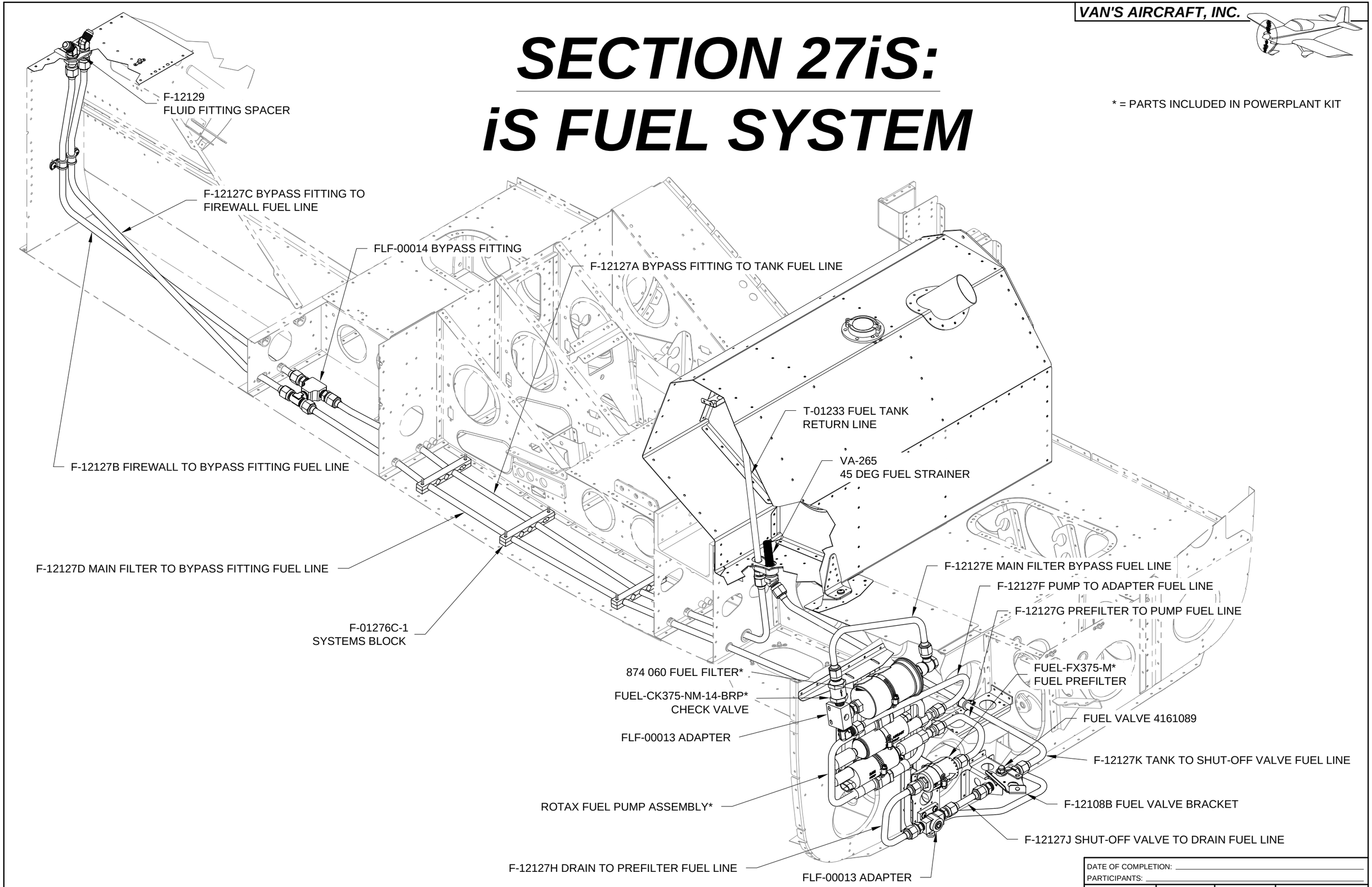
# SECTION 27iS:
# iS FUEL SYSTEM

* = PARTS INCLUDED IN POWERPLANT KIT




DATE OF COMPLETION: _____
PARTICIPANTS: _____

**NOTE: Several components specific to the Rotax 912iS Sport engine fuel system are supplied with the engine and therefore included in the RV-12iS Powerplant Kit. These components are noted throughout this section by ()*. Assembly and installation of these components is included in this section, however the components are not included in the fuselage kit.**

**All fuel lines can be fabricated from templates in this section, however final installation of fuel lines that connect to these components must be performed after receiving the powerplant kit.**

**NOTE: It is good practice to cap or cover open fuel lines to keep out debris and prevent fuel system contamination.**

**NOTE: See Section 5.27 for detailed fluid fitting assembly instructions.**

Step 1: Install the fluid fittings into the FLF-00014 as shown in Figure 1.

Clock fittings in the orientation shown.

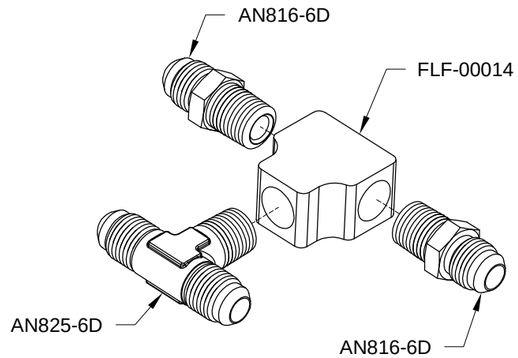



**FIGURE 1:** BYPASS FITTING ASSEMBLY

Step 2: Install the fluid fittings, plug, and CAV-110 into the FLF-00013 as shown in Figure 2.

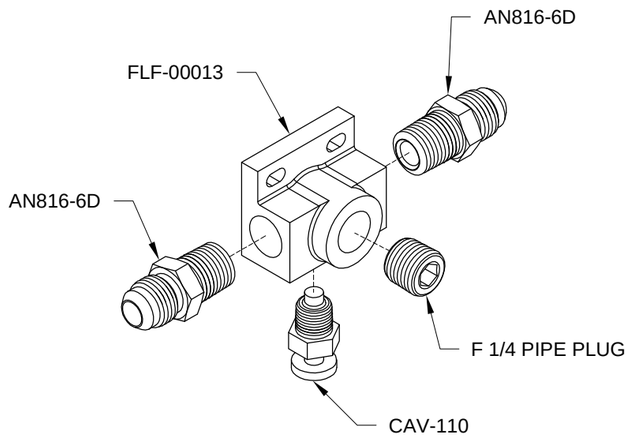



**FIGURE 2:** FUEL DRAIN ASSEMBLY

Step 3: Install the fluid fittings, F-12129, and hardware onto the F-01201B-1 as shown in Figure 3. Apply sealant between the AN837 Union Bulkhead Fittings and the Firewall.

Clock fittings in the orientation shown.

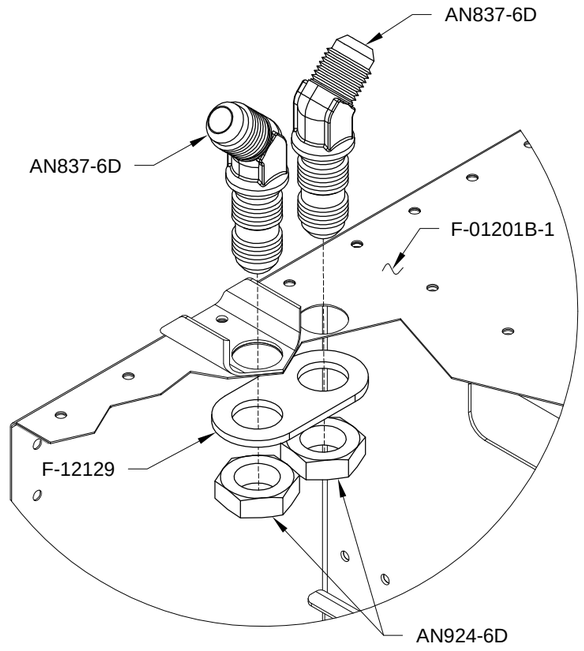



**FIGURE 3:** INSTALLING THE FIREWALL FLUID FITTINGS

Step 4: Drill 1/4 the Fuel Valve 4161089 handle per the dimensions given in Figure 4.

Step 5: Install the fluid fittings through the F-12108A and into the fuel valve as shown in Figure 5.

Step 6: Rivet the F-12108B per the call-outs in Figure 5.

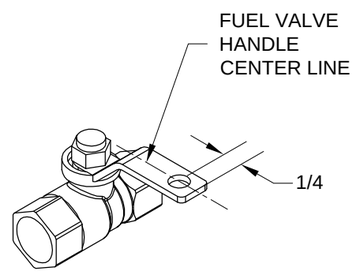



**FIGURE 4:** DRILLING THE FUEL VALVE 4161089 HANDLE

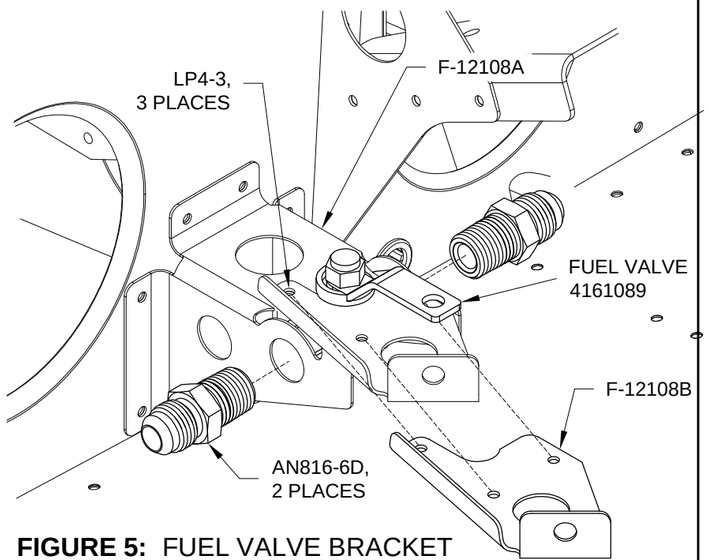



**FIGURE 5:** FUEL VALVE BRACKET ASSEMBLY

**NOTE: This page refers to components provided in the powerplant kit, denoted by ()*.**

Step 1: Open the housing of the 889 696 FUEL PUMP ASSY, UNF*. The Fuel Pump Assembly will look like Figure 1. Remove the Fuel Pump Assembly from the housing by removing the two clamps shown in Figure 1.

