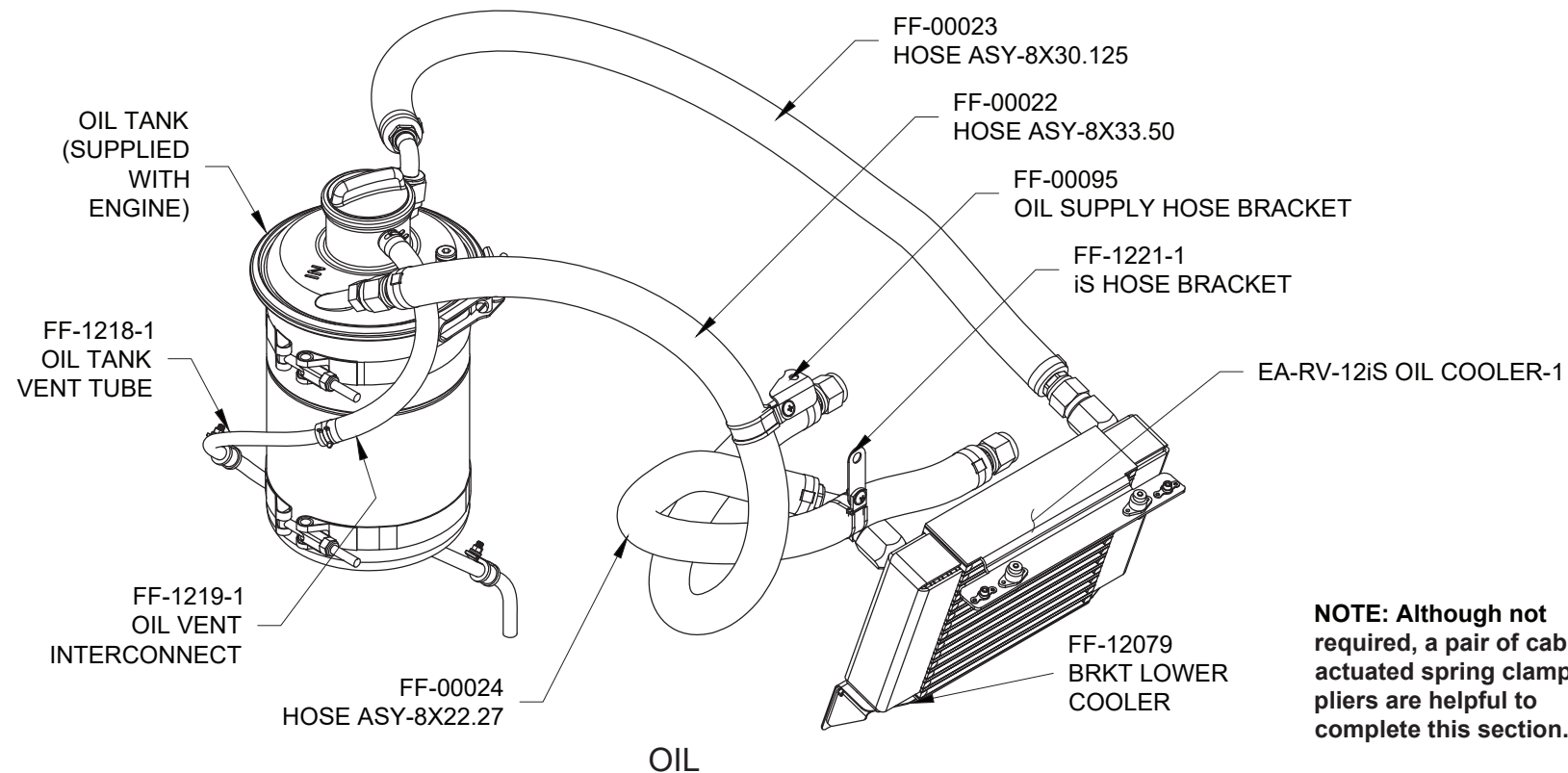
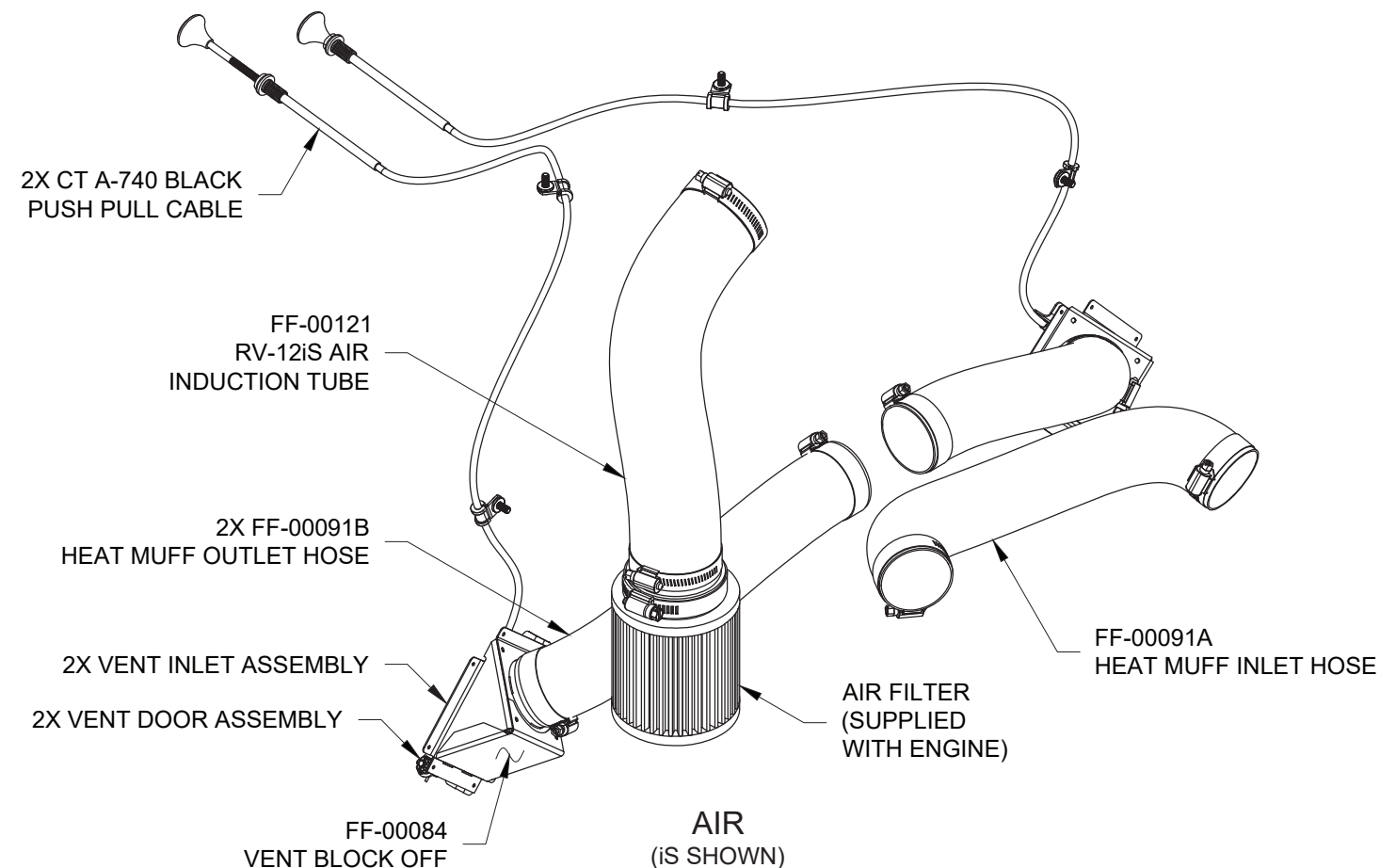
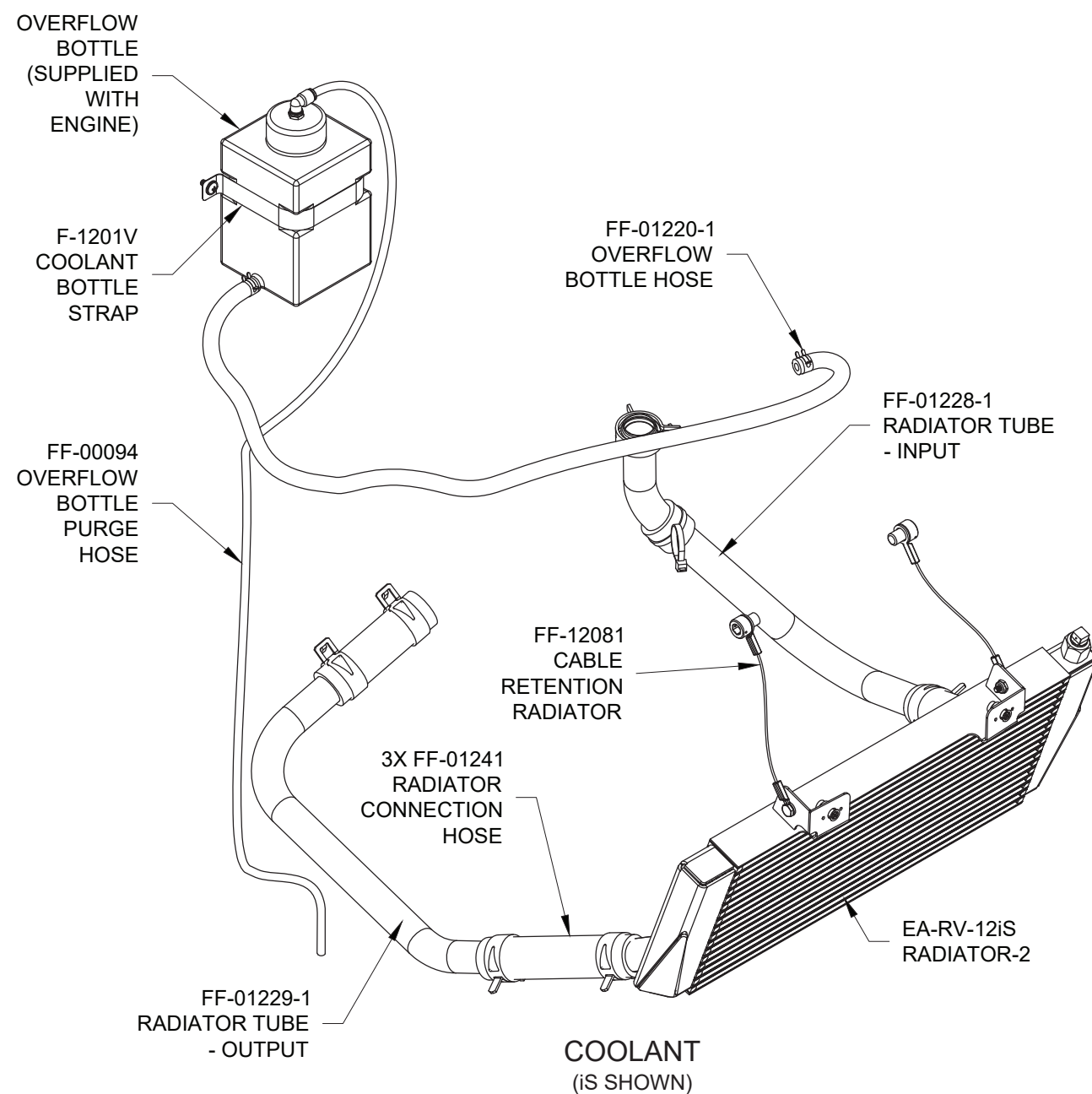


SECTION 50iS/U: COOLING AND HEATING SYSTEM



NOTE: Although not required, a pair of cable actuated spring clamp pliers are helpful to complete this section.

Step 1: Machine countersink and rivet K1000-08 and HW-212-12A camlock receptacles to EA-RV-12iS OIL COOLER-1 and EA-RV-12iS RADIATOR-2 as shown in Figure 1.

Step 2: Assemble Oil Cooler and Radiator using two AN525-832R8 screws.

Step 3: Install 2x HW-00028 grommets into FF-12079.

Step 4: Install FF-12080-L & -R into FF-12079 using 8x LP4-3 Rivets. Final assembly as shown in Figure 2.

Step 5: Slide FF-12079 onto Oil Cooler pins through grommets until bracket rests against bottom of Oil Cooler.

