

**REVISION DESCRIPTION:**

**1) Page: 37-01 REV 5:** Changed depiction to show added hardware and T-01220

**Page: 37-02 REV 4:** Added Figure 3 depicting Separating the T-01220 Doublers.

Figure 4 was Figure 3. Added depiction of T-01220A & B and revised rivet countersink locations. Rivet callouts and riveting instructions for T-1205 to T-00008, T-00009, T-01220A & B, moved to Page 37-03.

**Page: 37-03 REV 4:** Moved previous contents to the next page (repaginated rest of section)

Add instructions & Figure 1 depicting final installation of T-1205, T-00008, T-00009, T-01220A & B, and nutplates.

**Page: 37-04 REV 3:** Section Repagination.

Figure 1 and Figure 2 updated to show added hardware.

**Page: 37-05 REV 8:** Section Repagination

Figure 3 updated to show added hardware.

**Page: 37-06 REV 6:** Section Repagination

**Page: 37-07 REV 4:** Section Repagination

Figure 1 updated to show added holes for hardware, but hardware omitted for clarity.

Updated note prior to Step 13 to address issue of dangling chads.

**Page: 37-08 REV 3:** Section Repagination

**Page: 37-09 REV 1:** Section Repagination

Figure 1 and Figure 2 updated to show added holes for hardware, but hardware omitted for clarity.

**Page: 37-10 REV 1:** Section Repagination

**Page: 37-11 REV 0:** Added new page for Section Repagination

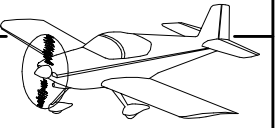
**Page: 37-12 REV 0:** Added blank page for Section Repagination

**Page: 37-13 REV 0:** Added page for Section Repagination. Added Figure 1 depicting Fuel Vent Line hole locations.

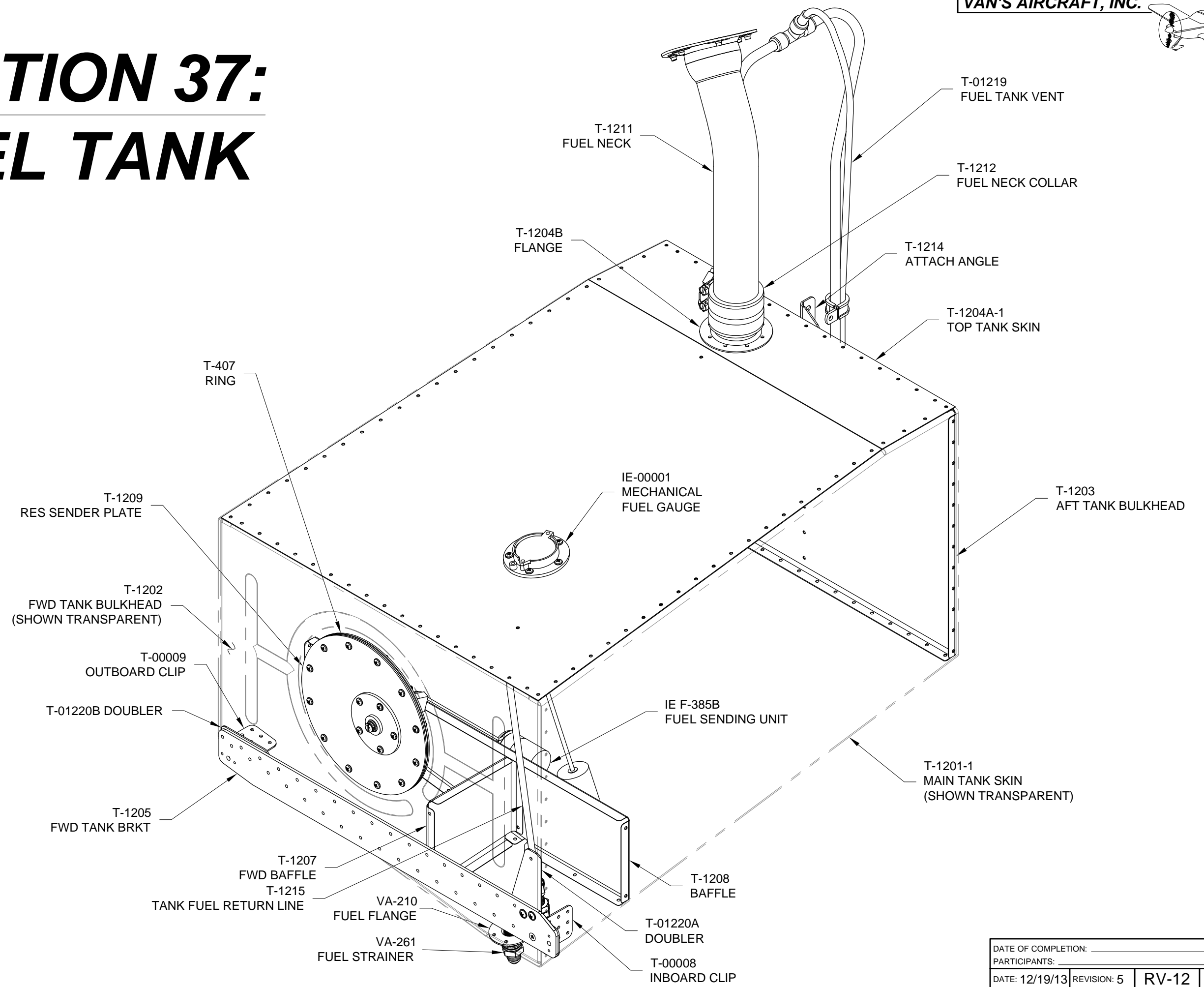
**Page: 37-14 REV 0:** Added blank page for Section Repagination

**2) Page 37-08 REV 8:** Added Figure 3 better depicting vent hole location.

Figure 4 was Figure 3.



# SECTION 37: FUEL TANK





**NOTE:** Throughout this section prime any parts if/as desired except any area that will be inside the tank.

**NOTE:** Read Section 5S for more information on fuel tank sealant. The tank is assembled much like any other structure with two important differences: Apply sealant between scuffed and cleaned parts that comprise a seam through which fuel could conceivably leak. This includes every fastener. Spin fastener shanks in sealant to apply a thin even coating before they are inserted. Read through this section and scuff mating parts before beginning assembly. Set rivets slowly using a hand blind rivet puller, allowing the tank sealant to displace before the rivet is completely set.

Step 1: Machine countersink the T-407 Ring nutplate attach holes.

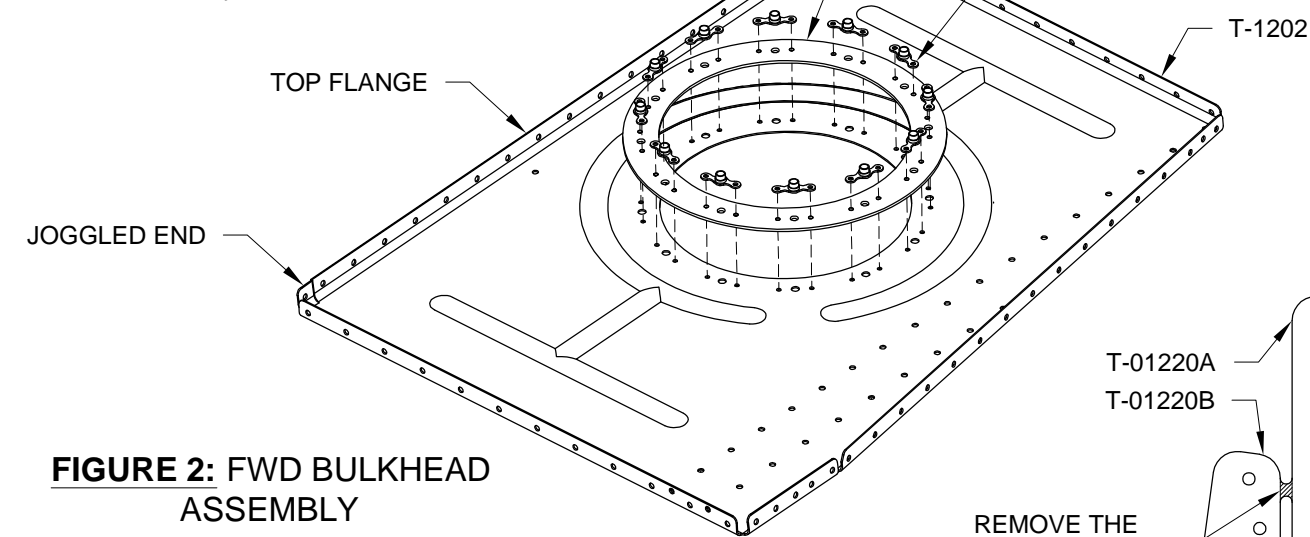
Step 2: Remove and discard the area shown in Figure 1 hatched from the T-407 Ring.

Step 3: Adjust the joggled ends of the T-1202 Fwd Tank Bulkhead top flange to be parallel to the rest of the top flange as shown in Figure 2.

**NOTE:** The flanges of the T-1202 Fwd Tank Bulkhead are bent toward the aft face of the part.

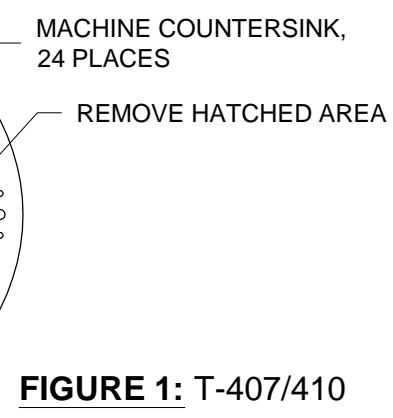
Step 4: Dimple the T-1202 Fwd Tank Bulkhead, flush on the forward side, at the nutplate attach holes.

Step 5: Rivet the nutplates, T-407 Ring and T-1202 Fwd Tank Bulkhead together as shown in Figure 2. Refer to the fwd tank bulkhead and ring as the Fwd Bulkhead Assembly.

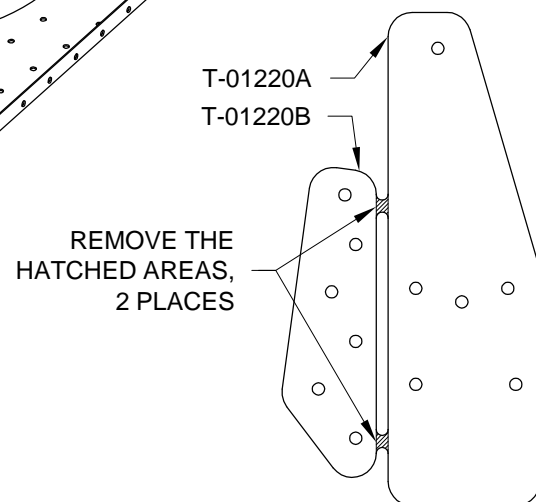


**FIGURE 2: FWD BULKHEAD ASSEMBLY**

Step 6: Separate the T-01220 Doublers as shown in Figure 3.



**FIGURE 1: T-407/410**



**FIGURE 3: SEPARATING THE DOUBLERS**

Step 7: Cleco together the T-1205 Fwd Tank Bracket, T-1202 Fwd Tank Bulkhead and T-01220A & B Doublers as shown in Figure 4. Radius the edges of the doublers to fit against the bend radii in the fwd tank bulkhead.

Step 8: Match-Drill #19 the three #30 holes called out in Figure 4. Uncleco the parts clecoed together in Step 7.

Step 9: Machine countersink the lower inboard #19 hole on the forward side of the F-1205 Fwd Tank Bracket to fit the head of the screw called out on Page 37-03, Figure 1. See Figure 4.

Step 10: Machine countersink the #30 holes on the forward side of the T-1205 Fwd Tank Bracket called out in Figure 4 to fit the heads of the the rivets called out on Page 37-03, Figure 1. Deburr the edges of the fwd tank bracket.

Step 11: Machine countersink the #40 holes on the forward side of the T-1205 Fwd Tank Bracket for the rivets called out on Page 37-03, Figure 1.

Step 12: Rivet the VA-210 Fuel Flange and the T-1201-1 Main Tank Skin to the Fwd Bulkhead Assembly per call-outs in Figure 4.

**NOTE:** The T-1010 Anti-Rotation Bracket must be filed to tightly fit the AN823-4D fitting.

Step 13: Rivet the T-1010 Anti-Rotation Bracket to the T-1201-1 Main Tank Skin per the call-outs in Figure 4.

Step 14: Install the AN832-4D bulkhead fitting to the T-1201-1 Main Tank Skin per the call-outs in Figure 4.

Step 15: Rivet the T-00008 Inboard Clip and T-00009 Outboard Clip to the T-1201-1 Main Tank Skin as shown in Figure 4.