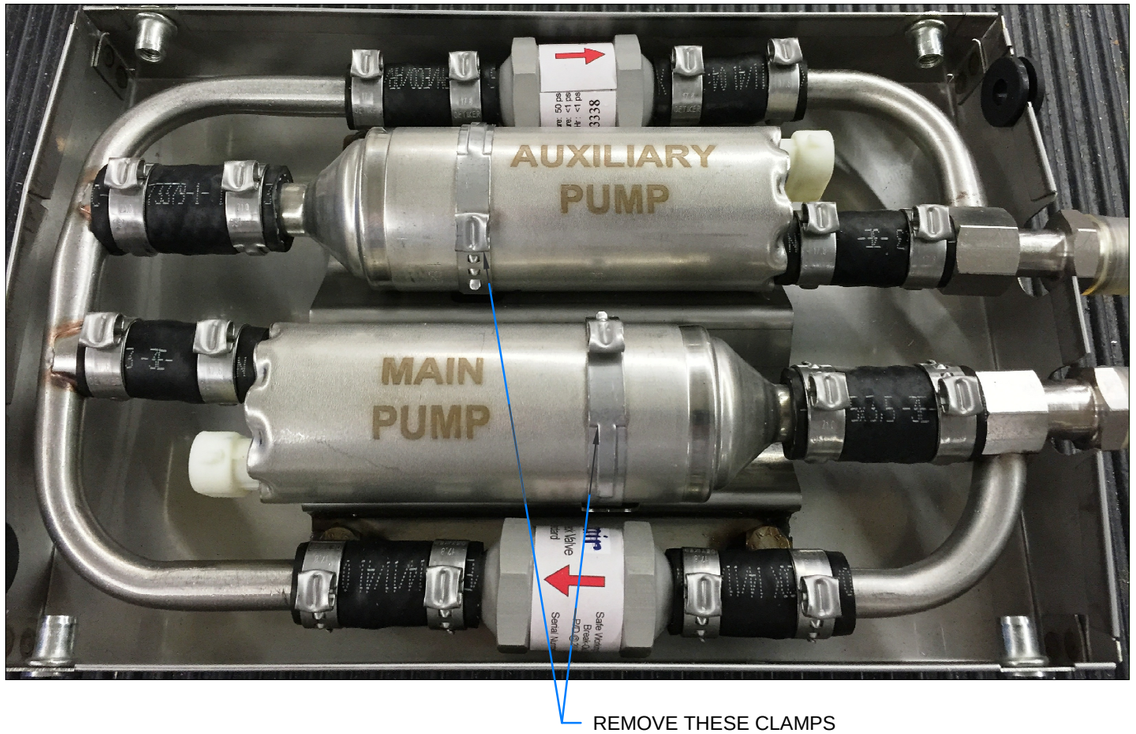



**FIGURE 1:** FUEL PUMP ASSEMBLY

**NOTE: Do not apply thread sealant to the FLF-00020 Banjo Bolt.**

Step 2: Assemble the 874 060*, FLF-00024*, FLF-00019*, FLF-00020* as shown in Figure 2.

Do not tighten the FLF-00020 at this time. It will be tightened in a subsequent step, after connecting to fuel lines.

Step 3: Assemble the fuel filter assembly, FLF-0021, and FLF-00022 as shown in Figure 2. Ensure that the FLF-00022 is centered on the FLF-00021, then torque the FLF-00021 to 40 in-lb.

**NOTE: See Section 5.27 for detailed fluid fitting assembly instructions.**

Step 4: Assemble the fuel filter assembly, fluid fitting, FUEL-CK375-NM-14-BRP* (check the flow direction), and FLF-00013 as shown in Figure 2. Clock the elbow as shown.

Temporarily cover the transducer port with tape as shown to keep out debris. The transducer will be installed with the electrical system.

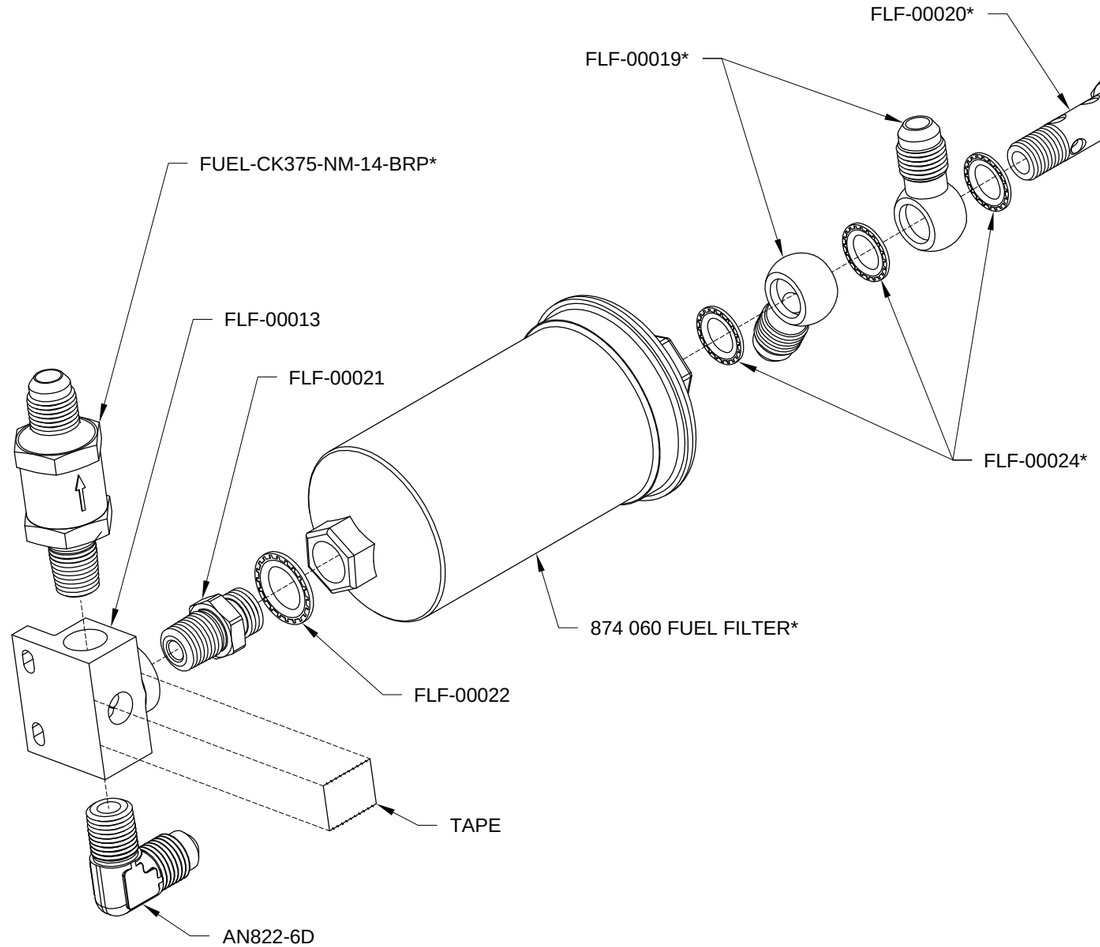



**FIGURE 2:** MAIN FUEL FILTER ASSEMBLY

**NOTE: The tubing dimensions given in this section include a 0.100 in. [2.5 mm] extension for each flare and assume a 1 in. radius to the centerline of the bend. See Figure 1.**

**NOTE: See Section 5.14 for important information on the process to fabricate fluid lines.**

Step 1 (Builder Assembled Fuel Tank): The VA-265 and the T-01233, shown in Figure 3, are installed in Section 26iS/U.

Step 1 (Prefabricated Fuel Tank): Install the VA-265 and the T-01233, shown in Figure 3, as described in Section 26iS/U.

Step 2: To fabricate the F-12127K, straighten and cut off 25 1/4 in. [641.4 mm] of ATO-035X3/8 tubing (unrolling against a flat surface works well).

Step 3: Measure 21/32 in. [16.7 mm] from the tank end of the tube and mark the end of bend line. Measure 1 5/16 in. [33.3 mm] from the tank end of the tube and mark the start of bend line.

Flare the tank end of the tube.

Make the 38° bend by referencing Figure 2, View A-A. Place the nut and sleeve over the opposite end of the tube. Slide the sleeve against the flare.

Step 4: Make the 90° bend going to the valve by referencing Figure 2 and View A-A. Place the nut and sleeve over the valve end of the tube (check that the other nut and sleeve have not fallen off the tube). Flare the valve end of the tube and slide the sleeve against the flare.

Step 5: Install the F-12127K as shown in Figure 3. A small amount of bending/adjustment by hand is acceptable. Place the clamp around the fuel line and attach to the F-01206F-2 as shown in the detail view in Figure 3.

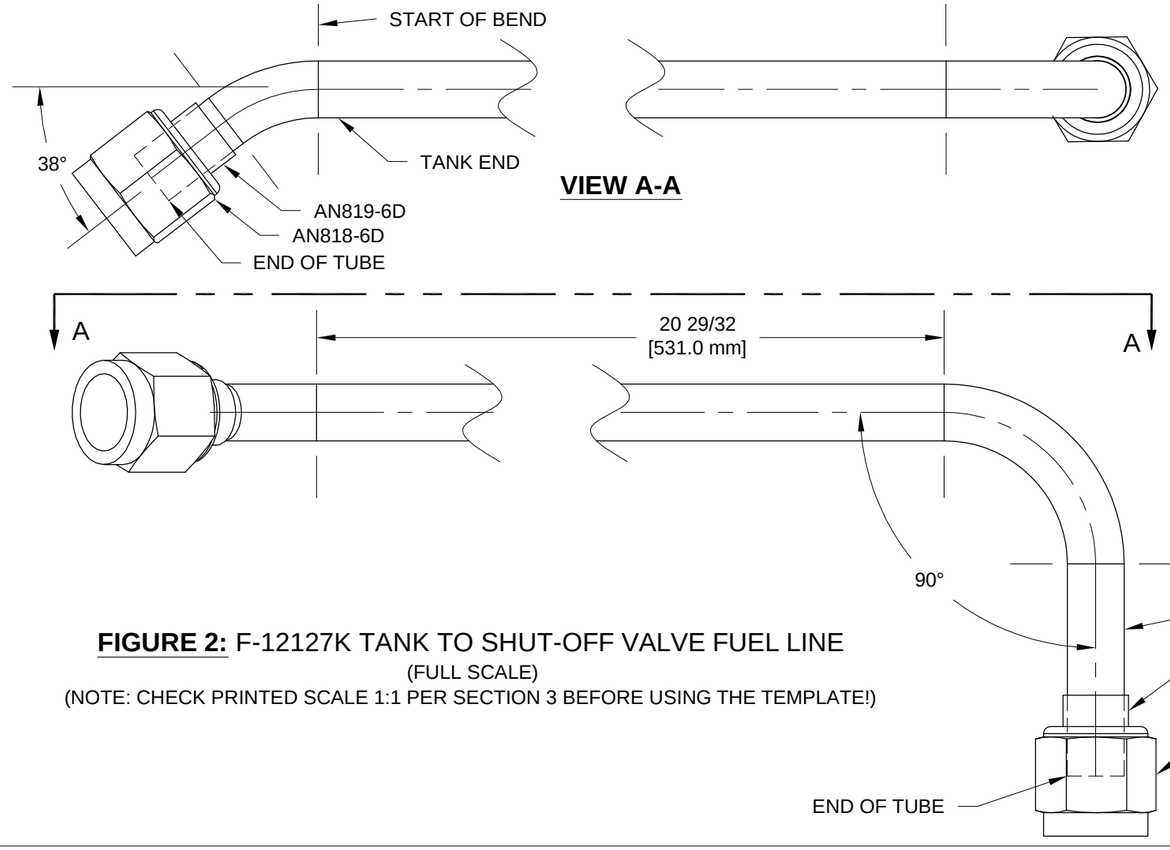



**FIGURE 2:** F-12127K TANK TO SHUT-OFF VALVE FUEL LINE
(FULL SCALE)
(NOTE: CHECK PRINTED SCALE 1:1 PER SECTION 3 BEFORE USING THE TEMPLATE!)

