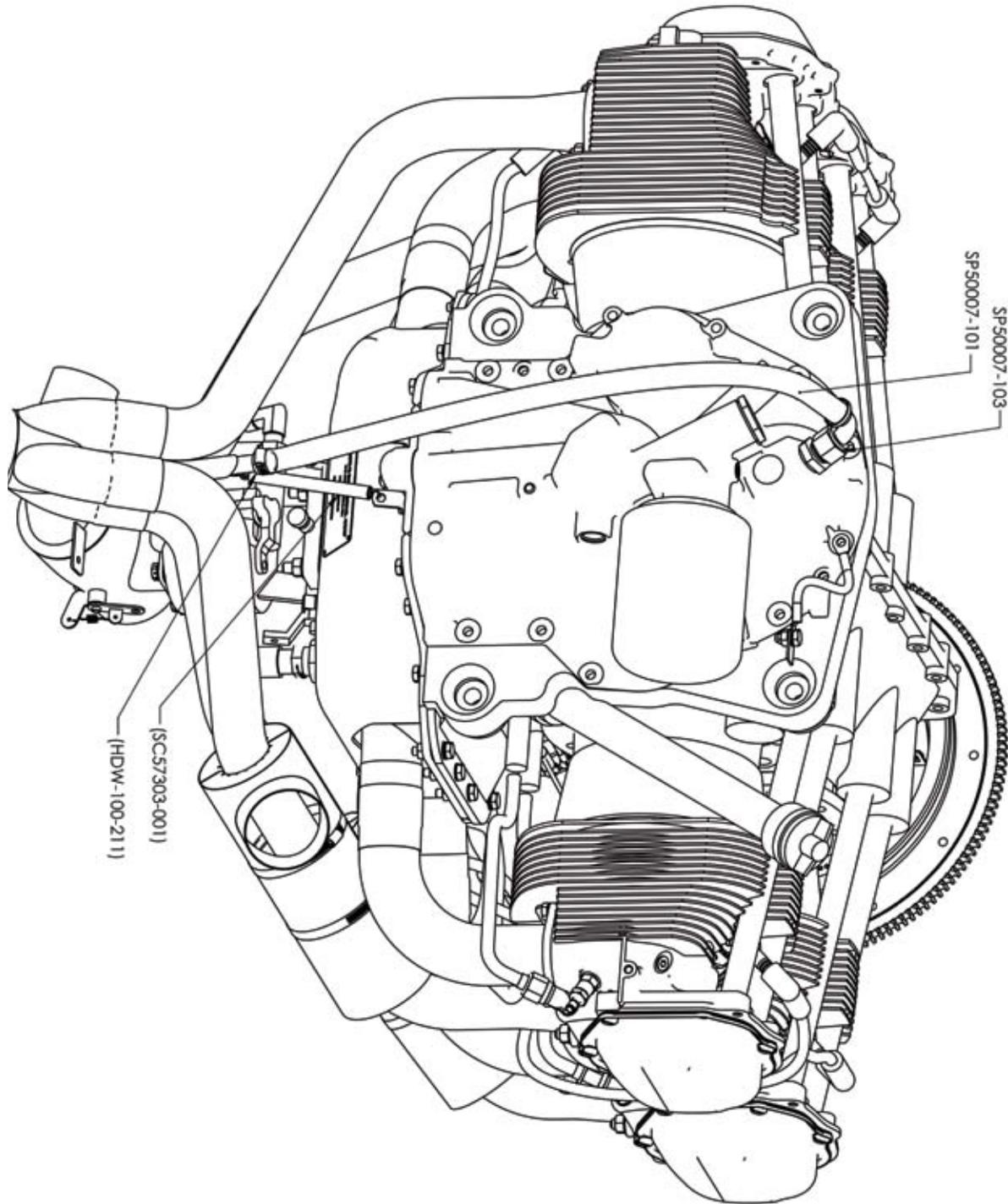


Figure FF2

SECTION 3 INSTALL WIRE GUIDE BRACKETS

Install the four wire guide brackets SC56052-001 as shown in Figure FF3 and retorque the nuts to 96 in.lbs.
THESE BRACKETS MAY ALREADY INSTALLED.



Photo 005

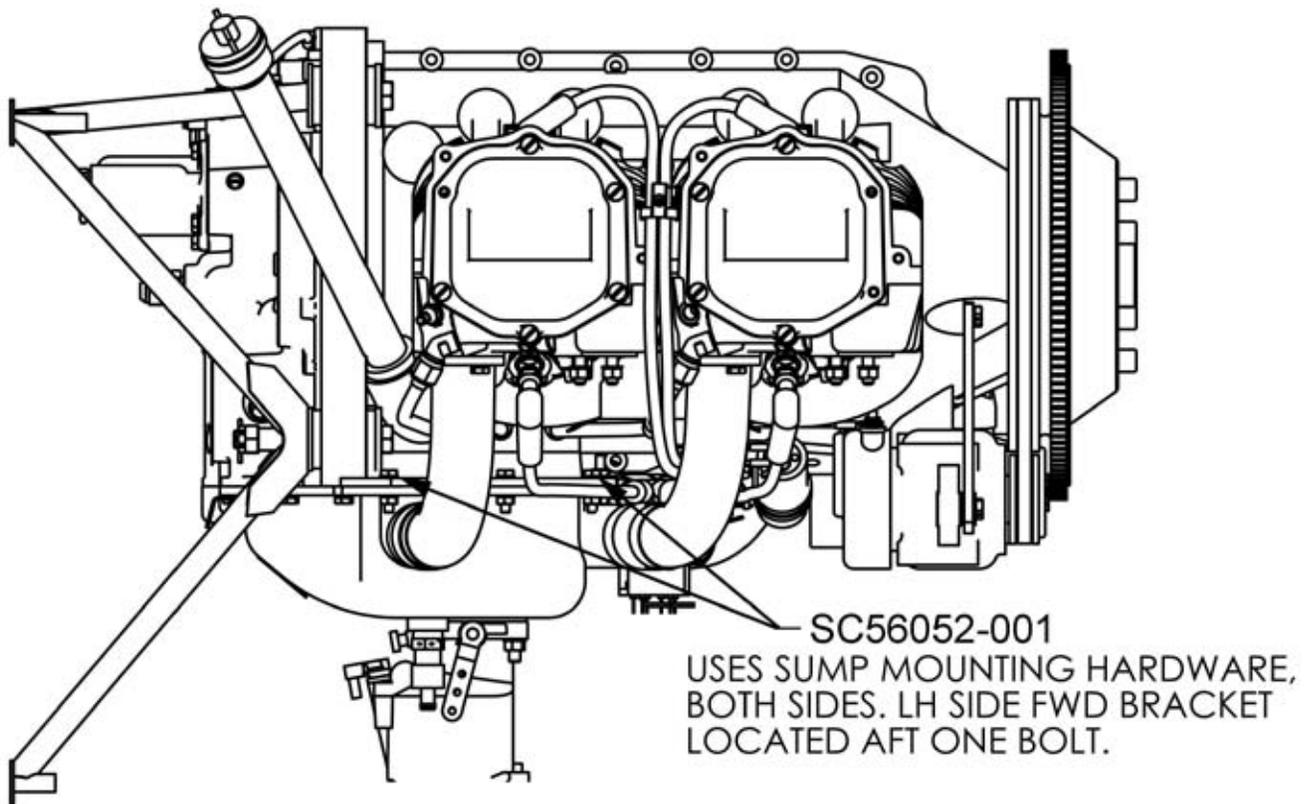


Figure FF3

SECTION 4 INSTALL OIL PRESSURE FITTING

Install the oil pressure SC50003-007 and SP50502-001 fittings per Figure FF4. SP50502-001 fitting will screw directly into the accessory drive case. This fitting should be coated with Loctite 567 or similar thread lubricant. **DO NOT OVER TIGHTEN THIS FITTING.** This fitting should be snug only. The pipe thread side of the SC50003-007 should be coated with Loctite 567 or similar thread lubricant. SC50003-007 should point in the direction shown in Photo 006.



Photo 006

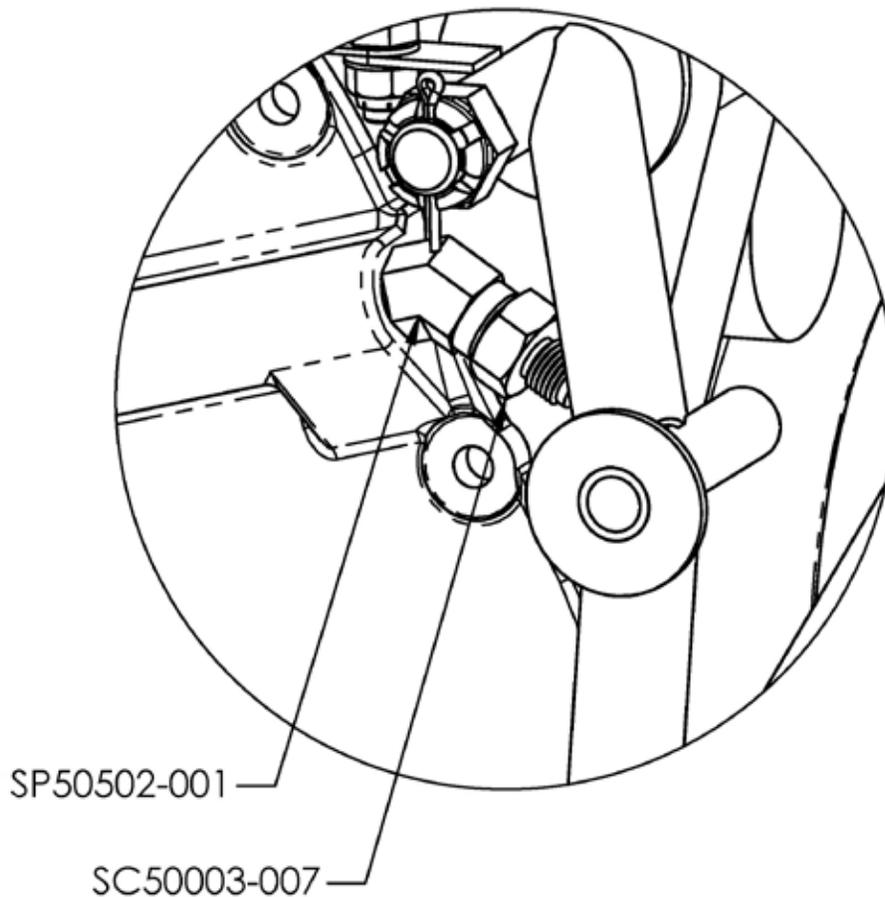


Figure FF4

SECTION 5 INSTALL OIL TEMPERATURE FITTING

Install oil temperature sender and copper crush washer VP5273-001 at this time per Photo 007.

Oil Temperature Sender

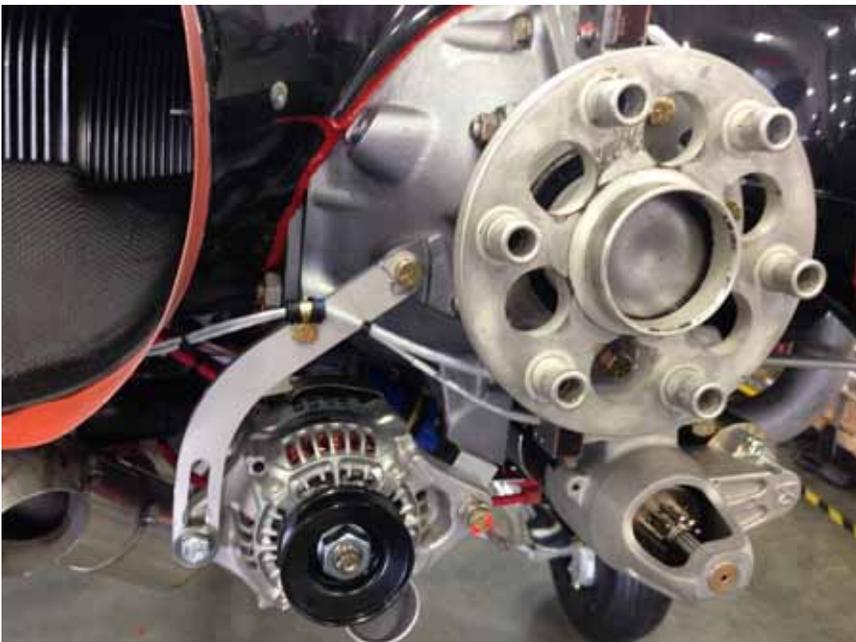


Photo 007

SECTION 6 ALTERNATOR INSTALLATION*Photo 008*

Install the alternator per Figure FF5. Notice the lock tab in photo 008 TC1222-001. Install this lock tab and torque the attaching bolts to 200 in.lbs.

DO NOT TIGHTEN THE ADJUSTING BOLT OR THE ALTERNATOR ATTACHMENT BOLT AT THIS TIME.

*Photo 009*

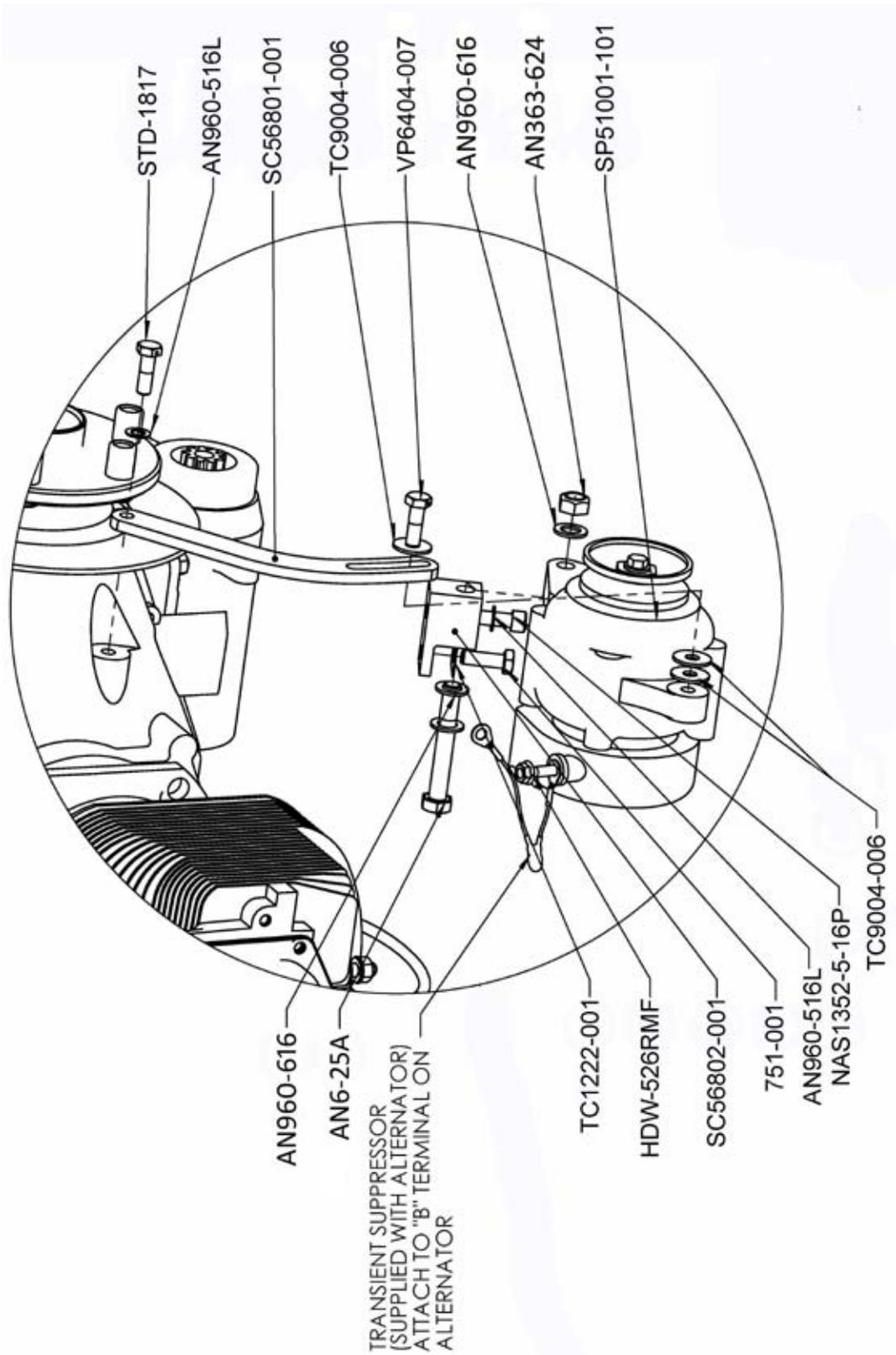


Figure FF5

SECTION 7 ALTERNATOR NOISE FILTER

Install the alternator noise filter per Photo 010 and Figure FF6. Apply blue Loctite 242 to attaching bolt prior to installation.