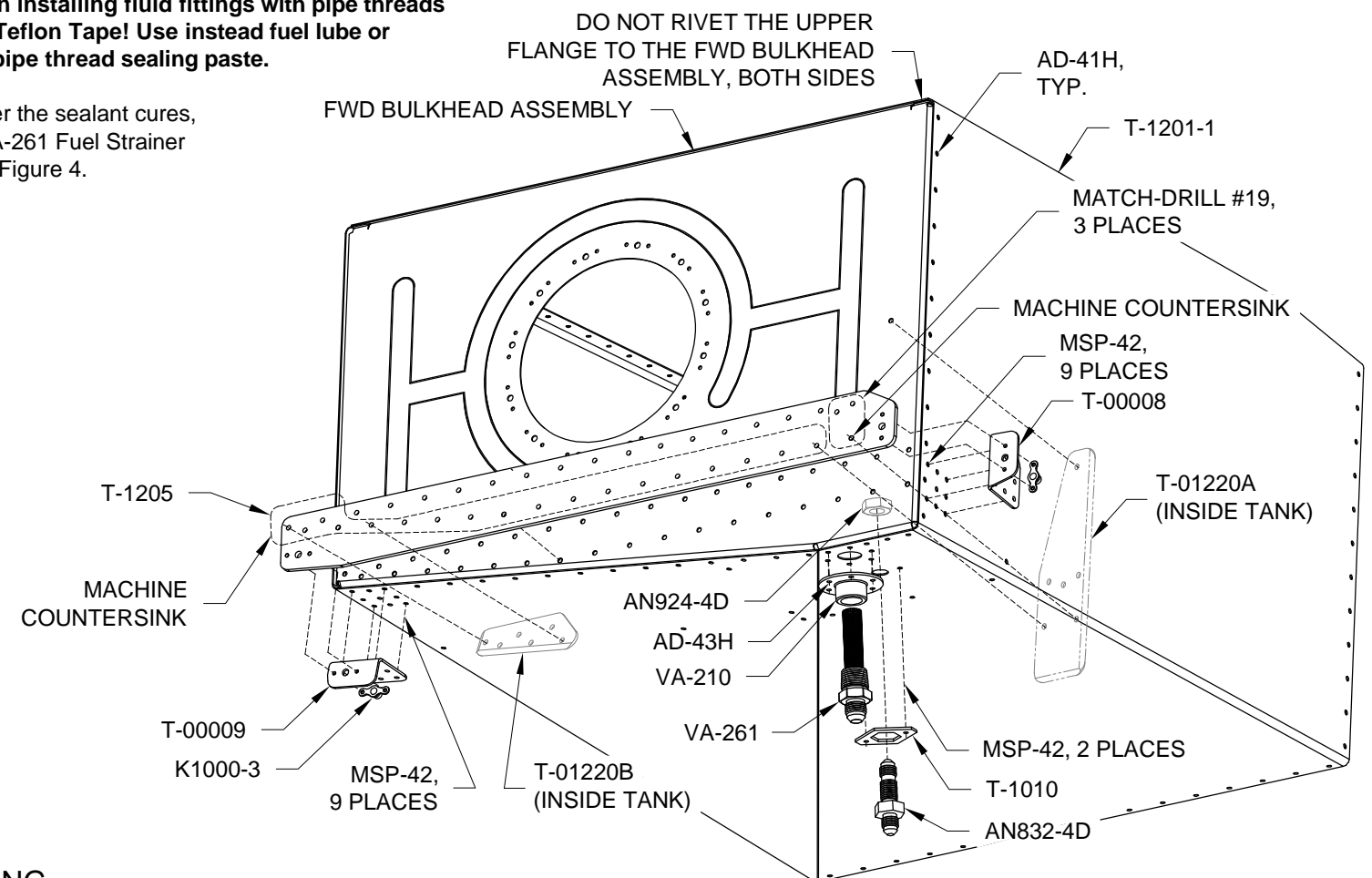
Coat the shop heads of the inboard and outboard clip rivets with fuel tank sealant.

Step 16: Cleco a nutplate to the T-1205 Fwd Tank Bracket and T-00008 Inboard Clip as shown in Figure 4.

Cleco a second nutplate to the fwd tank bracket and T-00009 Outboard Clip as shown in Figure 4.

**NOTE:** When installing fluid fittings with pipe threads do not use Teflon Tape! Use instead fuel lube or equivalent pipe thread sealing paste.

Step 17: After the sealant cures, install the VA-261 Fuel Strainer as shown in Figure 4.



**FIGURE 4: FUEL TANK ASSEMBLY**



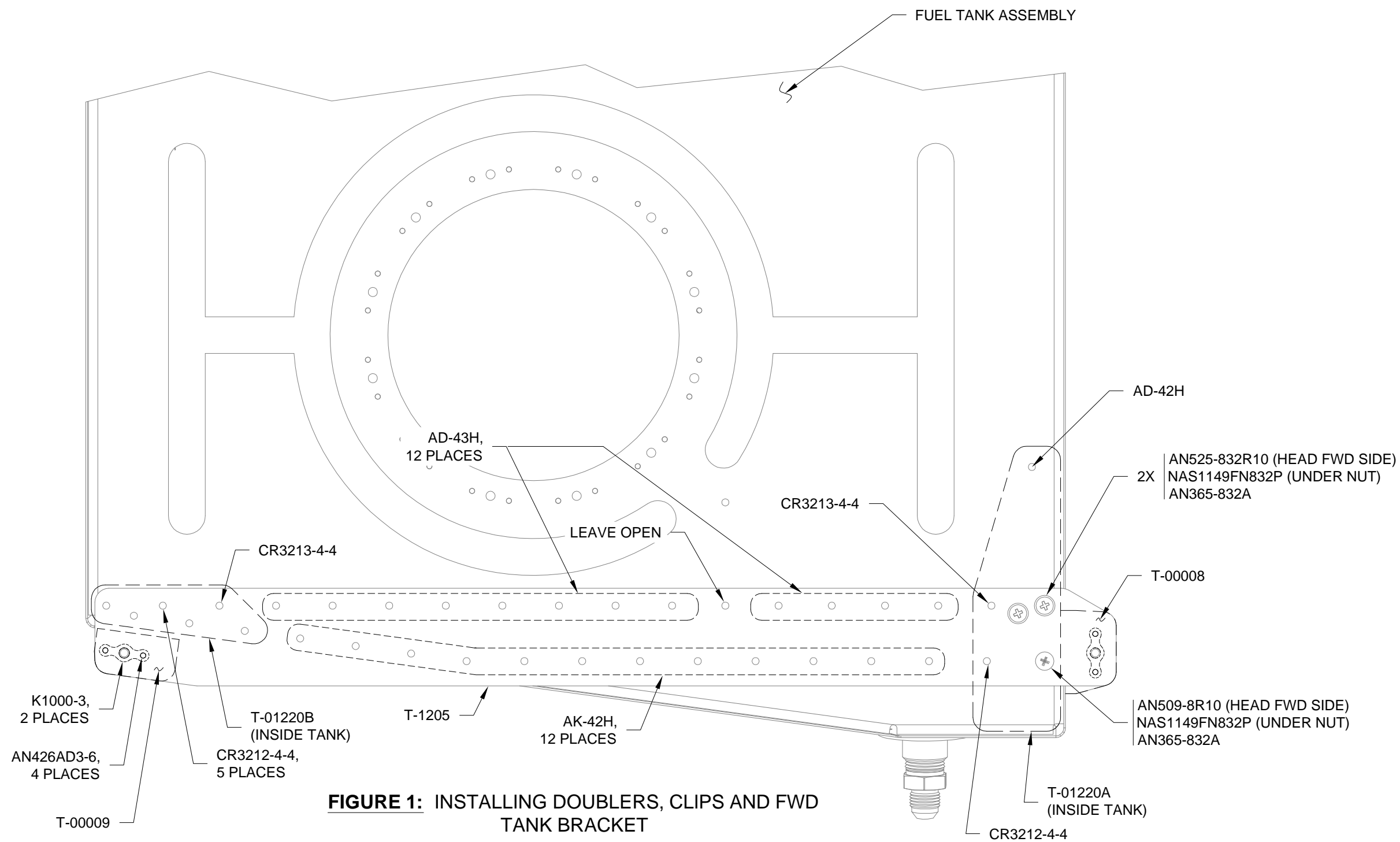
**Step 1:** Rivet the T-1205 Fwd Tank Bracket to the T-00008 Inboard Clip, T-00009 Outboard Clip, nutplates, and Fuel Tank Assembly using the rivets called out in Figure 1.

**Step 2:** Smear a very thin layer of fuel tank sealant over the mating surfaces of the T-01220A & B Doublers.

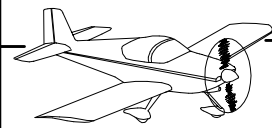
**Step 3:** Rivet the T-01220A & B Doublers to the Fuel Tank Assembly using the rivets called out in Figure 1.

**Step 4:** Install the screws common to the T-01220A Doubler and Fuel Tank Assembly as called out in Figure 1.

**Step 5:** Rivet the nutplates to the T-1205 Fwd Tank Bracket and T-00008 and T-00009 Clips using the rivets called out in Figure 1.



**FIGURE 1: INSTALLING DOUBLERS, CLIPS AND FWD TANK BRACKET**



**Step 1:** Apply sealant to all mating surfaces of the T-1207 Fwd Baffle and T-1208 Baffle then rivet them to the T-1201-1 Main Tank Skin and rivet them together. Ensure that the two inboard fuel passages of the baffle are free of sealant and that the outboard passage is filled as indicated in Figure 1. Do not apply sealant to the corners of the fwd baffle. Fill the two tooling holes in both of the baffles with sealant as indicated in Figure 2. When finished the only way for fuel, below the top flange of the baffles, to transfer to either side should be through the four critical fuel passages indicated in Figure 1.

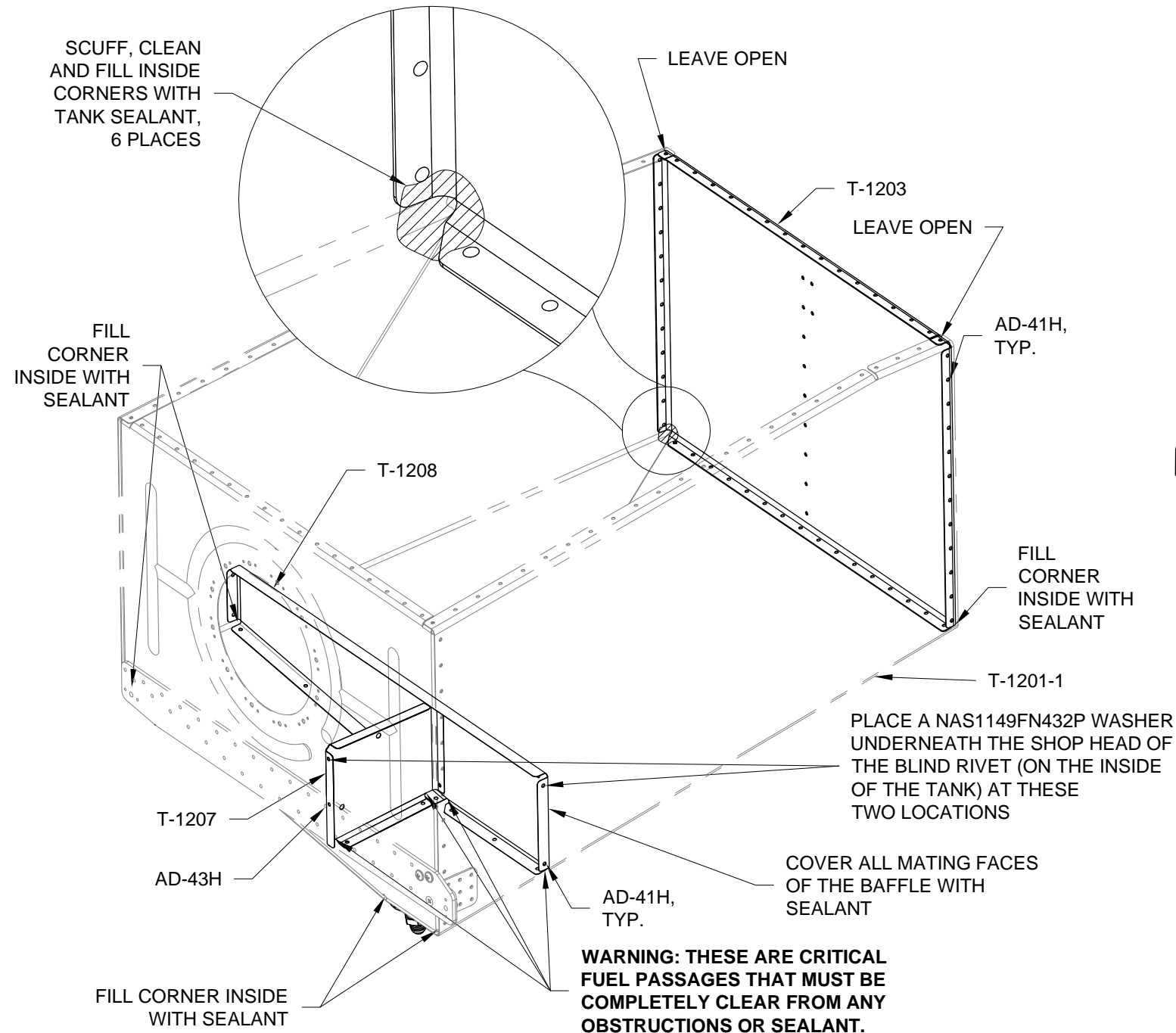
**Step 2:** Rivet the T-1207 Fwd Baffle to the T-1202 Fwd Bulkhead per call-outs in Figure 1.