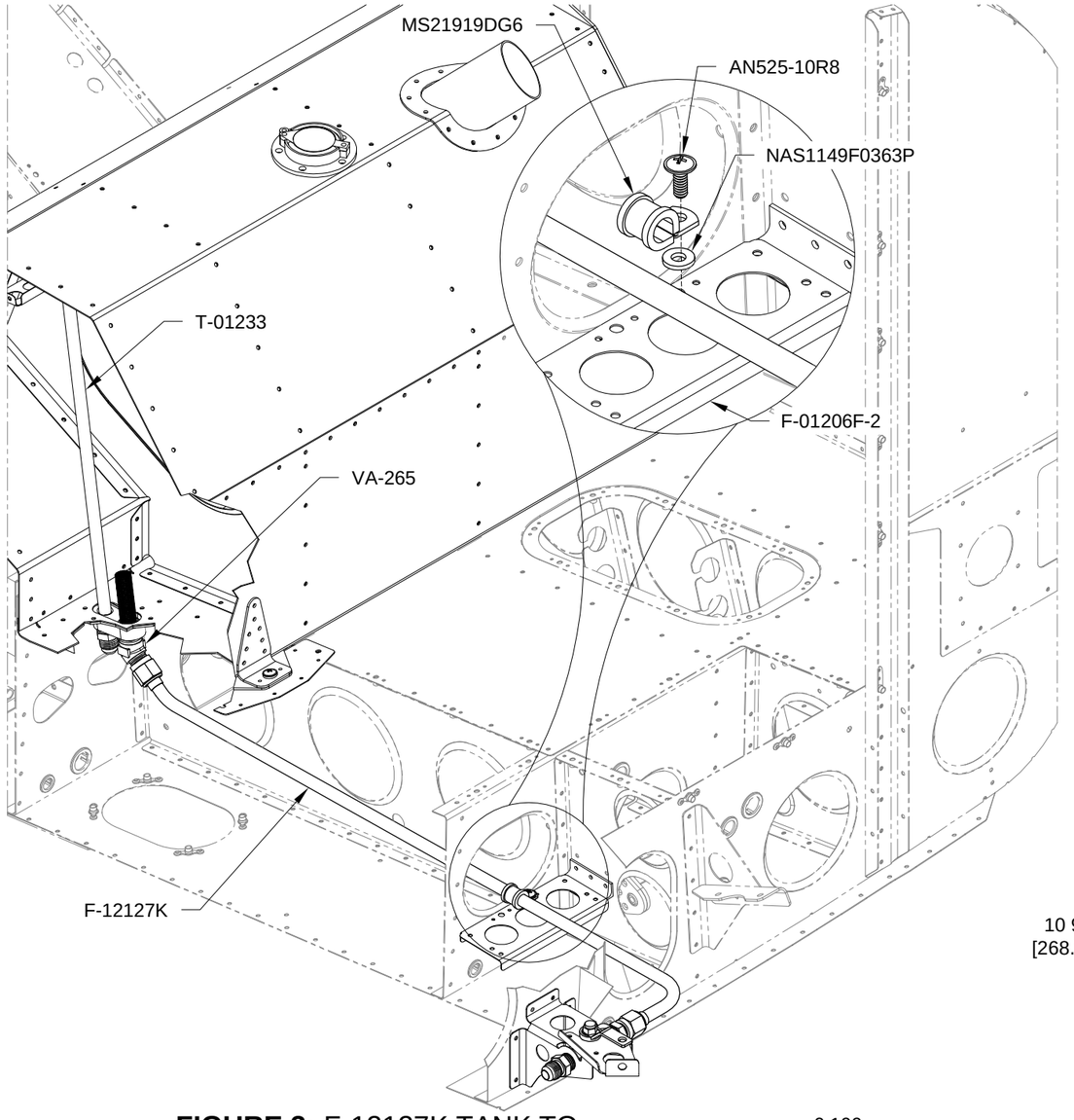



**FIGURE 3:** F-12127K TANK TO SHUT-OFF VALVE FUEL LINE INSTALLATION

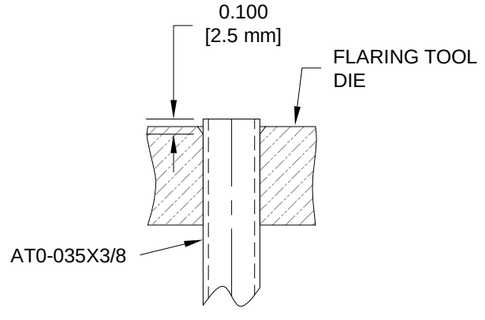



**FIGURE 1:** FLARING TOOL INSERTION

16
[406.4 mm]

**NOTE: See Section 5.14 for important information on the process to fabricate fluid lines.**

**NOTE: When installing fuel lines it is acceptable to bend a large radius curve by hand to ease installation, then restraighten afterwards.**

**NOTE: Check the installed fitting depth of the marked AN816-6D against the nominal dimension as shown in Figure 3. If the installed fitting depth is more than .063 in. [1.6 mm] different than the nominal dimension shown, adjust the length in Step 1 accordingly. Temporarily mark the fitting that was measured for installation reference.**

Step 1: Straighten 30 9/32in. [769.1 mm] of ATO-035X3/8 tubing. Fabricate the F-12127B by starting at the firewall end. Make the two shallow bends and the 82° bend by referencing Figure 2.

Step 2: Place the nut then the sleeve called out in Figure 2 over the firewall end of the tubing. Flare the end of the tube. Slide the sleeve up against the flare.

Step 3: Feed the bypass end of the tube through the snap bushing shown in Figure 1 and slide the tube aft. Place the nut and sleeve over the bypass end of the tube (Check that the other nut and sleeve have not fallen off the tube). Flare the bypass end of the tube.

Step 4: Attach the fuel line to the bulkhead fitting as shown in Figure 1.

Step 5: Attach the fuel line to the firewall with hardware as called out in Figure 1. A small amount of bending/adjustment by hand is acceptable.