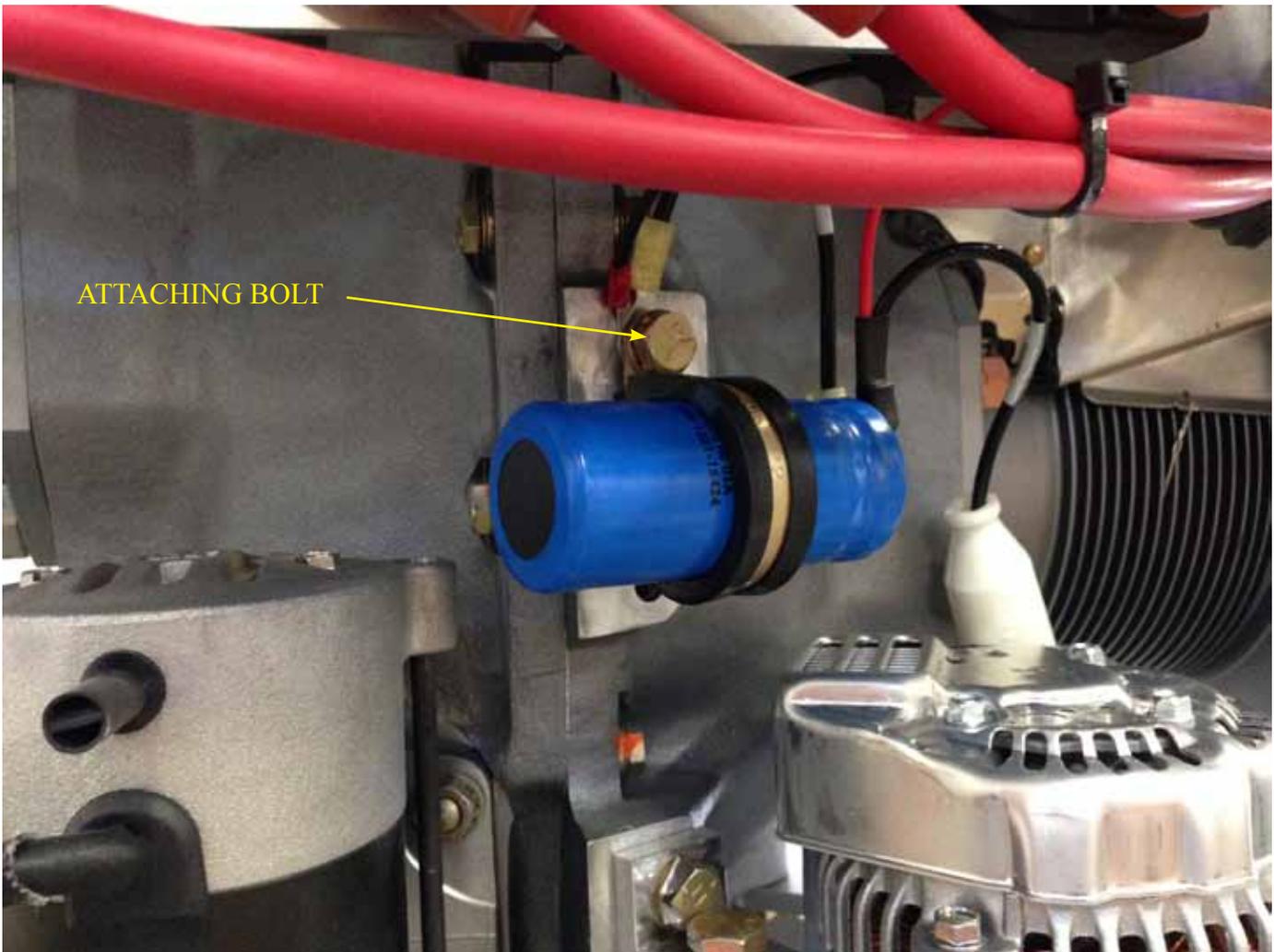


Photo 010

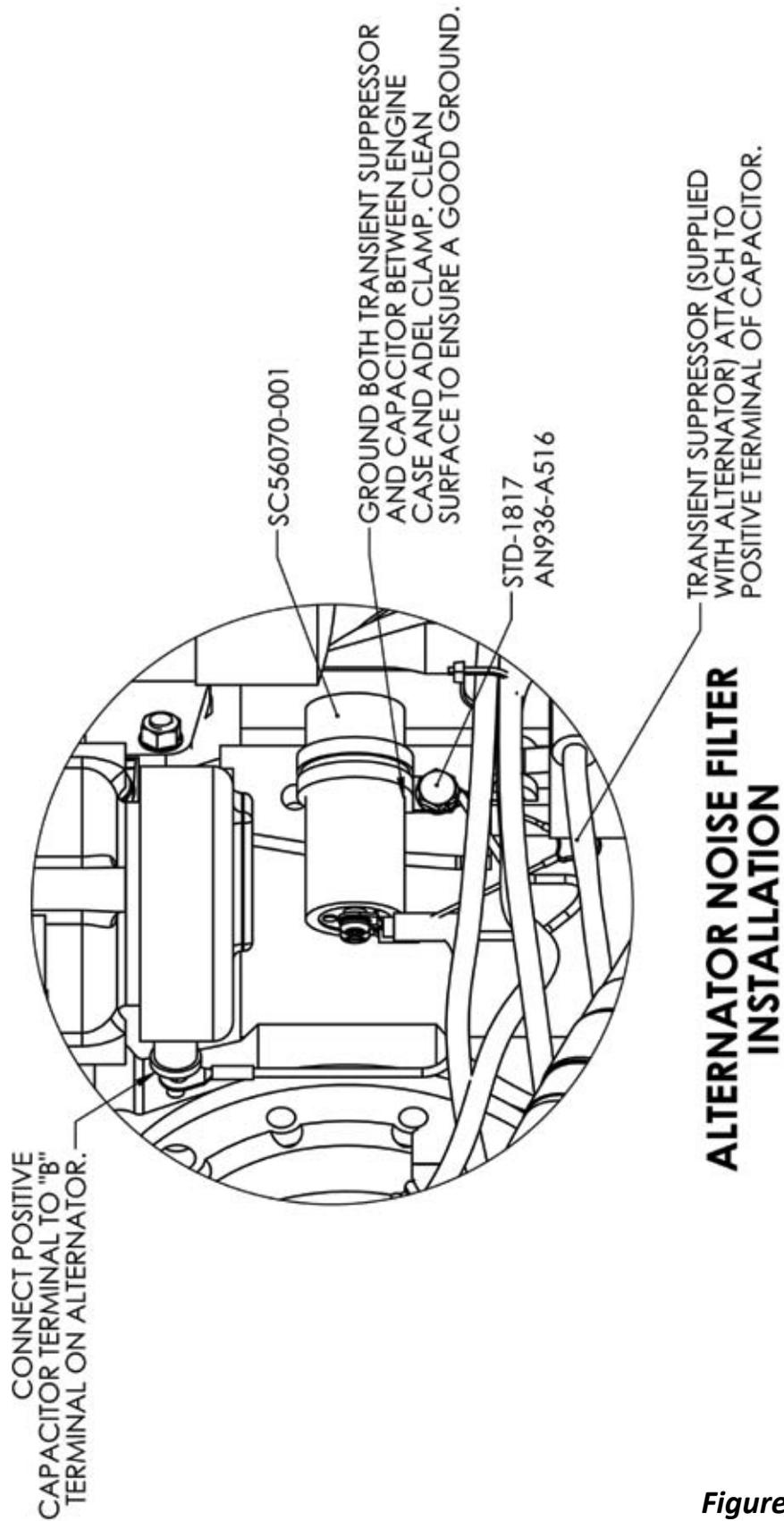


Figure FF6

SECTION 8 CARBURETOR INSTALLATION



Photo 011

Install the carburetor per Figure FF7 and torque the attaching nuts to 90 in.lbs.



Photo 012

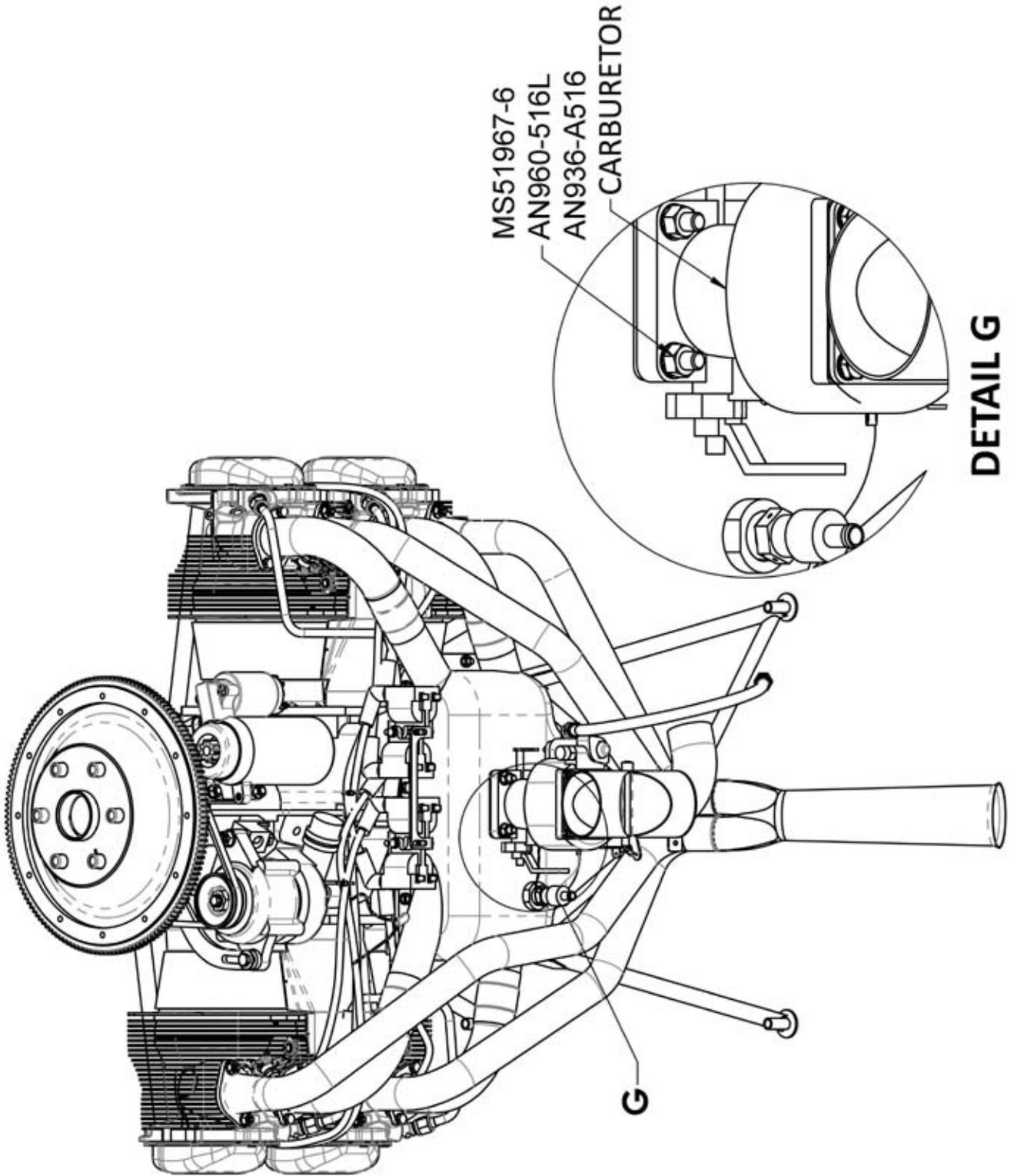


Figure FF7

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SECTION 9 CARBURETOR AIR BOX

Install the carburetor heat box per Figure FF8 and torque the attaching nuts to 60 in.lbs.



Photo 013

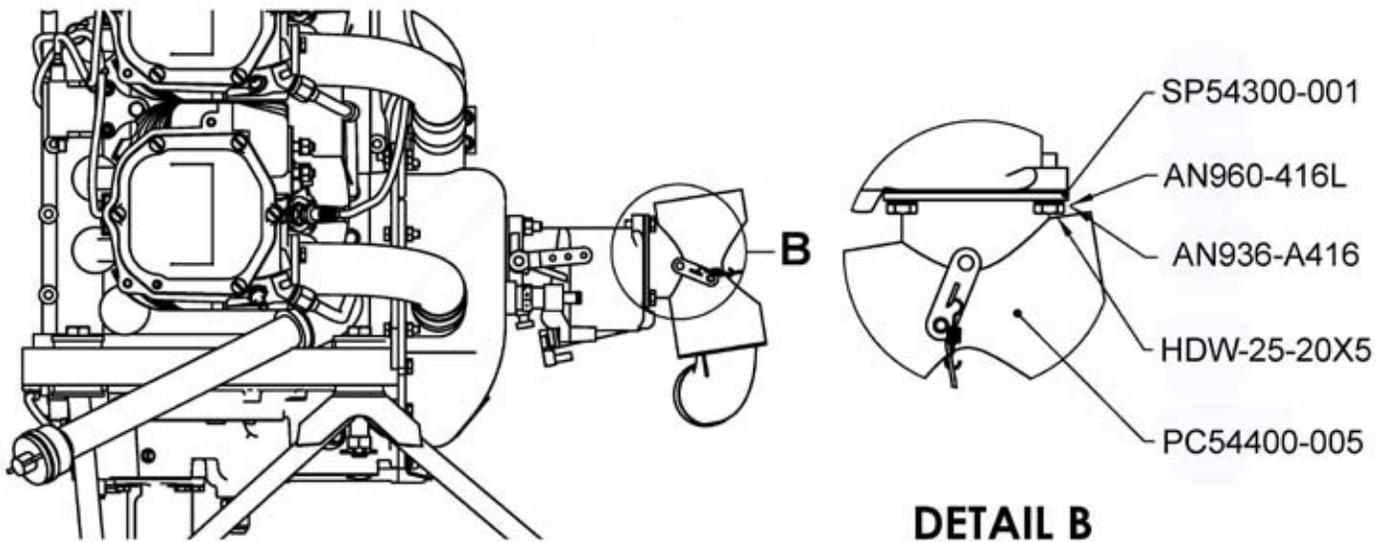
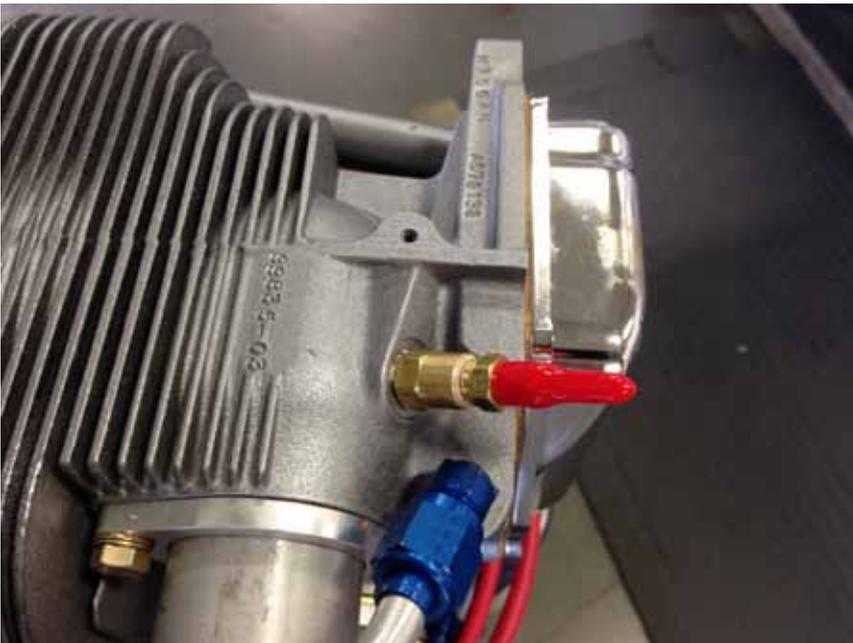


Figure FF8

SECTION 10 PRIMER AND MANIFOLD PRESSURE FITTINGS**Photo 014**

Install the primer fitting(Photo 014) and the manifold pressure fitting(Photo 015) per Figure FF9. These fittings will screw directly into the cylinder head. The threaded end of these fittings that will screw into the cylinder head should be coated with Loctite 567 or similar thread lubricant. **DO NOT OVER TIGHTEN THESE FITTINGS.** These fittings should be snug only.

**Photo 015**

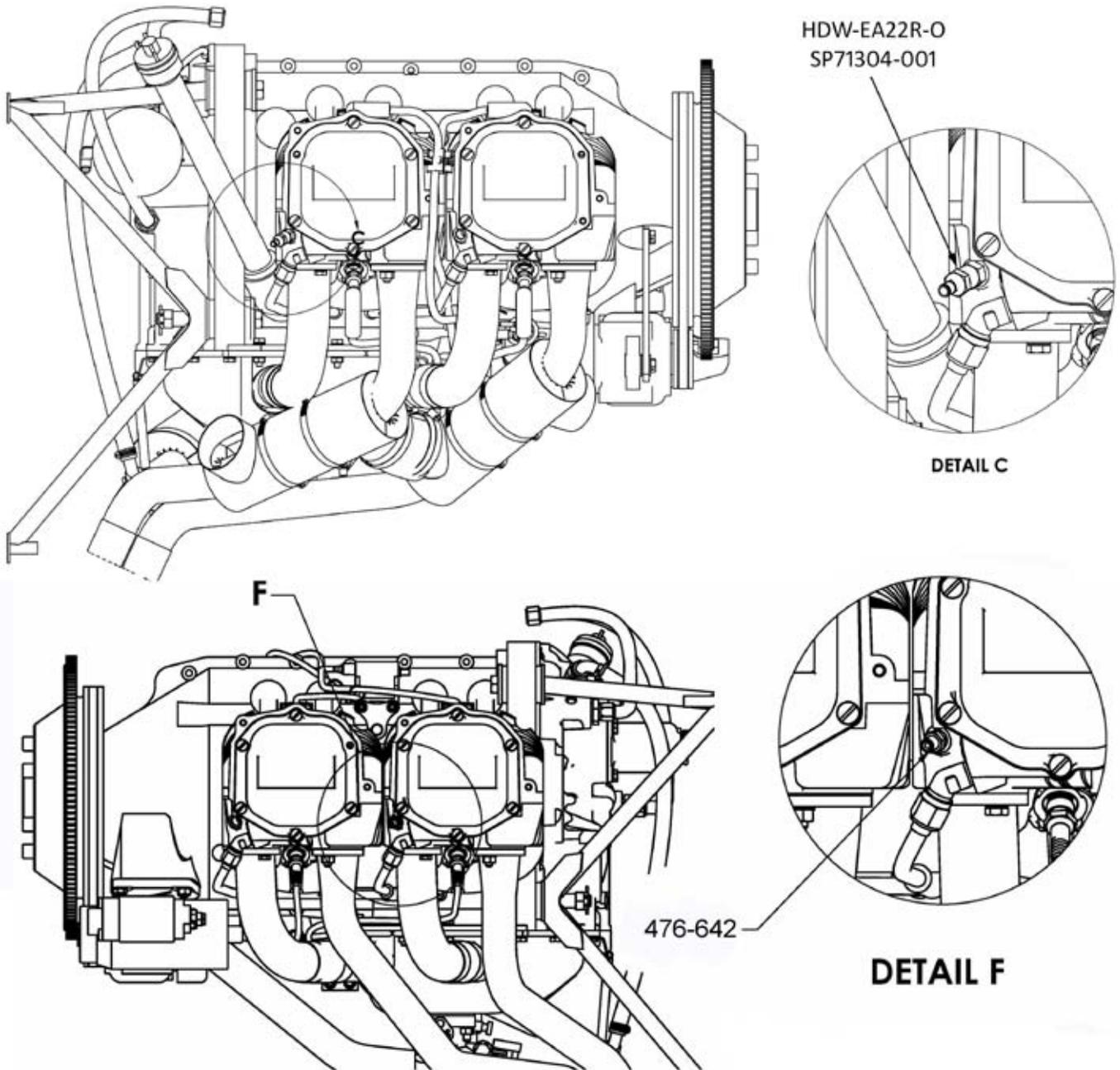


Figure FF9

SECTION 11 OIL FILLER TUBE

Now is the time to install the oil filler tube, these tubes are plastic and will snap off at the threads if you overtighten it. First find the filler tube gasket (round gasket that is supplied with the engine). This gasket will fit over the threaded end of the filler tube. Coat the threaded end of the filler tube with Loctite 567 or similar thread lubricant. Install the filler tube into the engine case and tighten hand tight. Use a hex wrench and tighten the filler, use the hex area shown below only. **DO NOT OVER TIGHTEN THE FILLER TUBE OR YOU WILL BREAK THE TUBE.** Safety wire the filler tube as shown in Photo 016.