**Step 3:** Adjust the joggled outer edges of the T-1203 Bulkhead top flange to be parallel to the remainder of the flange.

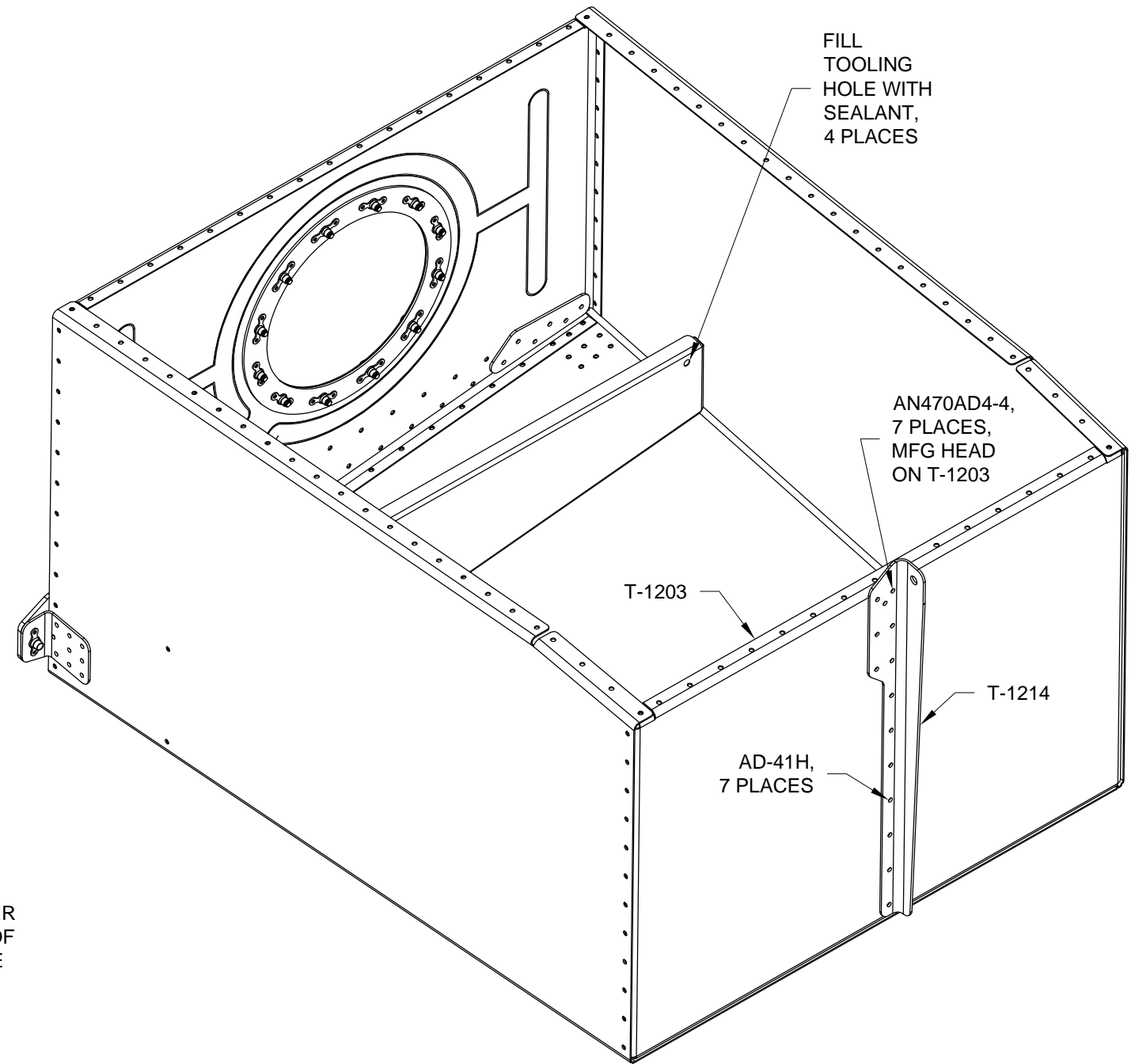
**Step 4:** Rivet the T-1203 Aft Tank Bulkhead to the T-1201-1 Main Tank Skin per the call-outs in Figure 1.

**Step 5:** Apply tank sealant to the inside bottom corners as shown in Figure 1.

**Step 6:** Rivet the T-1214 Attach Angle to the T-1203 Aft Tank Bulkhead per the call-outs in Figure 2.



**FIGURE 1: BAFFLE AND AFT BULKHEAD**



**FIGURE 2: INSTALLING THE ATTACH ANGLE**



Step 1: Machine countersink the forward side of the T-1209 Res Sender Plate for nutplate attach rivets.

Step 2: Rivet nutplates to the T-1209 Res Sender Plate as shown in Figure 1.

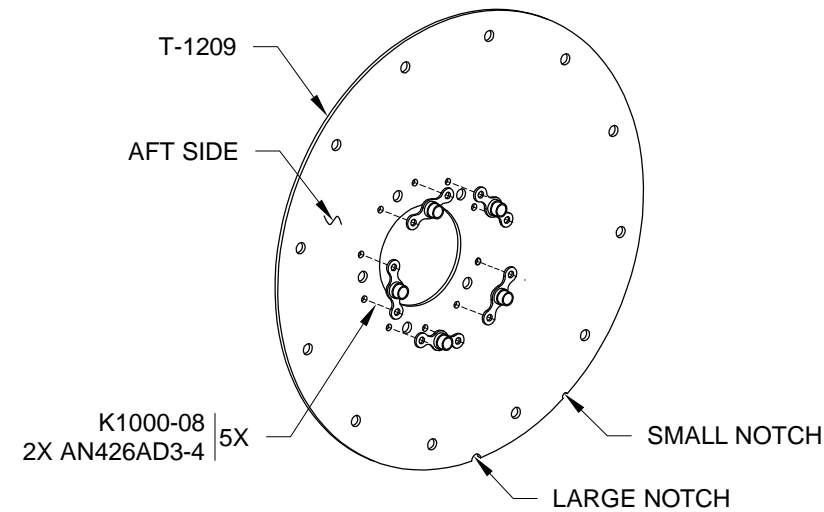


FIGURE 1: SENDER PLATE ASSEMBLY

Step 3: Use a vise to bend the IE F-385B Float Arm per the full scale template given at the bottom of this page. Insert the float arm into the IE F-385B Fuel Sending Unit. See Figure 2. Snap the float arm into the clips on the fuel sending unit.

Deflect the float arm to one of the stops. Check the resistance between the sending unit ground plate and the straight slot terminal screw (not shown) using a multimeter. The minimum resistance should be approximately 30 ohms. Deflect the float arm to the opposite stop. The maximum resistance should be approximately 240 ohms.

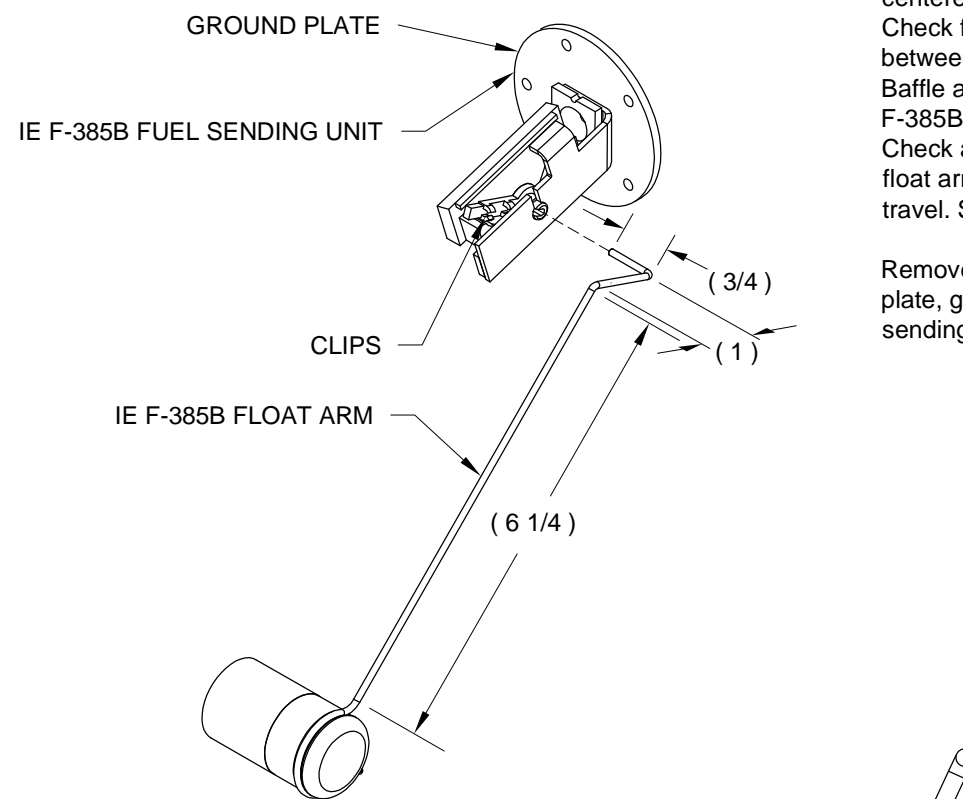


FIGURE 2: BENDING THE FLOAT ARM

NOTE: The IE F-385 Gasket in the following step is used only as a spacer to represent the thickness of the fuel tank sealant that will be used for the final assembly. THE GASKET WILL NOT BE USED IN THE FINAL ASSEMBLY.

Step 4: Temporarily attach the T-1209 Res Sender Plate and IE F-385 Gasket and IE F-385B Fuel Sending Unit to the Fuel Tank Assembly as shown in Figure 3. Use the notches to orient the sender plate. The small notch will be offset outboard, of the large notch that will be centered at the bottom. Check for clearance between the T-1208 Baffle and the IE F-385B Float Arm. Check and adjust the float arm for proper travel. See Figure 4.

Remove the res sender plate, gasket, and fuel sending unit.