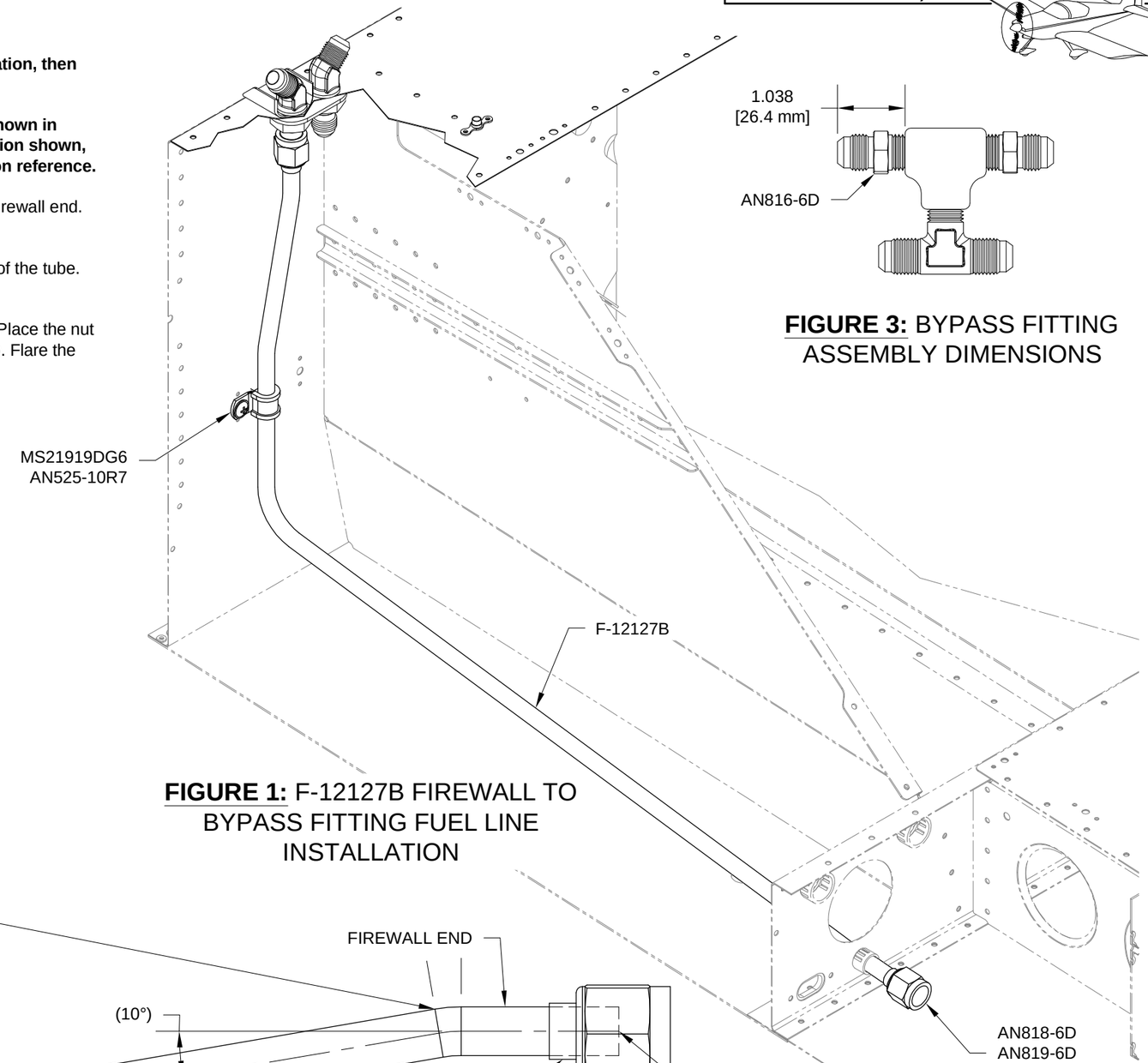



**FIGURE 1:** F-12127B FIREWALL TO BYPASS FITTING FUEL LINE INSTALLATION




**FIGURE 3:** BYPASS FITTING ASSEMBLY DIMENSIONS

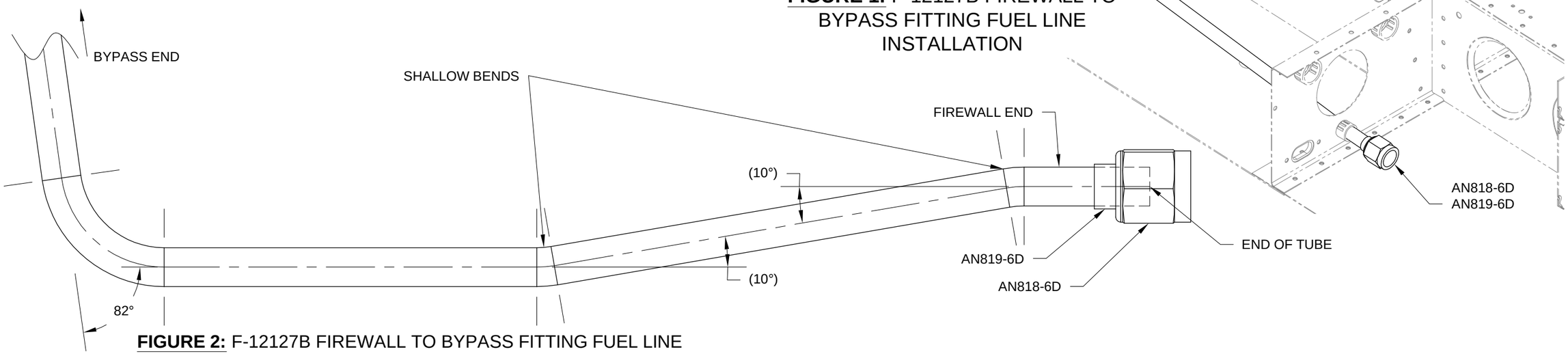



**FIGURE 2:** F-12127B FIREWALL TO BYPASS FITTING FUEL LINE
(FULL SCALE)
(NOTE: CHECK PRINTED SCALE 1:1 PER SECTION 3 BEFORE USING THE TEMPLATE!)

10 9/16
[268.3 mm]

16
[406.4 mm]

Step 1: Straighten 30 1/4 in. [768.4 mm] of ATO-035X3/8 tubing. Fabricate the F-12127C by starting at the firewall end. Make the two shallow bends and the 78° bend by referencing Figure 2 and View A-A.

Step 2: Place the nut then the sleeve called out in Figure 2 over the firewall end of the tubing. Flare the firewall end of the tube. Slide the sleeve up against the flare.

Step 3: Feed the bypass end of the tube through the HW-00014 and slide the tube aft (check that the other nut and sleeve have not fallen off the tube). Place the nut and sleeve over the bypass end of the tube. Flare the bypass end of the tube.

Step 4: Make a small bend in the F-12127C as necessary at the HW-00014 to align the F-12127C and F-12127B with the Bypass Fitting Assembly as shown in Figure 1. Attach the F-12127C and the F-12127B to Bypass Fitting Assembly as shown in Figure 1. Check to make sure the fitting marked for measurement on Page 27iS-05 is connected to the F-12127B.

Step 5: Attach the F-12127C to the bulkhead fitting as shown in Figure 1, then attach to the firewall with hardware as called out in Figure 1. A small amount of bending/adjustment by hand is acceptable.

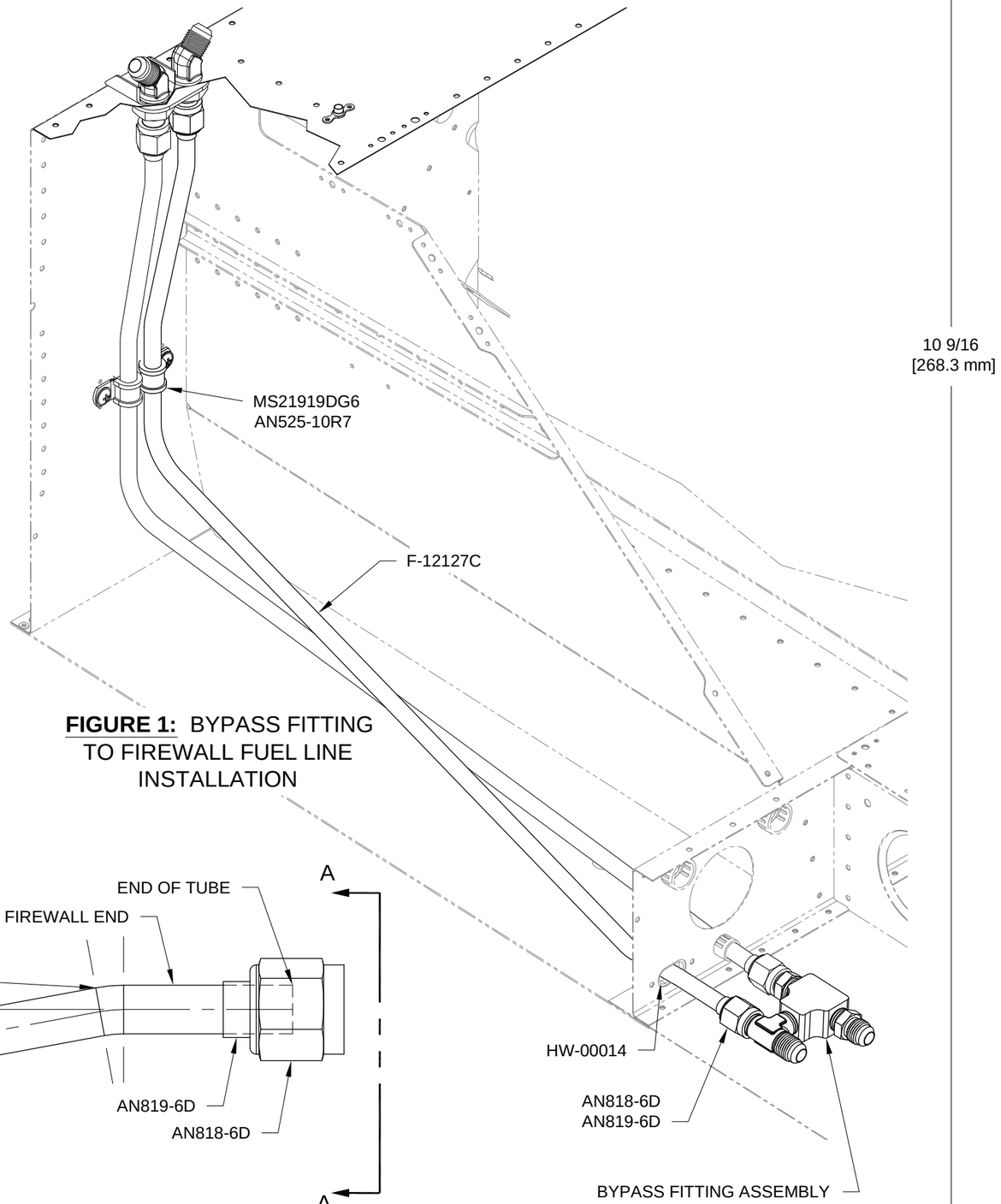
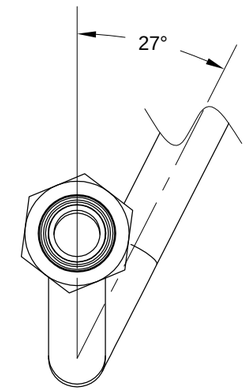



**FIGURE 1:** BYPASS FITTING TO FIREWALL FUEL LINE INSTALLATION




**VIEW A-A**

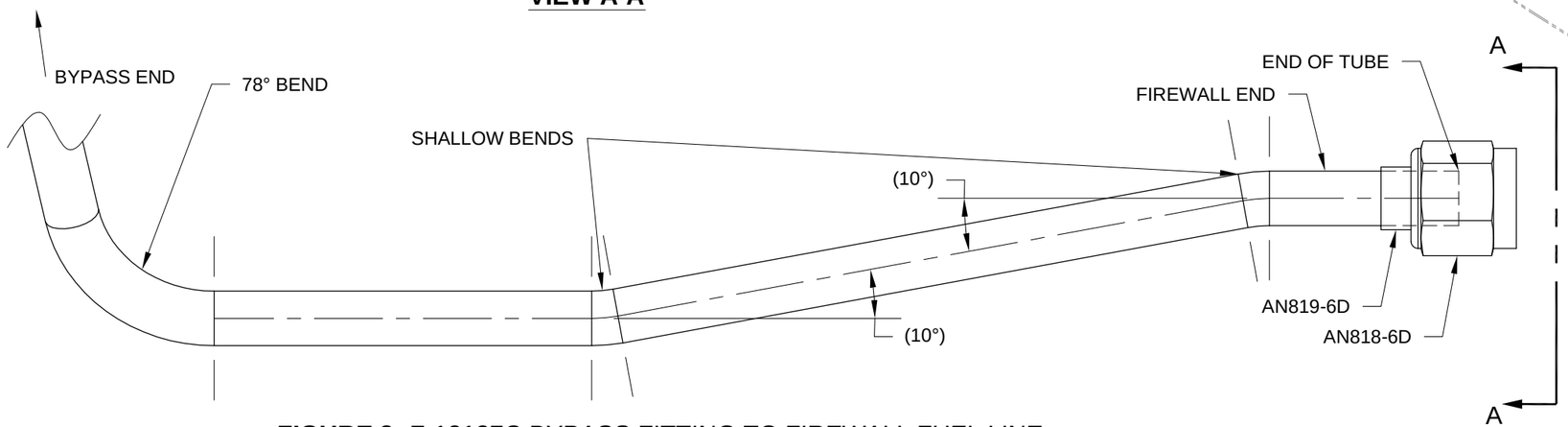



**FIGURE 2:** F-12127C BYPASS FITTING TO FIREWALL FUEL LINE
(FULL SCALE)
(NOTE: CHECK PRINTED SCALE 1:1 PER SECTION 3 BEFORE USING THE TEMPLATE!)

16
[406.4 mm]

Step 1: Final-Drill 5/16 in. [7.9 mm] the holes in three of the F-01276C-1 . Install the drilled F-01276C-1 with the oval recess on the right side, as shown in Figure 1.

**NOTE: Check the installed fitting depth of the FLF-00017 against the nominal dimension as shown in the detail view in Figure 1. If the installed fitting depth is more than .063 in. [1.6 mm] different than the nominal dimension shown, adjust the bend location in Figure 3 accordingly.**

Step 2: Straighten 42 1/2 in. [1079.5 mm] of ATO-035X3/8 tubing. Make the F-12127A starting at the tank end by making the 89° bend as shown in Figure 3.

Step 3: Place the nut then the sleeve called out in Figure 3 over the end of the tubing and then flare the end of the tube.

Step 4: Feed the bypass end of the line forward through the snap bushings shown in Figure 1 to the Bypass Fitting Assembly (check that the nut and sleeve have not fallen off the tube).