USE THIS HEX AREA ONLY TO
TIGHTEN FILLER TUBE



Photo 016

SECTION 12 LOWER CYLINDER BAFFLES

This section covers drilling the lower cylinder baffles. Drilling the lower baffles will allow you to install lower plenum baffles. Drill lower baffles per Figure FF10. Use a #50 drill bit and make sure not to damaged the cylinder. Apply high temp silicone as shown in Figure FF10. The silicone that the factory uses is: Permatex HIGH TEMP RTV SILICONE gasket maker.



Photo 017

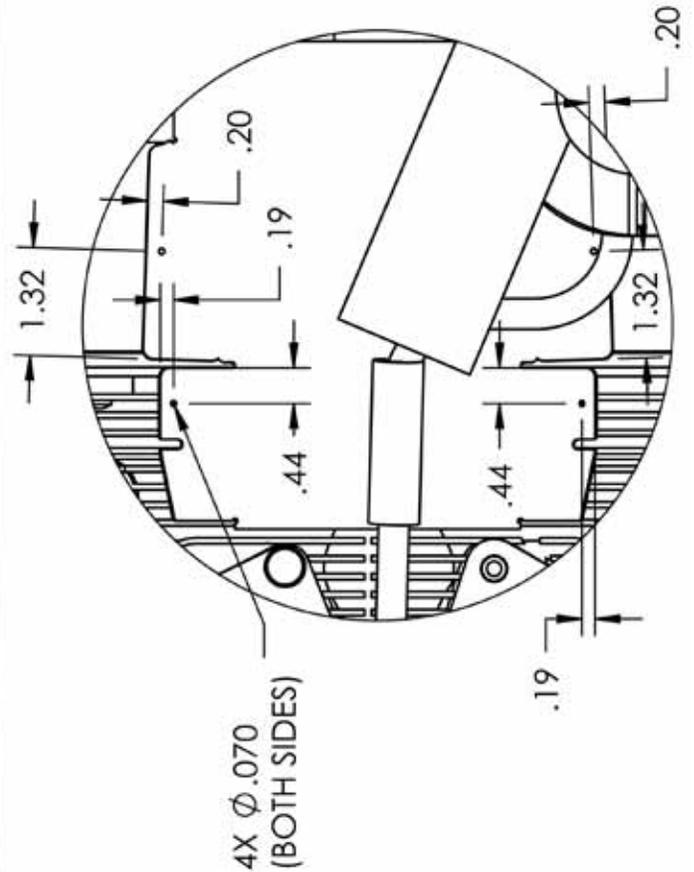
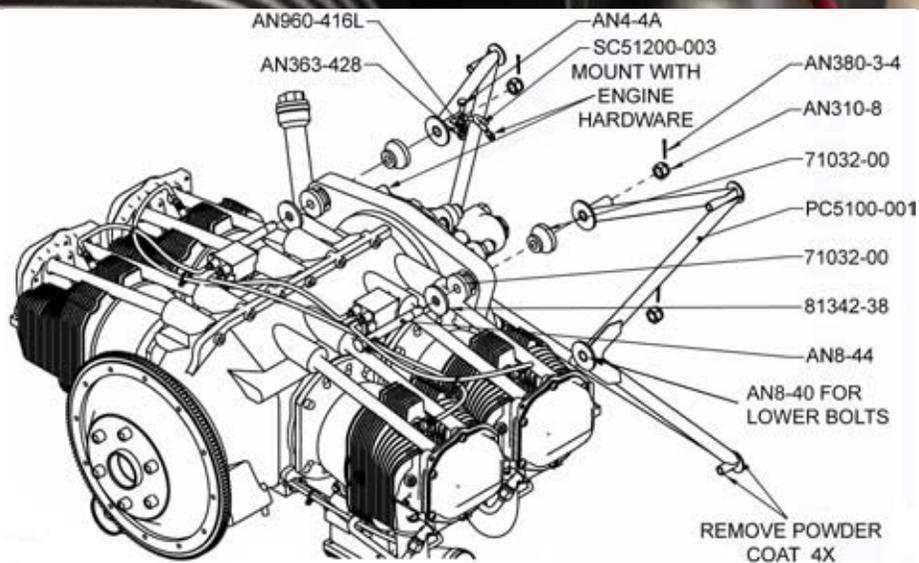


Figure FF10

SECTION 13 ENGINE MOUNT

Install the engine mount that was supplied with your finish kit with the hardware shown in Figure FF11. Torque the engine mount bolts to 60 in.lbs., then tighten to the next cotterpin hole. Install the cotterpin and bend the tails as shown in Photo 018.

**Photo 018****NOTE**

1. ADD AN960-816 TO AN8-40 AND AN8-44 TO PROPERLY ENGAGE NUT/COTTER PIN. WASHERS SHOULD BE PLACED DIRECTLY UNDER BOLT HEAD OR NUT. NO MORE THAN 2 WASHERS MAY BE USED UNDER NUT OR BOLT HEAD. 4 WASHERS TOTAL PER LOCATION.

Figure FF11

SECTION 14 EXHAUST COLLECTOR DRILLING**Photo 019**

The next section will deal with preparing the exhaust collector for installation. You will need to drill a hole in the exhaust collector flange as shown in Photo 020. Take an automatic center punch and punch the flange as shown in Photo 019. next you will drill the hole using a #6 drill bit.

**Photo 020**

SECTION 15 EXHAUST SPRING INSTALLATION**Photo 021**

After the hole has been drilled in the exhaust flange, install the two exhaust collector springs SP56051-102 onto the collector as shown in Photo 021.

**Photo 022**

Install the exhaust tubes and hardware according to Figure FF12. Leave the exhaust nuts loose at this time.

Install the exhaust collector onto the four individual pipes as shown in Photo 023. With the exhaust pipes still loose, move the collector to the best place for connecting the exhaust collector springs to the brackets (Figure FF13) that were installed in SECTION 2. Once the springs have been installed per Photo 024, tighten the exhaust pipe attachment nuts. Once all the exhaust pipe nuts have been tightened, torque these nuts to 90 in.lbs.

**Photo 023****Photo 024**

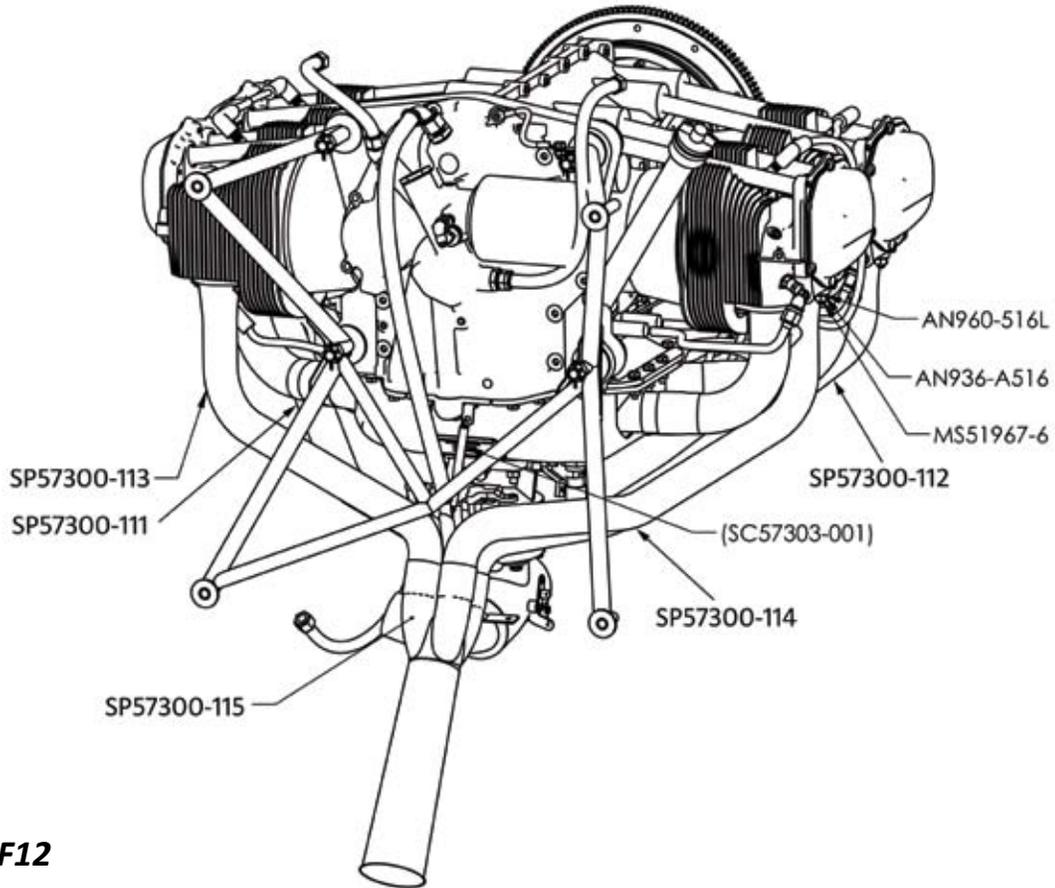


Figure FF12

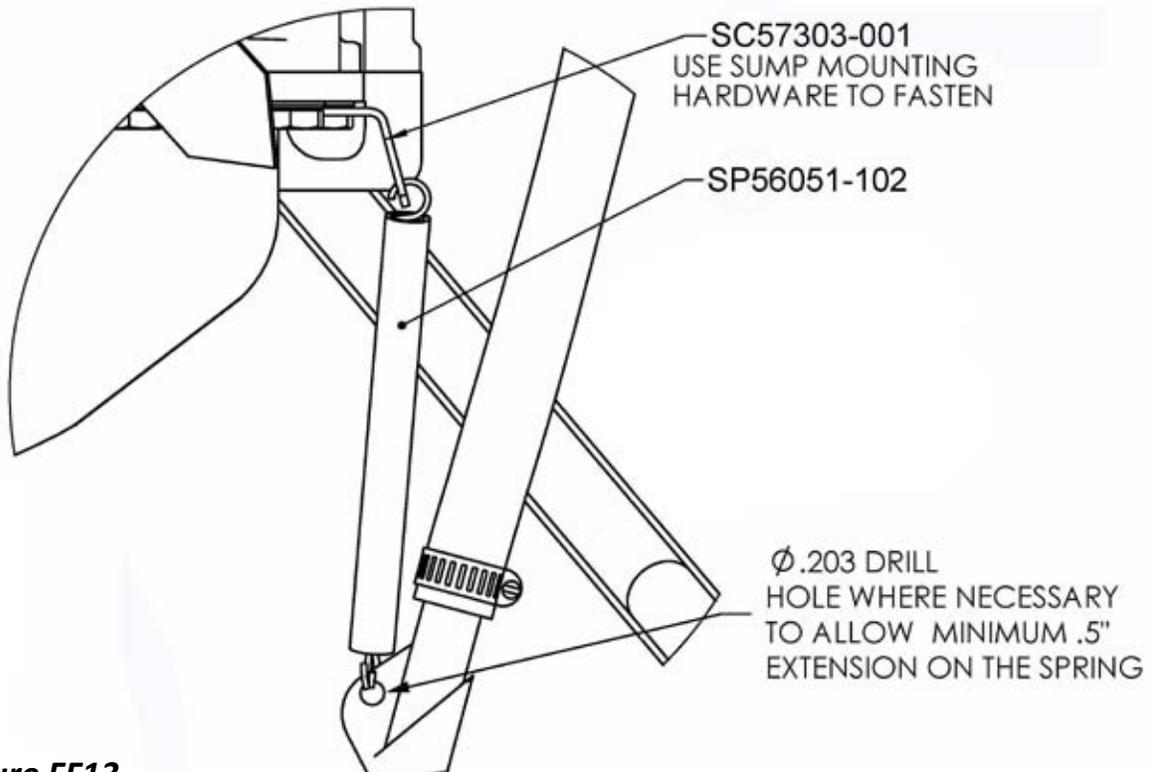


Figure FF13

SECTION 16 ENGINE BREATHER HOSE**Photo 025**

Attach the engine breather hose to the upper fitting as shown in Photo 025 and to the exhaust collector as shown in Photo 026 using the hardware shown in Figure FF14.

**Photo 026**

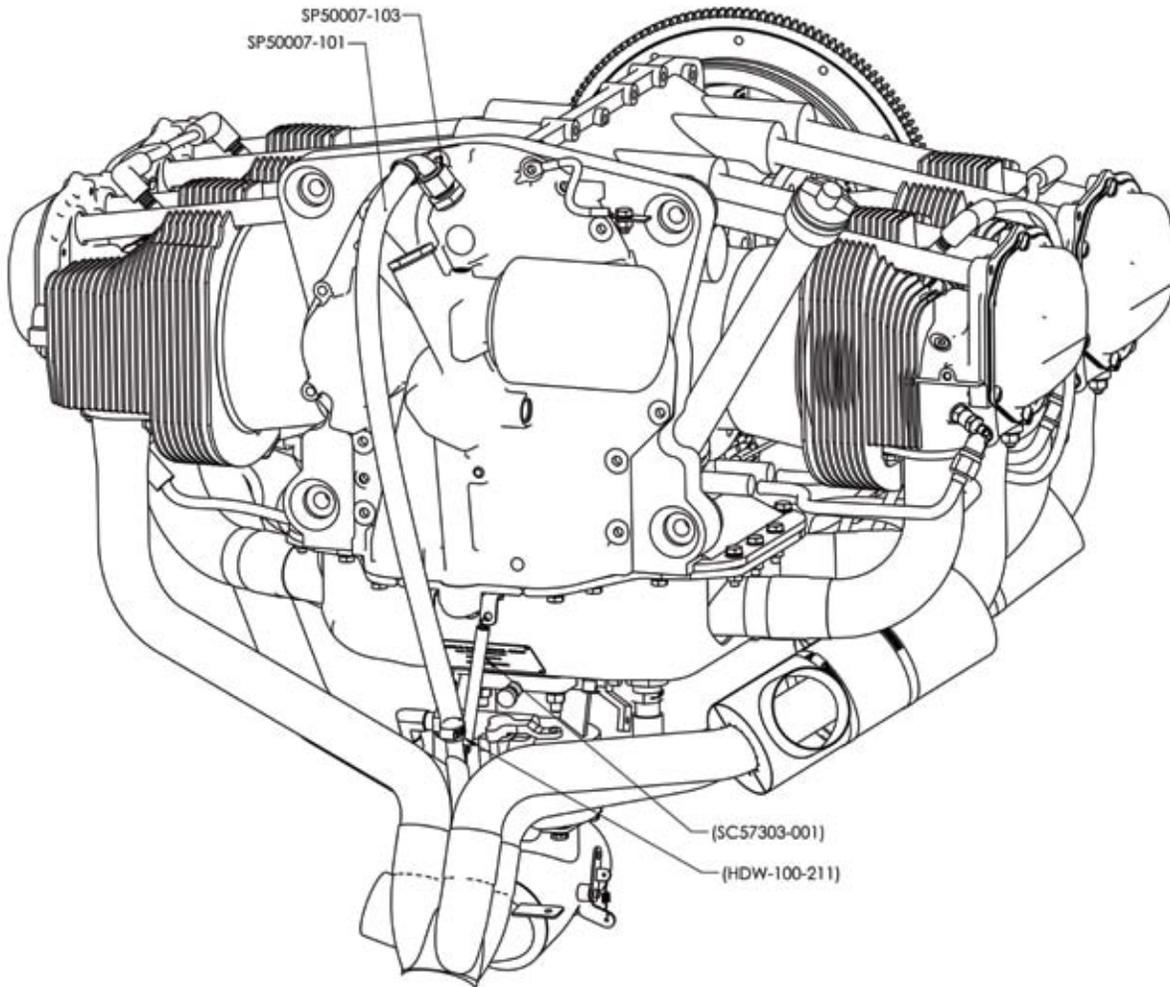


Figure FF14

SECTION 17 ENGINE MOUNT GROUND STRAP

Attach the ground strap to the engine mount tab and then to the engine accessory case bolt. Use hardware shown in Figure FF15. Ensure that the powder coating and paint has been removed from the engine mount tab and accessory drive case. Torque the accessory drive case bolt to 96 in.lbs.



Photo 027

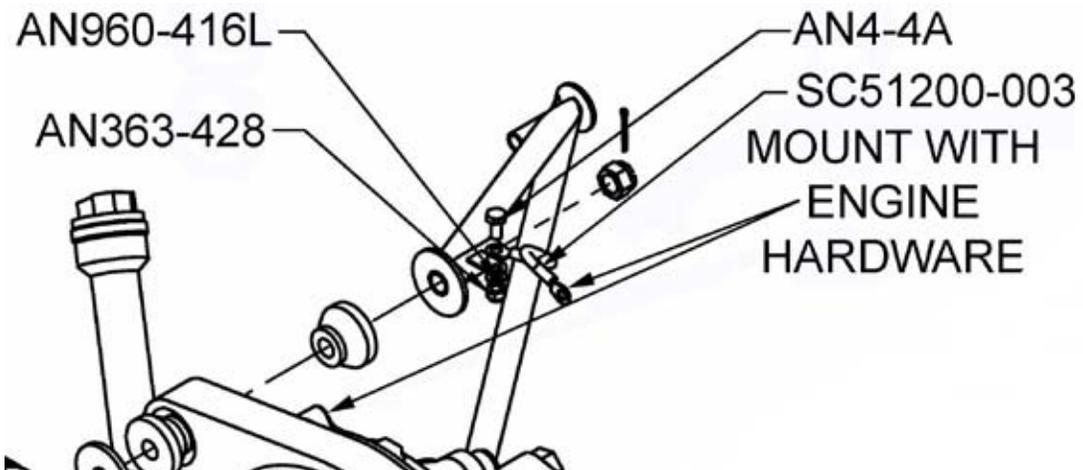
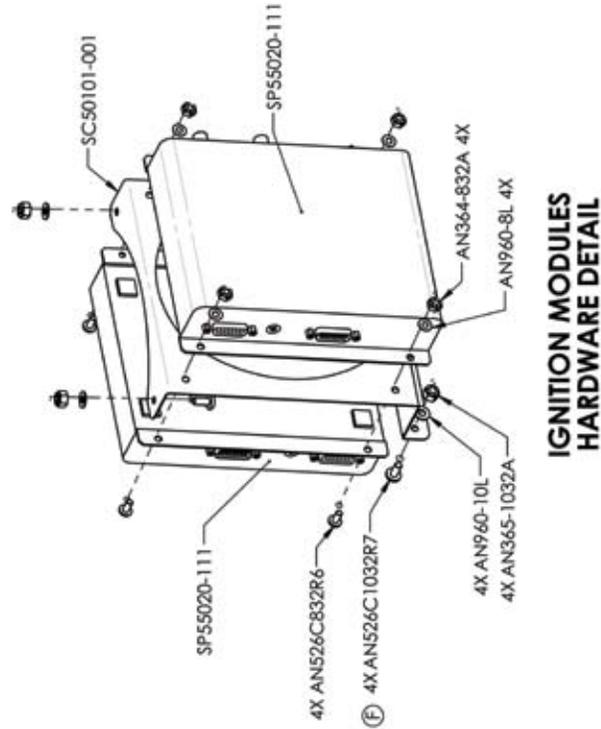


Figure FF15

SECTION 18 MOUNTING ELECTRONIC IGNITION BOXES*Photo 028*

BEFORE YOU INSTALL THE BOOT COWL IS THE BEST TIME TO INSTALL THE ELECTRONIC IGNITION BOXES AND IF YOU ARE USING A CUBCRAFTERS INSTRUMENT PANEL, YOU WILL INSTALL THE BATTERY BRACKET FOR THE BATTERY BACKUP SYSTEM. Install the electronic ignition bracket and boxes per Figure FF16. Connect the ignition boxes according to LightSpeed instructions. The wire routing will be addressed in later sections of this manual.