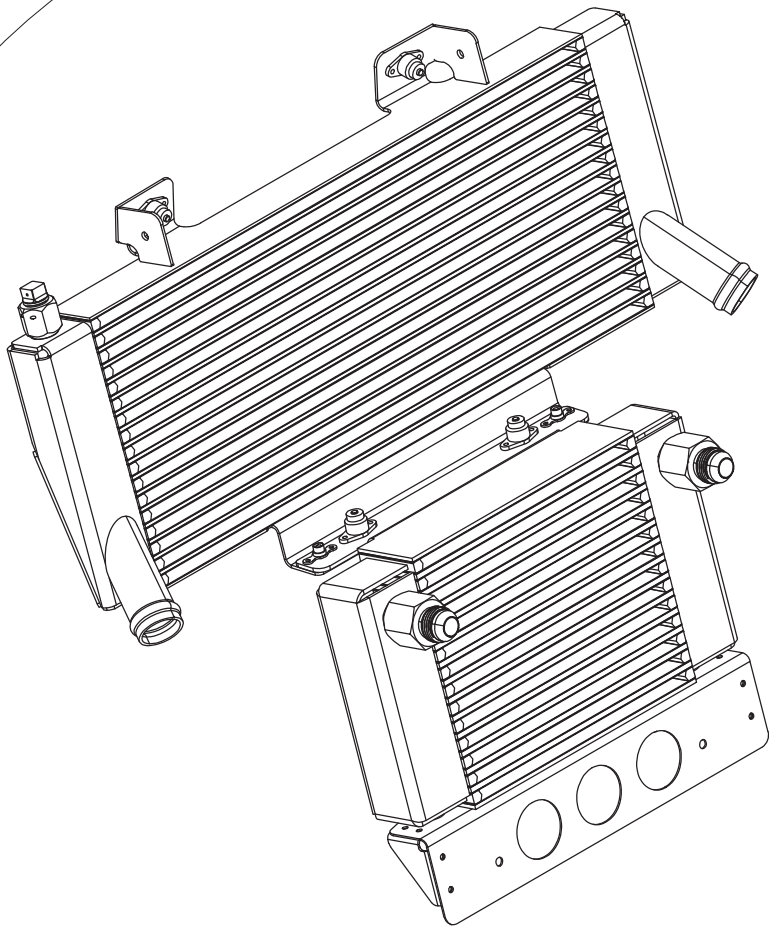


FIGURE 2: ASSEMBLED

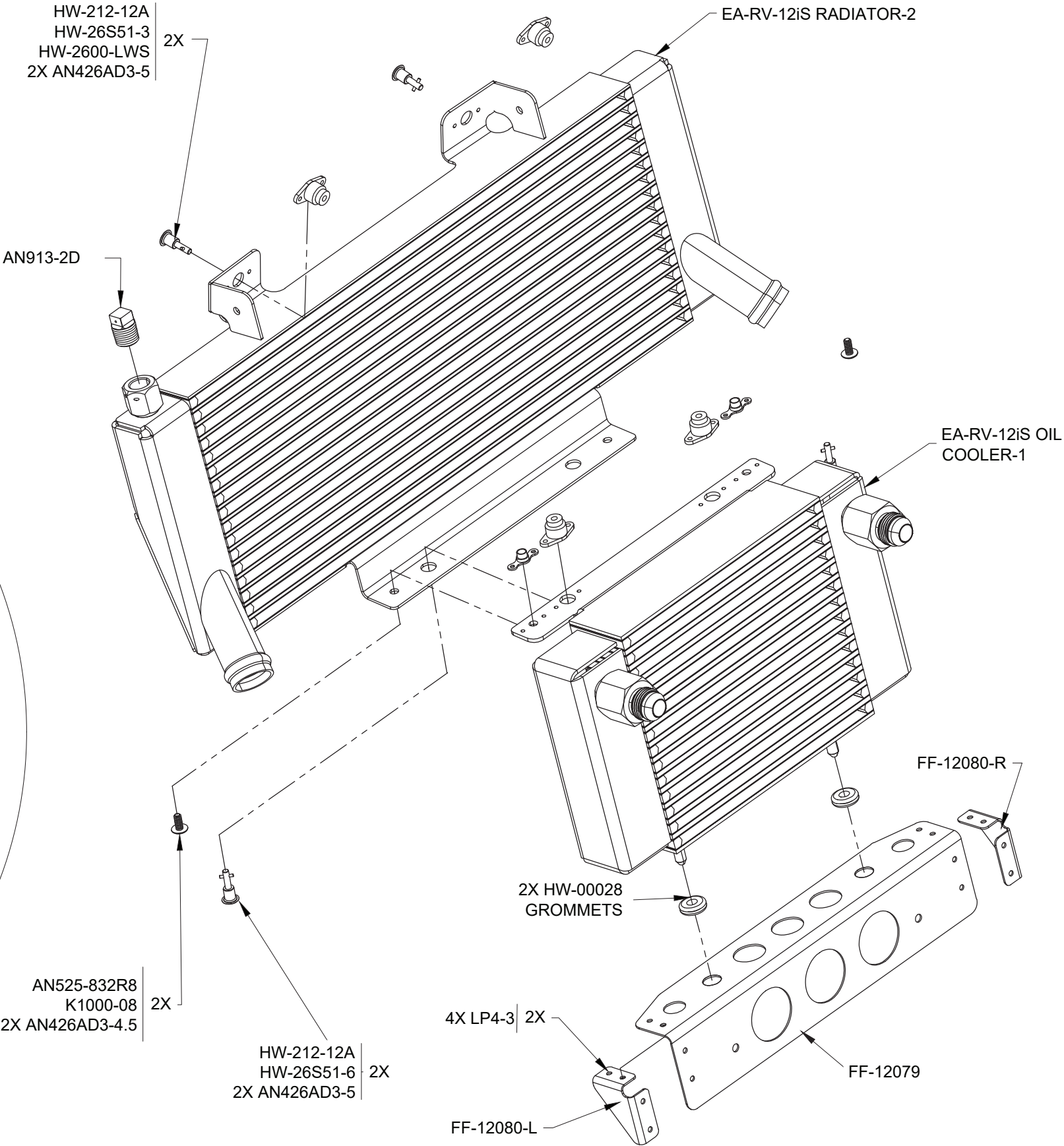


FIGURE 1: OIL COOLER AND RADIATOR ASSEMBLY

Step 1: Set Cowl 12iS Bottom on flat surface and stabilize with sandbags or similar.

Step 2: Mark center of cowl openings for the radiator and oil cooler with masking tape or permanent marker. Mark center of radiator and oil cooler.

Step 3: Place Radiator and Oil Cooler in the cowl as shown in Figure 1. Align center marks to locate Radiator and Oil Cooler left/right. Radiator and Cooler should be centered visually in their respective openings on the cowl. FF-12079 Should be flush to the bottom of the Oil Cooler and flush with the inside face of COWL-00014. Trim cowl as necessary per Section 37iS/U-20.

NOTE: Cowl opening edges must be trimmed now according to Section 37iS/U-20. Final gap should be 1/4 ". Take special care while trimming and locating cooler assembly before marking and drilling camlock locations as described below. Carefully adjust alignment as each camlock is located. The recommended sequence is installing the radiator camlocks, then COWL-00014, and finishing with the Oil Cooler camlocks. Read steps 4 through 9 before continuing.

Step 4: Mark and match drill 2x K1000-3 bolt locations through FF-12079 into COWL-00014 with a #11 (.191 IN) drill bit.

Step 5: Match drill, machine countersink, and install 2x K1000-3 nutplates into COWL-00014. Assemble FF-12079 to COWL-00014 as shown in Figure 1 & Section A-A. Recheck assembly alignment per Step 3.

Step 6: Mark and back drill 4x camlock holes with a #27 (.144 IN) drill bit through cowl. Ensure that assembly has stayed centered respective to cowl openings and that FF-12079 is still snug to the bottom of the oil cooler. Alternatively, mark camlock locations and drill locations after Step 7.

Step 7: Mark, drill, and Cleco COWL-00014 to Cowl 12iS Bottom. Install per Section 37iS/U-18.

Step 8: Remove cooler assembly from cowl. Final drill camlock locations to 5/16 (.3125 in).

Step 9: Reinstall radiator and oil cooler assembly using 2x HW-26S51-3 & 2x HW-26S51-6. See Figure 1 on 50iS/U-02 for locations in assembly. Optionally retain -3 camlock studs with 2x HW-2600-LWS **NOTE: Optional camlock retaining washers can be installed now or after painting the cowling.**

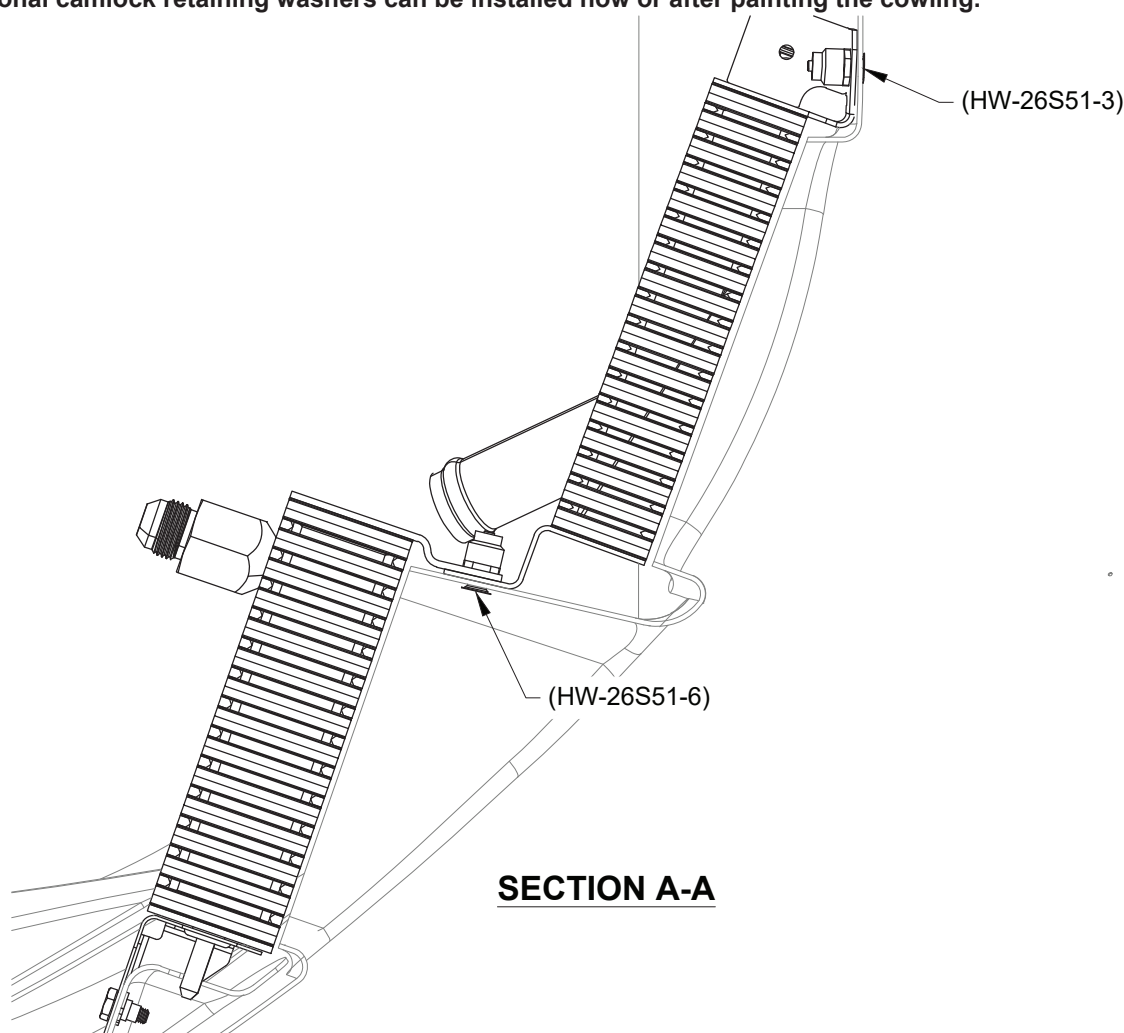
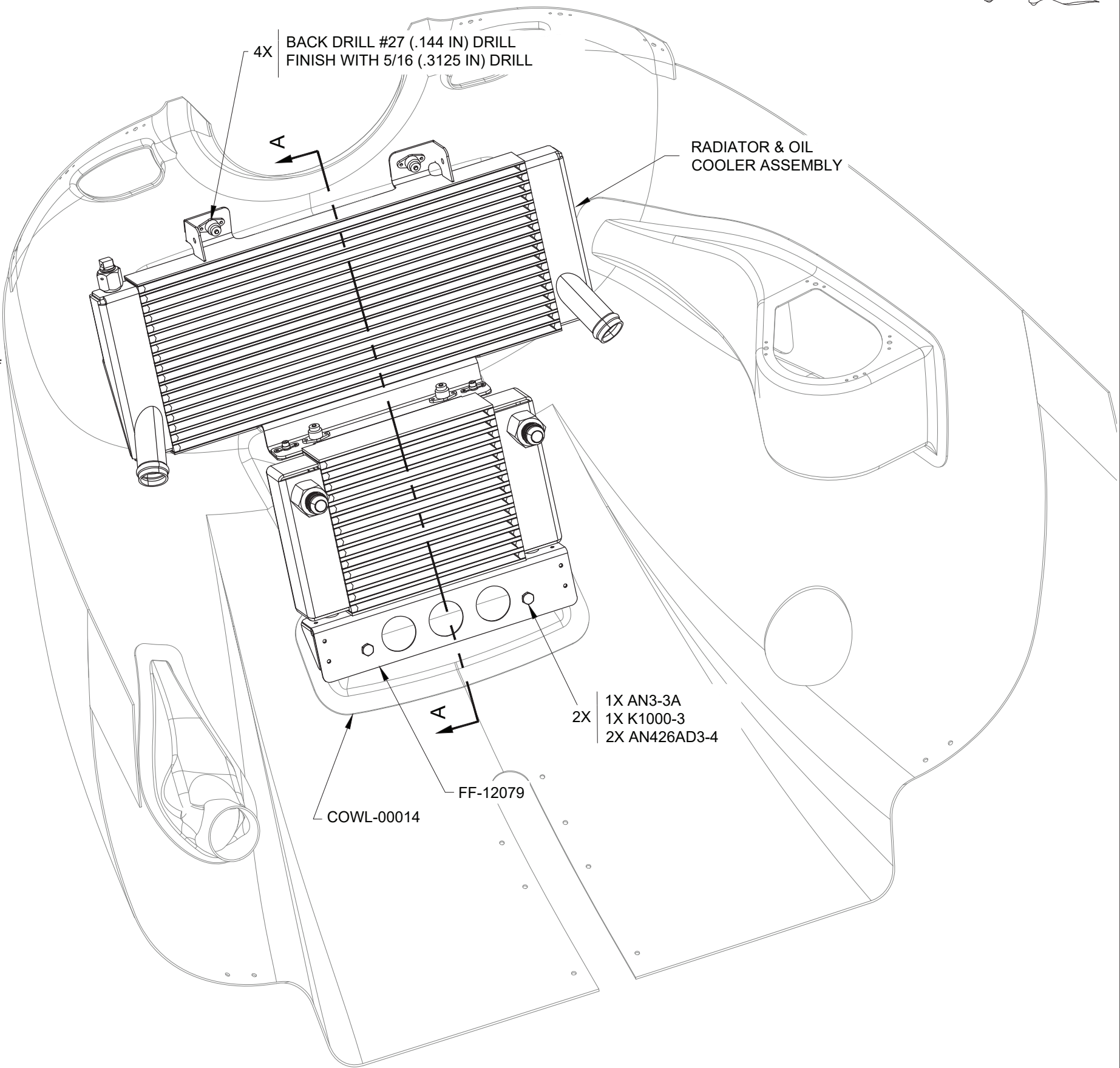