Step 5: Temporarily attach the F-12127A to the FLF-00017 as shown in the detail view in Figure 1. Add slight bends at bulkhead locations as required to align the fuel line with the snap bushings and the F-01276C-1 Systems Blocks. Lay the tube in the recesses of the F-01276C-1 as shown in Figure 1. Add a slight curve to follow the curvature of the F-01276-1 Bottom Skin.

Mark the forward end of the F-12127A at the end of the AN816 fitting in the Bypass Fitting Assembly. Add 0.100 in. [2.5 mm] to the measurement from the end of the fitting to account for the flare as shown in Figure 2.

Step 6: Detach the F-12127A from the FLF-00017, slide the tube back, and cut off the excess tube at the mark. Place the nut and sleeve called out in Figure 1 over the bypass end of the tubing and then flare the end of the tube.

Step 7: Attach the F-12127A to the Bypass Fitting Assembly as shown in Figure 1.

Step 8: Reattach the F-12127A to the FLF-00017 as shown in the detail view in Figure 1. A small amount of bending/adjustment by hand is acceptable. Check for clearance at the aft most snap bushing.

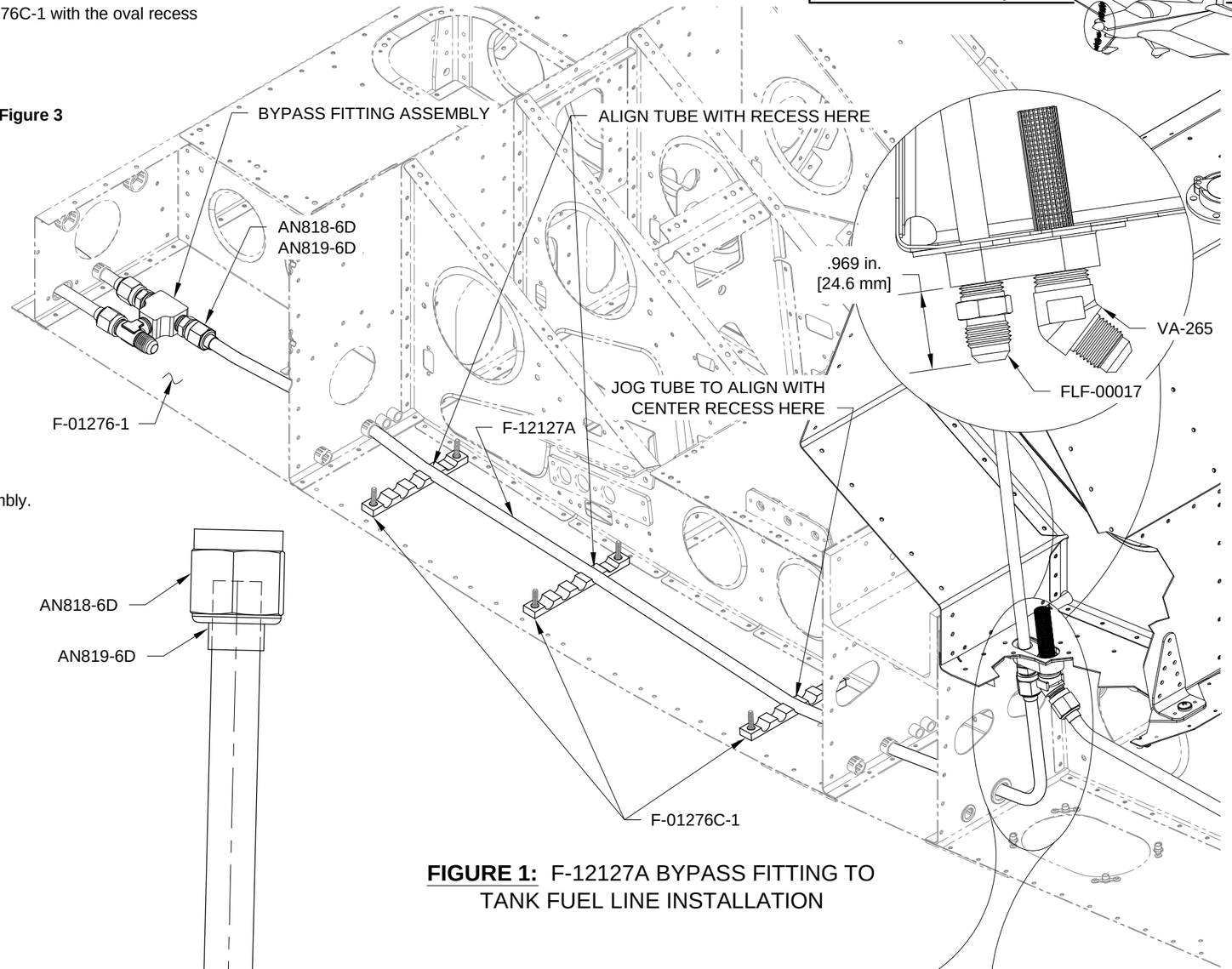



**FIGURE 1:** F-12127A BYPASS FITTING TO TANK FUEL LINE INSTALLATION

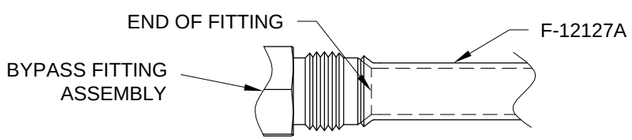



**FIGURE 2:** EXTRA LENGTH FOR FLARE

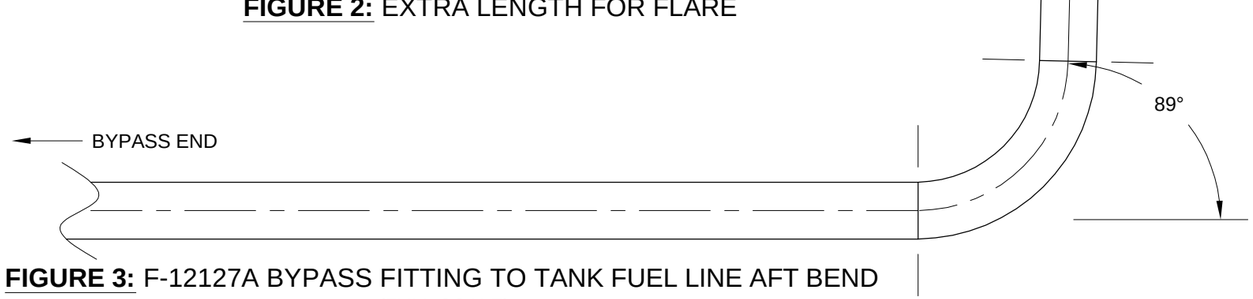
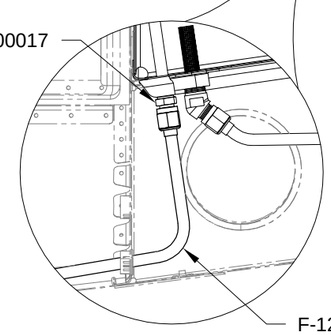



**FIGURE 3:** F-12127A BYPASS FITTING TO TANK FUEL LINE AFT BEND
(FULL SCALE)
(NOTE: CHECK PRINTED SCALE 1:1 PER SECTION 3 BEFORE USING THE TEMPLATE!)




16
[406.4 mm]

Step 1: Straighten 84 27/32 in. [2155.0 mm] of ATO-035X3/8 tube. Make the F-12127D starting at the filter end by making the 25° bend as shown in Figure 2. Place the nut and then sleeve over aft end of tubing. Flare the filter end of the tube. Slide the nut and sleeve against the flare.

Step 2: Place the tubing over Figure 2 and mark the start of the 88.2° bend. Make the 88.2° bend as shown in View A-A and on Page 27iS-09, Figure 1 (check that the nut and sleeve have not fallen off the tube).

Step 3: Make the 37°, 45°, and 90° bends referencing Page 27iS-09, Figure 2. Place the bent tubing over the template and mark the snap bushing location on the tube for reference.

Step 4: Feed the fuel line forward through the snap bushings to the Bypass Fitting Assembly. Place the nut and sleeve over the forward end of the tube. Flare the forward end of the tube.

Step 5: Attach the F-12127D to the Bypass Fitting Assembly as shown in Figure 1. A small amount of bending/adjustment by hand is acceptable.

Add slight bends at bulkhead locations as necessary to align the fuel line with the snap bushings and F-01276C-1 Systems Blocks. Lay the tube into the left recess in the F-01276C-1 adding a slight curve to follow the curvature of the F-01276-1. Ensure F-12127D has a minimum of 1/2 in. [12.7 mm] clearance to the F-12108A while seated in the F-01276C-1.

Step 6: Attach the F-12127D to the F-01207D-L-1 with hardware called out in Figure 1.

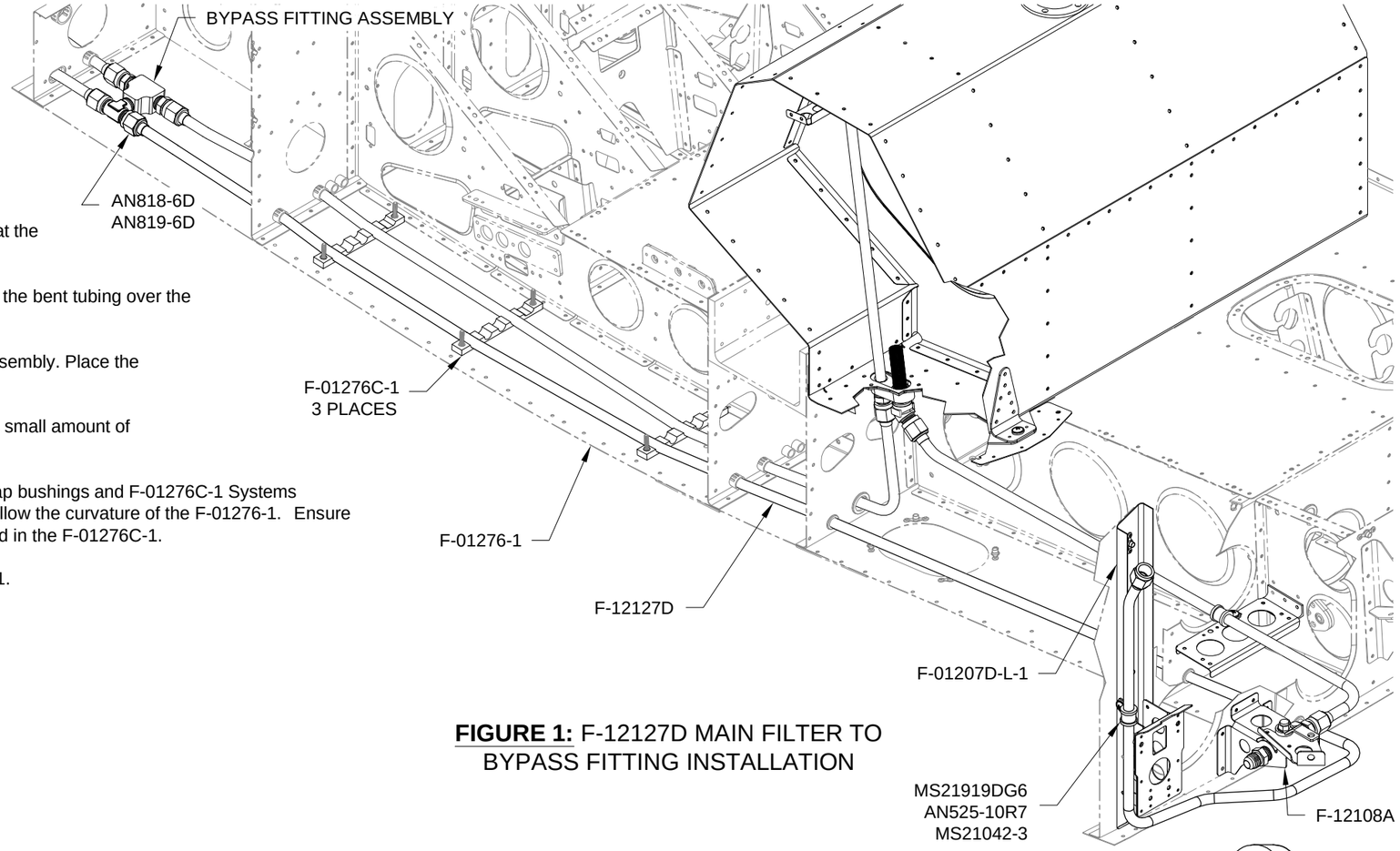
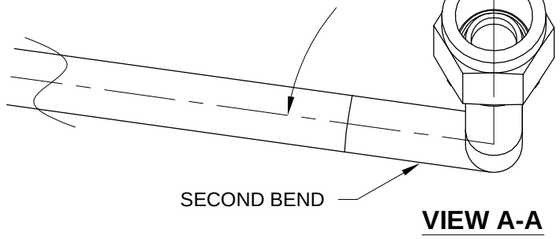