*Photo 029*



**IGNITION MODULE
INSTALLATION**

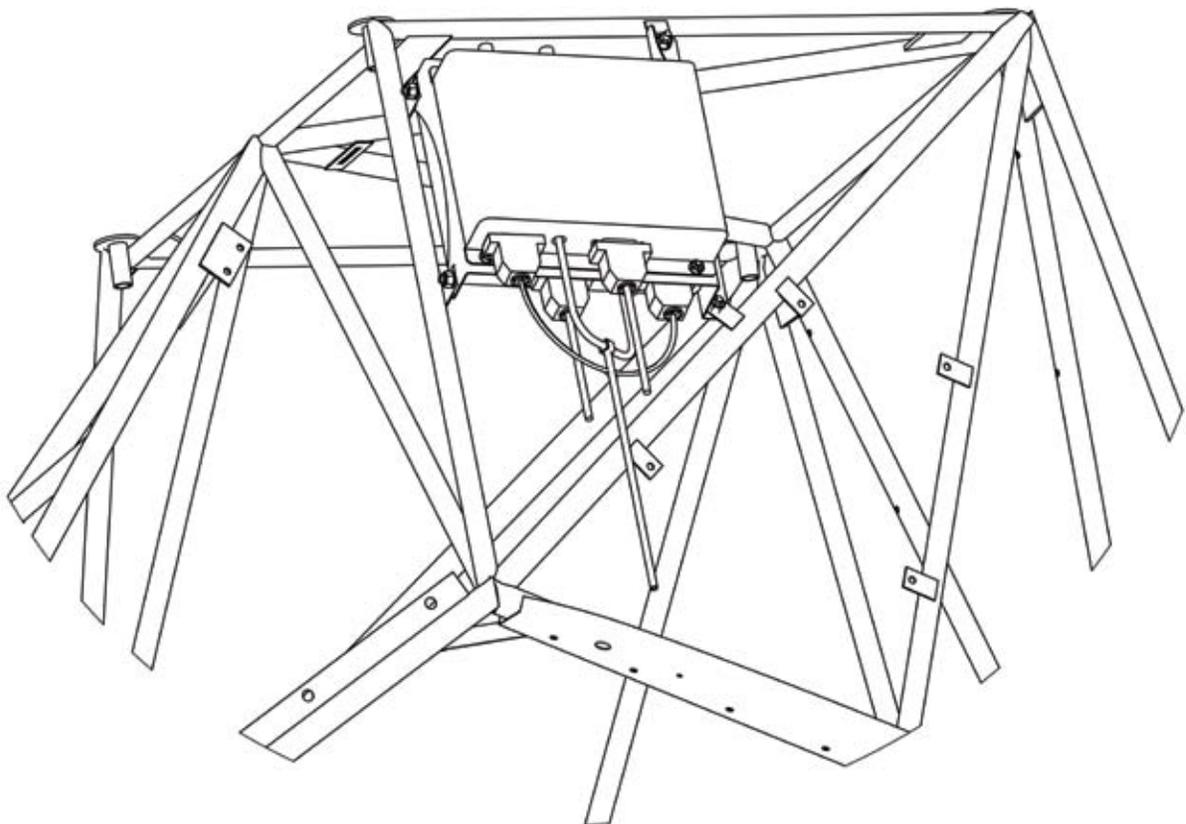


Figure FF16

SECTION 19 ENGINE TO FUSELAGE MOUNTING**Photo 030****Photo 031**

Using an engine hoist or other lifting equipment, lift the engine into place and insert the bolts shown in Figure FF17. Install the nuts and washers per Figure FF17. Torque the bolts from the head side to 260 in.lbs. Relax the hoist and let the engine hang. **BEFORE YOU RELAX THE HOIST, MAKE SURE YOU HAVE ENOUGH WEIGHT ON THE TAIL SO THE ENGINE DOESN'T HIT THE GROUND.**

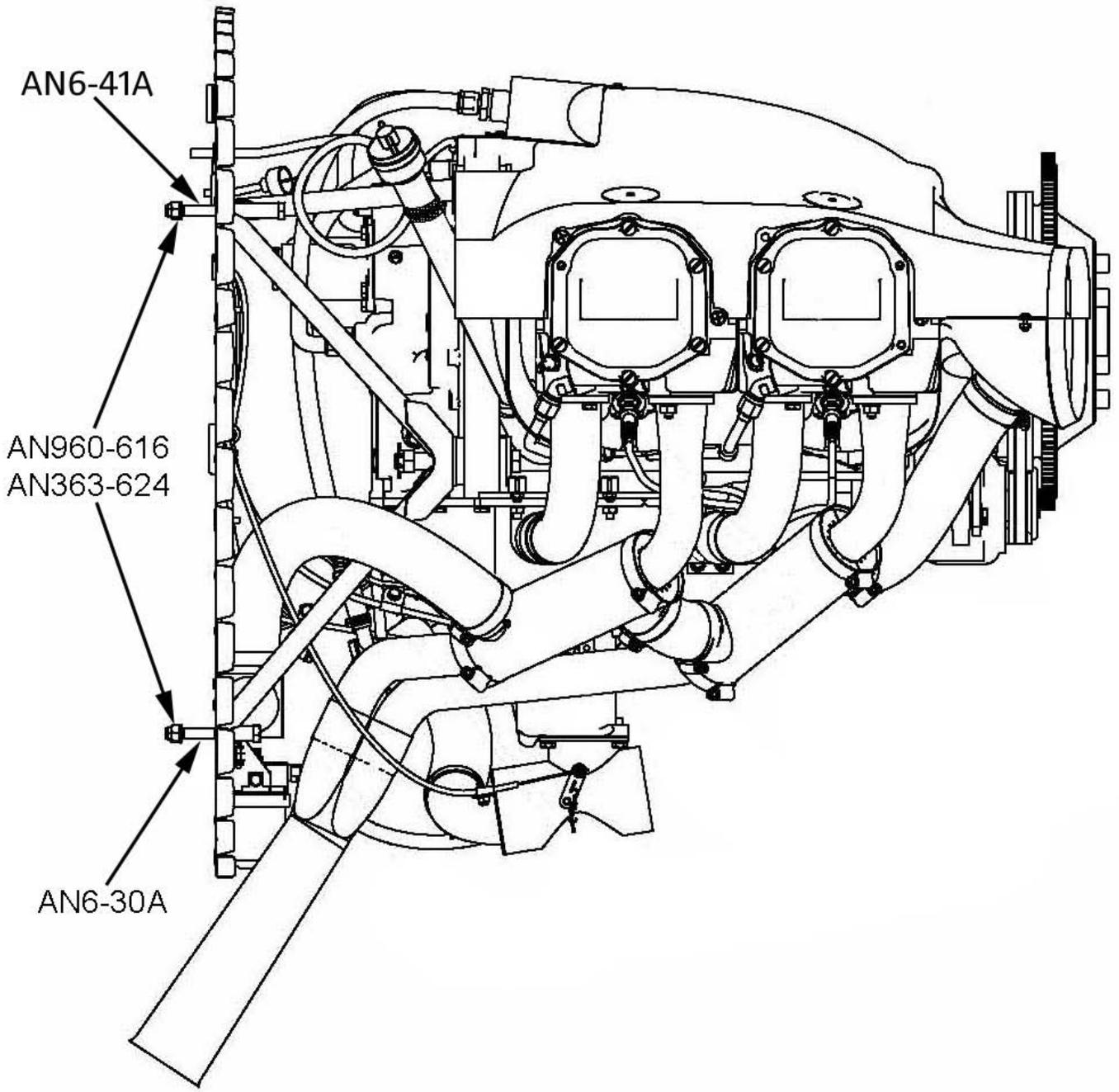


Figure FF17

SECTION 20 ENGINE CONTROL CONNECTION**Step 1. THROTTLE CABLE CONNECTION*****Photo 032***

Connect the throttle cable as shown in the photos on this page. Use Figure FF18 for the hardware used in this installation.

***Photo 033***

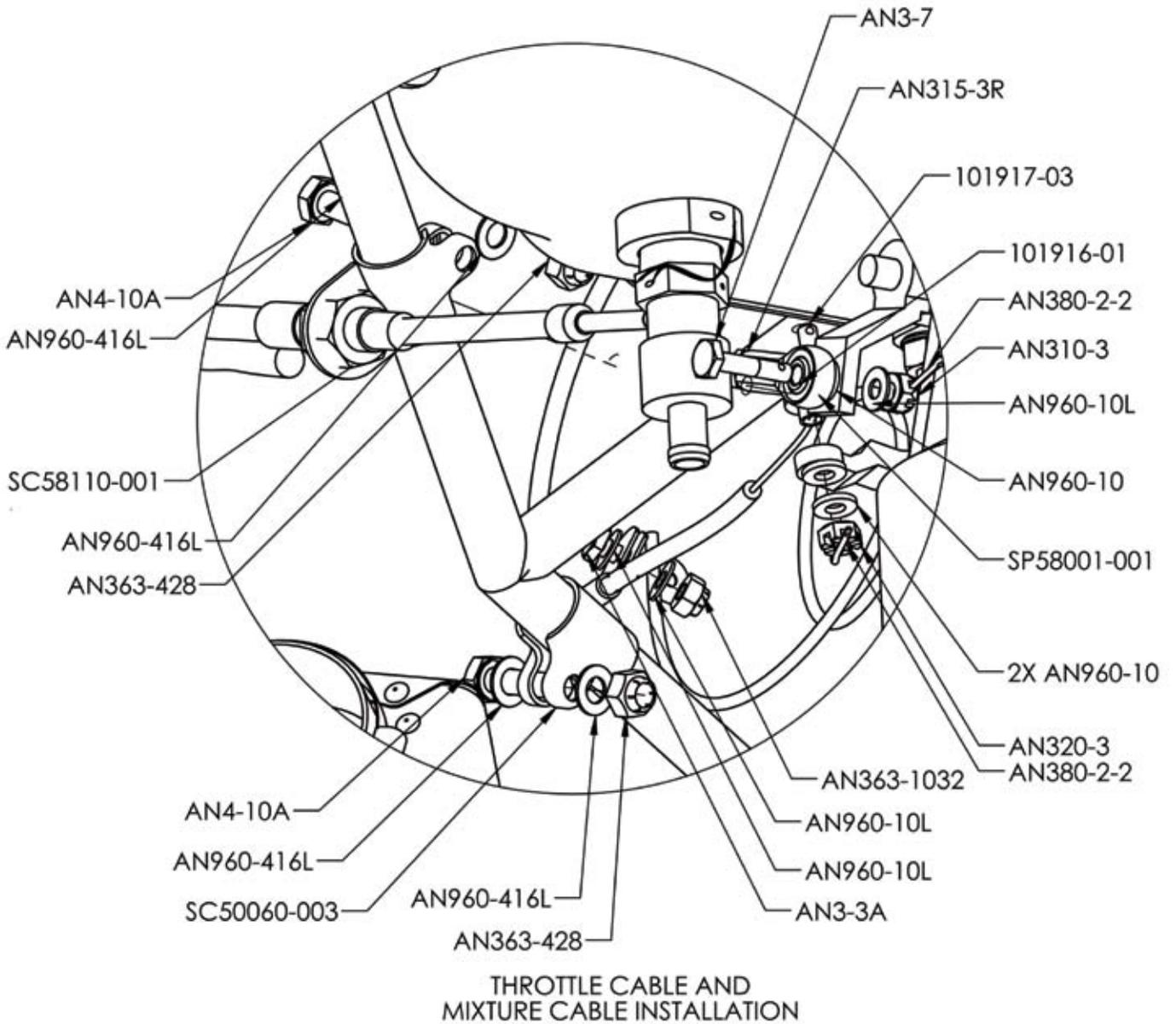


Figure FF18

SECTION 20**ENGINE CONTROL CONNECTION
Step 2. MIXTURE CABLE CONNECTION*****Photo 034***

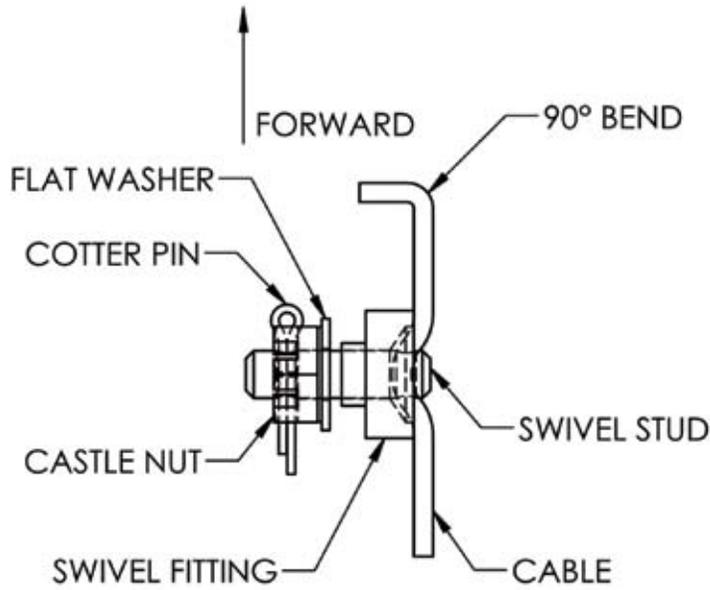
Connect the mixture cable as shown in the photos on this page. Use Figure FF19 for the hardware used in this installation.

***Photo 035***

SECTION 20**ENGINE CONTROL CONNECTION****Step 3. CARB. HEAT CABLE CONNECTION****Photo 036**

Connect the carb heat cable as shown in Photo 036 and Photo 037. Use Figure FF20 for the hardware used in this installation.

**Photo 037**



**MIXTURE CONTROL/CARB
HEAT CONTROL INSTALLATION**

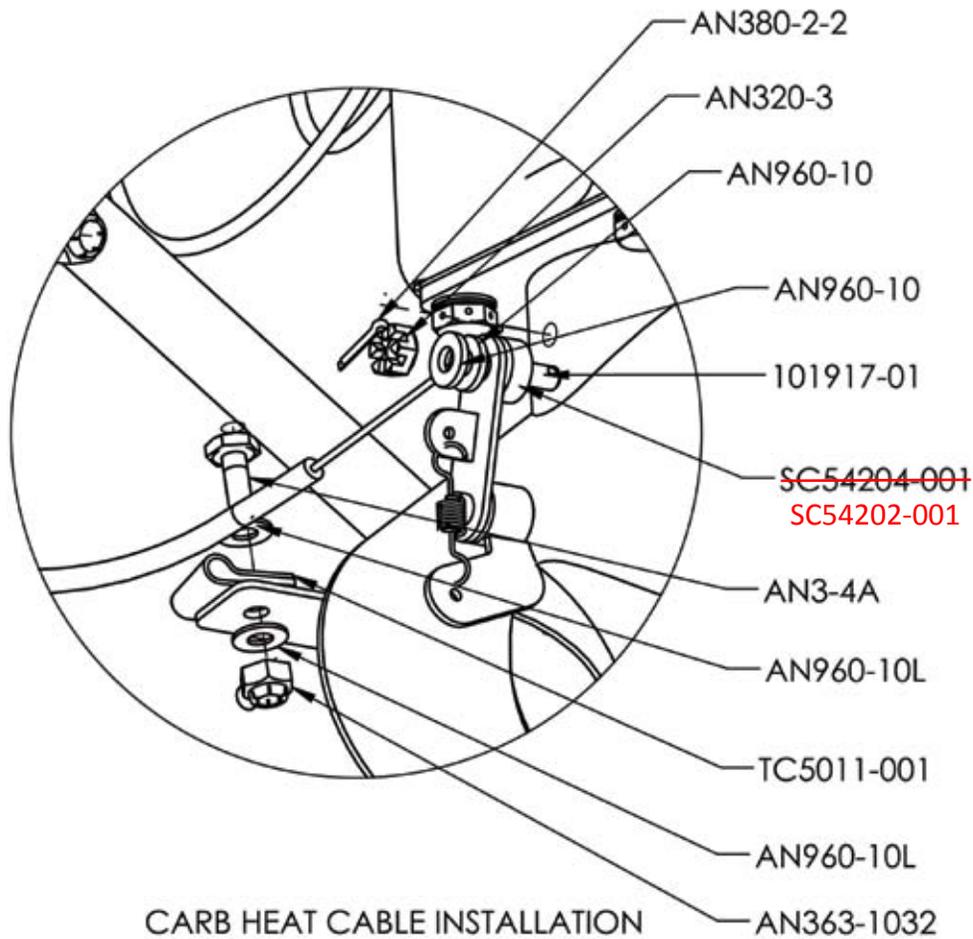


Figure FF20

SECTION 21 ALTERNATOR AND IGNITION PICKUP WIRES**Photo 038**

Connect the coil, alternator, and electric ignition pickup wires to the right side of the engine as shown in the photos on this page. Figure FF21 will show the hardware used in this installation.

**THE IGNITION PICKUP WIRES
NEED TO BE RUN ALL BY
THEMSELVES AS SHOWN IN Photo
038**

**Photo 039**

Ensure the electric ignition pickup wires follow down the alternator adjustment arm as shown in this photo. You will connect the wires to the alternator arm using shown in Photo 040 also.