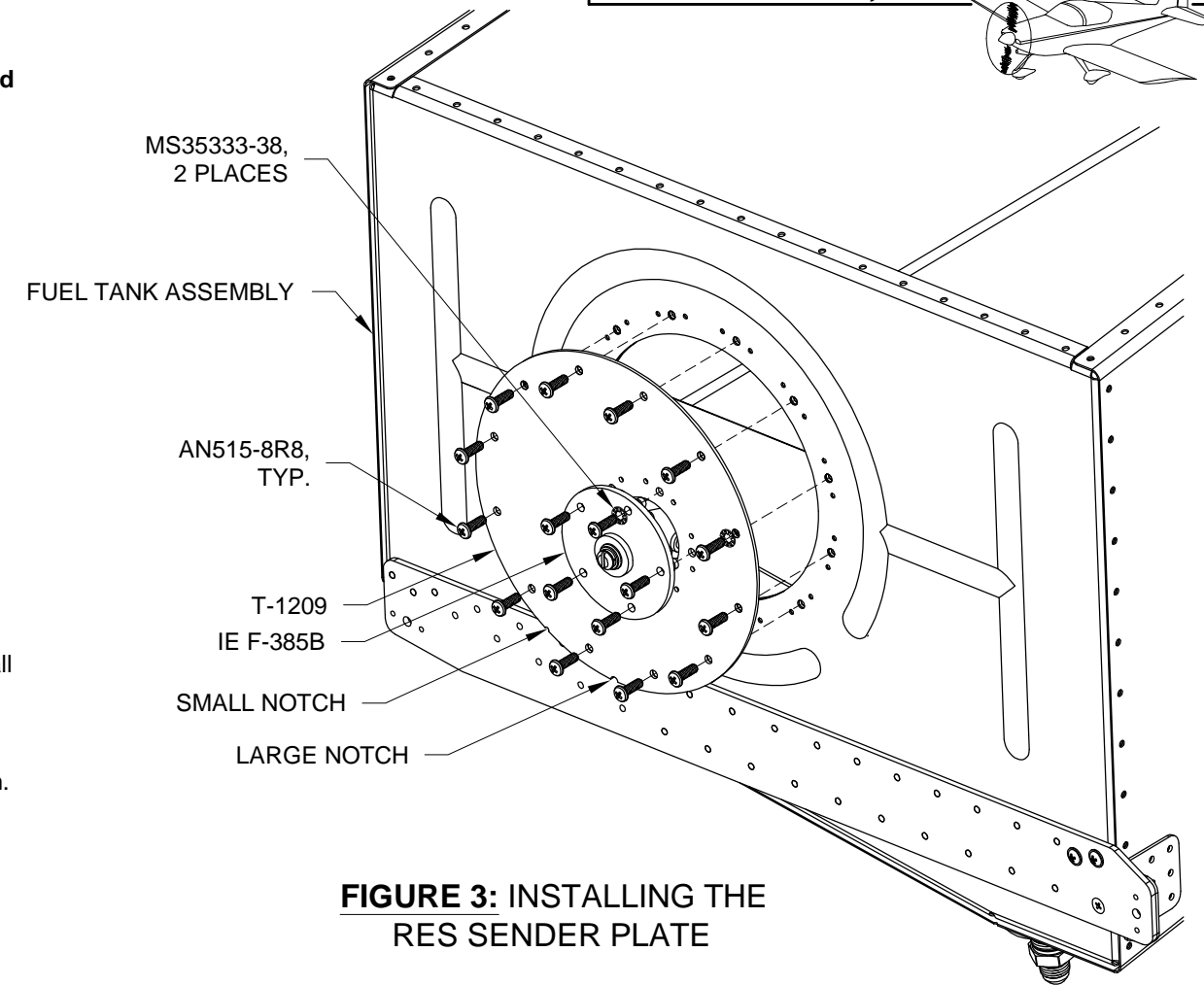


FIGURE 3: INSTALLING THE RES SENDER PLATE

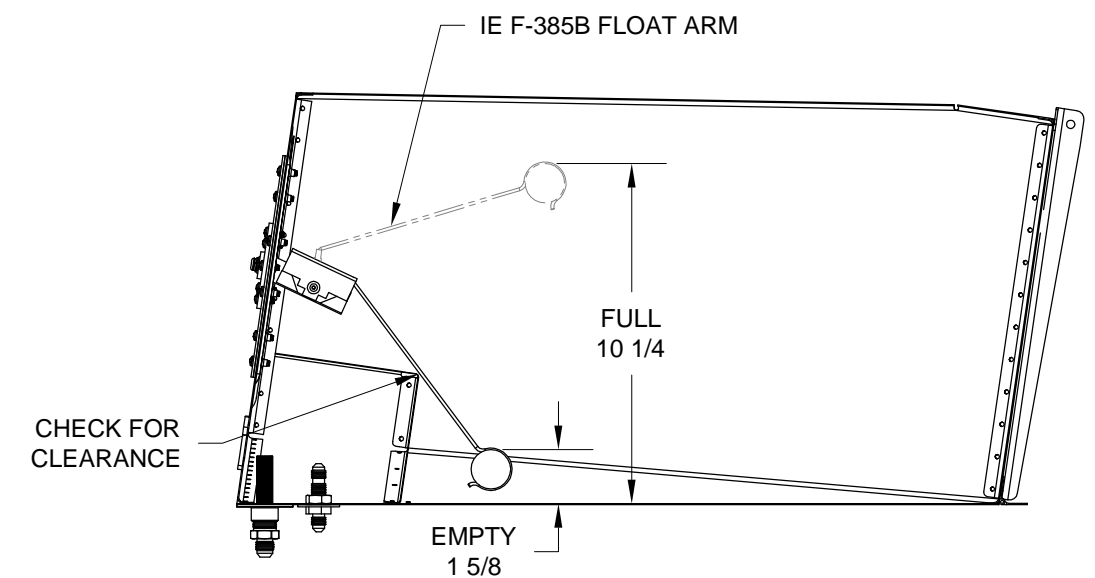
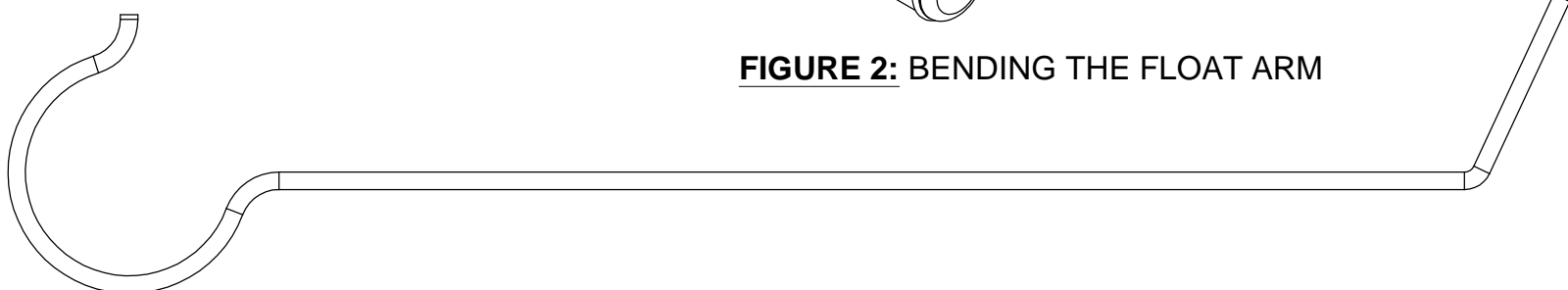


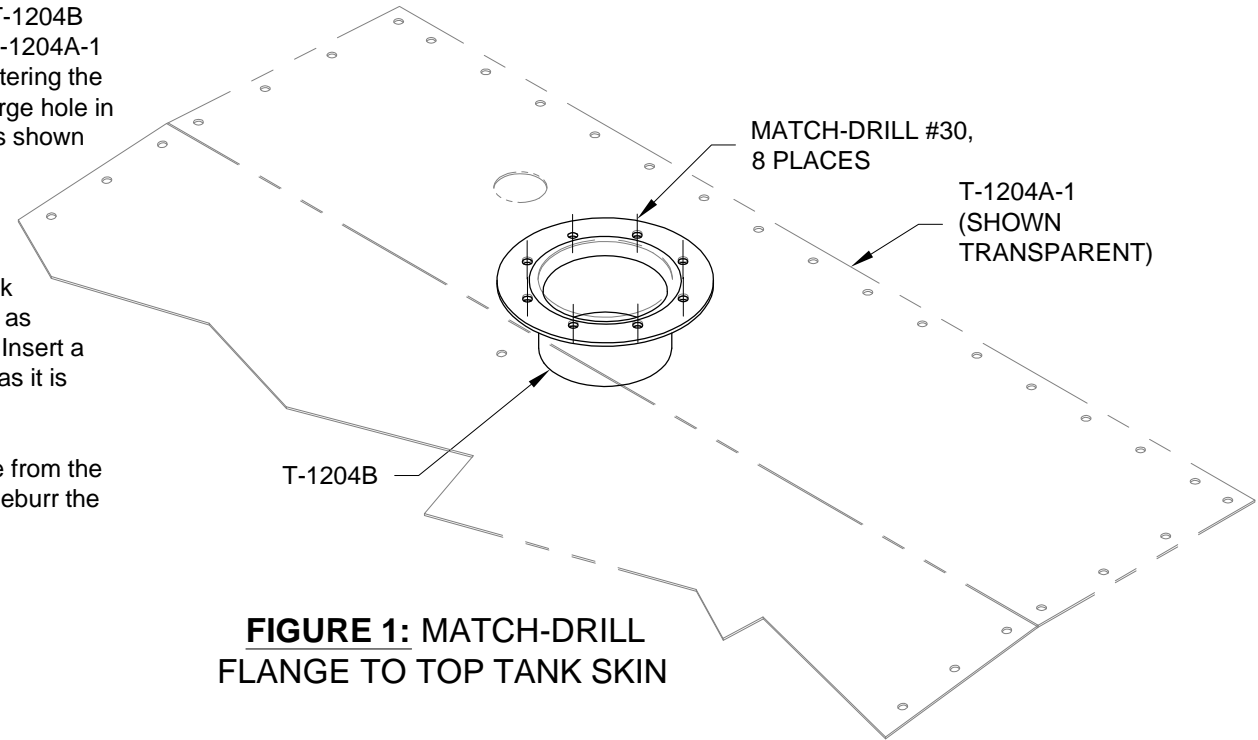
FIGURE 4: CHECKING TRAVEL AND CLEARANCE



**Step 1:** Place the T-1204B Flange under the T-1204A-1 Top Tank Skin centering the flange under the large hole in the top tank skin as shown in Figure 1.

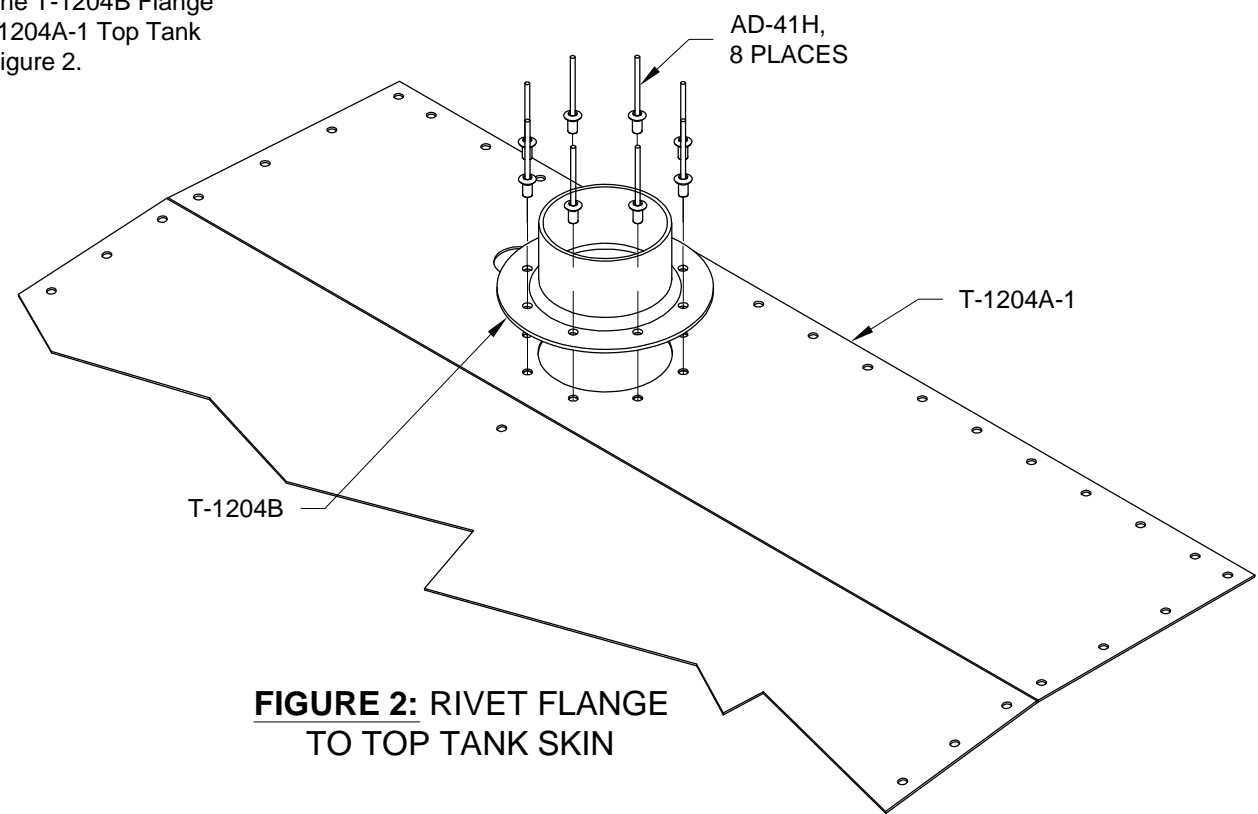
Match-Drill #30 the holes in the top tank skin into the flange as shown in Figure 1. Insert a cleco in each hole as it is match-drilled.

Un-cleco the flange from the top tank skin and deburr the holes.



**FIGURE 1: MATCH-DRILL FLANGE TO TOP TANK SKIN**

**Step 2:** Blind rivet the T-1204B Flange to the top of the T-1204A-1 Top Tank Skin as shown in Figure 2.



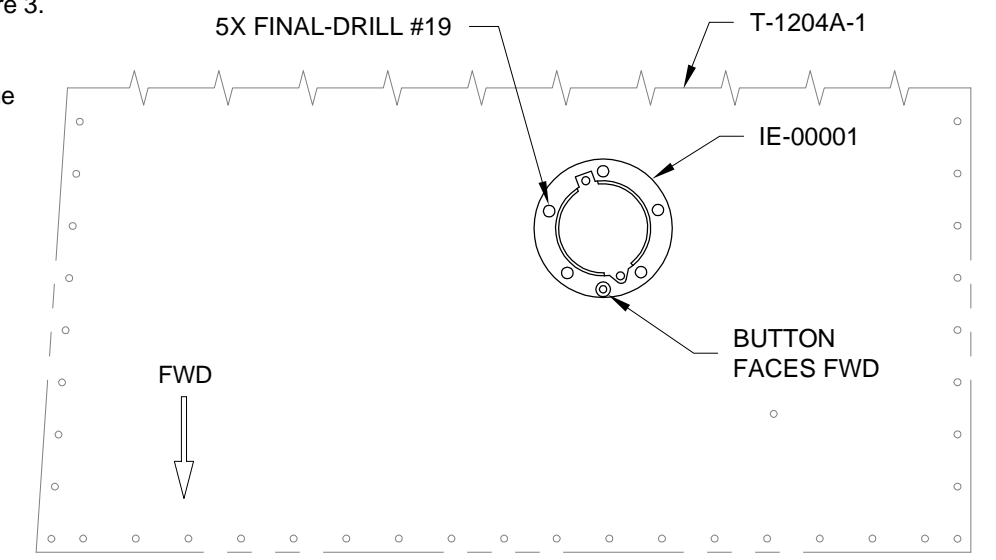
**FIGURE 2: RIVET FLANGE TO TOP TANK SKIN**

**NOTE:** Verify the Mechanical Fuel Gauge is oriented as shown in Figure 3.

**Step 3:** Insert the the IE-00001 Mechanical Fuel Gauge into the T-1204A-1 Top Tank Skin shown in Figure 3.

Final-Drill #19 the #30 holes in the top tank skin through the mechanical fuel gauge flange as shown in Figures 3 & 4. Secure with a nut and screw as each hole is drilled.