**FIGURE 1:** F-12127D MAIN FILTER TO BYPASS FITTING INSTALLATION




**VIEW A-A**

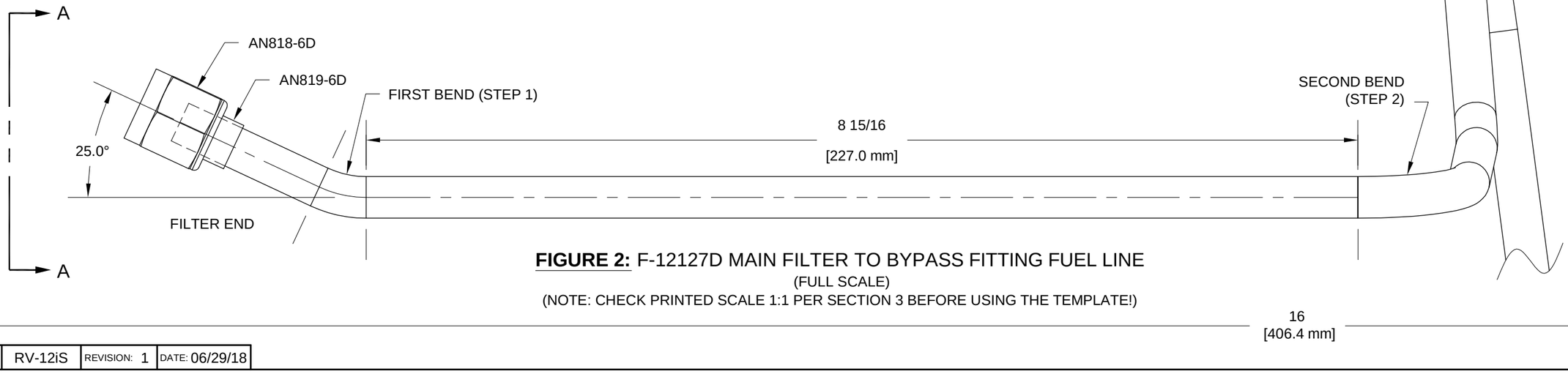
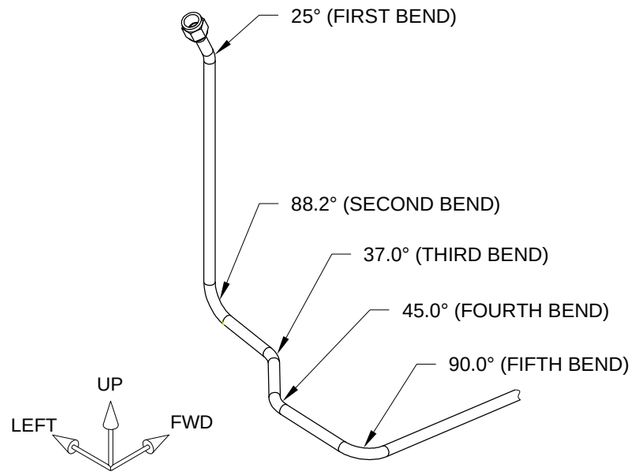



**FIGURE 2:** F-12127D MAIN FILTER TO BYPASS FITTING FUEL LINE
(FULL SCALE)
(NOTE: CHECK PRINTED SCALE 1:1 PER SECTION 3 BEFORE USING THE TEMPLATE!)




**ISO VIEW**
**(1:5 SCALE)**

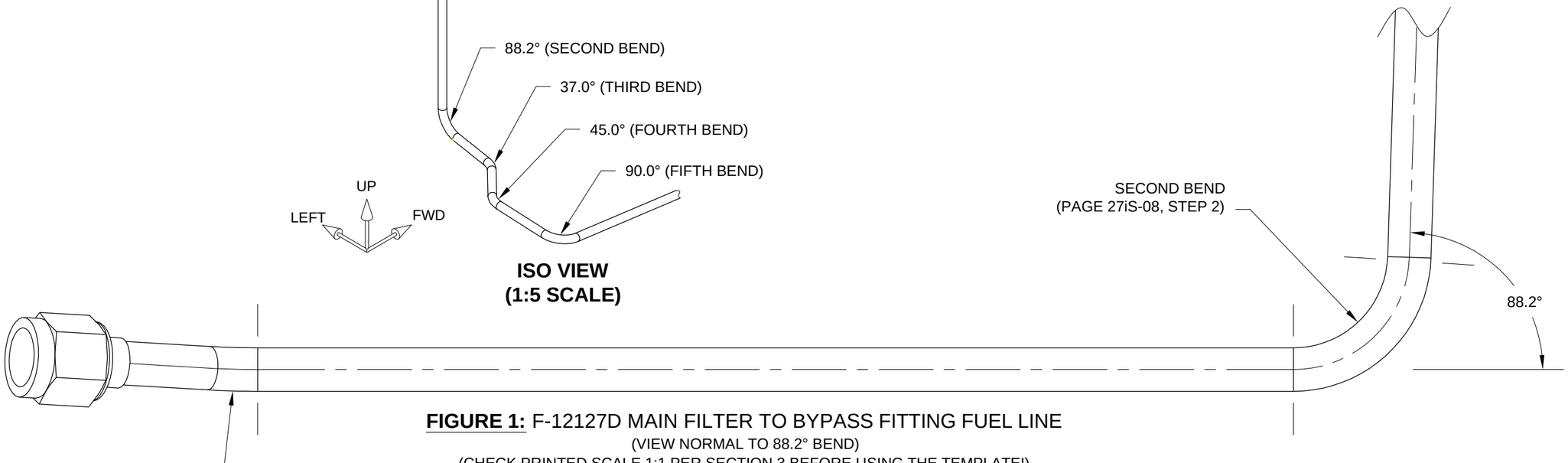
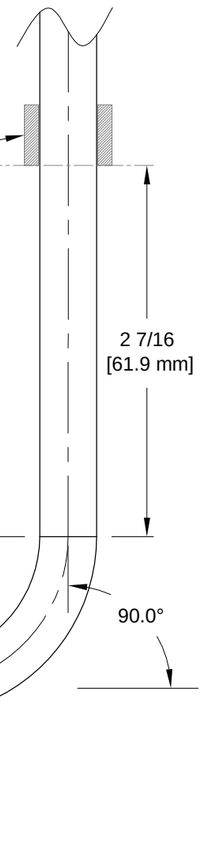



**FIGURE 1:** F-12127D MAIN FILTER TO BYPASS FITTING FUEL LINE
(VIEW NORMAL TO 88.2° BEND)
(CHECK PRINTED SCALE 1:1 PER SECTION 3 BEFORE USING THE TEMPLATE!)



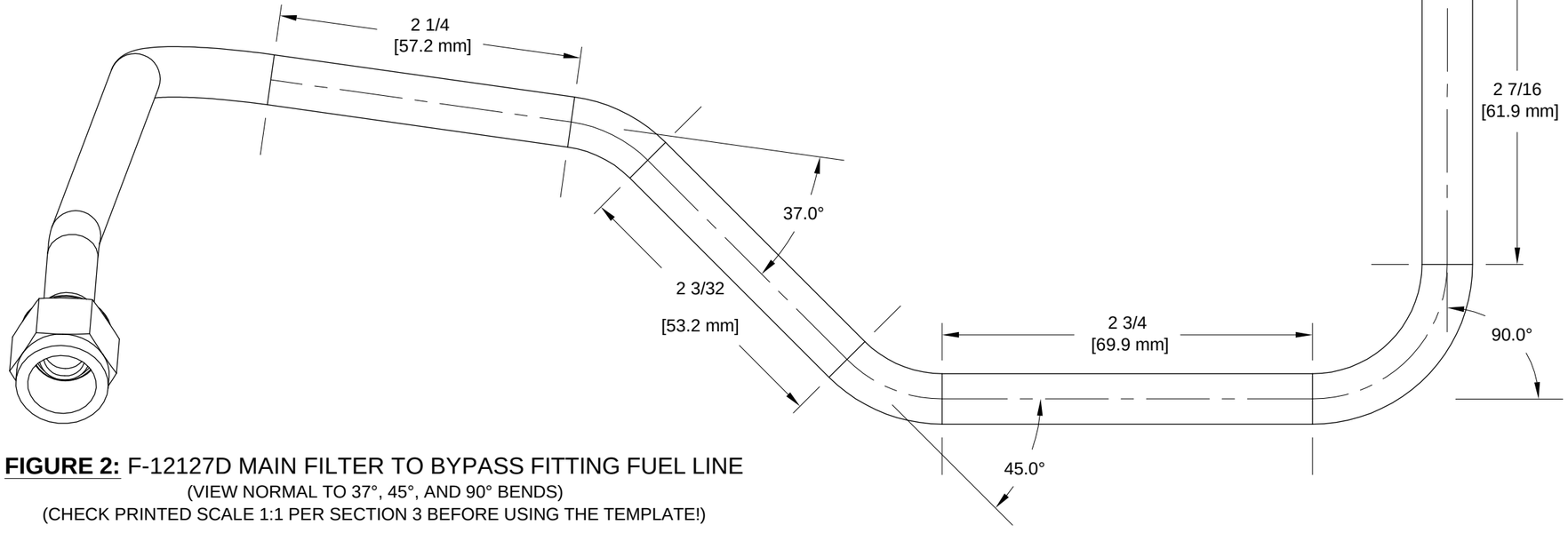




**FIGURE 2:** F-12127D MAIN FILTER TO BYPASS FITTING FUEL LINE
(VIEW NORMAL TO 37°, 45°, AND 90° BENDS)
(CHECK PRINTED SCALE 1:1 PER SECTION 3 BEFORE USING THE TEMPLATE!)