FIGURE 1: ATTACH RADIATOR & OIL COOLER ASSEMBLY TO COWL



Step 1: Attach the FF-00022 and FF-00024 to the engine as shown in Figure 1.

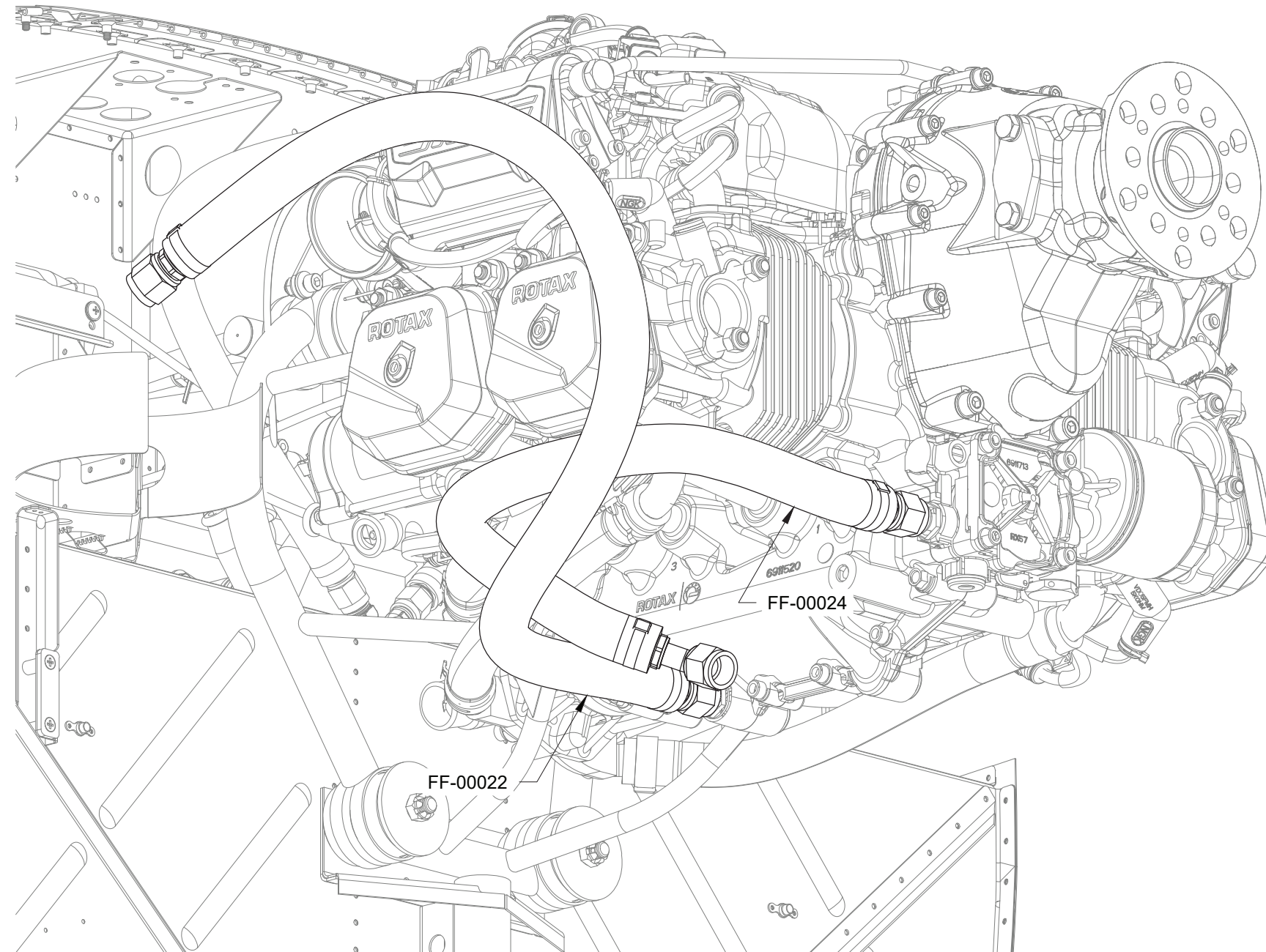
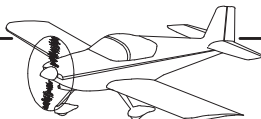


FIGURE 1: ATTACH OIL HOSES TO THE ENGINE
(IS SHOWN, SIMILAR LOCATIONS FOR ULS)



Step 1: Temporarily install lower cowl (with coolers and radiator) onto aircraft. Install 2x FF-12081 to engine and radiator as shown in Figure 1 using 2x SCREW-00007, AN3-3A, and MS21042-3. Torque SCREW-00007 to 190 in-lbs and safety wire or apply thread locker.

Step 2: Cut two 6 in. [15.24 cm] length of EA HOSE GATES 24816 to create two FF-01241-1. Verify that there is no debris inside the hoses, wipe with isopropyl alcohol as required.

Step 3: Mark a pair of insertion lines 1 in. [25.4 cm] and 1 1/4 in. [31.8 cm] from each end of both the FF-01228-1 (shown next page) and FF-01229-1. Deburr both ends of the FF-01228-1 and FF-01229-1.

NOTE: All radiator tubes in this section should be inserted at least 1 in. [2.5 cm] into their couplers (FF-01241), with 1 1/4 in. [3.2 cm] being desirable. Adjust engagement as required to eliminate any pre-load on the radiator tubes.

NOTE: If leaks are detected after filling the system with coolant (not completed in this section), ensure that the clamp is positioned firmly against the bead at the end of the leaking radiator tube.

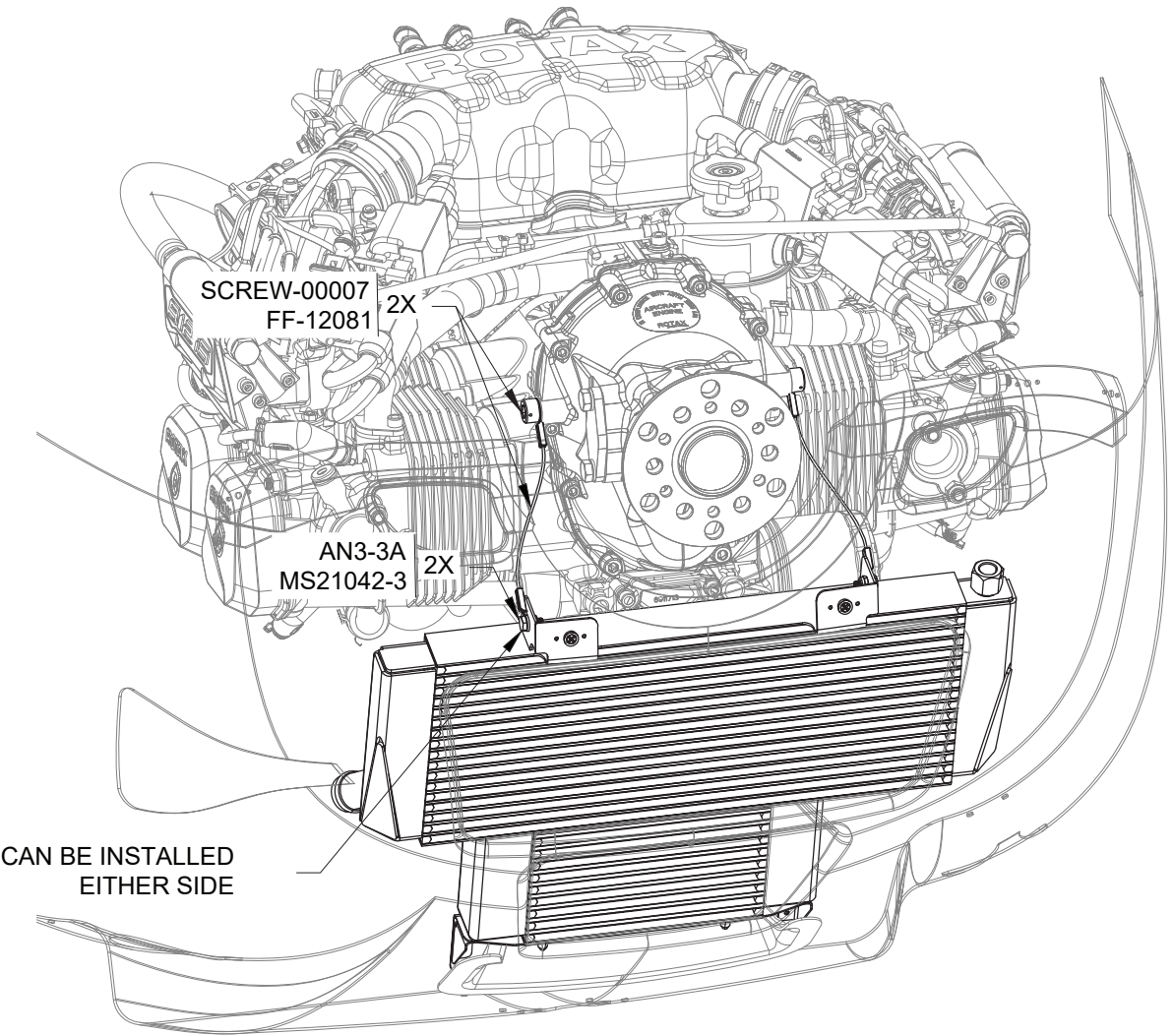


FIGURE 1: ATTACH RADIATOR & OIL COOLER TO ENGINE

Step 4: Attach the FF-01229-1 to the engine with a FF-01241-1 as shown in Figure 2 using a 4 in. length of the preformed engine hose from page 6.