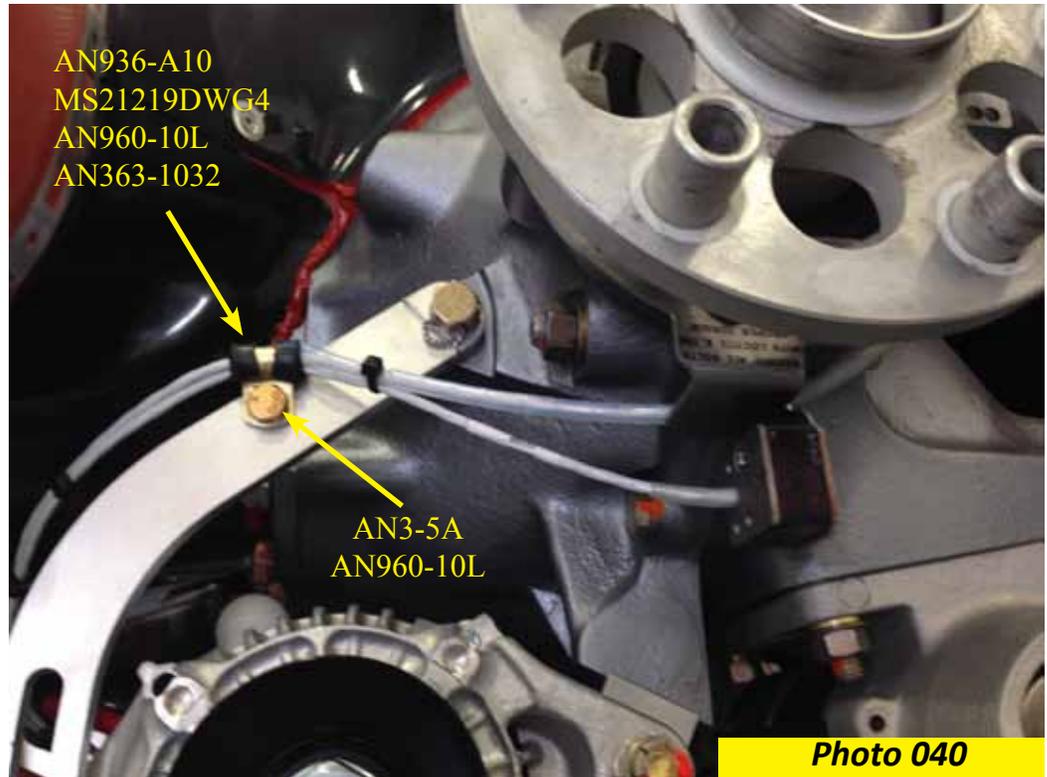


Photo 040

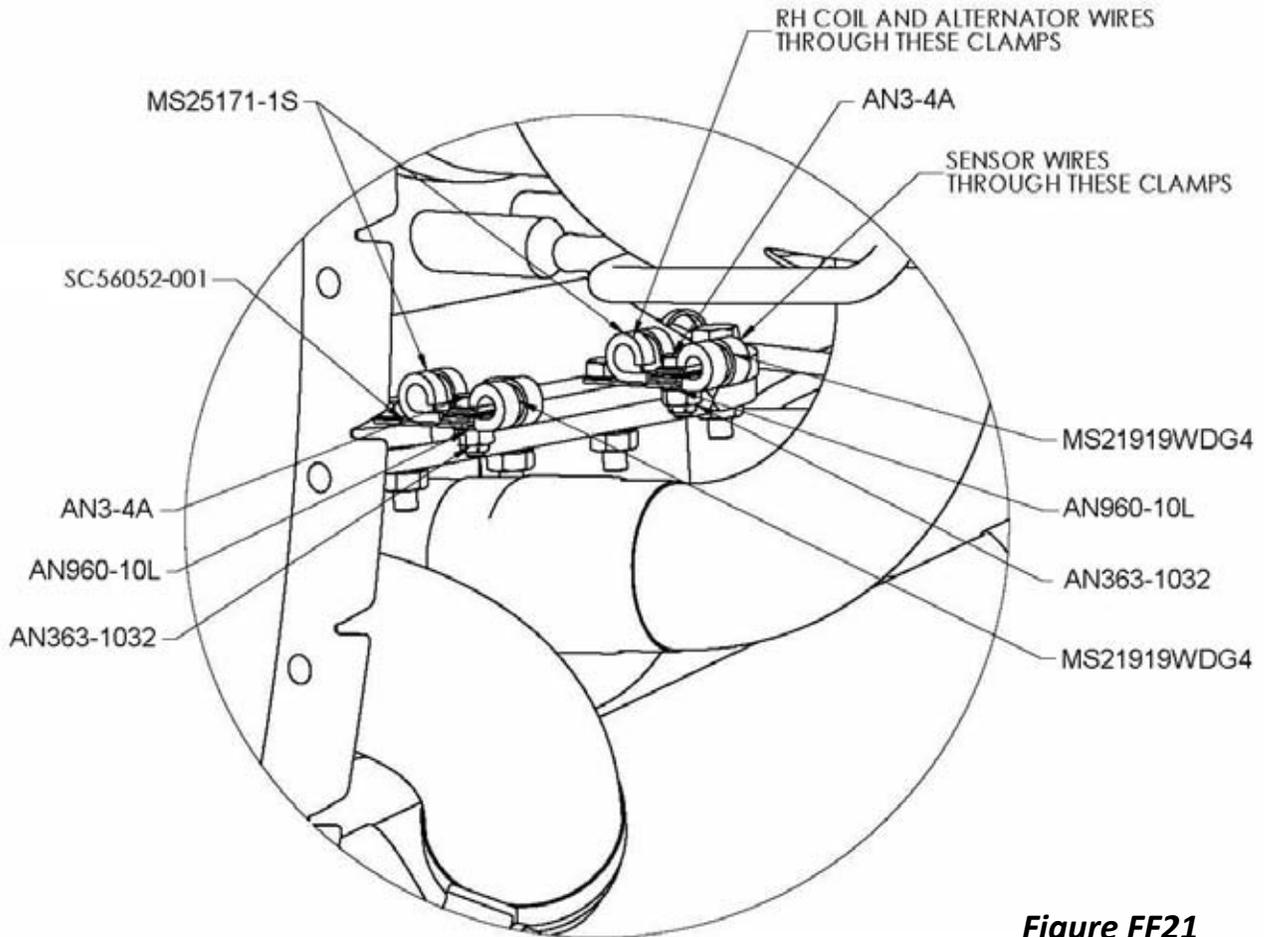


Figure FF21

SECTION 22 IGNITION PICKUP COILS AND IGNITION COIL WIRES

Mark the ignition coils as shown in Photo 041. Connect the electrical coil wires to the ignition coils as shown in Figure FF22.



Photo 041



Photo 042

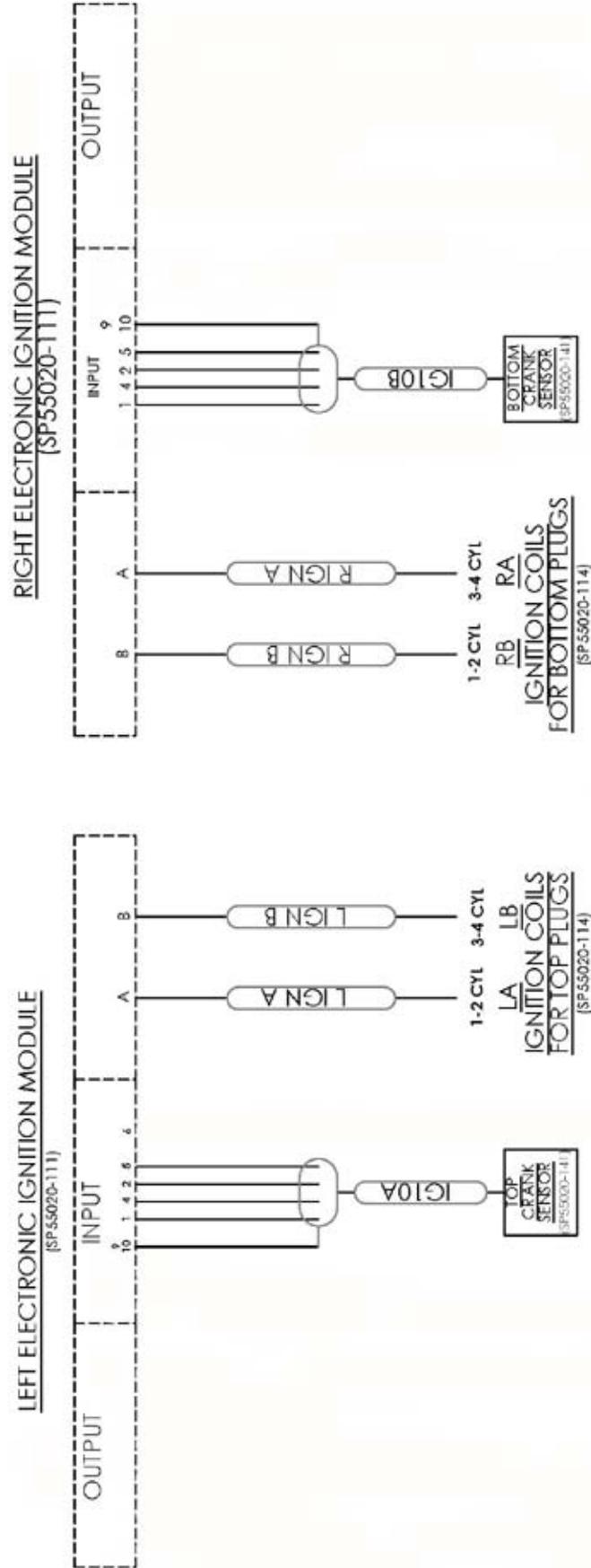


Figure FF22

The vertical center of the Mini Sensor should align with the split line of the engine case at the top of all engines. For dual 4 cylinder Plasma installations a second Mini Sensor is installed 180 degrees from the first sensor. Photo 044 shows the sensor installation. Photo 042 shows the sensor wire routing around the front of the engine.

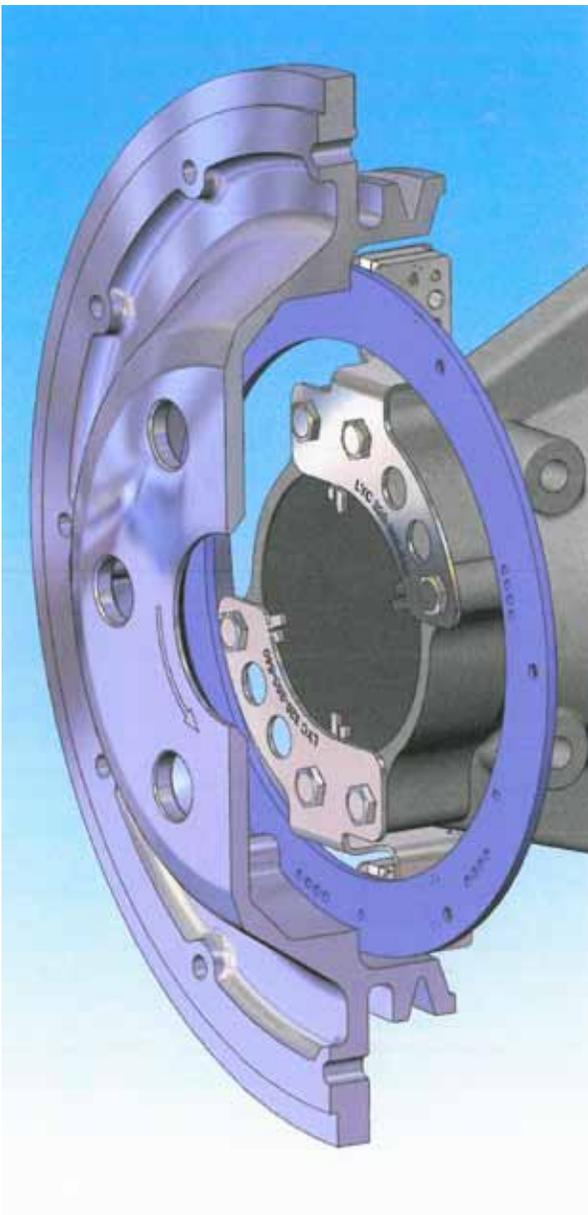


Photo 043



Photo 044

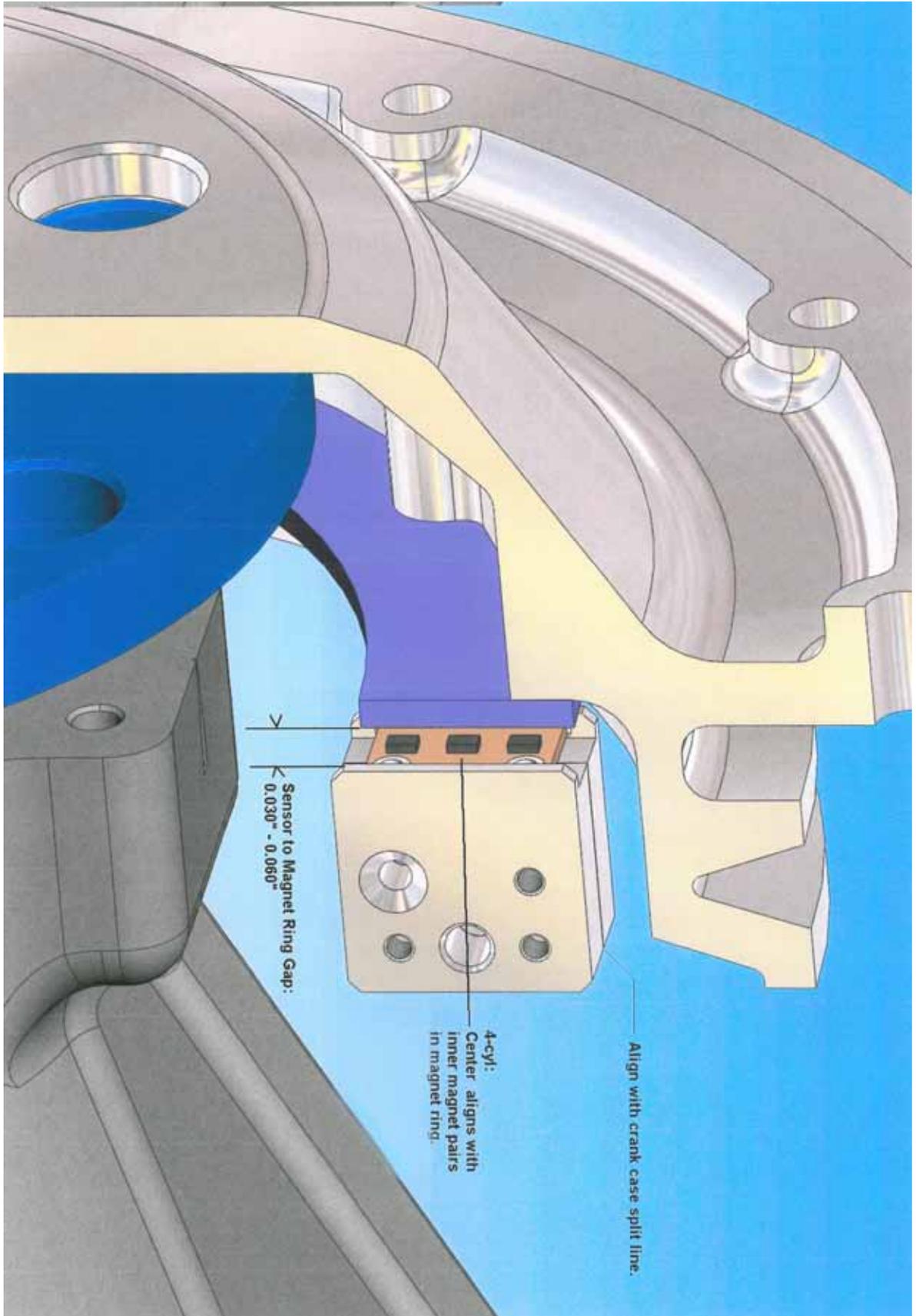


Photo 045

SECTION 23 STARTER WIRE**Photo 046**

Connect the starter wire to the left side of the engine as shown in the photos on this page. Figure FF23 will show the hardware used in this installation.

**Photo 047**

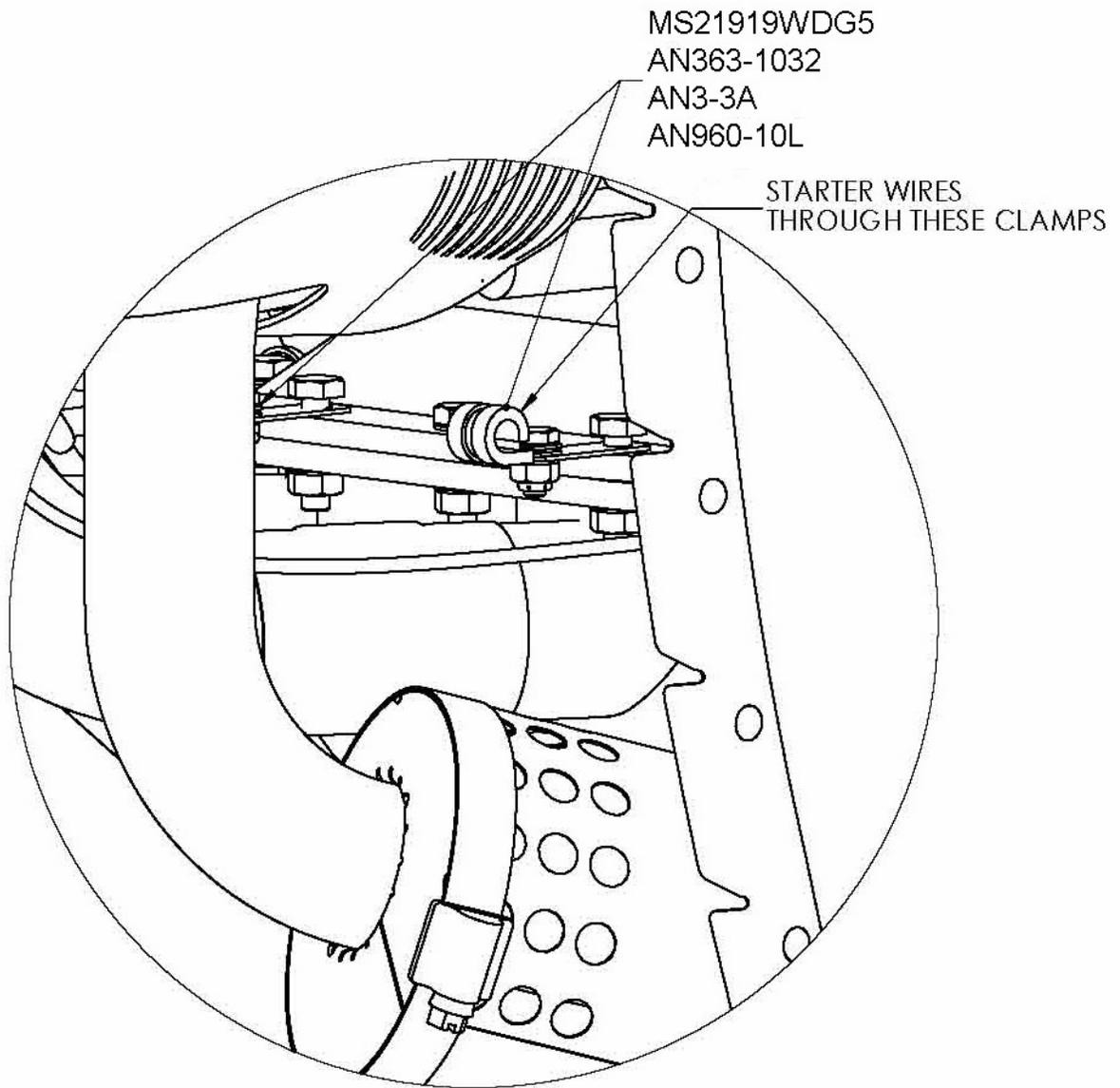
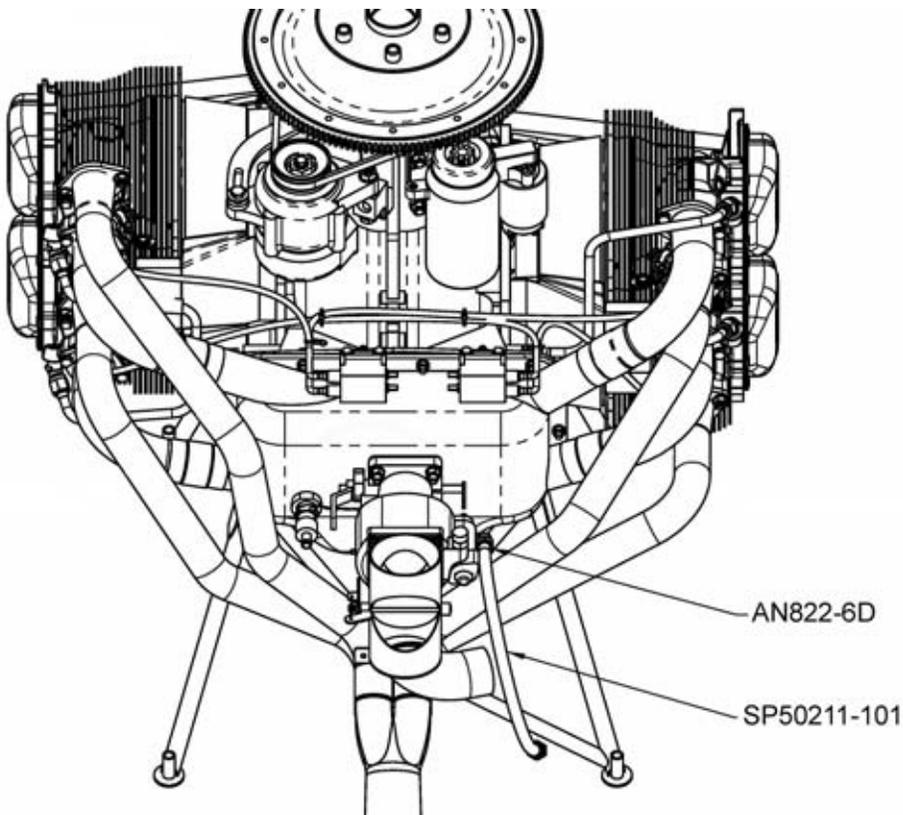


Figure FF23

SECTION 24 FUEL LINE INSTALLATION

Photo 048

Install the AN816-6D into the gascolator and the AN822-6D into the carburetor. The threaded end of these fittings that will screw into the gascolator and carb. should be coated with Loctite 567 or similar thread lubricant. **DO NOT OVER TIGHTEN THESE FITTINGS.** Install the fuel line per Figure FF24 and Photo 048.