16
[406.4 mm]

**NOTE: This page refers to components provided in the powerplant kit, denoted by ()*.**

Step 1: Straighten 2 1/2 in. [63.5mm] of ATO-035X3/8 tubing. Make the F-12127J by flaring one end of the tube. Place both sets of nuts and sleeves called out in Figure 1 over the opposite end of the tubing and slide against the flare.

Step 2: Flare the opposite end of the tube (check that the nuts and sleeves have not fallen off the tube).

Step 3: Attach the F-12127J to the fuel valve as shown in Figure 2.

Step 4: Attach the Fuel Drain Assembly to the F-12127J as shown in Figure 2 (fully tighten both AN818 nuts), then attach the Fuel Drain Assembly to the F-12109A with screws as shown.

Step 5: Attach the FUEL-FX375-M* to the F-12109A with a hose clamp as shown in Figure 2 (check flow direction). Do not fully tighten clamp at this time.

**NOTE: The F-12111 bracket assembly may be removed from the fuselage to ease installation of the Main Fuel Filter Assembly*, Rotax Fuel Pump Assembly*, and the F-12127E and F-12127F fuel lines.**

Step 6: Attach the Rotax Fuel Pump Assembly* to the F-12111C with hose clamps as shown. Do not fully tighten the clamps at this time. Make sure the Auxiliary Pump is on top and fittings are oriented as shown.

Step 7: Attach the Main Fuel Filter Assembly* to the F-12111B with a hose clamp as shown. Do not fully tighten the clamp at this time.

Attach the F-12127D fuel line to the banjo fitting* closest to the fuel filter as shown in the detail view in Figure 2.

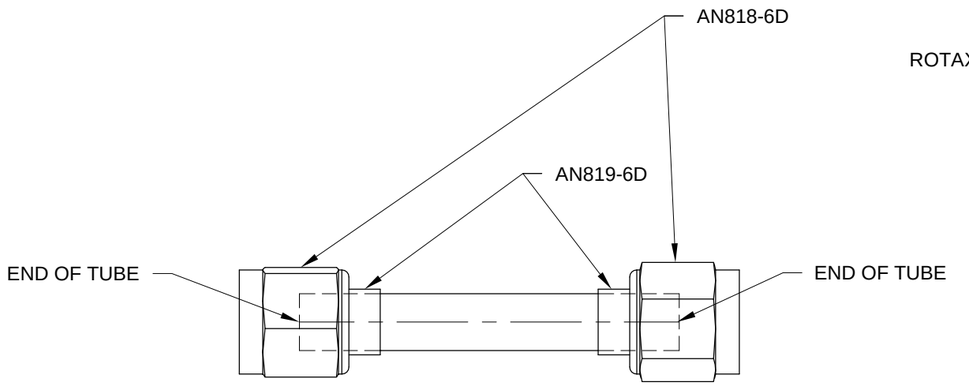



**FIGURE 1:** F-12127J SHUT-OFF VALVE TO DRAIN FUEL LINE
(NOTE: CHECK PRINTED SCALE 1:1 PER SECTION 3 BEFORE USING THE TEMPLATE!)

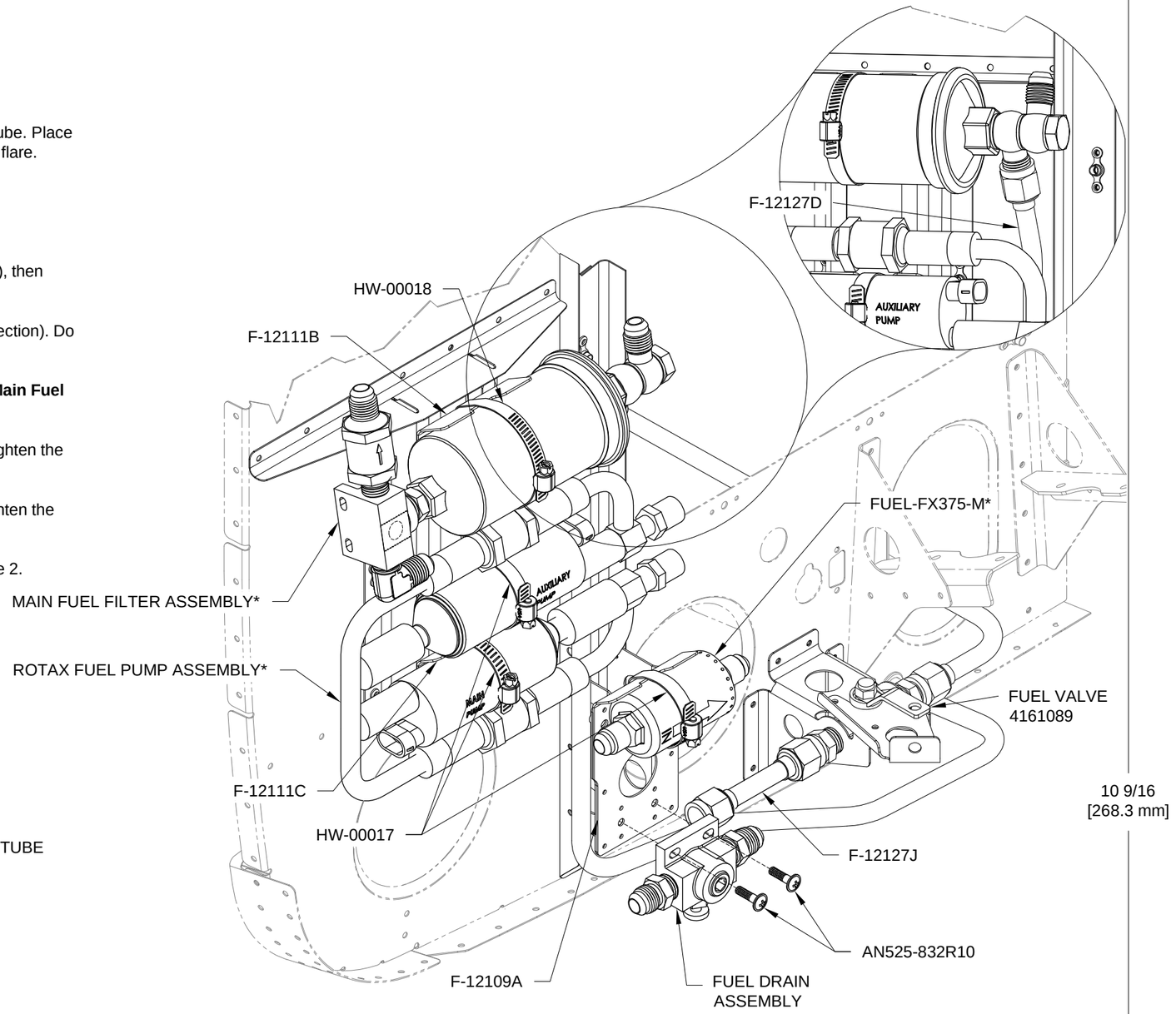



**FIGURE 2:** F-12127J SHUT-OFF VALVE TO DRAIN FUEL LINE INSTALLATION

16 [406.4 mm]

**NOTE: This page refers to components provided in the powerplant kit, denoted by ()*.**

Step 1: Straighten 7 3/8 in. [187.3 mm] of ATO-035X3/8 tubing. Make the F-12127H by making bends as shown in Figure 1.

Step 2: Place the nut then the sleeve called out in Figure 1 over the drain end of the tubing. Flare the drain end of the tube.

Place the nut and sleeve called out in Figure 1 over the prefilter end of the tubing (check that the other nut and sleeve have not fallen off the tube). Flare the prefilter end of the tube.

Step 3: Attach the F-12127H to the Fuel Drain Assembly and the FUEL-FX375-M* as shown in Figure 2.

Step 4: Tighten the hose clamp holding the FUEL-FX375-M*.

Step 5: Straighten 7 1/8 in. [181.0mm] of ATO-035X3/8 tubing. Make the F-12127G by making the bends shown in Figure 3. The clocking and position of the ends are critical, but minor deviations along the length are acceptable.

Step 6: Place the nut then sleeve called out in Figure 3 over the prefilter end of the tubing. Flare the prefilter end of the tube.

Place the nut and sleeve over the pump end of the tubing (check that the other nut and sleeve have not fallen off the tube). Flare the pump end end of the tube.

Step 7: Attach the fuel line to the FUEL-FX375-M* and the Rotax Fuel Pump Assembly* as shown in Figure 2. Tighten the hose clamps holding pump assembly.