Remove the Mechanical Fuel Gauge from the top tank skin and deburr the holes.

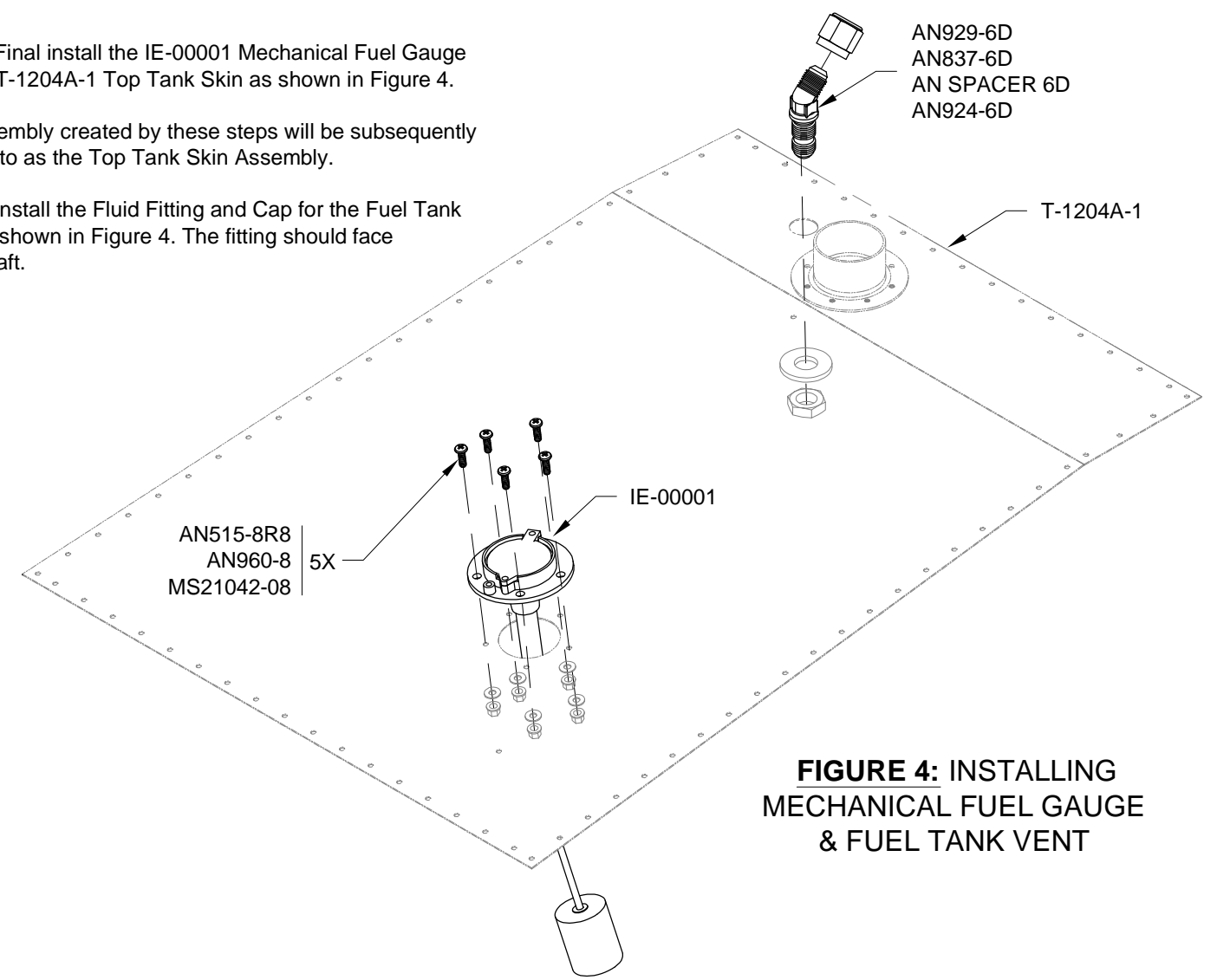


**FIGURE 3: MECHANICAL FUEL GAUGE ORIENTATION**

**Step 4:** Final install the IE-00001 Mechanical Fuel Gauge into the T-1204A-1 Top Tank Skin as shown in Figure 4.

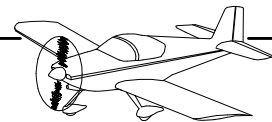
The assembly created by these steps will be subsequently referred to as the Top Tank Skin Assembly.

**Step 5:** Install the Fluid Fitting and Cap for the Fuel Tank Vent as shown in Figure 4. The fitting should face straight aft.



**FIGURE 4: INSTALLING MECHANICAL FUEL GAUGE & FUEL TANK VENT**





**Step 1:** Cleco the Top Tank Skin to the Fuel Tank Assembly. See Fig. 1.

Temporarily bolt the Fuel Tank Assembly to the Center Section Assembly and F-1207J Attach Angle using the hardware call-outs in Figure 1.

**Step 2:** Use two hose clamps and the T-1212 Fuel Neck Collar to join the T-1211 Fuel Neck and Top Tank Skin Assembly together as shown in Figure 1.

Center the fuel neck on the skin fuel opening as shown in Figure 1. For the best fit of the fuel neck (between the Fuel Tank Assembly and the F-1277-R Fwd Turtle Deck Skin) it may be necessary to adjust the length by loosening the hose clamps and extending or shortening the assembly.

Bend the upper flange of the fuel neck as required for a best fit against the fwd turtle deck skin (small gaps can be filled with fuel tank sealant).

**Step 3:** Once satisfied with the fit and position of the T-1211 Fuel Neck, match-drill #30 the holes in the F-1277-R Fwd Turtle Deck Skin into the flange of the fuel neck, cleco as you go. Remove the fuel neck and deburr holes.

**Step 4:** Remove the fuel tank from the fuselage. Remove the Top Tank Skin Assembly from the Fuel Tank Assembly.

**Step 5:** Use screws to temporarily attach the nutplates to the bottom side of the T-1211 Fuel Neck as shown in Fig. 1.

**Step 6:** Match Drill #40 the nutplate holes into the T-1211 Fuel Neck as shown in Figure 1. Cleco the nutplates as the holes are drilled. Remove the nutplates.

**Step 7:** Machine countersink the screw holes in the upper side of the T-1211 Fuel Neck to fit the head of an AN426AD3 rivet.

**Step 8:** Deburr the holes in the T-1211 Fuel Neck and install the nutplates as shown in Figure 1.

**Step 9:** Check to be thoroughly sure that no chips or construction debris remain in the Fuel Tank Assembly.

**Step 10:** Fabricate two T-1216 Clips per Figure 2.

**NOTE: Cleco the Top Tank Skin Assembly to the Fuel Tank Assembly for reference.**

**Step 11:** Fabricate the T-1215 Fuel Return Line using a 34 1/4 inch length of AT0-032X1/4 soft aluminum tube. Install a nut and sleeve on one end of the fuel return line and flare that end.

From the bulkhead fitting, route the fuel return line up to the Top Tank Skin Assembly, then aft (near the rivet holes for the T-1216 Clips), then the remainder up through the fuel tank opening.

Capture the fuel return line with the clips and rivet the clips to the skin per the call-out in Figure 1.

**Step 12:** Rivet the Top Tank Skin Assembly to the Fuel Tank Assembly per the call-out in Figure 1. Install the T-1215 Fuel return line to the AN832-4D bulkhead fitting.

**NOTE: After setting rivets, there may be small "chads" or balls of fuel tank sealant present inside the tank on the shop heads of the rivets. Remove these after the sealant has cured.**

**Do not re-torque screws after sealant cures.**

**Step 13:** Add sealant in any remaining areas, corners cracks and crannies as necessary.

Install the T-1209 Res Sender Plate and IE F-385B Sending Unit with sealant using the hardware called out on Page 37-05, Figure 3. Use a 1/16 inch thick layer of sealant between the res sender plate and the T-1202 Fwd Tank Bulkhead and in place of the IE F-385 Gasket.

Start a screw into each hole in the res sender plate. Note that a lock washer is installed under the head of one of the screws. This should be free of sealant as much as possible for a good electrical ground connection.

Evenly and progressively tighten the screws just enough to cause sealant to bulge evenly from underneath the perimeter of the res sender plate.

When finished, there should be a minimum 1/32 layer of sealant between the res sender plate and the fwd tank bulkhead.

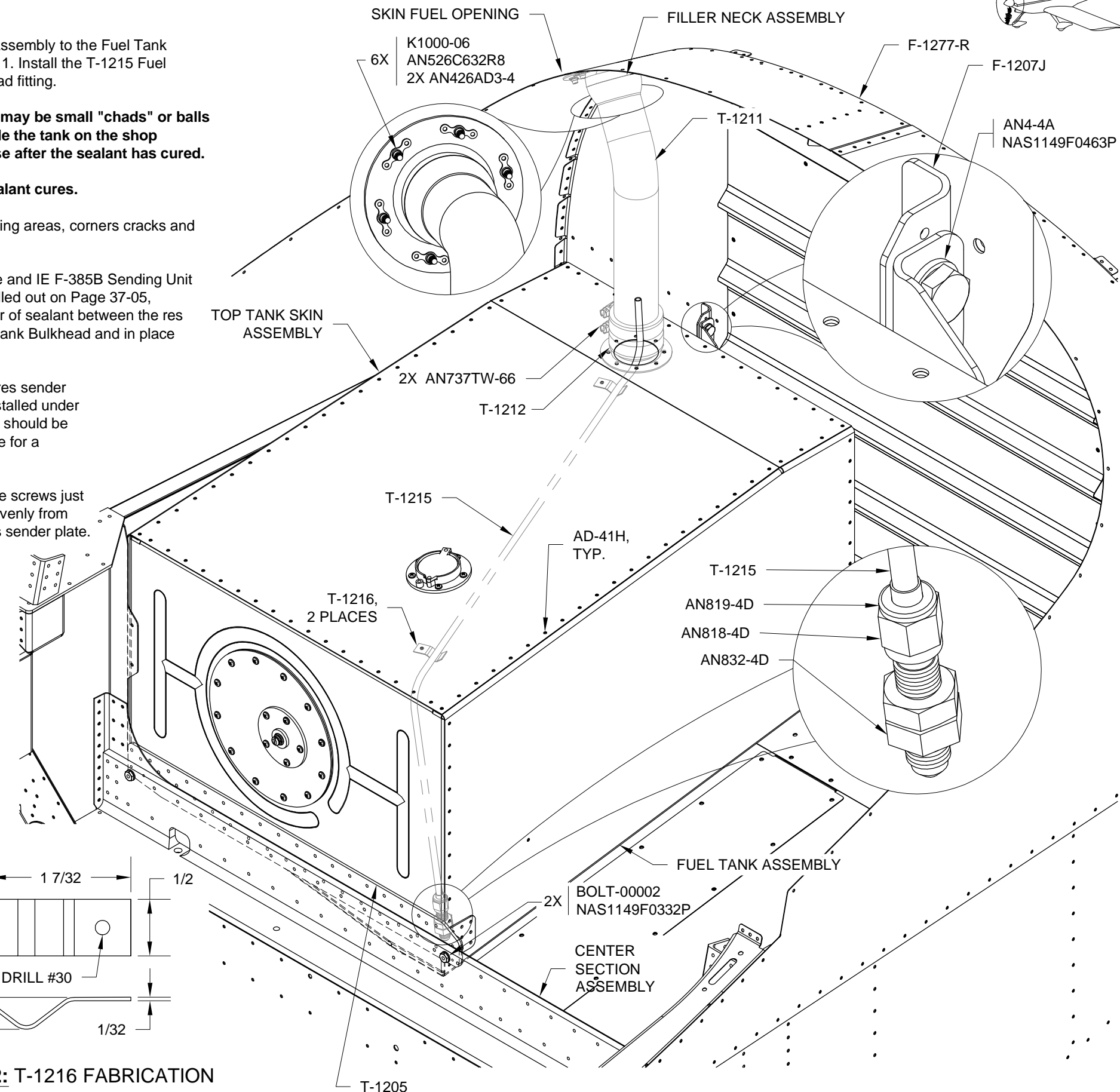
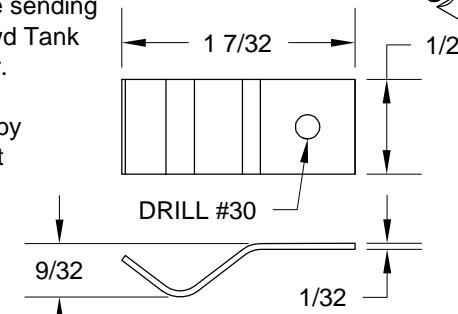
Leaving a thickness of sealant is important; should the res sender plate ever need to be removed it allows sufficient gap for a blade to be inserted between the sender and the bulkhead to cut the bond.

Repeat this process for the sending unit.

Check for continuity between the ground plate on the sending unit and the T-1205 Fwd Tank Brkt using a multimeter.