Figure FF24

SECTION 25 CABIN AND CARB. HEAT MUFFS

Install the cabin heat muff in accordance with Figure FF25. You will notice that there are two cabin heat muffs connected by a section of 2 1/2" scat tubing. The heat muffs need to spread enough to get them around the exhaust pipes per Photo 049. Take a look at all the pictures in this section and be familiar with the proper orientation. **DO NOT OVERTIGHTEN THE HOSE CLAMPS THAT HOLD THE HEAT MUFFS TOGETHER**, if they are over tightened they will be distorted and will lose valuable heat. During this installation you will run a section of 2 1/2" scat tubing from the right lower front baffle to the front of the forward cabin heat muff.

Use Figure FF26 to install the carb. heat muff on the right side of the engine. When I talk about the right or left side of the engine, the reference is from the front of the engine.



Photo 049



Photo 050

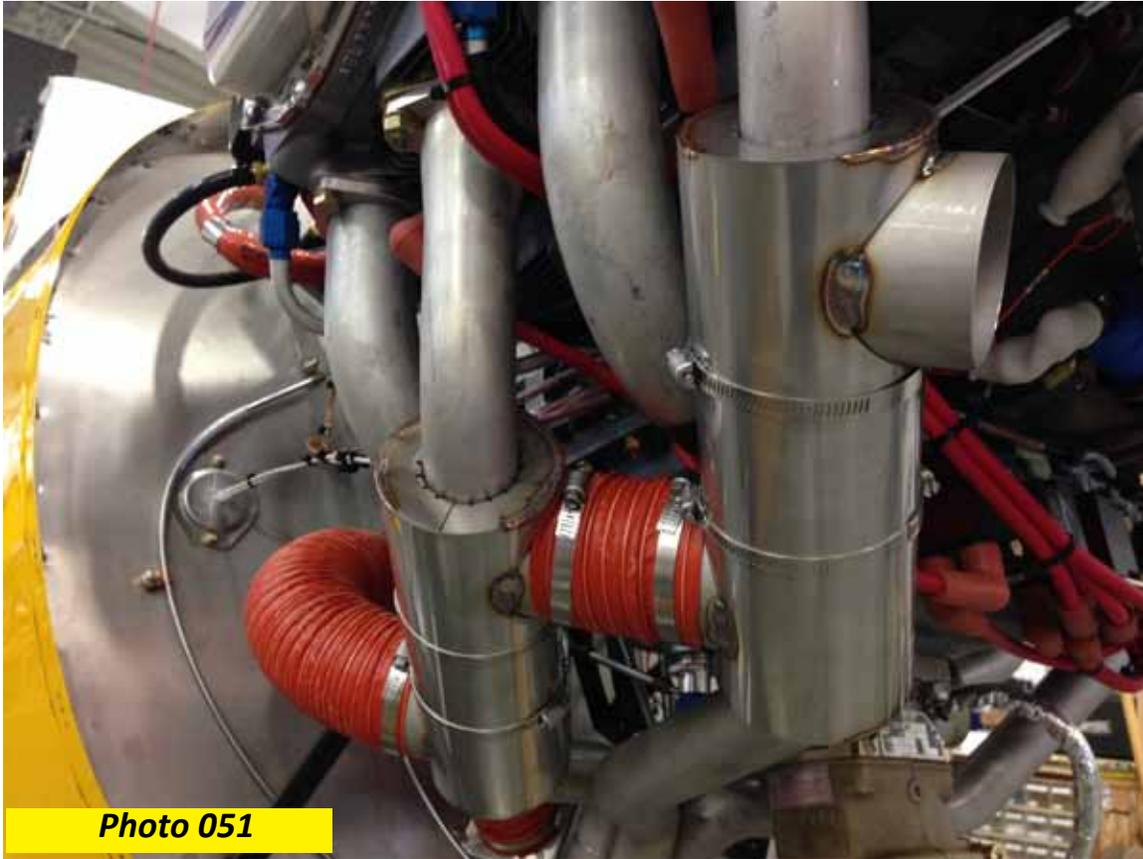


Photo 051

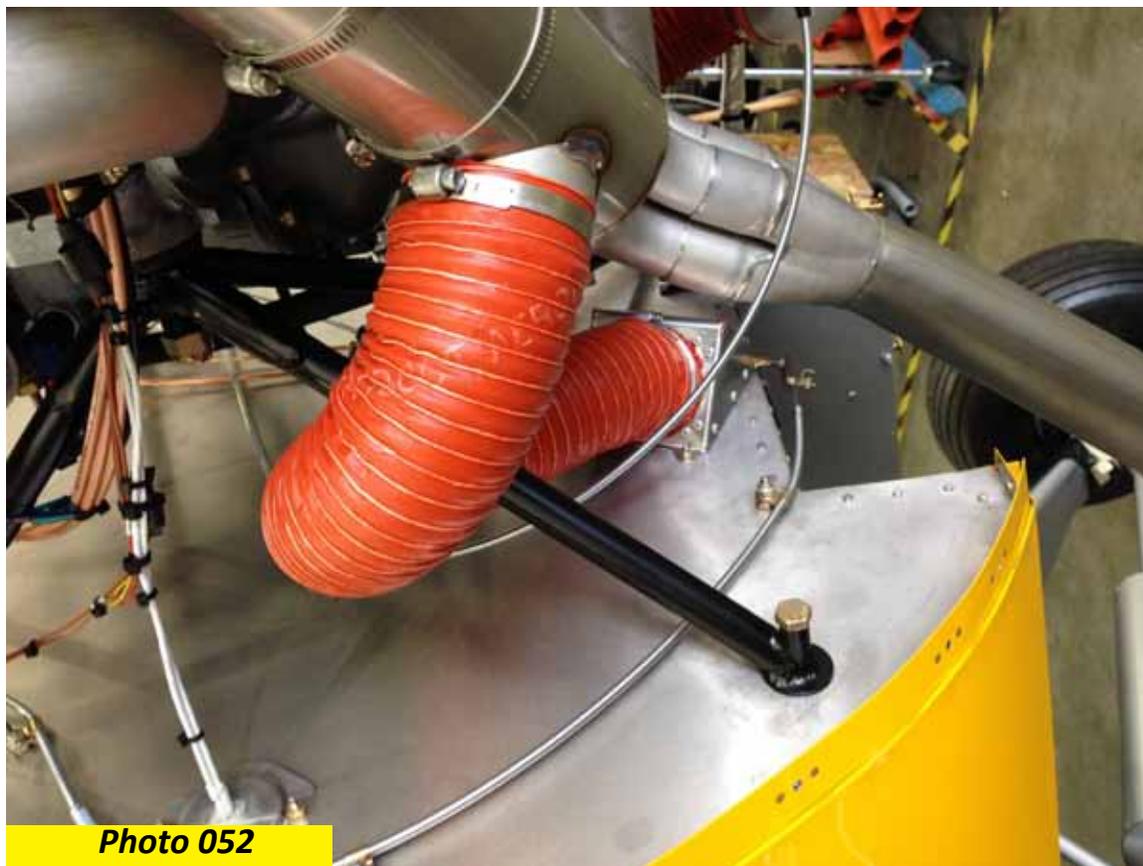


Photo 052



Photo 053

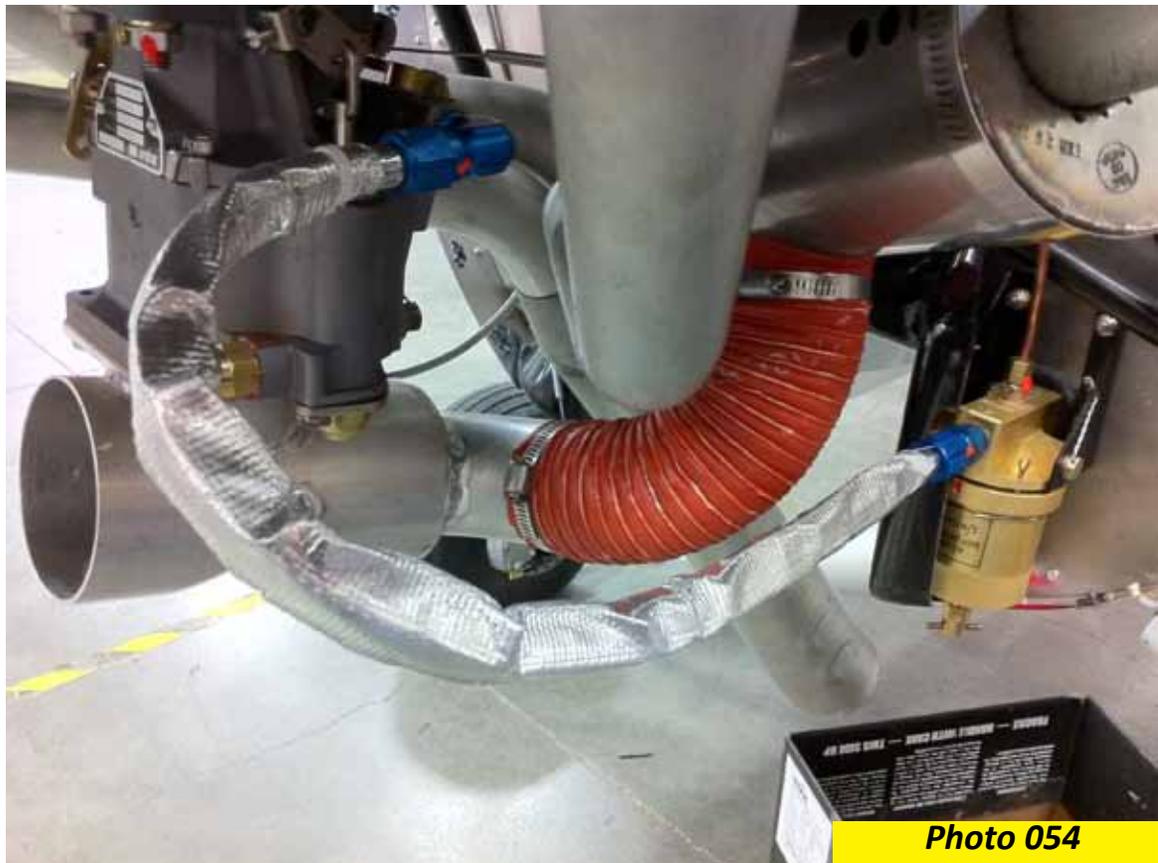


Photo 054

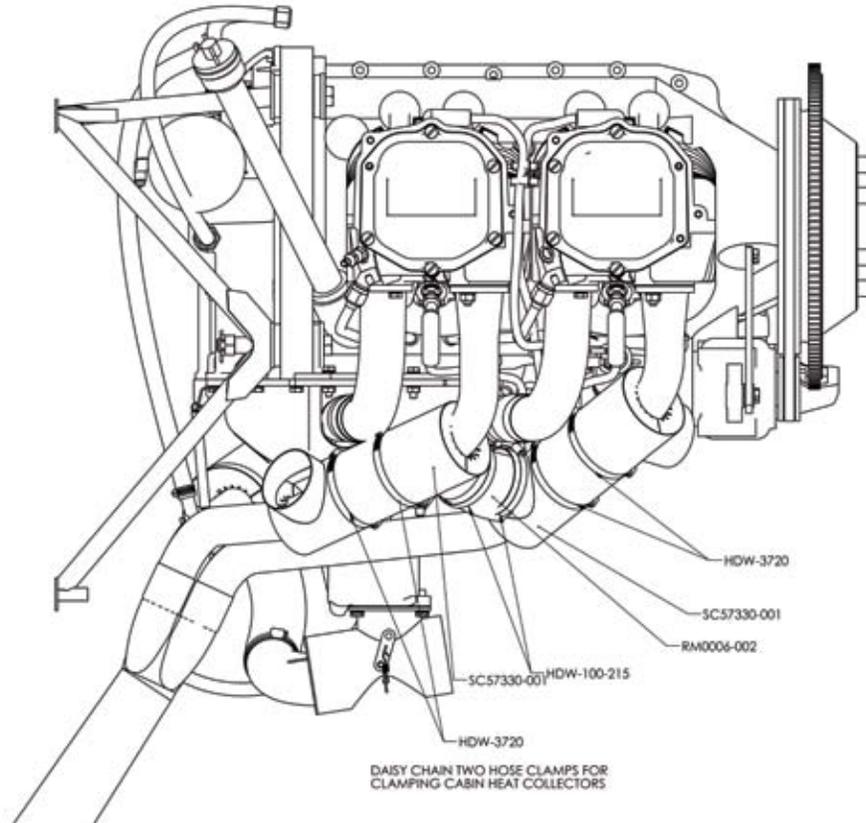


Figure FF25

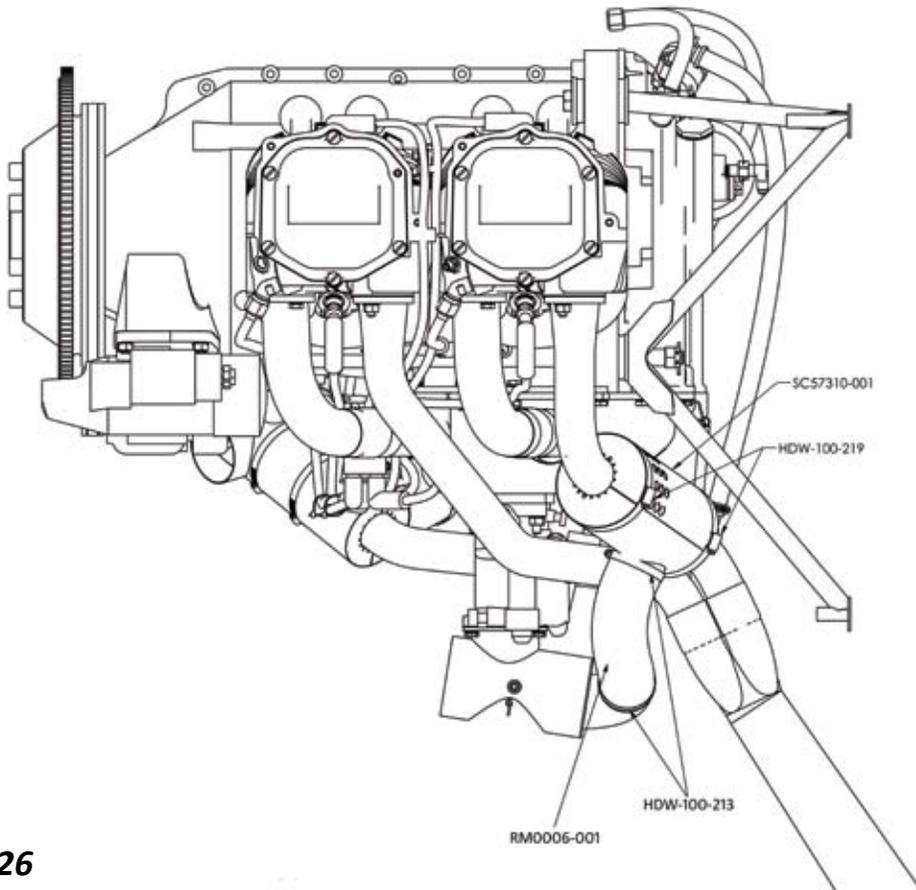


Figure FF26

SECTION 26 PRIMER LINE CONNECTION

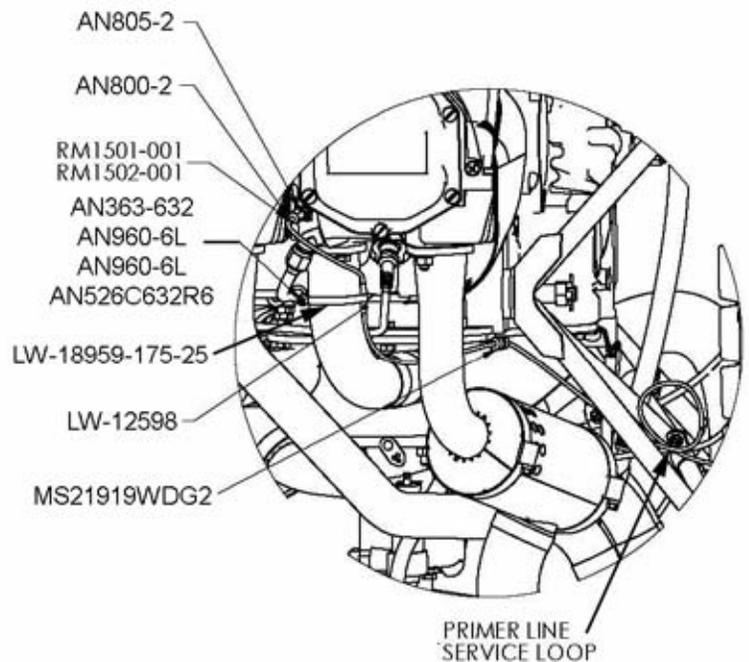
This section will cover the installation of the engine primer line into the right rear cylinder head. When I talk about the right or left side of the engine, the reference is from the front of the engine. You will need to solder the primer fitting to the primer line. Route the primer line as shown in Figure FF27. Once the primer line has been trimmed to the proper length slide the primer nut onto the primer line. Next you will coat the inside of the fitting AN800-2 and the outside of the primer line where the fitting will go with rosin soldering flux that can be purchased from Radio Shack. You will then need a butane torch shown in Photo 056 and silver-bearing solder #64-035E also purchase from Radio Shack. The next thing to do is insert a piece of .032” safety wire about 3/4” into the hole in the fitting and down into the primer tubing, this safety wire will keep the solder from wicking down the primer tube. Heat up the fitting with the torch and wick the solder into the bottom side of the fitting. Remove the safety wire and clean up any excess solder.