Step 5: Attach the FF-01229-1 to the EA-RV-12iS RADIATOR-2 with a FF-01241-1 as shown in Figure 2.

Step 6: Attach the FF-00024 to the EA-RV-12iS OIL COOLER-1 as shown in Figure 2.

Step 7: Check the clearance between the EA LV-1 Heat Shield installed on the EX-00021-1 and the forward HW-00013 as shown in the detail view in Figure 3, then adjust the clocking of the upper segment of the EX-00021-1 as necessary to ensure the clearance shown while maintaining a minimum of 1 in. [25.4 mm] engagement in both EX-00021-1 slip joints.

Step 8: Torque the Cylinder #1 exhaust stud nuts to the value found in the Rotax 912iS Installation Manual, Section 78-00-00.

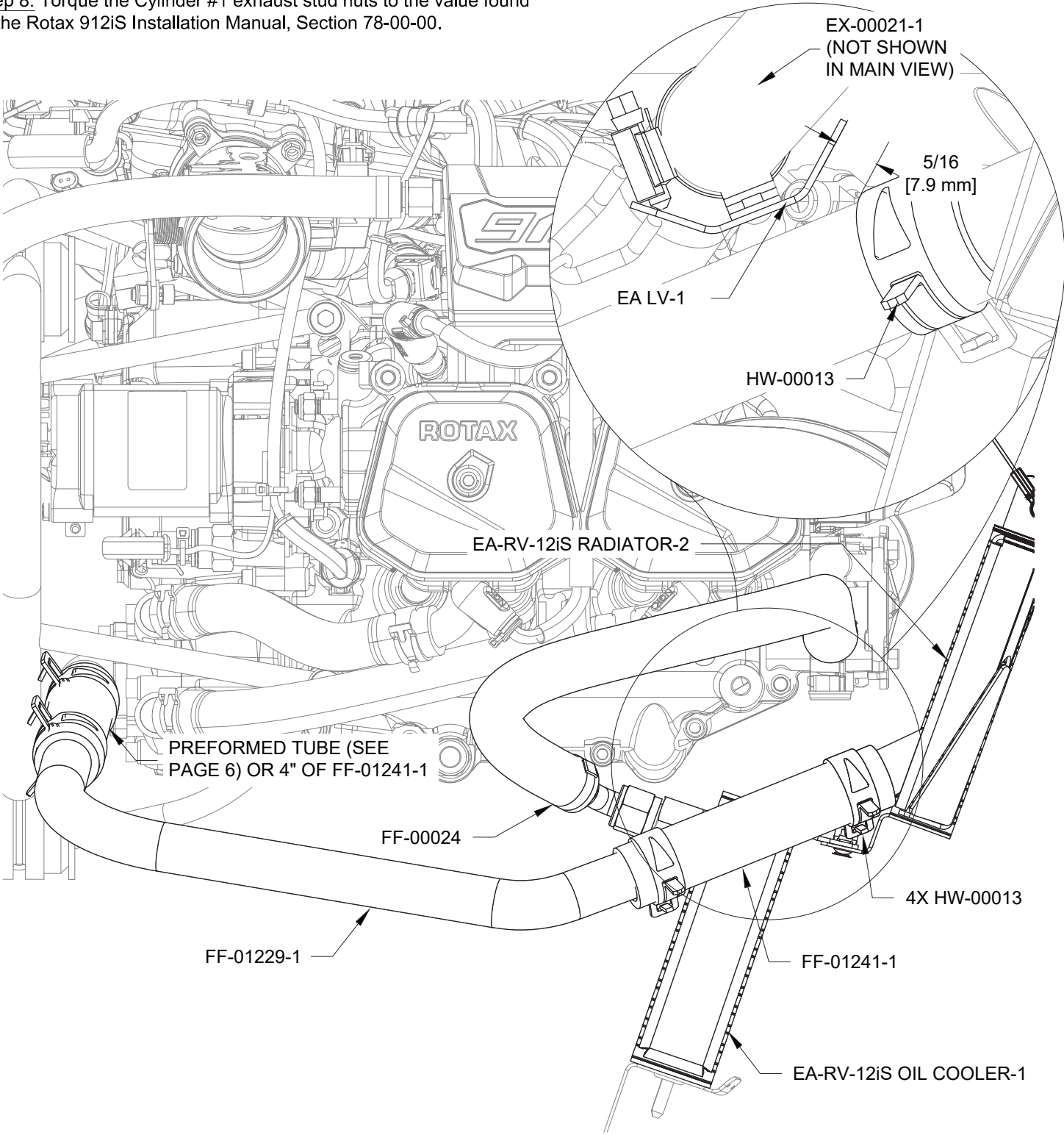


FIGURE 2: RADIATOR & OIL HOSES - RIGHT SIDE

Step 1: Locate and/or detach the preformed radiator outlet hose from the left side of the engine. See Figure 1.

Step 2: Mark a hose trim line around the circumference of the preformed hose 1 13/32 in. [35.7 mm] below the bend tangent of the preformed hose. See Figure 1.

Step 3: Use a utility knife, or equivalent, to cut the preformed hose along the marked line. Verify that there is no debris inside the hose, wipe with isopropyl alcohol as required. At least 4" of preformed hose should remain to be used as shown on page 5.

Step 4: Reattach the modified preformed radiator hose to the engine.

Step 5: Attach the FF-00023 to the EA-RV-12iS OIL COOLER-1 as shown in Figure 1.

Step 6: Attach the FF-01228-1 to the engine as shown in Figure 1.

Step 7: Attach the FF-01228-1 to the EA-RV-12iS RADIATOR-2 with FF-01241-1 as shown in Figure 1.

Step 8: Bond a 1 in. [25.4 mm] long scrap of preformed radiator outlet hose to the FF-01228-1 with RTV as shown in Figure 1.

Step 9: Secure the FF-01228-1 to the #4 cylinder coolant hose with two tie-wraps as shown in Figure 1. Place a layer of RTV between the tie-wrap and the scrap of preformed radiator hose.

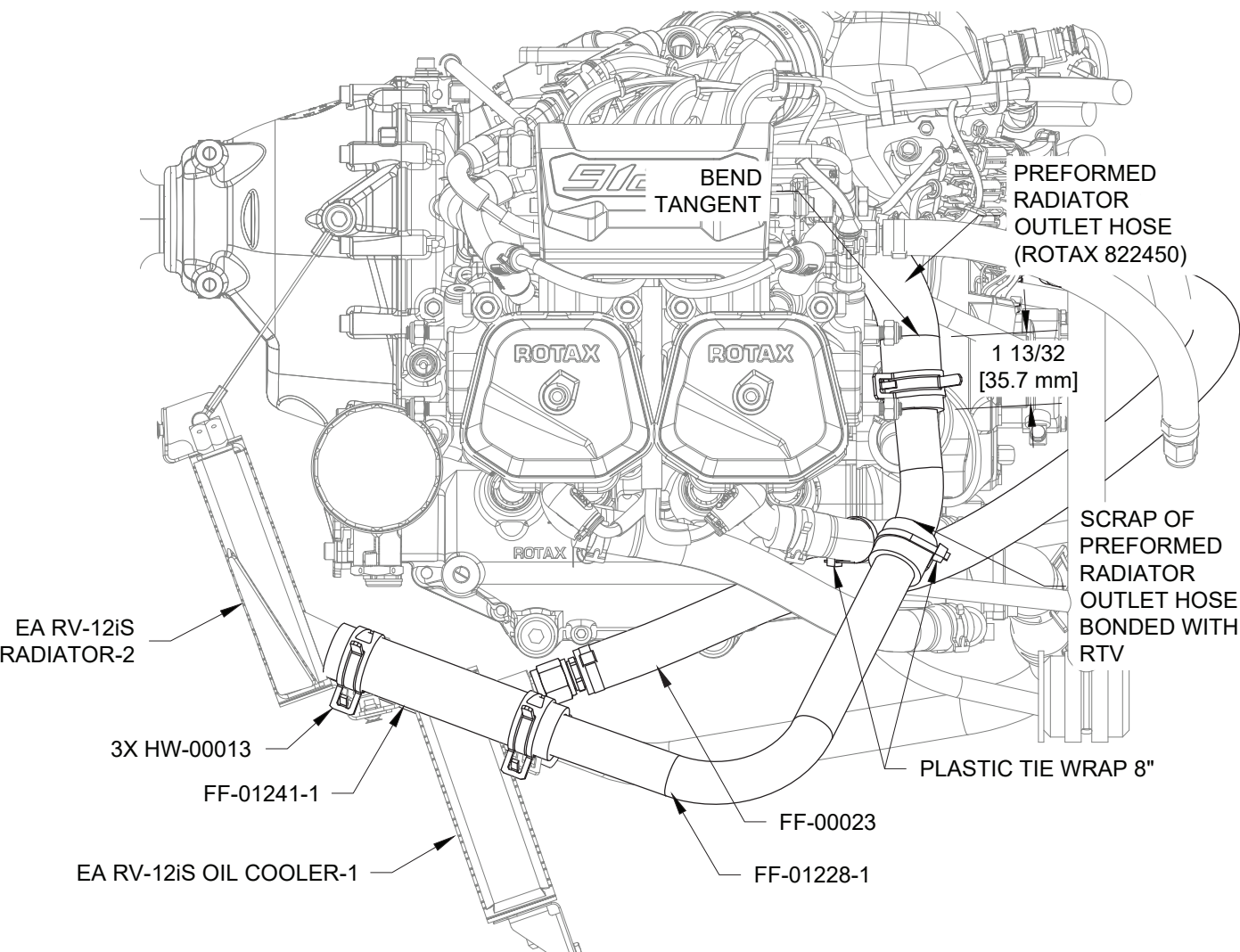
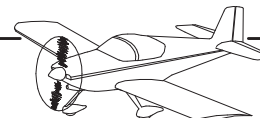


FIGURE 1: RADIATOR & OIL HOSES - LEFT SIDE
(iS ONLY)



Step 1: Install the Oil Tank using two band clamps in the orientation shown in Figure 1.

If necessary, loosen and reposition the Rotax clamp on the Oil Tank in the position shown in Figures 1 and 2.

If desired, trim the ends of the band clamp bolts but leave at least a 1/4 in. [6.4 mm] of exposed threads.

Step 2: Cut a 8 in. [20.3 cm] length of EA HOSE H177 to create the FF-1219-1.

Step 3: Cut a 22 3/4 in. [57.8 cm] length of AT0-035X3/8 to create the FF-1218-1.

Step 4: Slip the FF-1219-1 onto the barbed stem of the Oil Tank and secure with a clamp as shown in Figure 1.

Step 5: Insert the FF-1218-1 into the FF-1219-1 and clamp as shown in Figure 1.

Step 6: Bend the FF-1218-1 to follow the firewall stiffener as shown in Figure 1. Secure the FF-1218-1 to the stiffener with cushioned clamps.

Step 7: Attach the FF-00022 and FF-00023 to the Oil Tank as shown in Figure 2.

Step 8 (Optional): Trim the excess from the FF-1221-1 and paint the exposed steel surfaces. See Figure 3.

Step 9 (ULS): Install the cushioned clamps around the FF-00022 and FF-00024 as shown in Figure 2.

Step 10 (iS): Install the cushioned clamps around the FF-00022 and FF-00024 as shown in Figure 2.

Route the Rotax Ambient Air, Pressure, Temperature Sensor (AAPT) wire through the FF-00022 cushioned clamp. See Figure 2 on Page 50iS/U-10.

DO NOT final torque the FF-00022 clamp hardware just yet.