Check float arm travel by measuring sending unit resistance with the tank positioned as shown and with it inverted. See Page 37-05 Step 3.

**FIGURE 2: T-1216 FABRICATION**



**FIGURE 1: FITTING THE FUEL TANK**



**CAUTION: The tank sealant must be fully cured before leak testing the Fuel Tank Assembly. Use less than 1 psi. DO NOT over pressurize the Fuel Tank Assembly.**

**Step 1:** Temporarily attach the T-1211 Fuel Neck to the Fuel Tank Assembly using the T-1212 Collar and hose clamps. Install the T-406A Fuel Cap. Attach the air valve (from the FUEL TANK TEST KIT) to the AN832-4D bulkhead fitting using the hose clamps and hose called out in Figure 1. Securely attach a balloon (or equivalent) to the VA-261 Fuel Strainer.

**Step 2:** Follow the instructions provided with the Fuel Tank Test Kit to test the Fuel Tank Assembly for leaks. Repair any leaks, then re-test the Fuel Tank Assembly until no leaks are detected.

**Step 3:** Remove the Filler Neck Assembly, the balloon, the hose, the hose clamps and the air valve.

**Step 4:** Rivet the F-01296 Vent Bracket to the aft side of the F-1207C-R Bulkhead as shown in Figure 4.

**Step 5:** Install the Adel Clamp as shown in Figure 4.

**NOTE: Do not bevel the forward edge of the Aft Fuel Tank Vent Line at this time.**

**Step 6:** Fabricate the T-01219B & C Fuel Vent Lines from AT0-035X3/8 Aluminum Tubing as shown on Page 37-11 Figure 1 and Figure 2.

**Step 7:** Fabricate the T-091218A Fuel Vent Air Line and T-091218D & E Fuel Vent Air Line Adapters as shown in Figure 2.

**Step 8:** Assemble the Fuel Vent Air Line as shown in Figure 2.

**Step 9:** Remove the Cap from the Fluid Fitting in the Fuel Tank Assembly. Temporarily install the Fuel Tank Assembly as shown on Page 37-07, Figure 1. Do not install the fuel line or fuel return line at this time.

Install the T-01219C Fuel Vent Line on to the Fuel Tank Assembly and through the F-1207C-R Bulkhead using a snap bushing as shown in Figure 3.

**NOTE: Remove the fuel tank as necessary to complete the following steps.**

**Step 10:** Drill a 1/2 hole and a #30 hole in the F-1282-R Skin using the .098 pilot holes provided. If pilot holes are not present, use the template on Page 37-13, Figure 1.

**Step 11:** Install the blind rivet into the F-1282-R Skin as shown in Figure 3.

**NOTE: Take care not to crush the Air Line in the Plastic Tie Wraps. Do not install the Air Line through the Adel Clamp.**

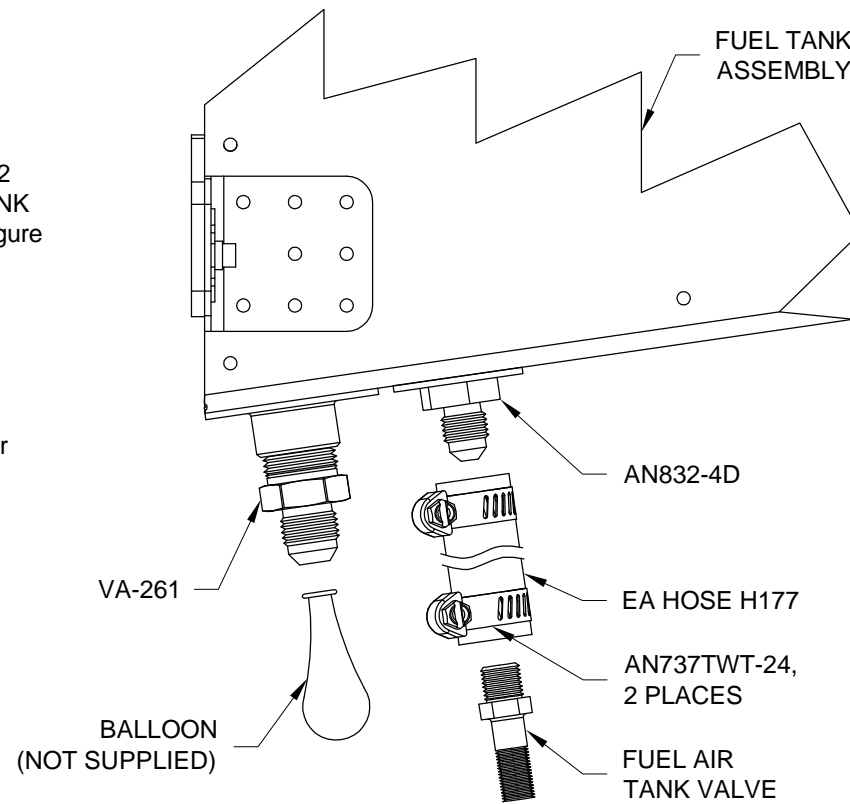
**Step 12:** Install the Fuel Vent Air Line as shown in Figure 3. Refer to 'Installing Static Air System' instructions for guidance on connecting the fuel vent air line to the blind rivet.

**Step 13:** Install the T-01219B Fuel Vent Line and Snap Bushing as shown in Figure 3.

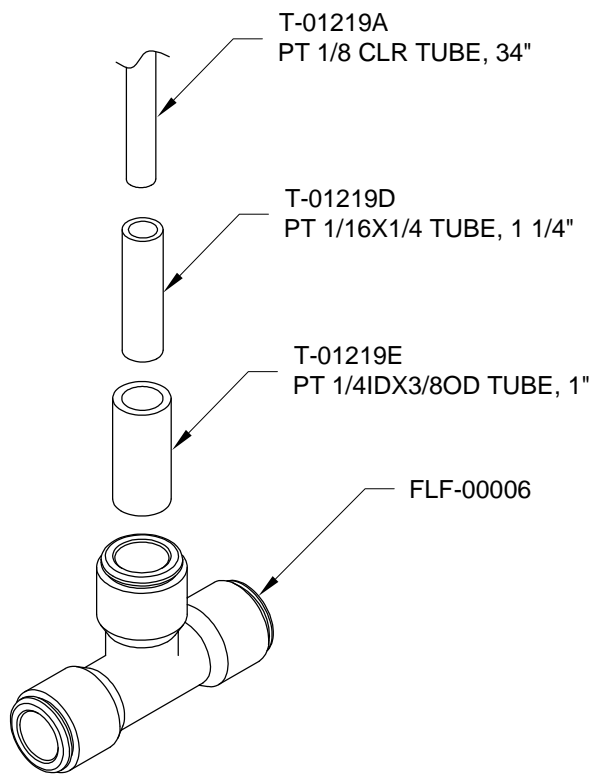
**Step 14:** Mark the Fuel Tank Vent Line approximately 1/4 from the bottom surface of the F-1282-R Skin.

**Step 15:** Remove, then bevel the forward side of the T-01219B Fuel Vent Line as shown on Page 37-11 Figure 1.

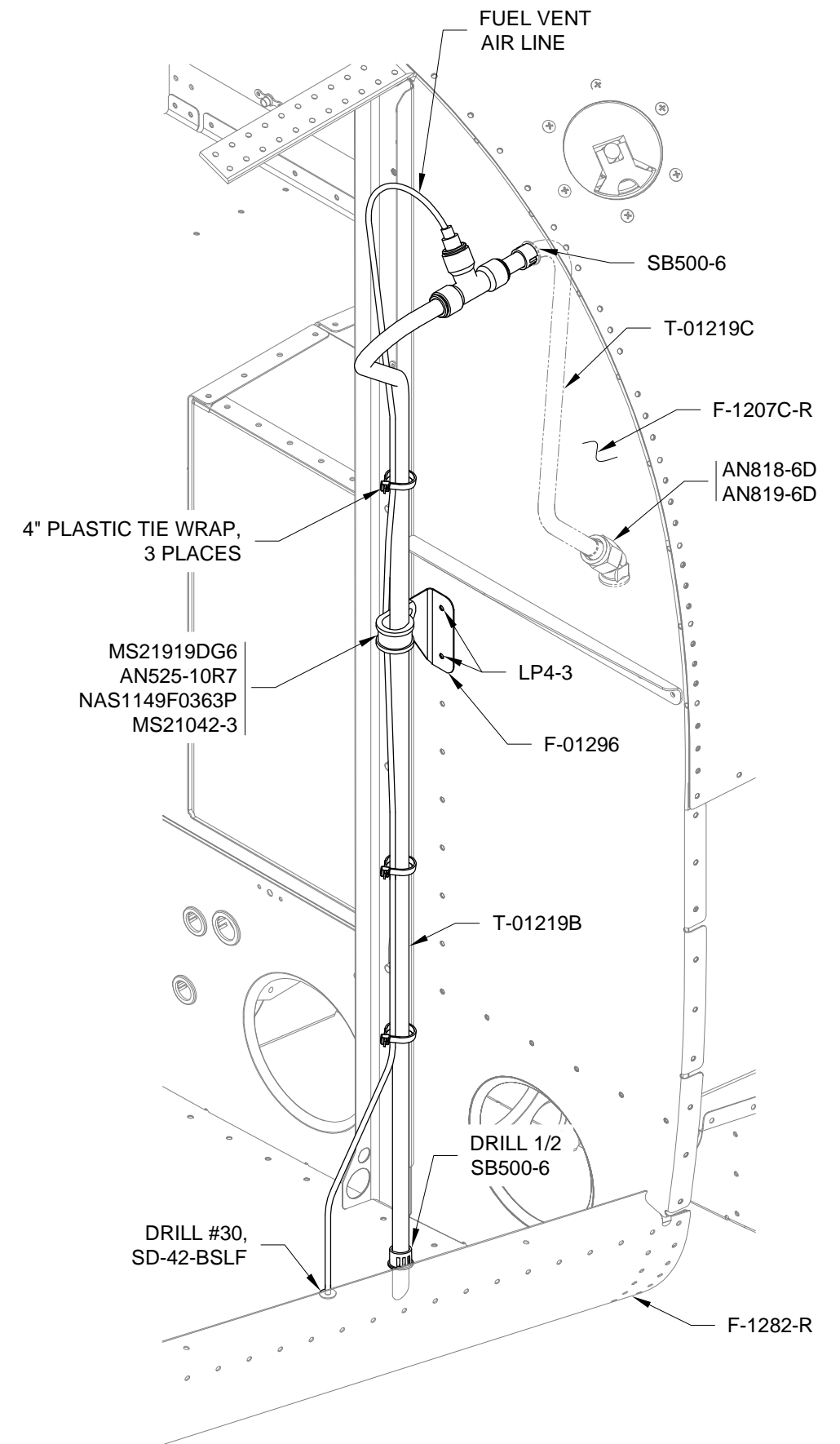
**Step 16:** Reinstall the T-01219B Fuel Vent Line.



**FIGURE 1: LEAK TEST**



**FIGURE 2: FUEL VENT AIR LINE**



**FIGURE 3: FUEL TANK VENT**



Step 1: Reinstall the Fuel Tank Assembly, connect the fuel line and fuel return line as shown on Page 37-07, Figure 1. Slide the T-1212 Fuel Neck Collar onto the T-1211 Fuel Neck Flange. Apply a sparing amount of release agent (oil, Boelube, or similar) on the inside surface of the F-1277-R Fwd Turtle Deck Skin where the fuel neck flange will attach. Smear fuel tank sealant on the face of the fuel neck flange that will abut the fwd turtle deck skin. Fasten the fuel neck to the fwd turtle deck skin using hardware called out in Figure 1. Avoid distorting the fwd turtle deck skin by tightening fasteners only enough to cause sealant to bulge evenly from underneath the perimeter of the fuel neck flange. Slide the fuel neck collar down and clamp it to the fuel neck flange and T-1204B Flange. Allow the sealant to fully cure.

Step 2: Remove excess cured sealant from inside the T-1211 Fuel Neck Flange. Stuff a rag into the fuel neck flange. Trim away cured sealant from the perimeter of the fuel opening in the F-1277-R Fwd Turtle Deck Skin. Then remove rag and trimmed sealant.