Photo 055



Photo 056



PRIMER INSTALL

Figure FF27

SECTION 27 OIL PRESSURE LINE CONNECTION

Install the oil pressure line MS28741-3-0162A onto fittings installed in SECTION 4. You will need to install the firewall end of the oil hose onto the oil sending unit/ mechanical gauge per manufacturers instructions.

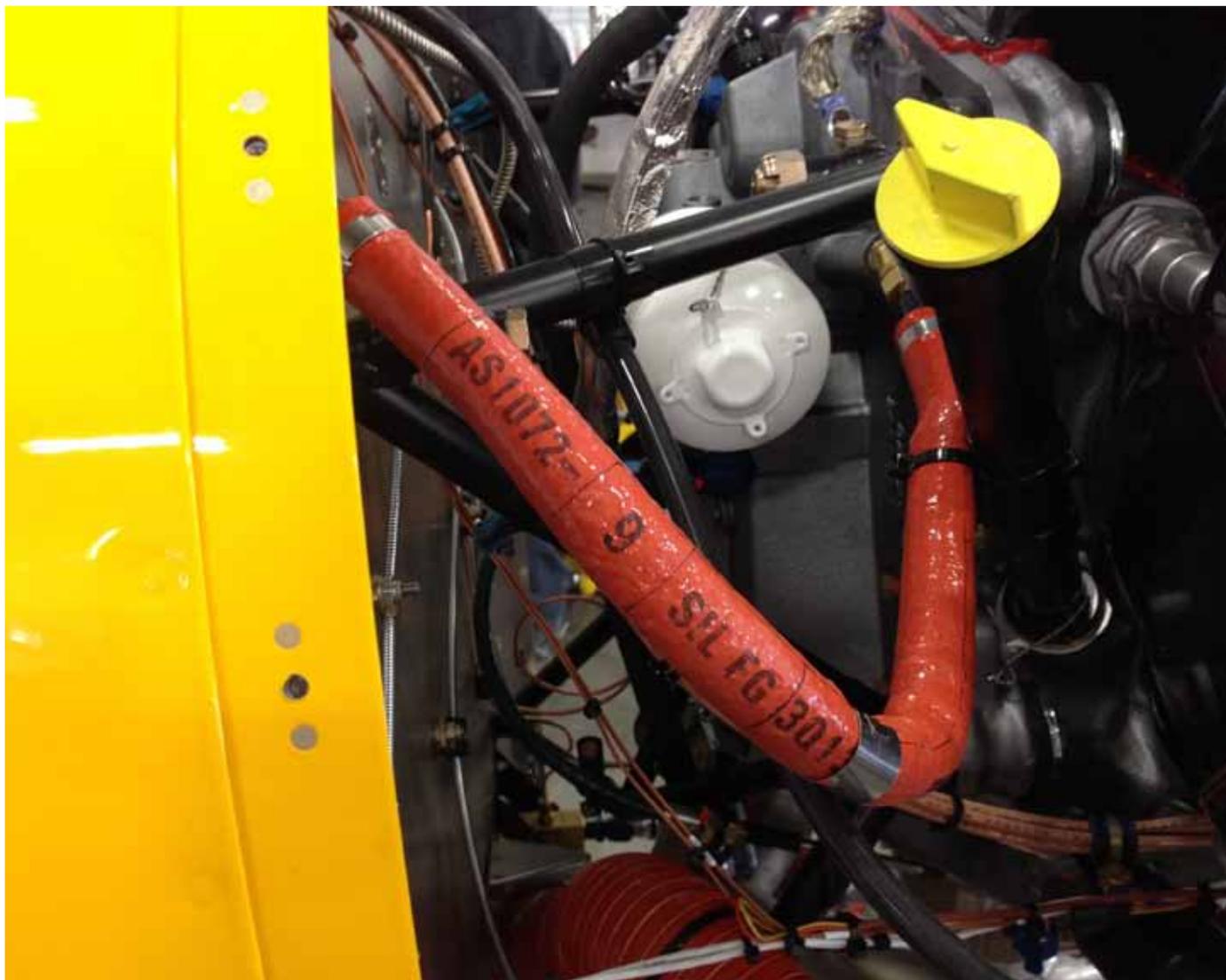


Photo 057

SECTION 28 VACUUM PORT CONNECTION

Run the hose from the electronic ignition boxes through the firewall and route as shown in Photo 058. Cut the rubber hose to length, then compress the spring clamp HDW-12683 (using pliers) and slide it over the hose. Push the hose onto the barbed fitting and slide the spring clamp down over the fitting.



Photo 058

SECTION 29 PLENUM PREPARATION**Step 1. PLENUM FITTING**

You will need to fit the upper plenum. First set the upper plenum on the engine as shown in photos in this section and check that it clears the valve covers. Mark the areas that will need to be trimmed and trim with a cutoff blade on a die grinder or a sanding drum on the die grinder. **YOU WILL MOST LIKELY NOT HAVE TO TRIM ANY OF THE PLENUM BAFFLES, IF YOU SHOULD NEED TO, DO NOT TRIM TOO MUCH ON THE UPPER PLENUM.** The fit around the valve covers should be free of excessive gaps. Next look at the rear of the engine. The left side of the upper plenum may need to be trimmed to fit the engine case.



Photo 059

Most likely the holes that need to be drilled will already have pilot holes drilled in the upper plenum. When test fitting the upper plenum inspect it to verify the actual location of the hole. The final hole diameter where the plenum will bolt onto the cylinders should be 1/4".



Photo 060

Once the upper plenum has been properly fitted, fit the four lower baffle pieces per Photo 061, Photo 062 , and Photo 063 to the upper plenum and cylinders. You will probably not need to trim these pieces. If a cleaner fit could be obtained by trimming, by all means please trim as necessary.



Photo 061



Photo 062



Photo 063

SECTION 29**PLENUM PREPARATION****Step 2. OIL COOLER FITTING**

Mark the oil cooler as shown in Figure FF28 and drill with a #25 drill bit. Set the oil cooler on the upper plenum as shown in Photo 064 and Photo 065, then match drill the oil cooler in the eight places that you drilled in the oil cooler. Make sure the oil cooler is centered on the upper plenum.

**Photo 064****Photo 065**

SECTION 29**PLENUM PREPARATION****Step 3. OIL COOLER NUTPLATES****Photo 066**

Enlarge the match drilled holes in the upper plenum to a #10 drill bit. Install the nutplates per Figure FF28 and Photo 066 and Photo 067. Install the fittings in the oil cooler per Figure FF28 using Loctite 567 or similar thread lubricant. **DO NOT OVERTIGHTEN THESE FITTINGS.** Attach the oil cooler to the upper plenum using hardware per Figure FF28.

**Photo 067**

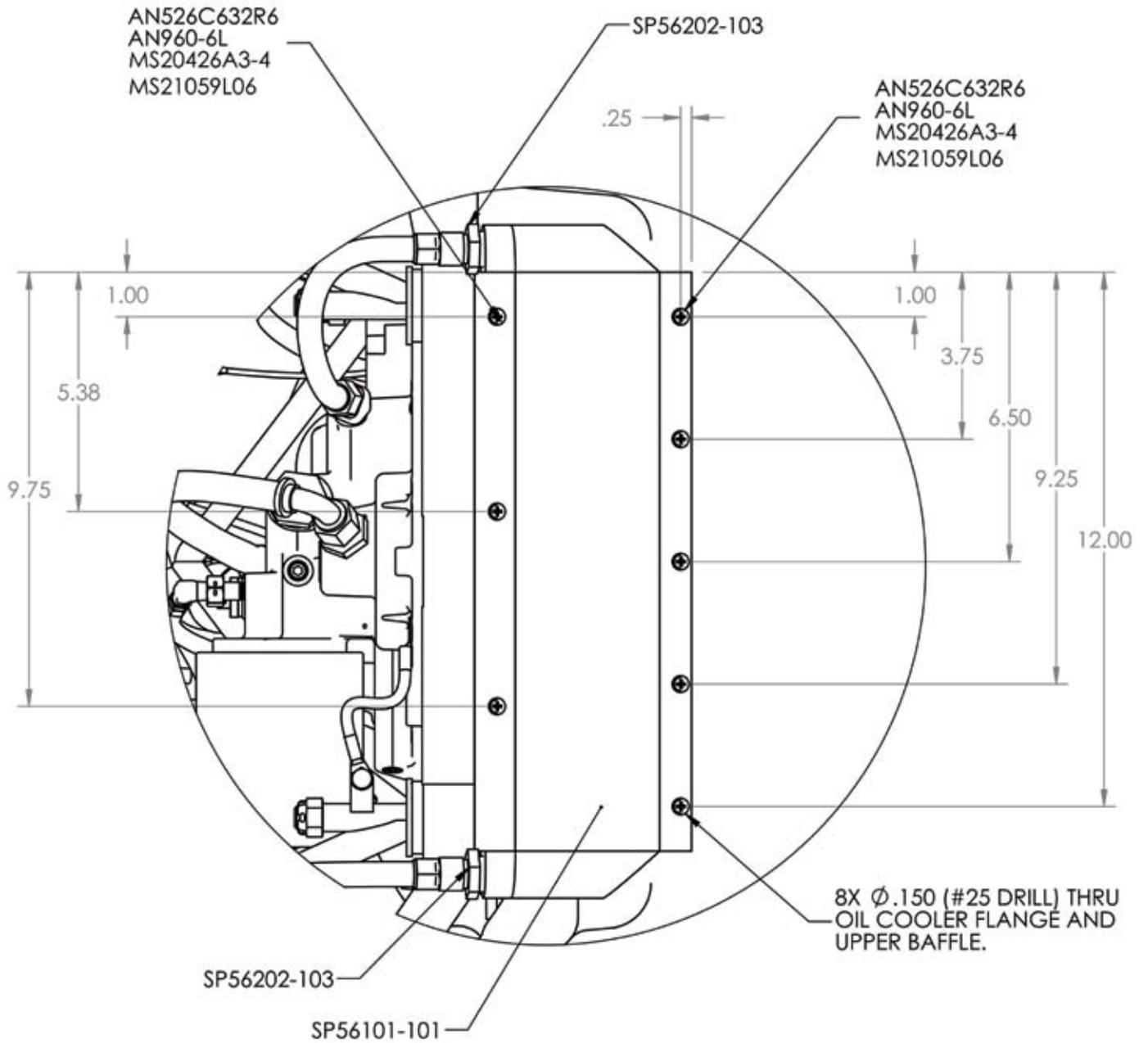


Figure FF28

SECTION 30 PLENUM HARDWARE PREP.**Photo 068****Photo 069**

Once the upper plenum has been fit and the oil cooler has been attached, it is now time to install the plenum system. Install the four lower plenum pieces first and then install the upper plenum. You will need to match drill the bottom baffle parts to the upper plenum per Figure FF30, Figure FF31, and Figure FF29. Fit each lower baffle to the upper plenum and match drill using a #19 drill bit. Once the fitting and match drilling is complete, install the nut plates per Figure FF33. Countersink the holes that will take the AN507C632R6 screws in the upper plenum to accommodate the HDW-A3226-012-935 washers.