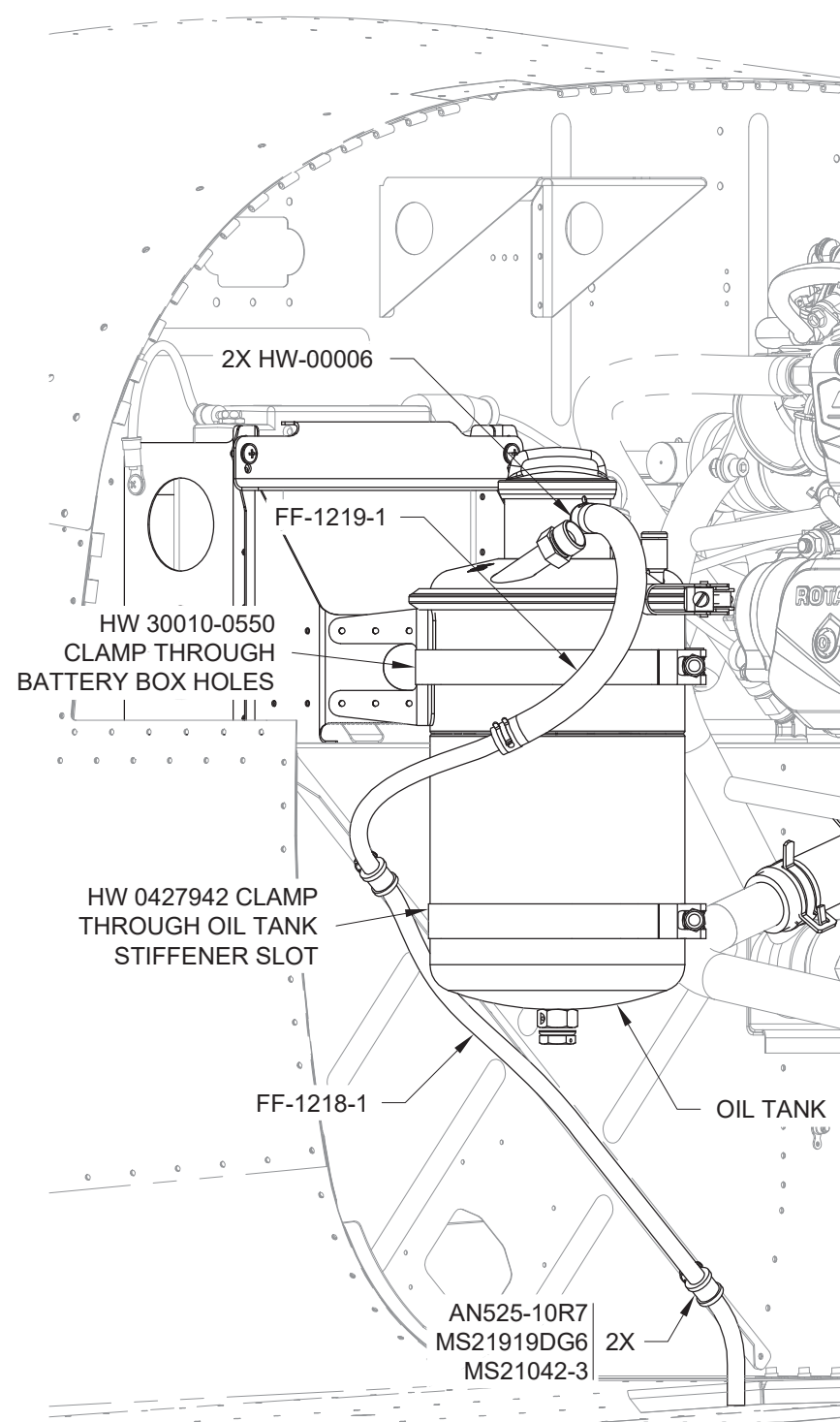


FIGURE 1: INSTALL OIL TANK & VENT TUBE

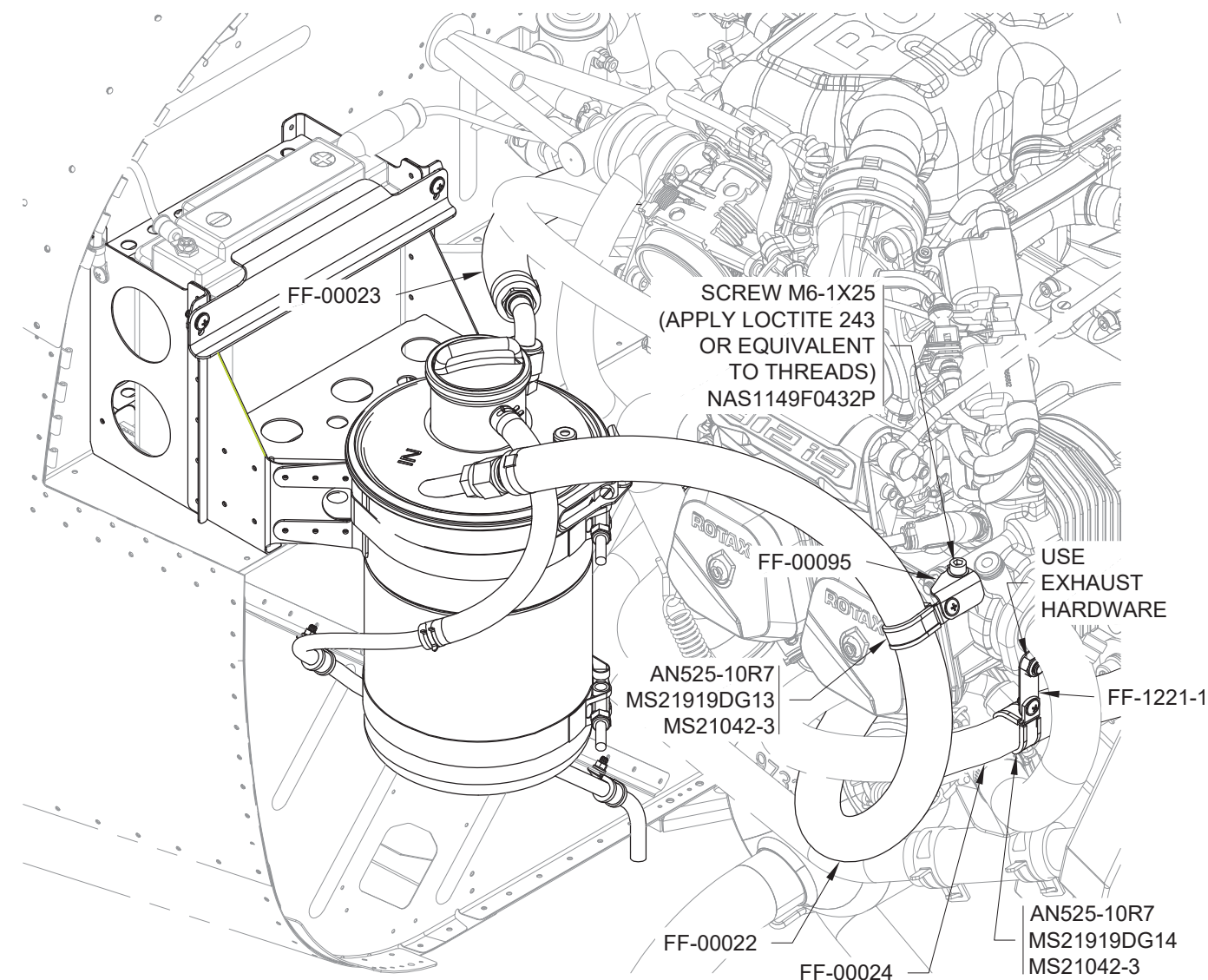


FIGURE 2: ATTACH & SECURE OIL HOSES

INSTALL CLAMP USING THIS HOLE

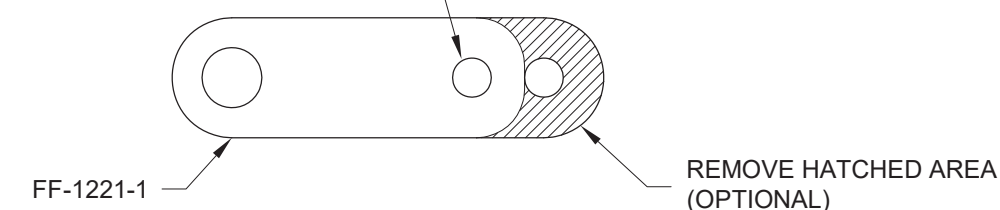


FIGURE 3: FF-1221-1



Step 1: Position the Overflow Bottle as shown in Figure 1. To prevent chaffing, apply a thin layer of RTV to the aft side of the bottle wherever it contacts the firewall. Allow the RTV to fully cure before bottle installation.

Step 2: Remove the Overflow Bottle cap and drill 3/8 a hole centered on the existing vent hole in the cap.

Step 3: Attach the FLF-00007 to the Overflow Bottle cap as shown in Figure 1. A 9/16 socket can be used to press the push nut onto the elbow and over the cap.

Step 4: Cut a 40 in. [101.6 cm] length of PT-035X1/4 tube to create the FF-00094.

Step 5: Mark the FF-00094 7/16 in. [11.1 mm] from one end (this will be the upper end).

Step 6: Insert the marked end of the FF-00094 into the FLF-00007 until the mark aligns with the end of the FLF-00007.

Step 7: Route the FF-00094 downward and secure the outlet to the FF-1218-1. See Figure 1.

Step 8: Cut a 34 in. [86.4 cm] length of EA HOSE H175 to create the FF-01220-1.

Step 9: Slip the FF-01220-1 (with clamp) over the stem on the Overflow Bottle and clamp as shown in Figure 1.

Step 10: Attach the Overflow Bottle to the firewall as shown in Figure 1.

Step 11: Route the free end of the FF-01220-1 forward and around the right side of the Airbox, passing under the engine mount as shown in Figure 1 and securing the FF01220-1 to the oil temperature sensor wiring.

Step 12: Slide the free end (with clamp) over the barbed stem on the Expansion Tank and clamp as shown in Figure 1.

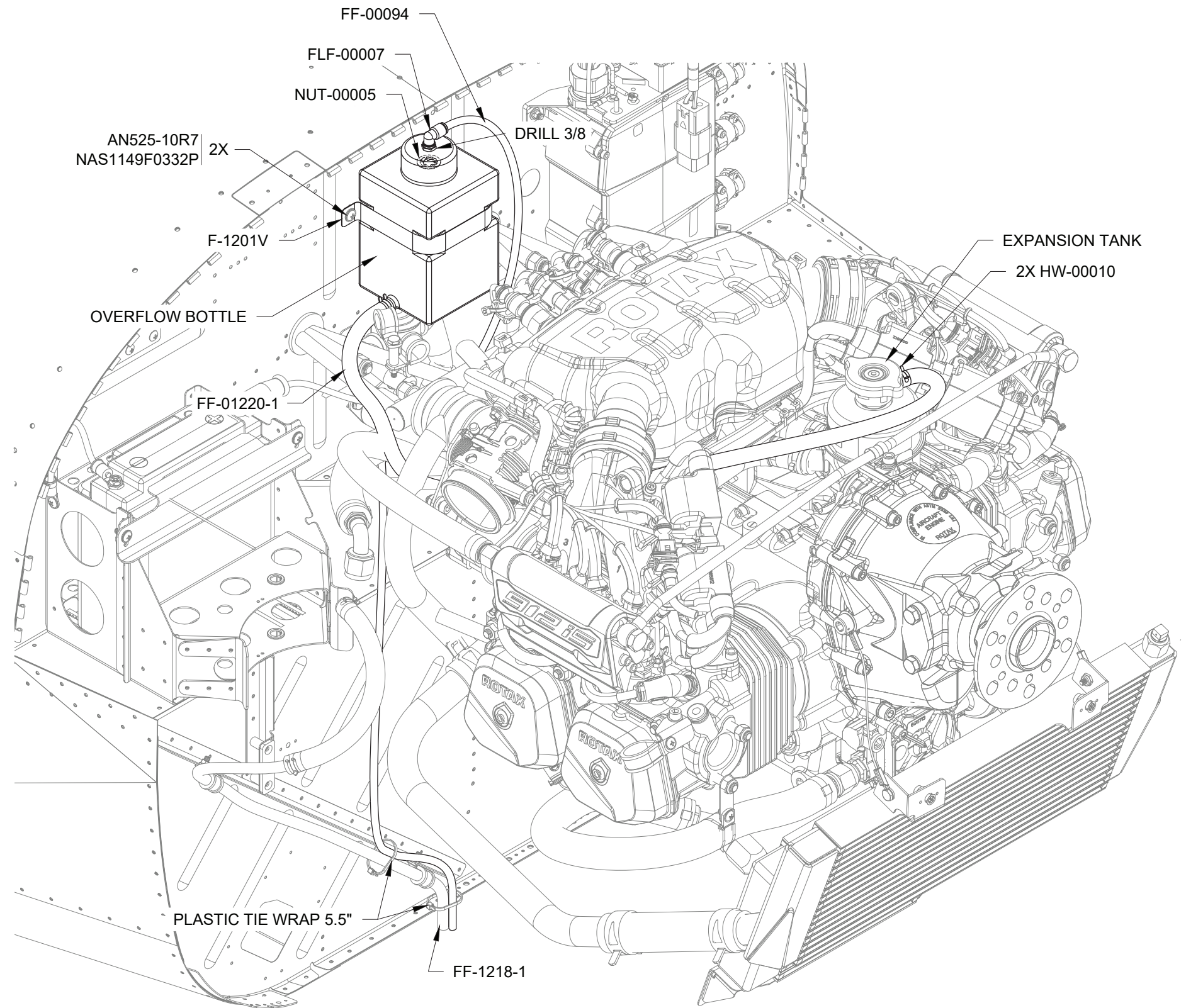


FIGURE 1: OVERFLOW BOTTLE



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Step 1: Remove the FF-00120 from the COWL-00006. See Figure 1.