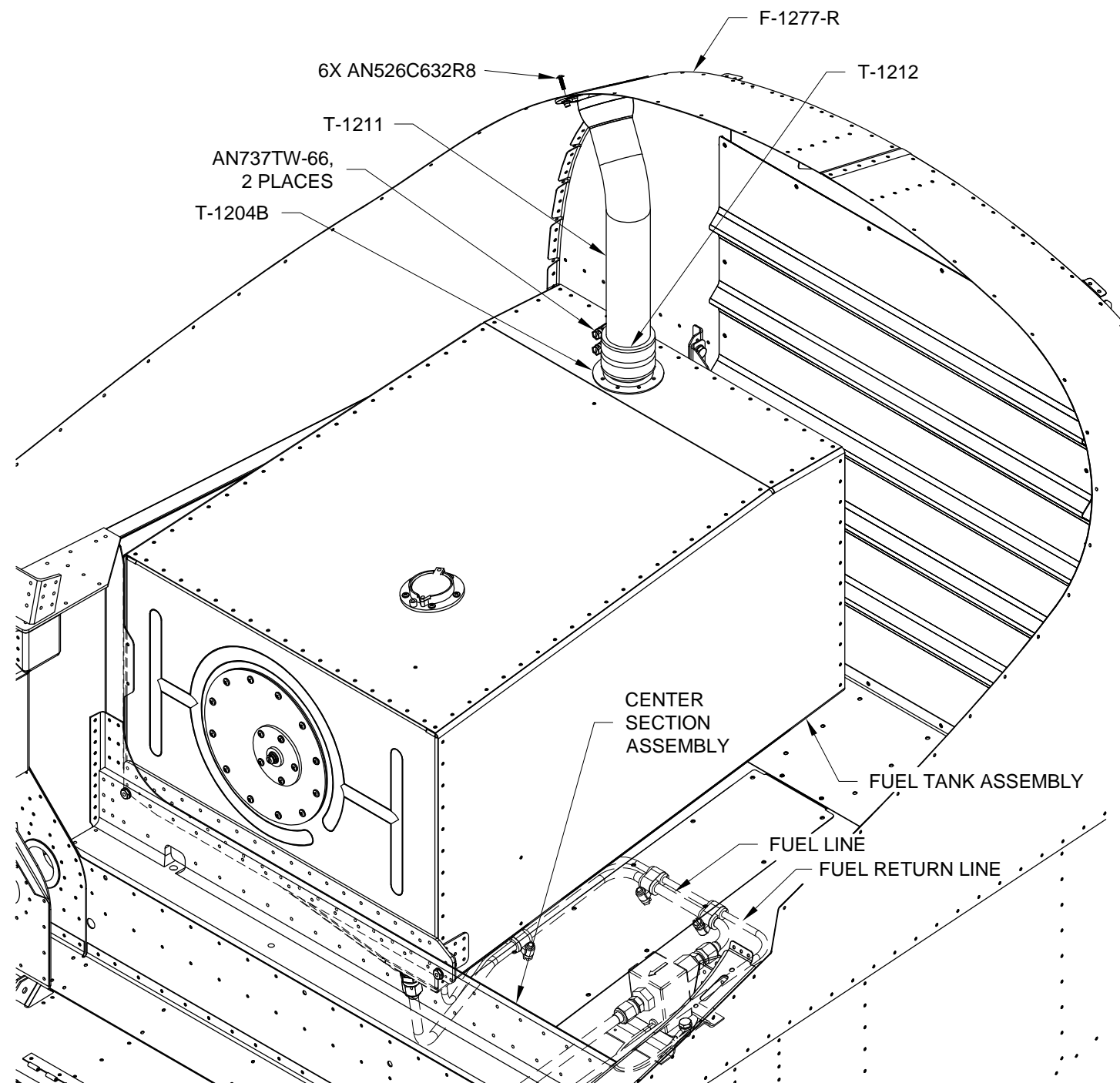


FIGURE 1: INSTALLING THE FUEL TANK

Step 3: Install the WH-Q428 (ORN/BRN) Fuel Sender Wire to the IE F-385B Fuel Sender as shown in Figure 2.

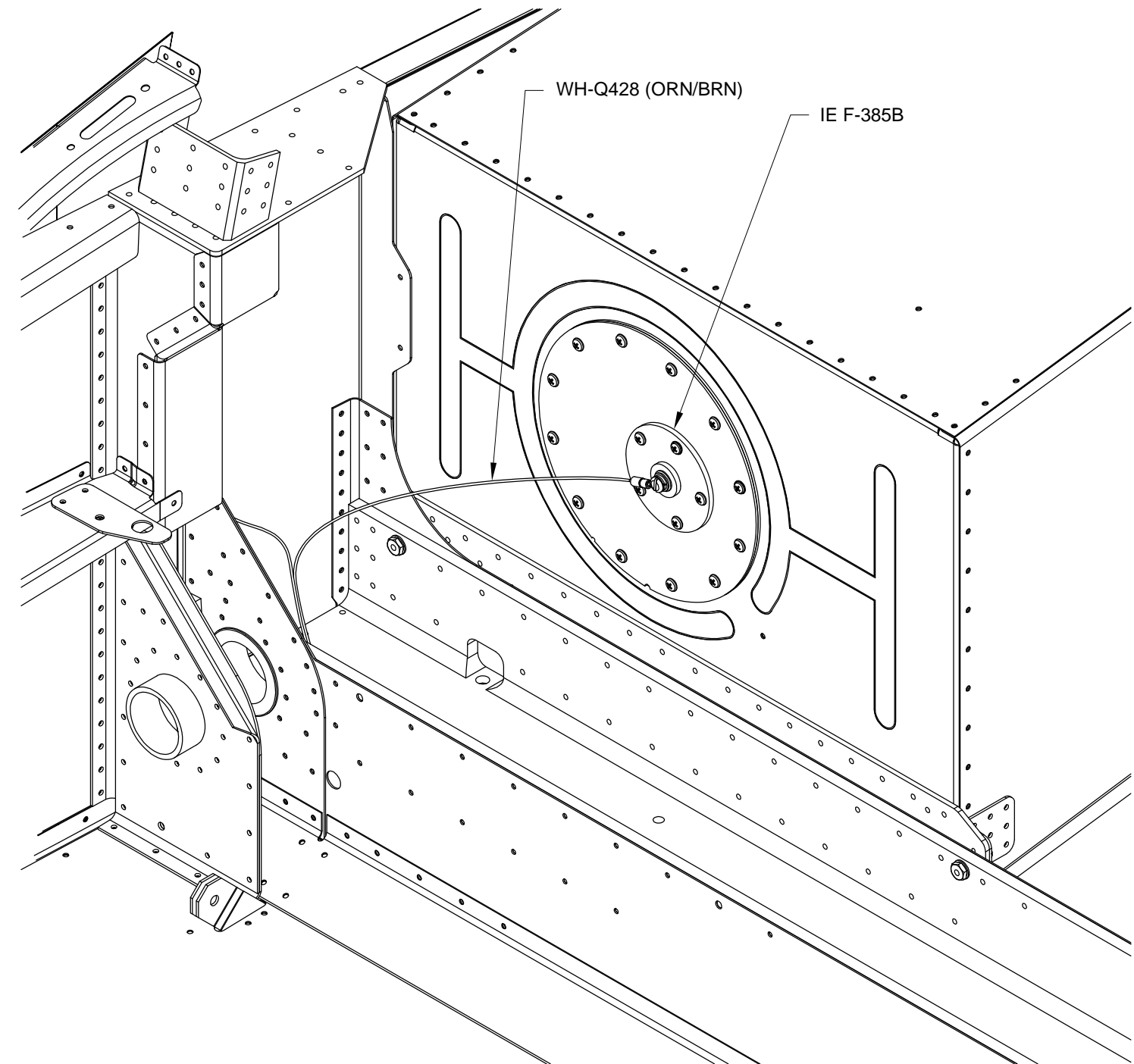
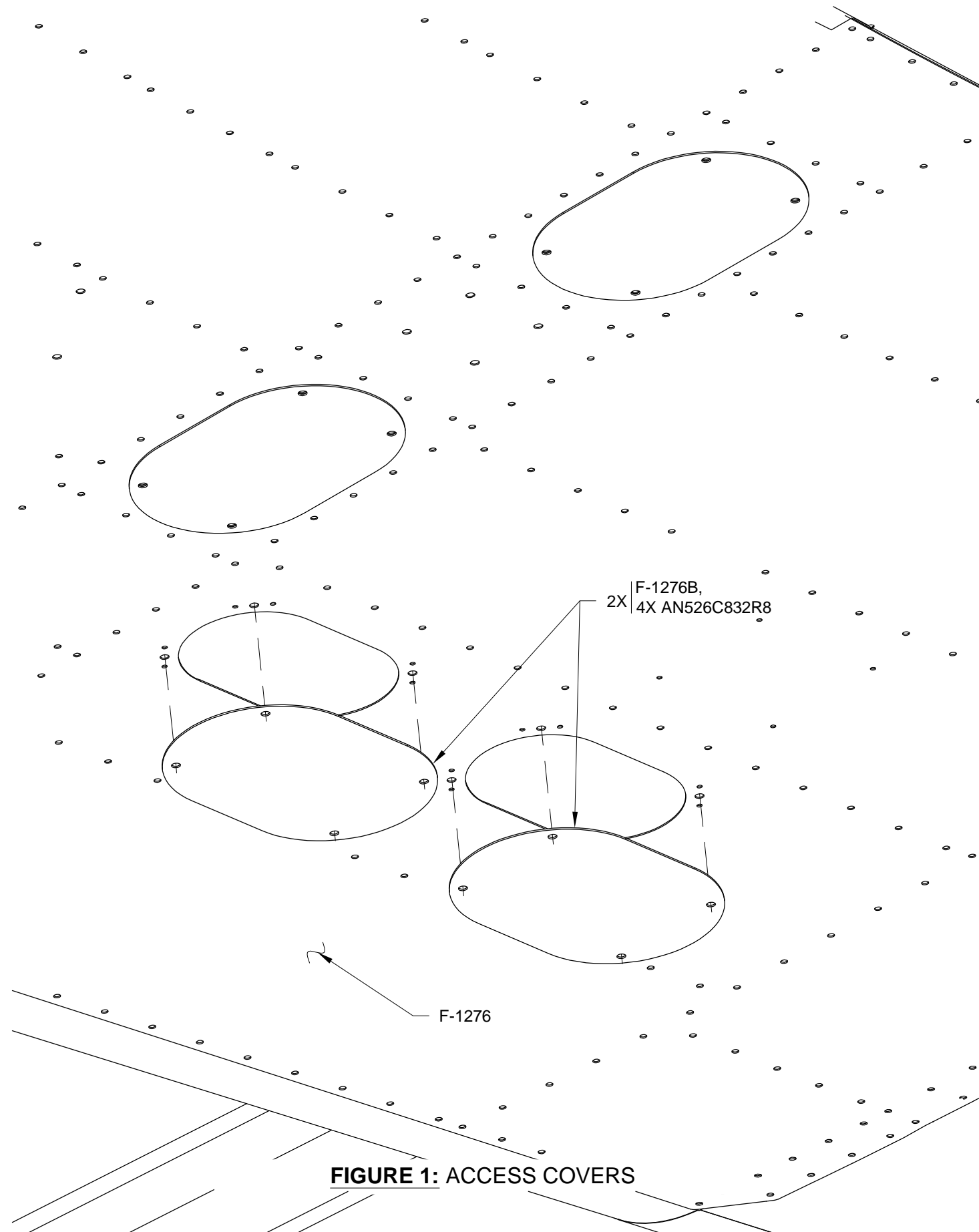


FIGURE 2: FUEL SENDER WIRE INSTALL



Step 1: Install the F-1276B Cover Plates as shown in Figure 1.





NOTE: CHECK PRINTED SCALE 1:1 PER SECTION 3 BEFORE USING TEMPLATE!