Photo 070

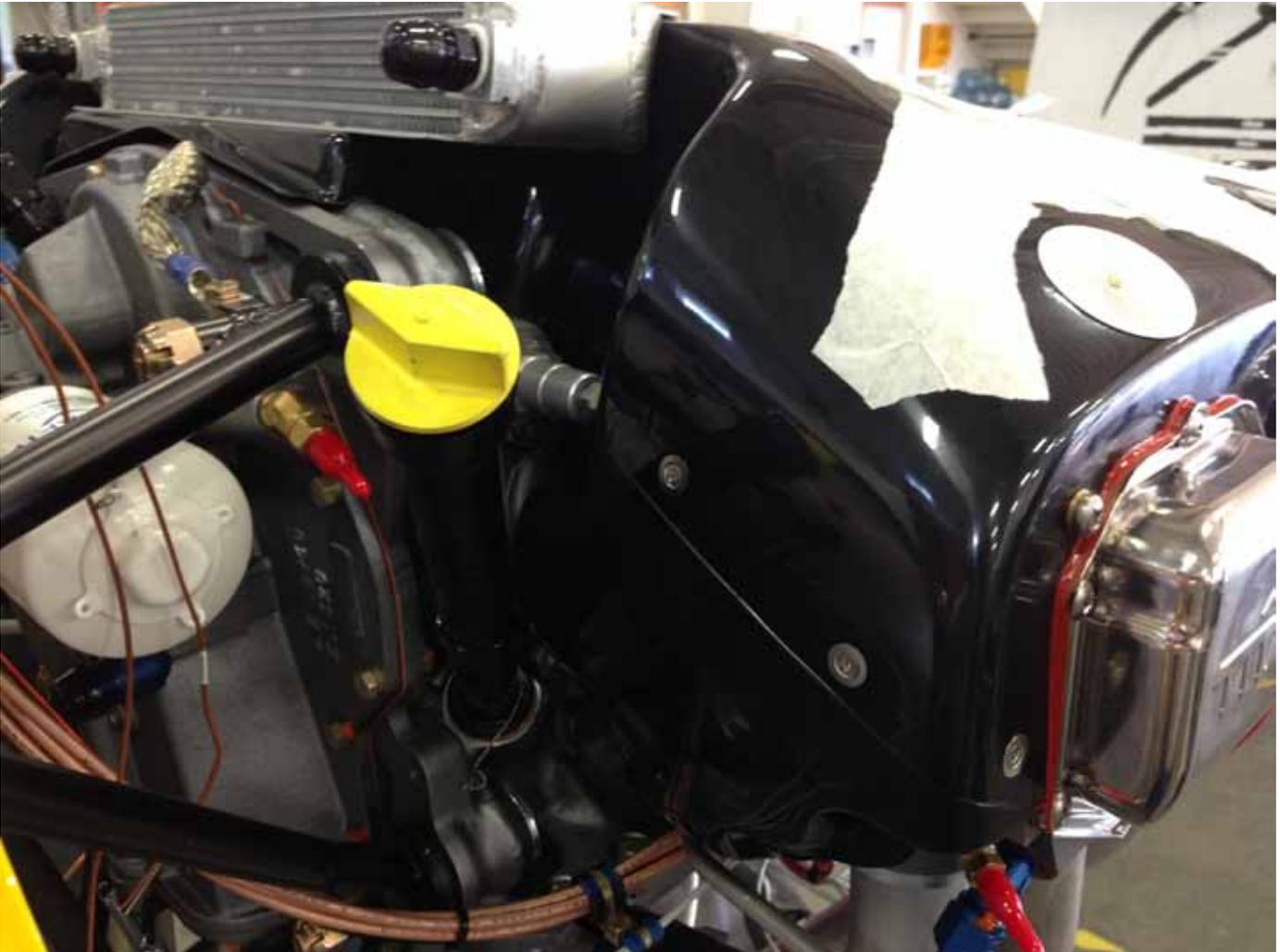


Photo 071

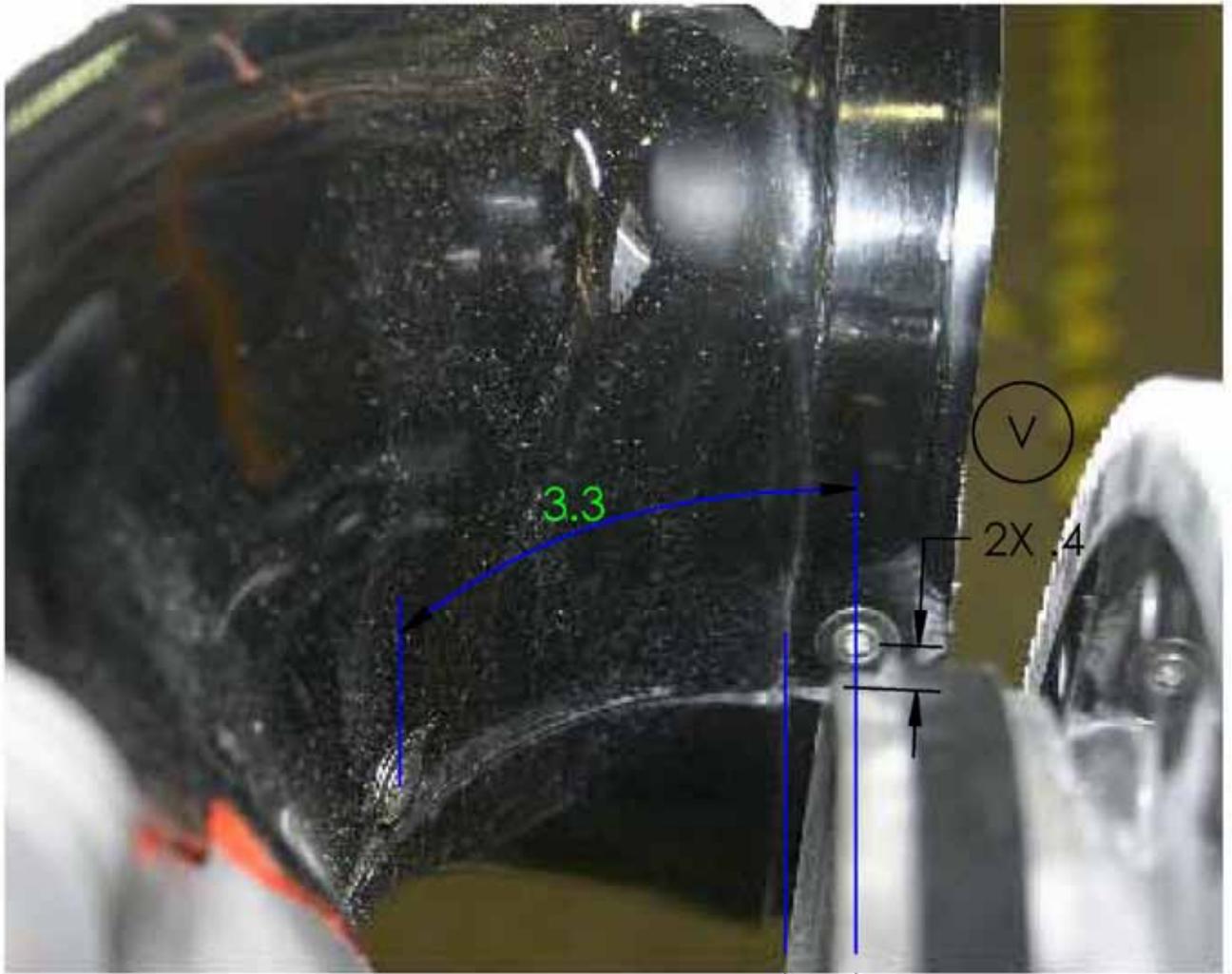


Figure FF29

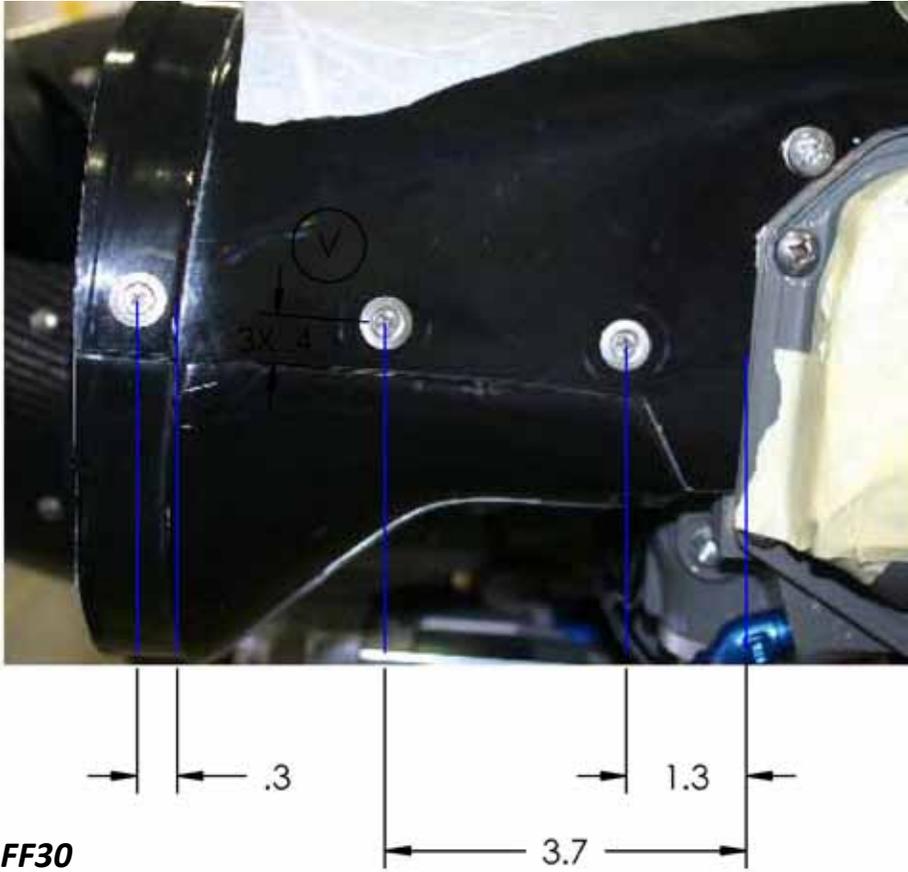


Figure FF30

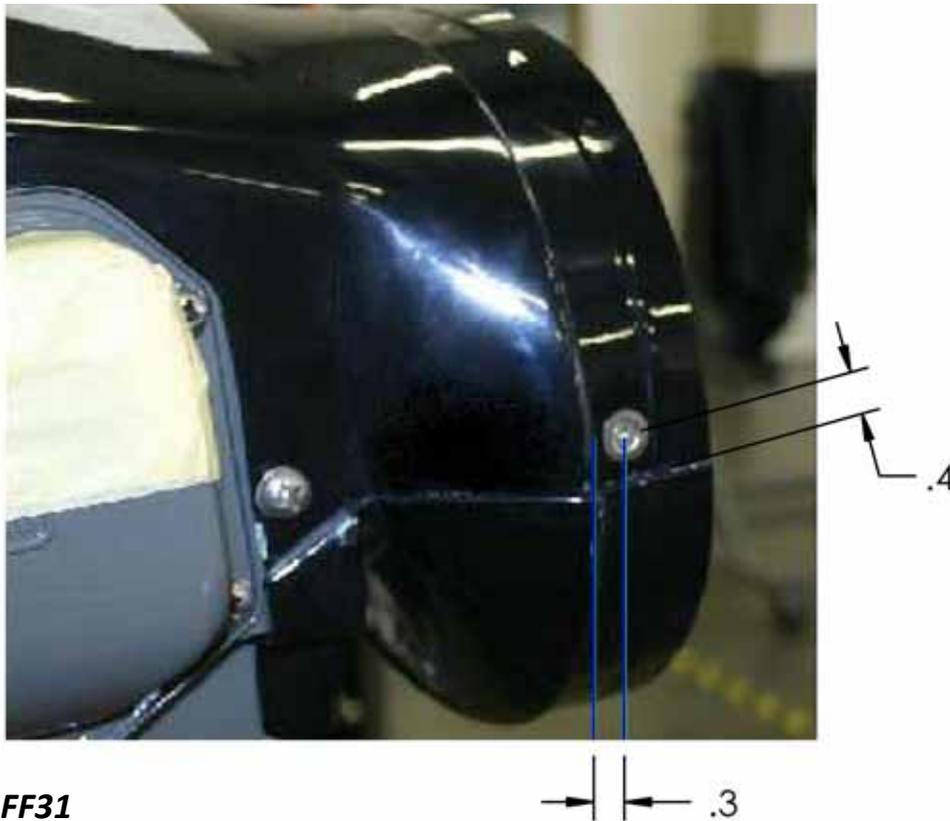


Figure FF31

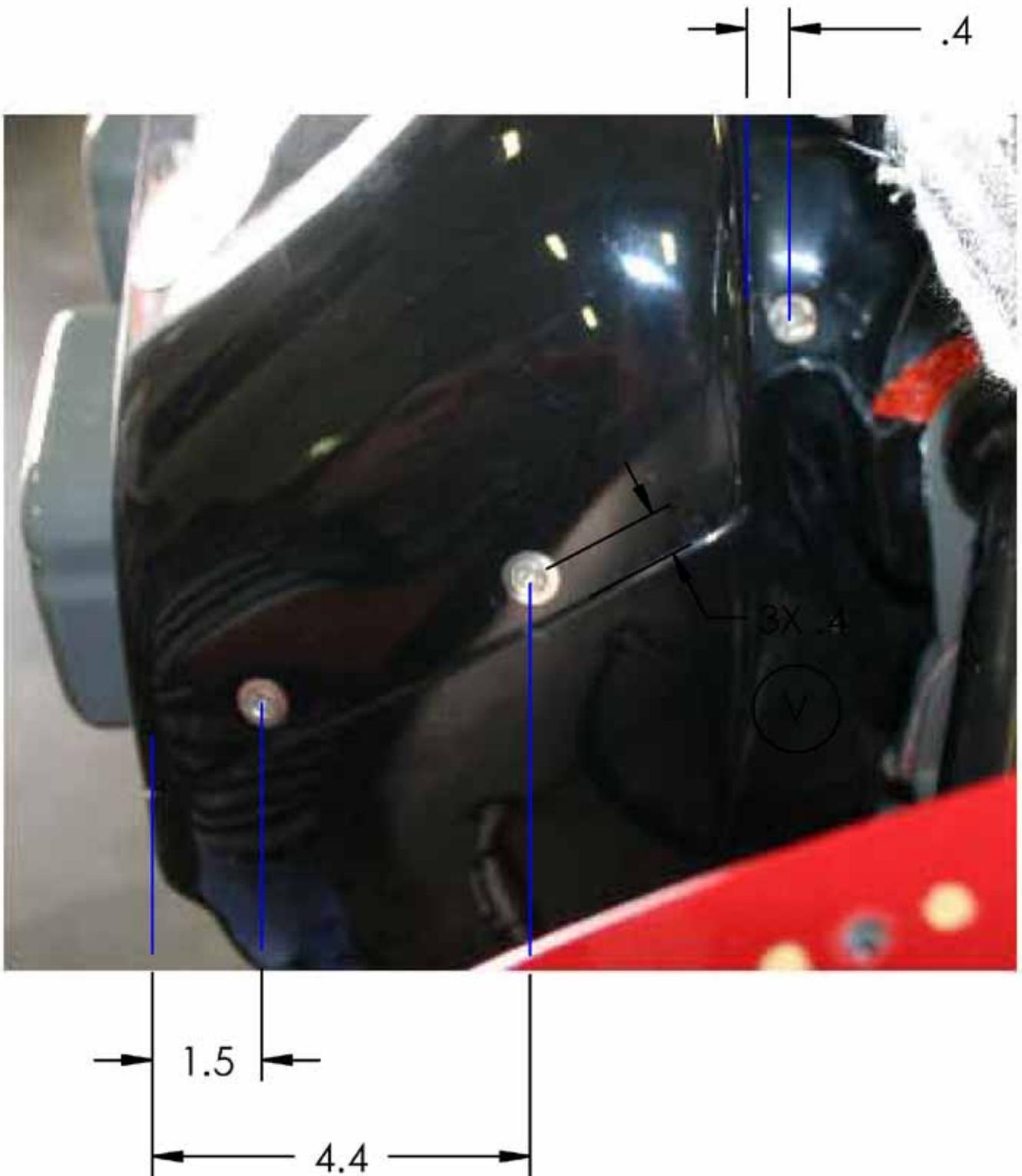


Figure FF32

SECTION 31 NEW PLENUM INSTALLATION

Install all of the hardware shown in Figure FF33 and complete the plenum and baffle installation. Everything on the baffle installation should fit nice and tight.

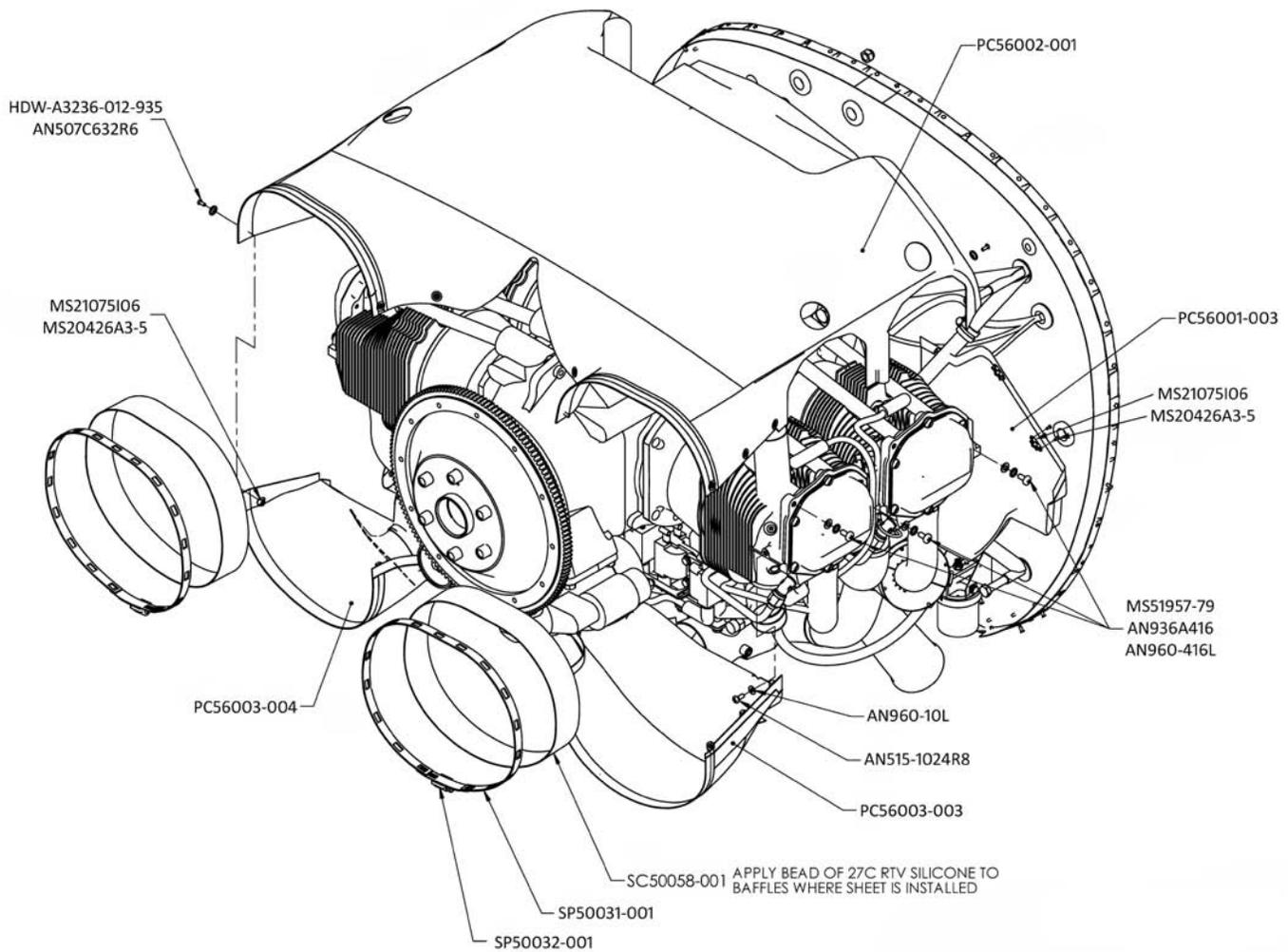


Figure FF33

SECTION 32 PLENUM/BAFFLE FINAL STEP

Using .032 Stainless Steel safety wire, safety the bottom connection between the lower baffle pieces and the aluminum center baffle as shown in Photo 072. There is a 1/8" rod bonded into the Carbon Fiber lower baffles. **MAKE SURE THE SAFETY WIRE GOES AROUND THIS 1/8" ROD THAT IS MOLDED INTO THE CARBON FIBER AS SHOWN IN Photo 072.**

*Photo 072*

SECTION 33 PLENUM/BAFFLE SEALING

Once the plenum/baffle system has been installed, you will start the baffle sealing process. At the factory we use: **Permatex, High Temp RTV Silicone Gasket Maker**. Apply a bead of silicone to all mating surfaces, see Photo 073 through Photo 082. One of the things that we do at the factory to help minimize the cleanup after the plenum/baffle assembly is to mark all the places where the plenum will contact the engine. This will help you when applying the silicone.

**Photo 073****Photo 074**



Photo 075



Photo 076



Photo 077



Photo 078



Photo 079



Photo 080



Photo 081



Photo 082

SECTION 34 OIL COOLER LINE INSTALLATION

Install the oil cooler and oil cooler lines per Figure FF34.



Photo 083



Photo 084

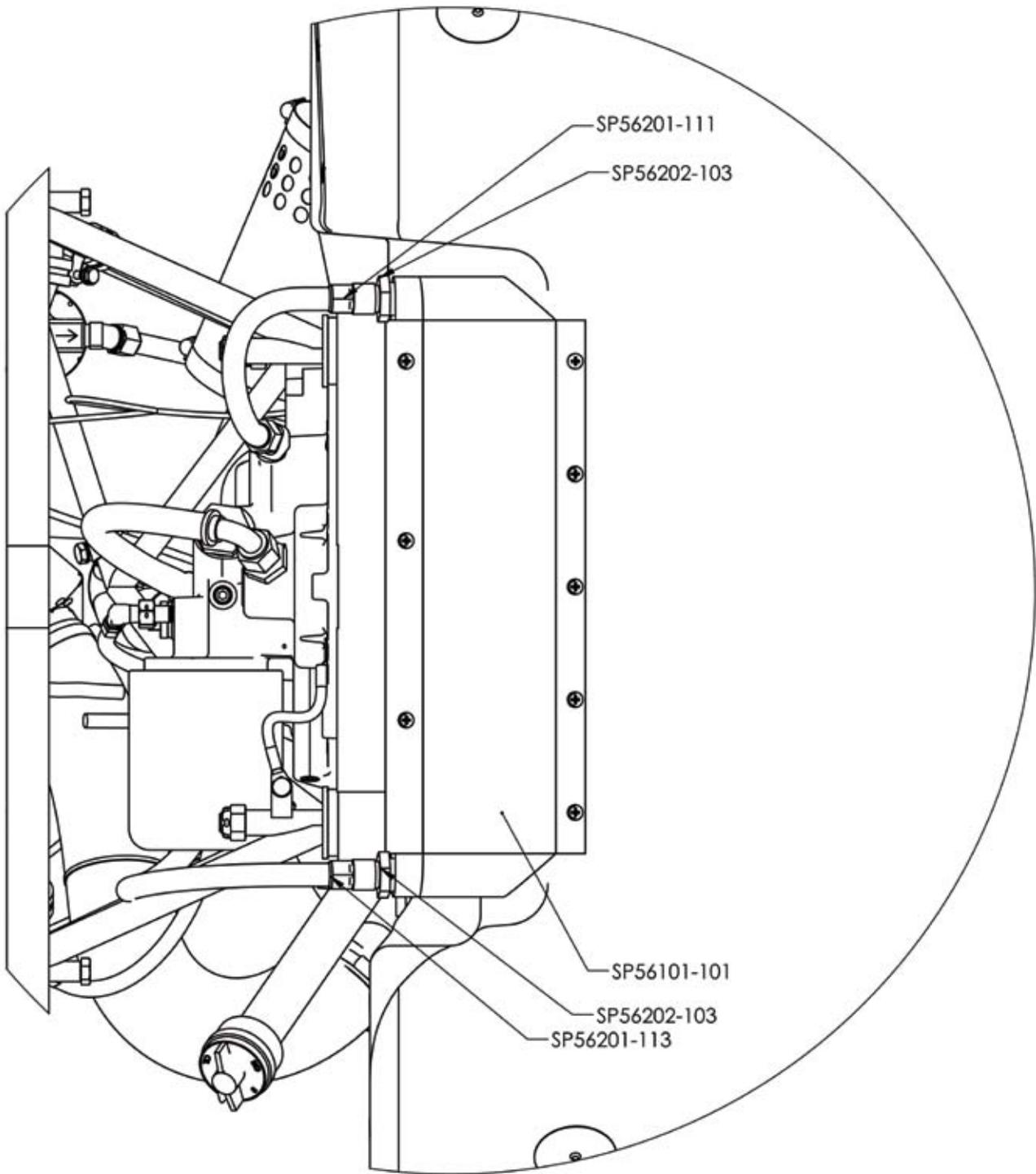


Figure FF34