Step 2: Assemble the parts shown in Figure 1 to create the Air Induction Filter Assembly.

The Air Induction Filter Assembly will be attached to the COWL-00006 upon final installation of the COWL 12iS BOTTOM.

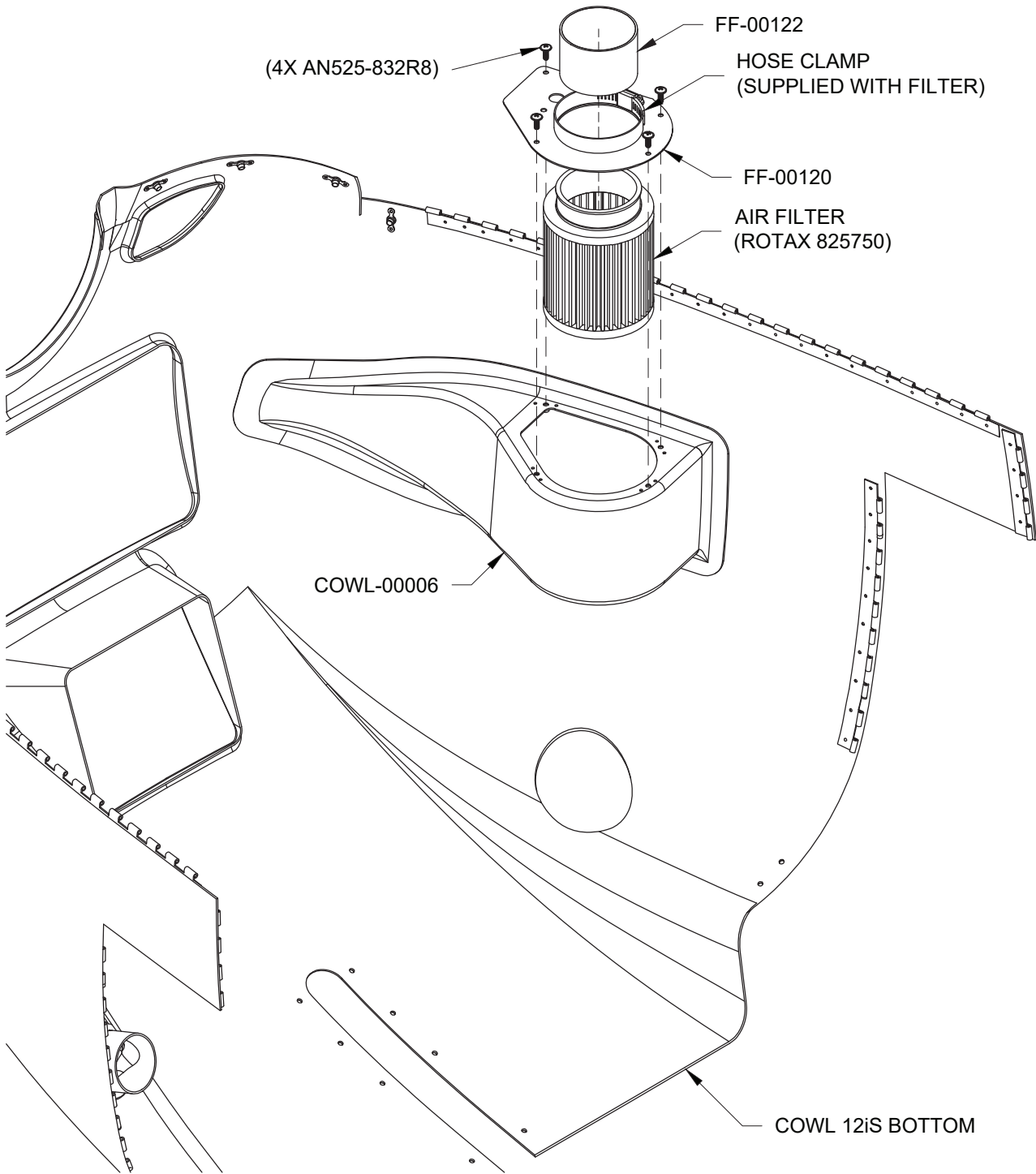


FIGURE 1: AIR INDUCTION FILTER ASSEMBLY

Step 3: Cut a 13 in. [33.0 cm] piece of 2.5 in. [6.4 cm] diameter SCAT tube to create the FF-00121.

Step 4: Unspool the wire from inside of the FF-00121 3/4 in. [19.1 mm] from one end of the tube. Cut off the first half of the unspooled wire and discard. Bend the first 1/4 in. [6.4 mm] of the remaining wire inward at a 90.0° angle.

Twist the unspooled wire to reduce its diameter within the FF-00121. Tuck the end of the wire inside one of the wire loops that are still attached to the outer orange material.

The goal is to have the wire rest inside the FF-00121 without it pushing hard against the outer orange material.

Step 5: Attach the unmodified end of the FF-00121 to the engine and the modified end to the Air Induction Filter Assembly (i.e. FF-00122) as shown in Figure 2.

Step 6: Attach the Rotax Ambient Air, Pressure, Temperature Sensor (AAPTS) to the Air Induction Filter Assembly as shown in Figure 2.

Step 7: Adjust the AAPTS wire as required and final torque the FF-00022 cushioned clamp hardware.

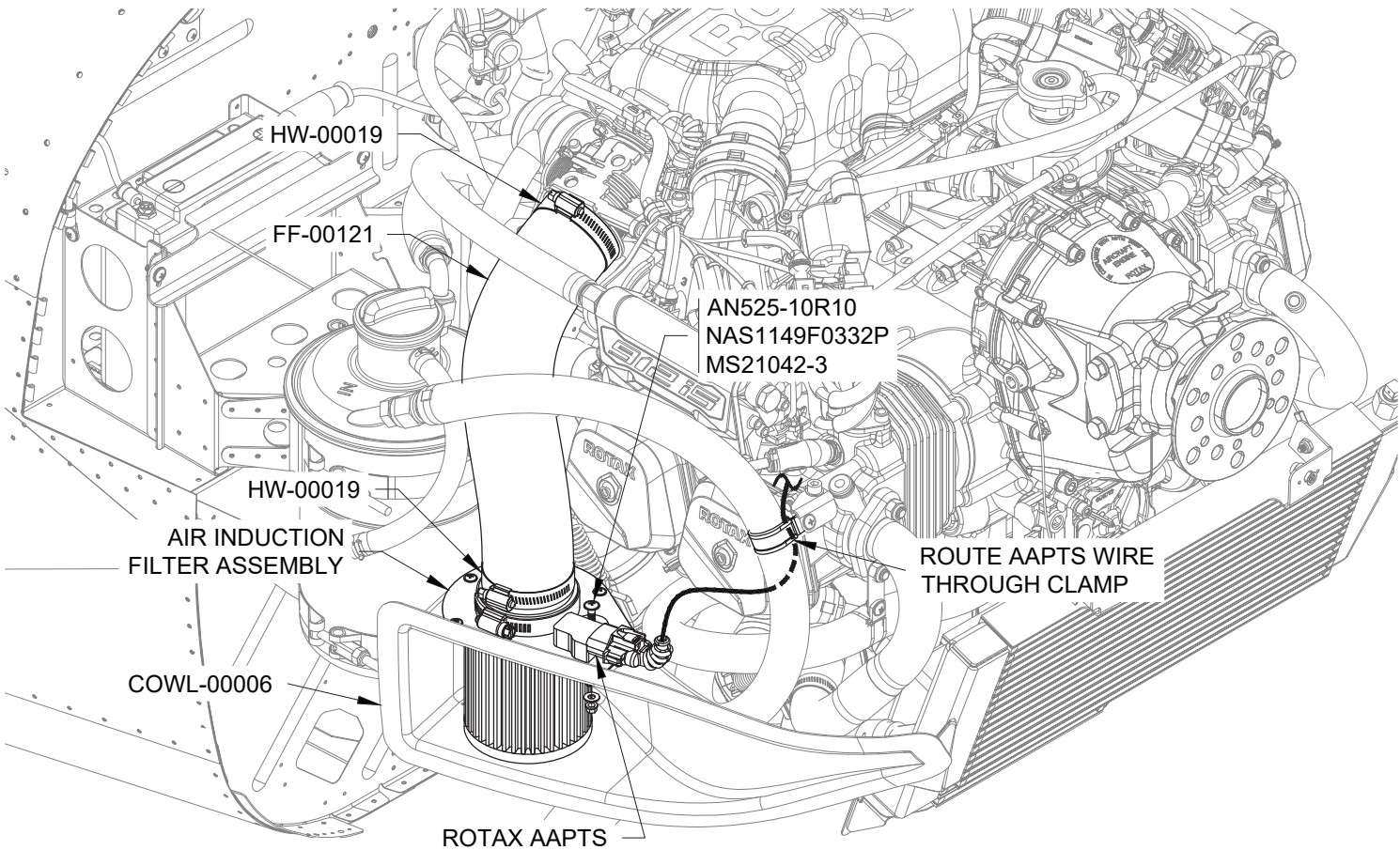


FIGURE 2: AIR INDUCTION FILTER ASSEMBLY ATTACHMENT

NOTE: Fabricate two identical Vent Door Assemblies and two Vent Inlet Assemblies.

Step 1: Fabricate two VENT-00001D from MS20257-C2 stainless steel hinge using the dimensions given in Figure 1. Trim the hinge pins to the length of the finished parts and insert.

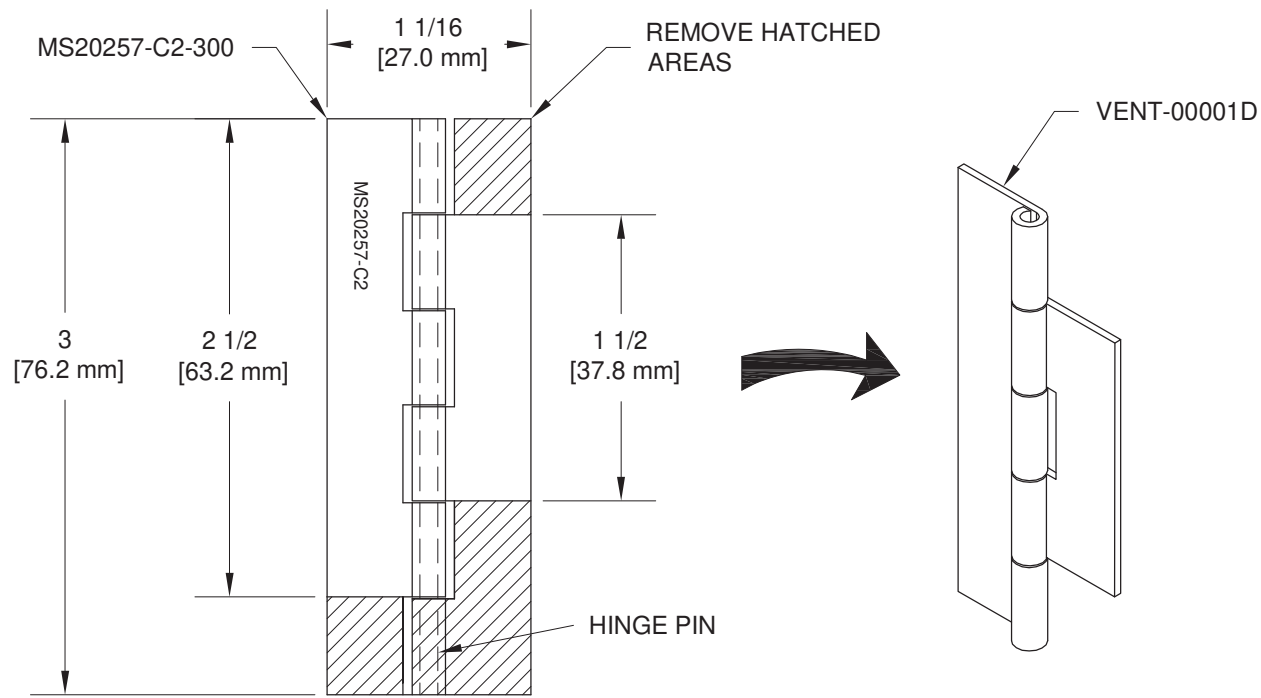


FIGURE 1: FABRICATE HINGES
(ONE PART SHOWN)

NOTE: Center the hinge halves within their side to side play and firmly clamp all parts before match-drilling.