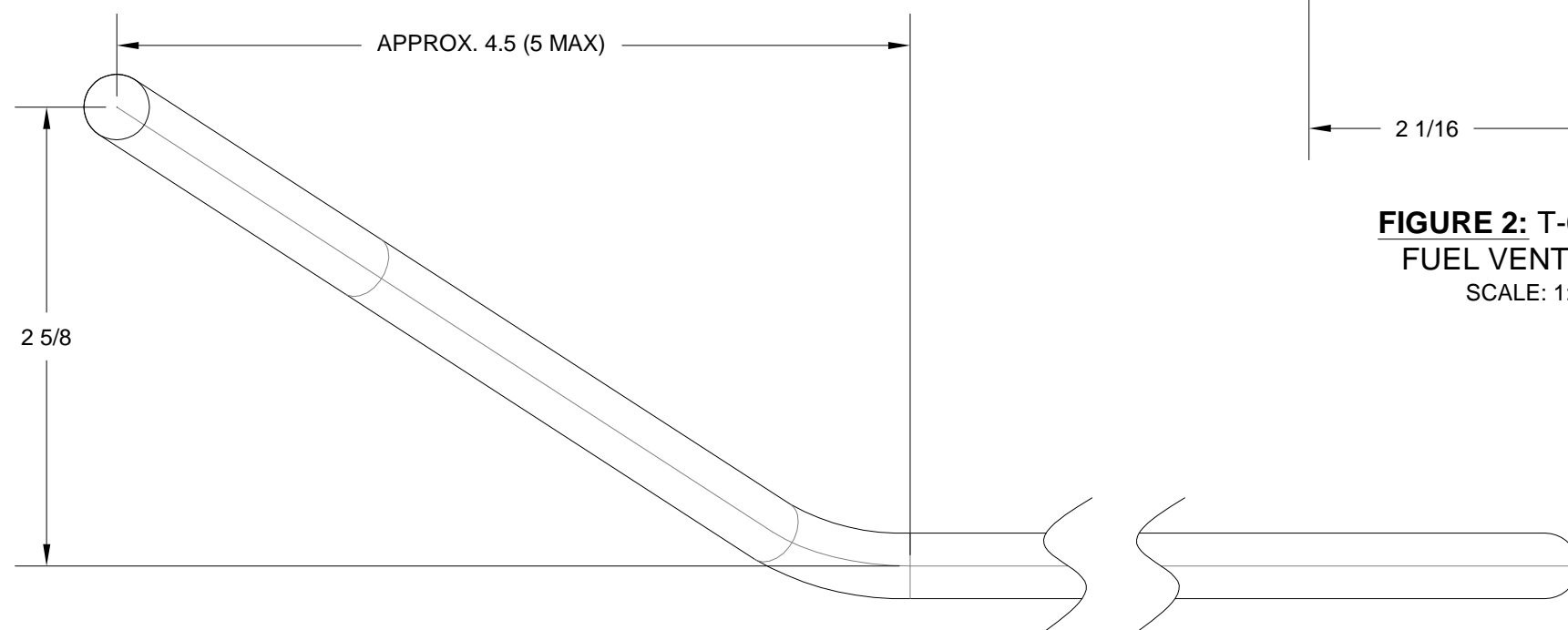


FIGURE 1: T-01219B FUEL VENT LINE  
(VIEW FROM LEFT, ROTATED 90°) SCALE: 1:1

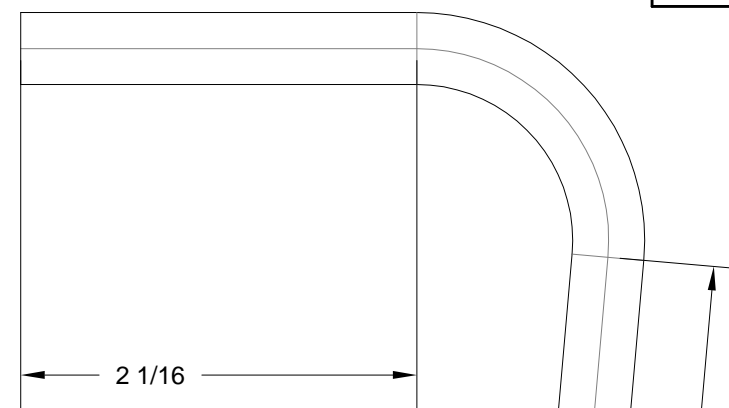
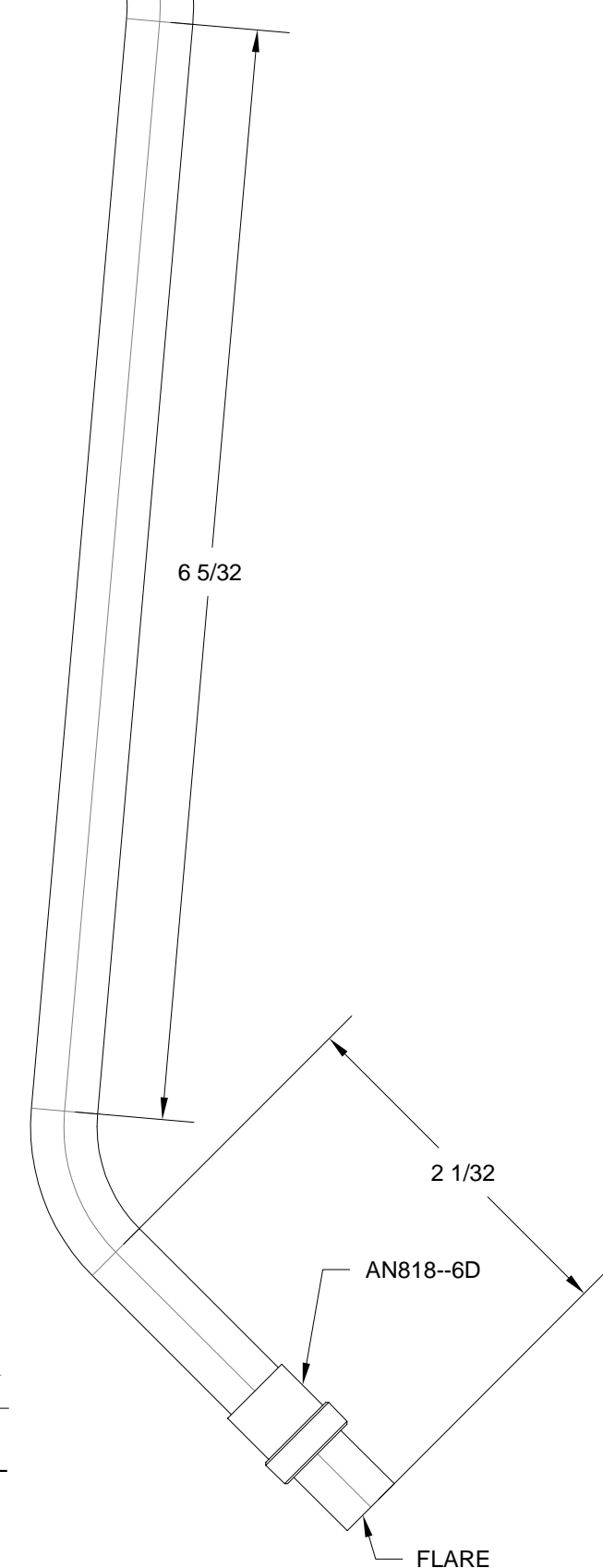
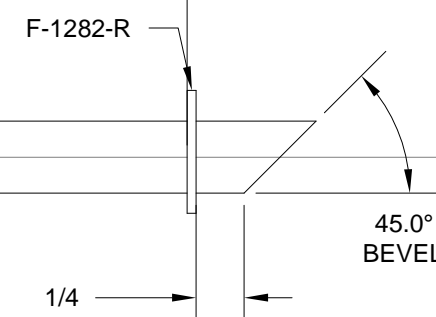
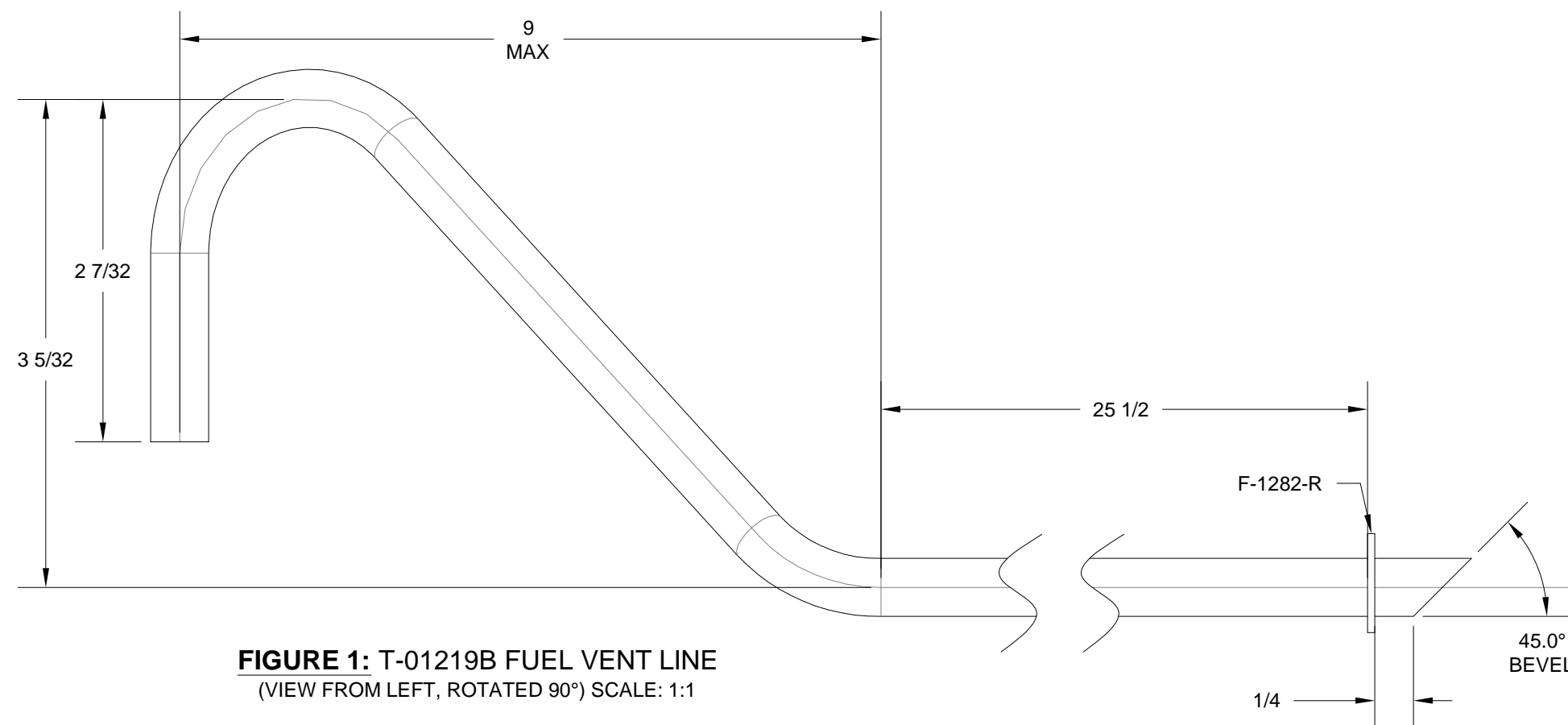
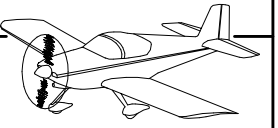


FIGURE 2: T-01219C  
FUEL VENT LINE  
SCALE: 1:1

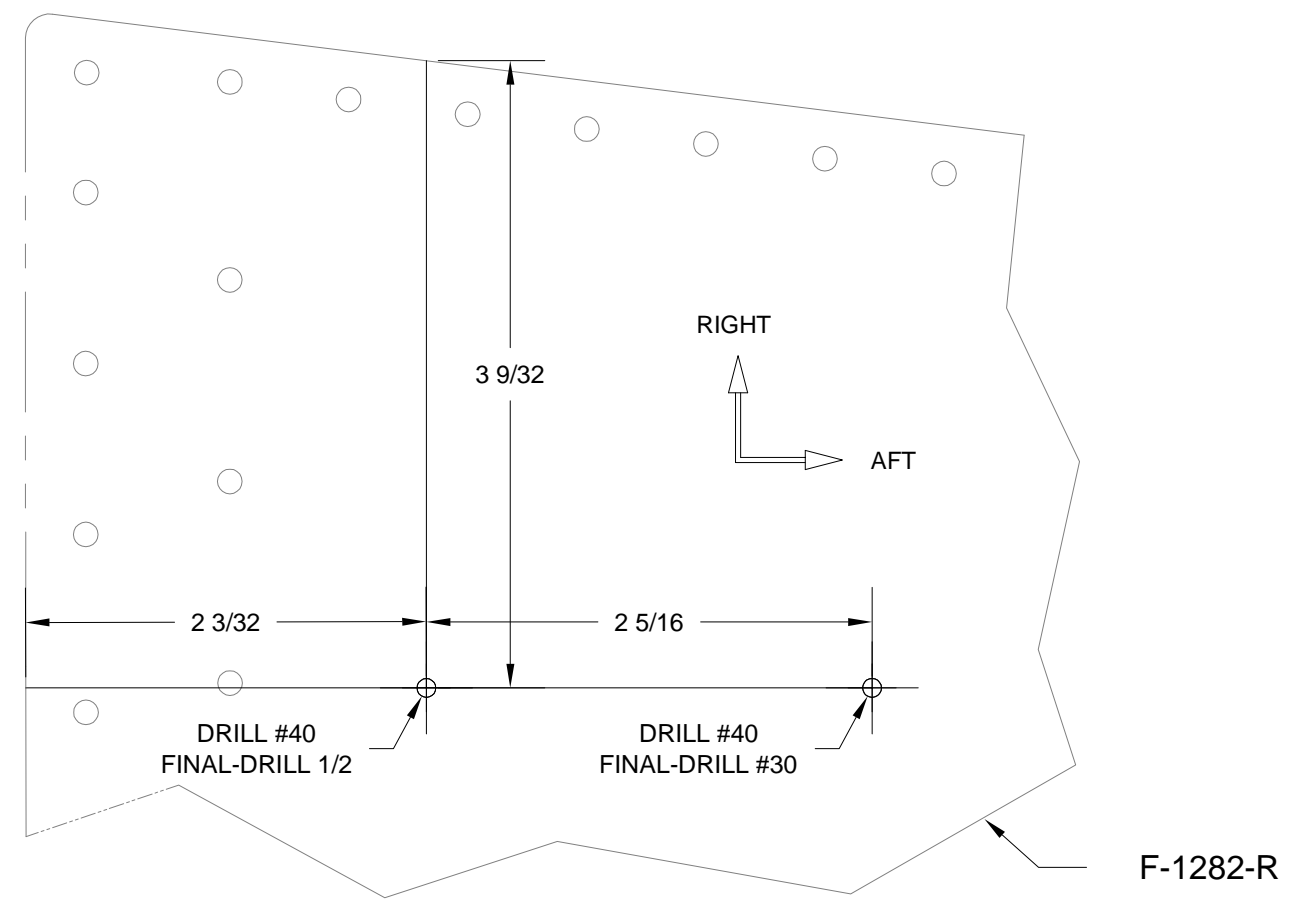




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**FIGURE 1: VENT HOLE LOCATIONS**



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