Step 2: Center the two halves of one VENT-00001D on one VENT-00001CE and match-drill #40 the holes in the VENT-00001CE into the VENT-00001D. Repeat for the remaining VENT-00001D. See Figure 2.

Step 3: Dimple the #40 holes in the VENT-00001D as shown in Figure 2.

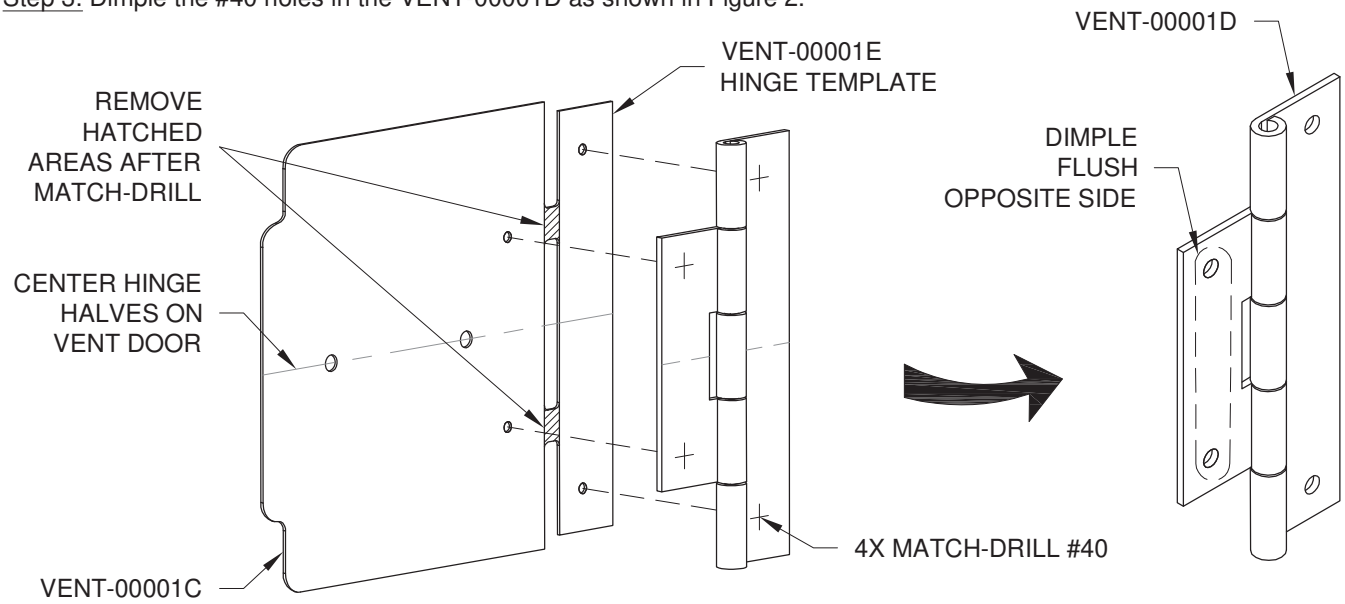


FIGURE 2: MATCH-DRILL & DIMPLE HINGES
(ONE SET SHOWN)

Step 4: Separate and discard the VENT-00001E template from the VENT-00001CE as shown in Figure 2.

Step 5: Separate and final-drill the VENT-00001A-L & -R and F-14103 as shown in Figure 3.

Step 6: Final-Drill the VENT-00001B as shown in Figure 4.

Step 7: Prime the VENT-00001A-L & -R, VENT-00001B, and FF-00084 if desired.

Step 8: Machine countersink the #40 holes in the VENT-00001D and VENT-00001F as shown in Figure 4.

Step 9: Dimple the VENT-00001C as shown in Figure 4.

Step 10: Rivet the VENT-00001D and VENT-00001F to the VENT-00001C as shown in Figure 4.

Hereafter refer to this as the Vent Door Assembly.

Step 11: Rivet the VENT-00001B to the VENT-00001A-L & -R as shown in Figure 4.

Hereafter refer to this as the Vent Inlet Assembly.

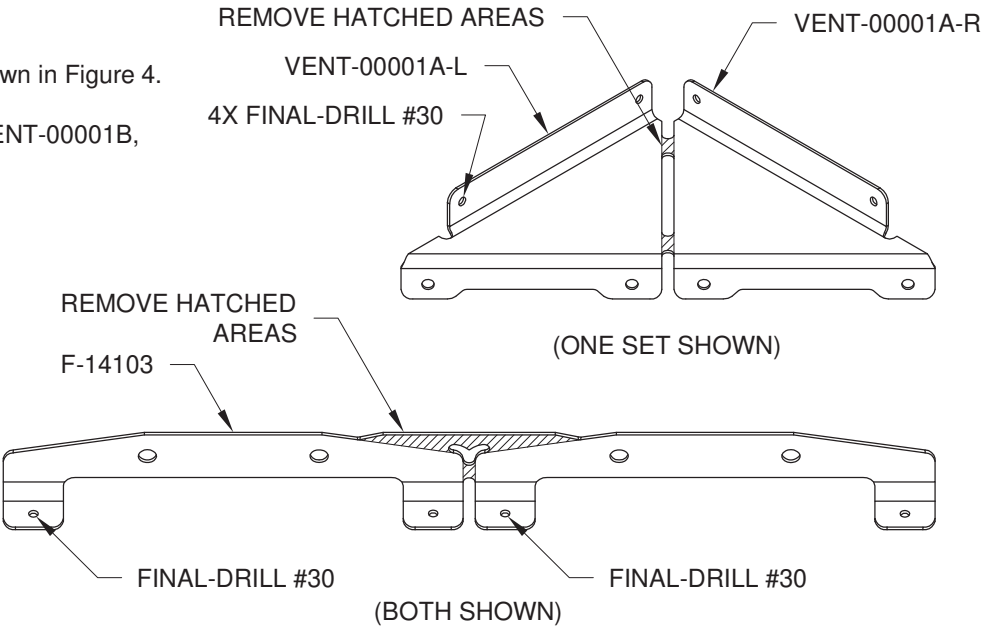


FIGURE 3: SEPARATE VENT SIDES & CABLE BRACKETS

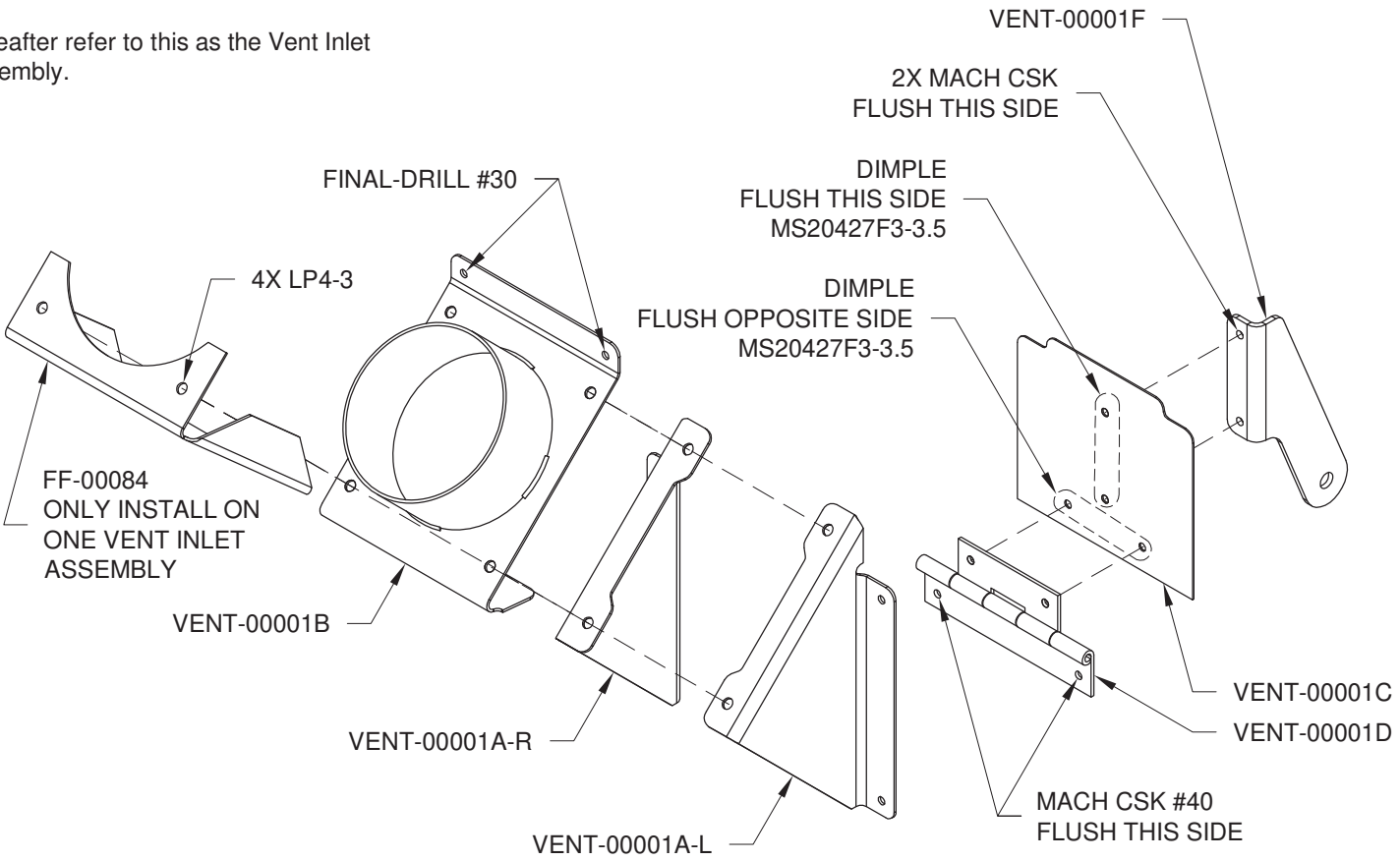


FIGURE 4: VENT DOOR ASSEMBLY AND VENT INLET ASSEMBLY
(ONE SET SHOWN)



Step 1: Rivet the Vent Door Assemblies to the lower firewall and F-14103 as shown in Figures 1 and 2. Note the orientation of the F-14103 in Figure 2.

Step 2: Cleco the Vent Inlet Assembly (the one without the FF-00084) to the left side (Pilot's side) of the firewall. Open and close the vent door while applying left and right side loads on the door. File the vent door as required to remove interference with the Vent Inlet Assembly.

Final-Drill #30 the Vent Inlet Assembly holes into the firewall.

Step 3: Repeat Step 2 for the right side (Co-Pilot's side).

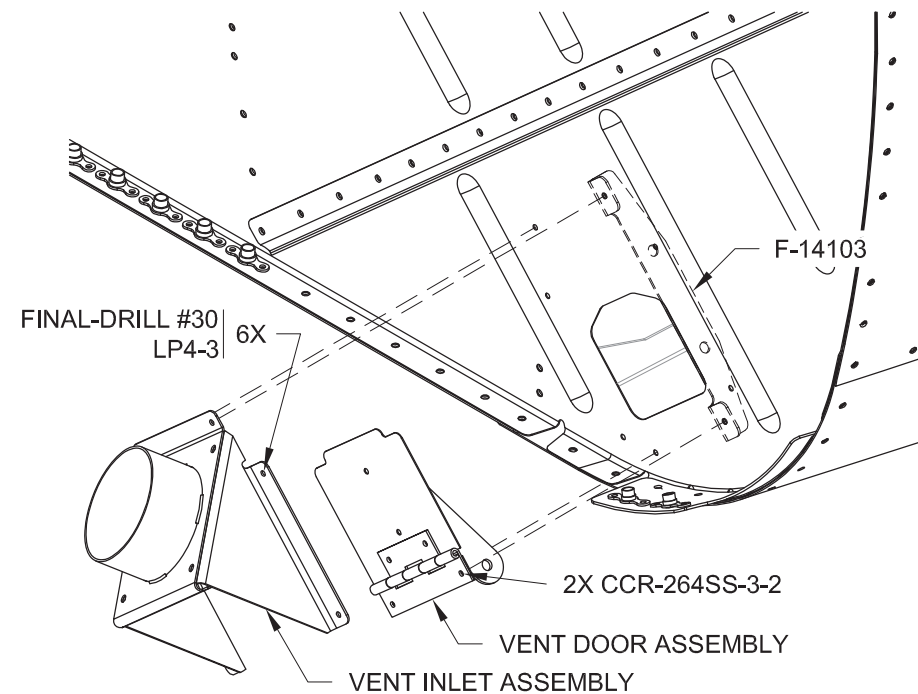


FIGURE 1: INSTALLING THE VENT DOOR & INLET ASSEMBLIES
(LEFT SIDE SHOWN)

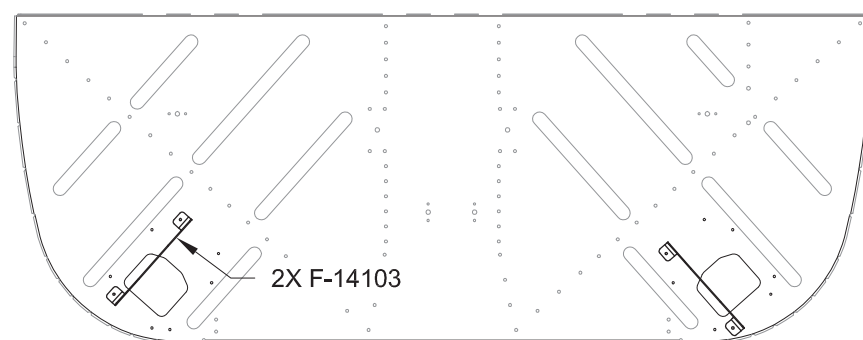


FIGURE 2: CABLE BRACKET ORIENTATION
(AFT SIDE VIEW LOOKING FORWARD)

Step 4: Rivet the Vent Inlet Assemblies to the firewall and F-14103 as shown in Figure 1. Install the Vent Inlet Assembly with the FF-00084 on the right side.

Step 5: Pull out the knob of each CT A-740 BLACK to create a minimum gap between the knob and shank as shown in Figure 3.

Step 6: Use a die grinder to trim the CT A-740 BLACK to the length shown in Figure 3.

Step 7: Push in the knob of each CT A-740 BLACK until the "cushion gap" remains between the knob and shank as shown in Figure 3. This will ensure that the vent doors close fully (i.e. the movement of the vent doors will be limited by contact with the firewall and not by the push pull cables themselves).

Step 8: Fully close the Vent Door Assemblies.

Step 9: Route the ends of both CT A-740 BLACK through the F-01246 and install as shown in Figure 4.

Ensure that each Vent Door Assembly is halfway open when its knob is pulled out halfway.

Ensure that each Vent Door Assembly is fully closed before the knob contacts the shank.

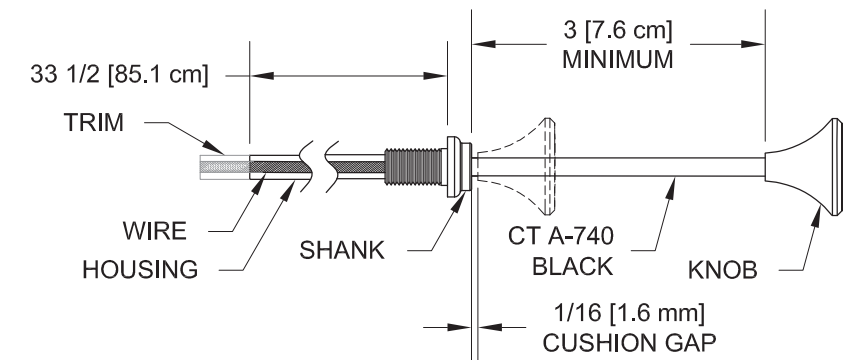


FIGURE 3: TRIMMING THE CABIN HEAT CABLES

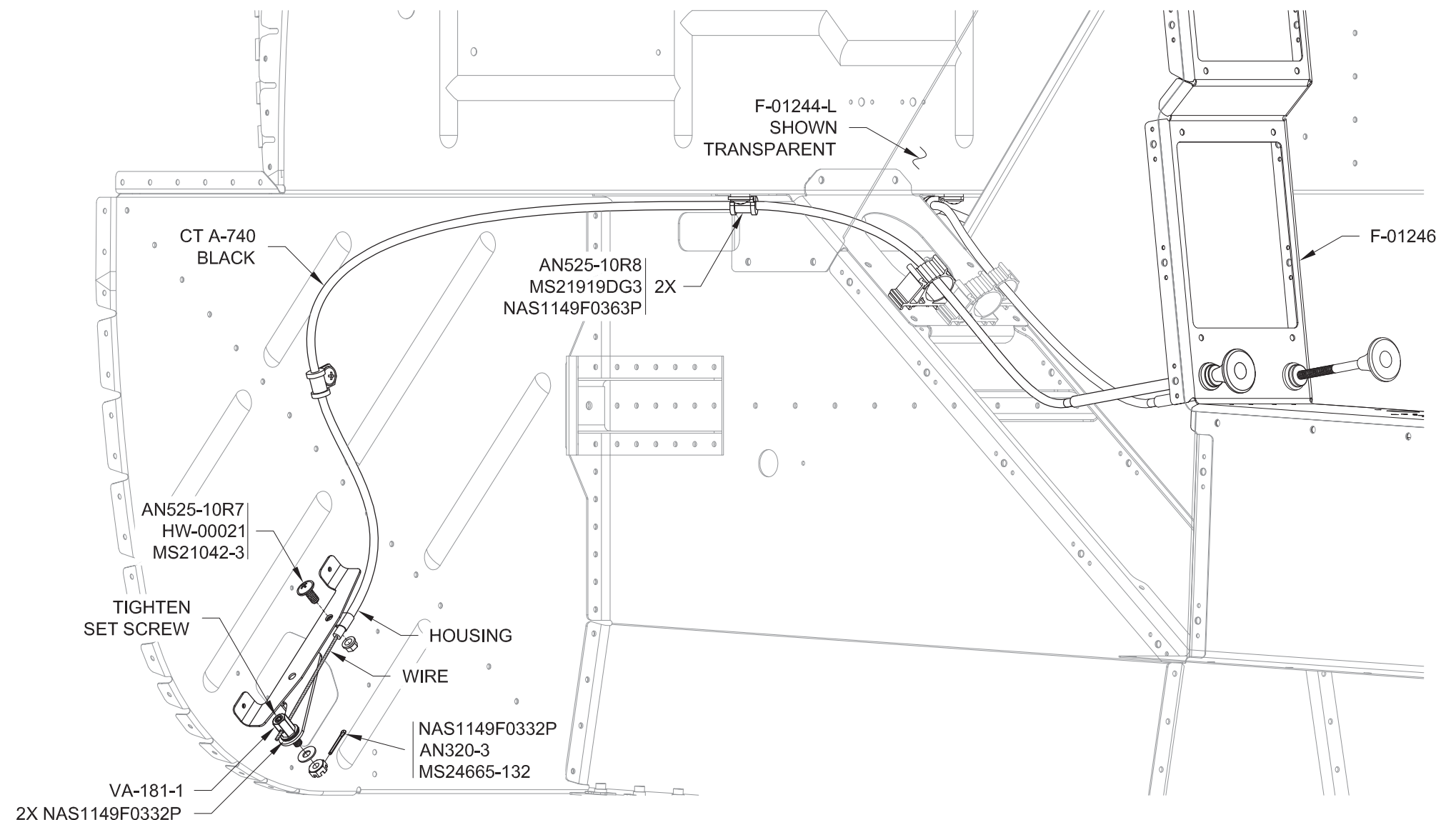
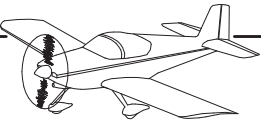


FIGURE 4: ROUTING THE CABIN HEAT CABLES
(LEFT SIDE SHOWN)



Step 1: Cut one 17 in. [43.2 cm] and two 13 in. [33.0 cm] pieces of 2 in. [5.1 cm] diameter SCAT tube to create the FF-00091A and FF-00091B, respectively.

Step 2: Perform Step 4 on Page 50iS/U-10 to finish the ends of each SCAT tube.

Step 3: Connect the FF-00091A & B to the heat muff as shown in Figure 1. If required, reduce the length of the FF-00091A to eliminate interference with the left firewall stiffener.

Step 4: Connect the two FF-00091B to the two Vent Inlet Assemblies as shown in Figure 1.

Step 5: If required, rotate the three EA LV-1 HEAT SHIELDS that are installed on the exhaust system so that they aim directly at the nearest radiator tube. Secure the heat shields.

Step 6: If desired, seal any gaps in the Vent Inlet Assemblies with RTV as shown in Figure 1. This will increase heater performance.

The FF-00091A will be connected to the VENT-00003 upon final installation of the COWL 12iS BOTTOM COWL. **DO NOT** over tighten the hose clamp or it will crush the VENT-00003.

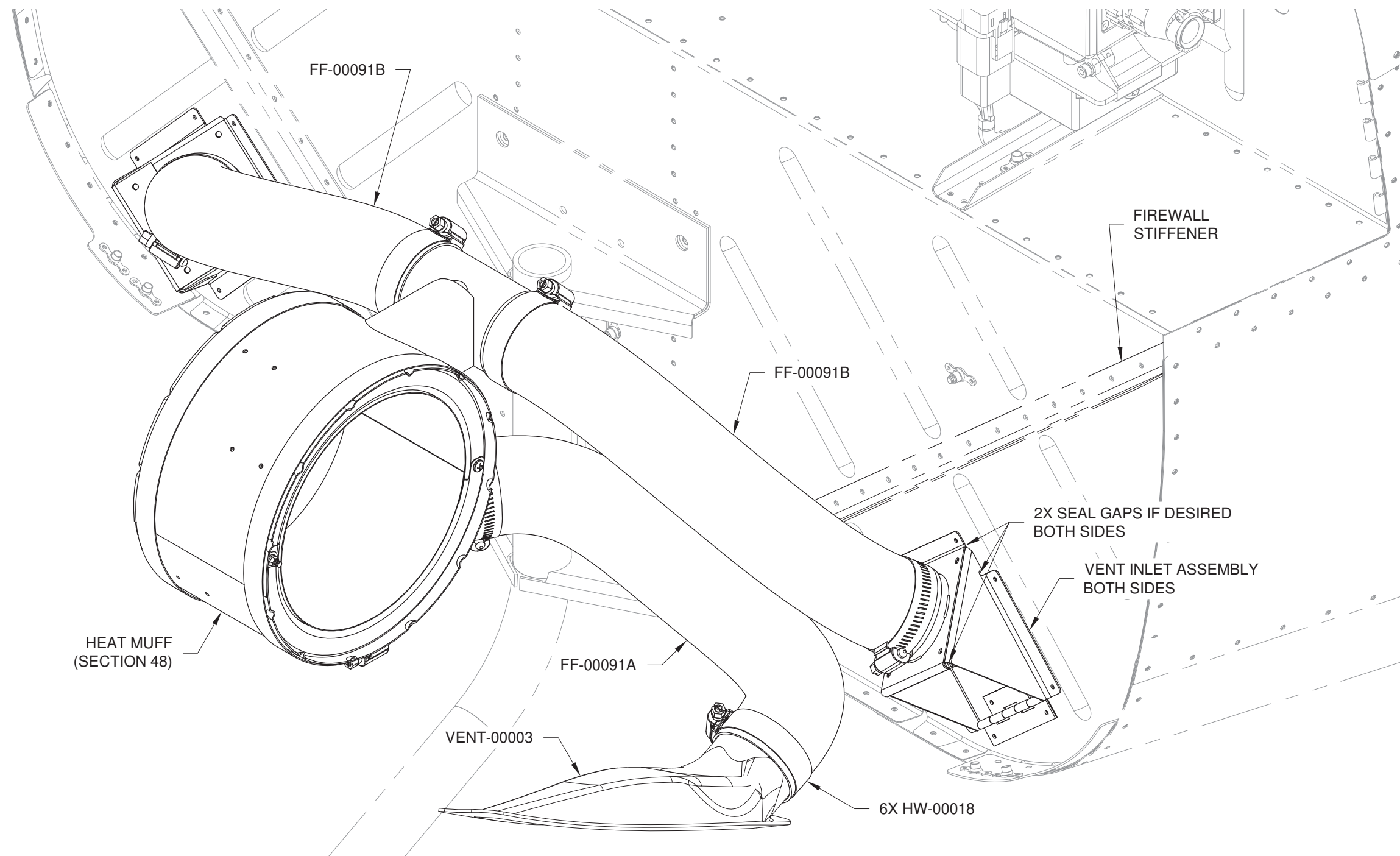


FIGURE 1: ATTACH HEAT MUFF HOSES



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