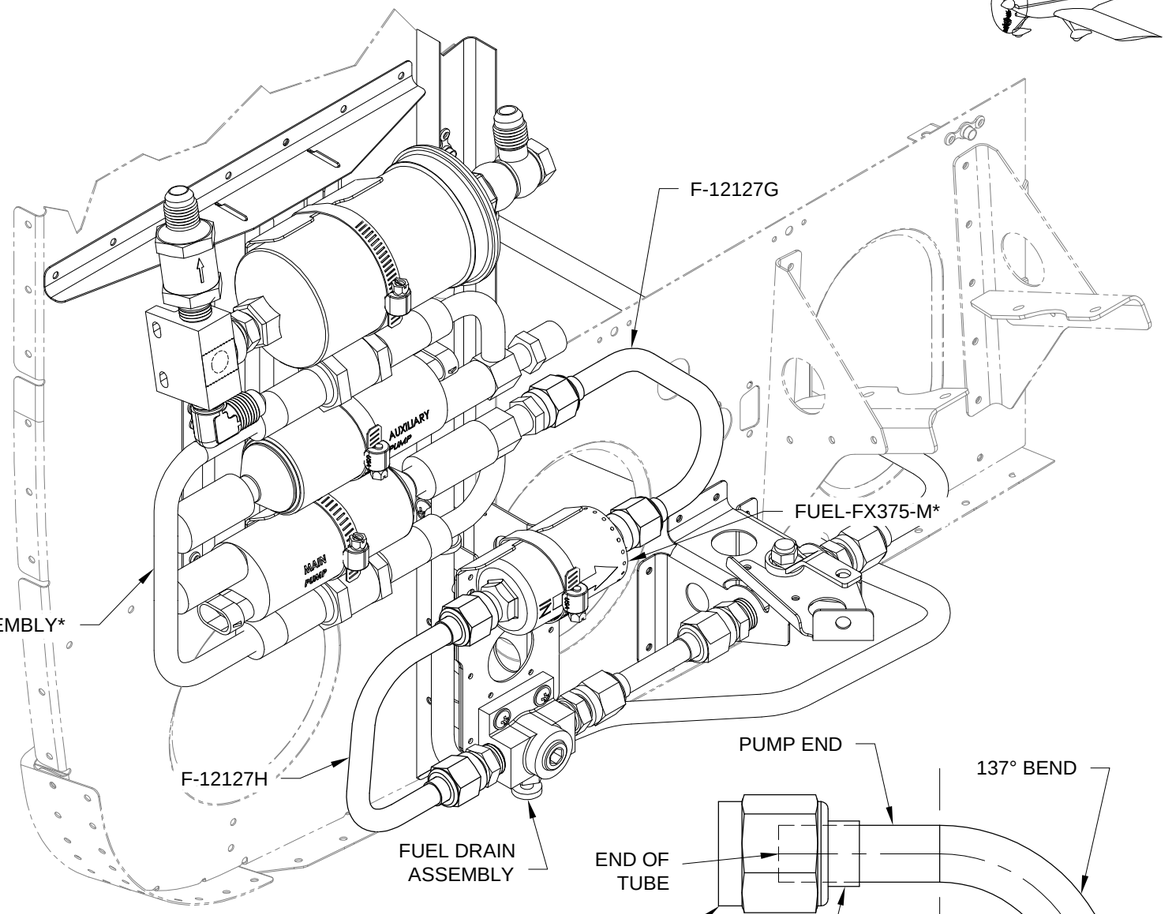



**FIGURE 2:** F-12127H AND F-12127G
FUEL LINE INSTALLATION

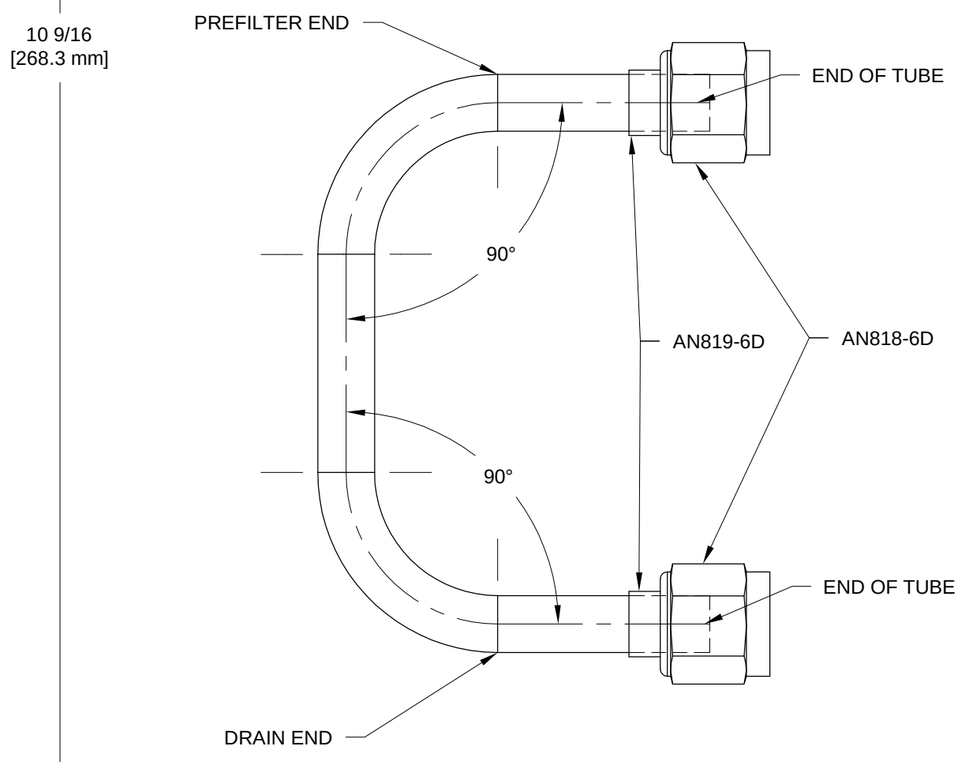



**FIGURE 1:** F-12127H DRAIN TO PREFILTER FUEL LINE TEMPLATE
(NOTE: CHECK PRINTED SCALE 1:1 PER SECTION 3 BEFORE USING THE TEMPLATE!)

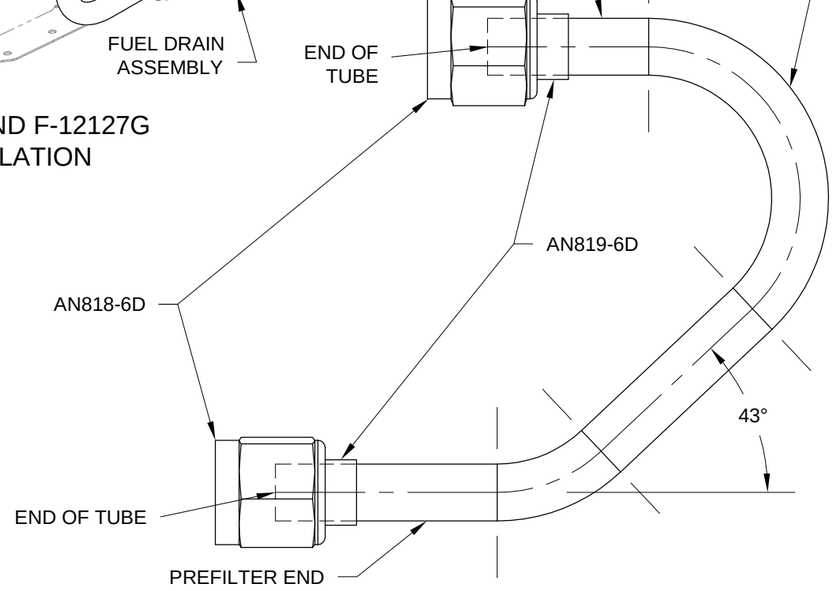



**FIGURE 3:** F-12127G PREFILTER TO PUMP FUEL LINE TEMPLATE
(NOTE: CHECK PRINTED SCALE 1:1 PER SECTION 3 BEFORE USING THE TEMPLATE!)

**NOTE: This page refers to components provided in the powerplant kit, denoted by ()*.**

Step 1: Straighten 11 11/16 in. [296.9mm] of ATO-035X3/8 tubing. Fabricate the F-12127E by making the bends shown in Figure 1. The clocking and position of the ends are critical, but minor deviations along the length are acceptable.

Step 2: Place the nut then the sleeve called out in Figure 1 over the check valve end of the tubing. Flare the end of the tube. Place the nut and sleeve over the banjo end of the tube (check that the other nut and sleeve have not fallen off the tube). Flare the end of the tube.

Step 3: Attach the fuel line to Main Fuel Filter Assembly* as shown in Figure 2. A small amount of bending/adjustment by hand is acceptable.

Step 4: Torque banjo bolt* to 12.0 ft. lb. (take care to not distort the fuel lines).

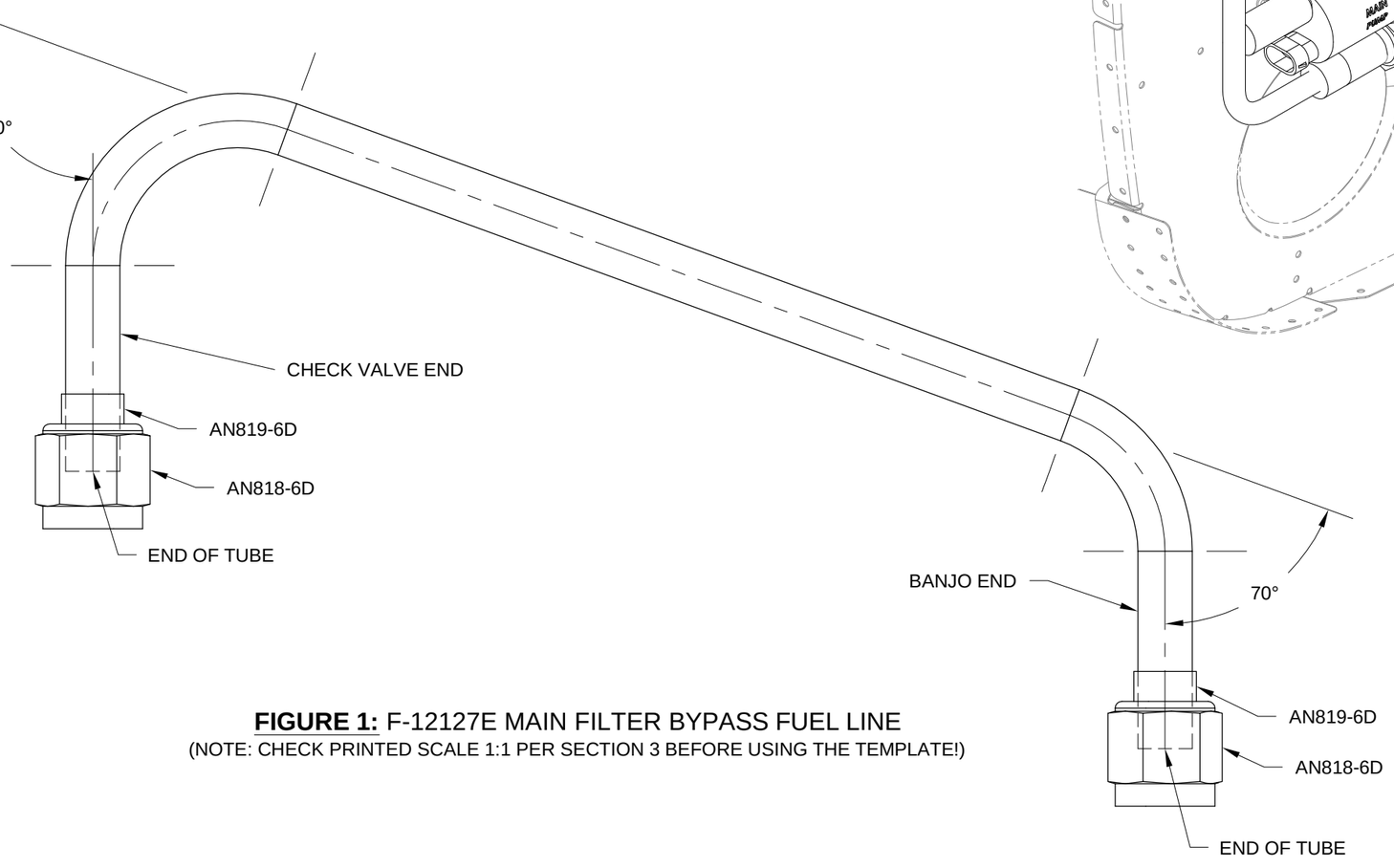



**FIGURE 1:** F-12127E MAIN FILTER BYPASS FUEL LINE
(NOTE: CHECK PRINTED SCALE 1:1 PER SECTION 3 BEFORE USING THE TEMPLATE!)

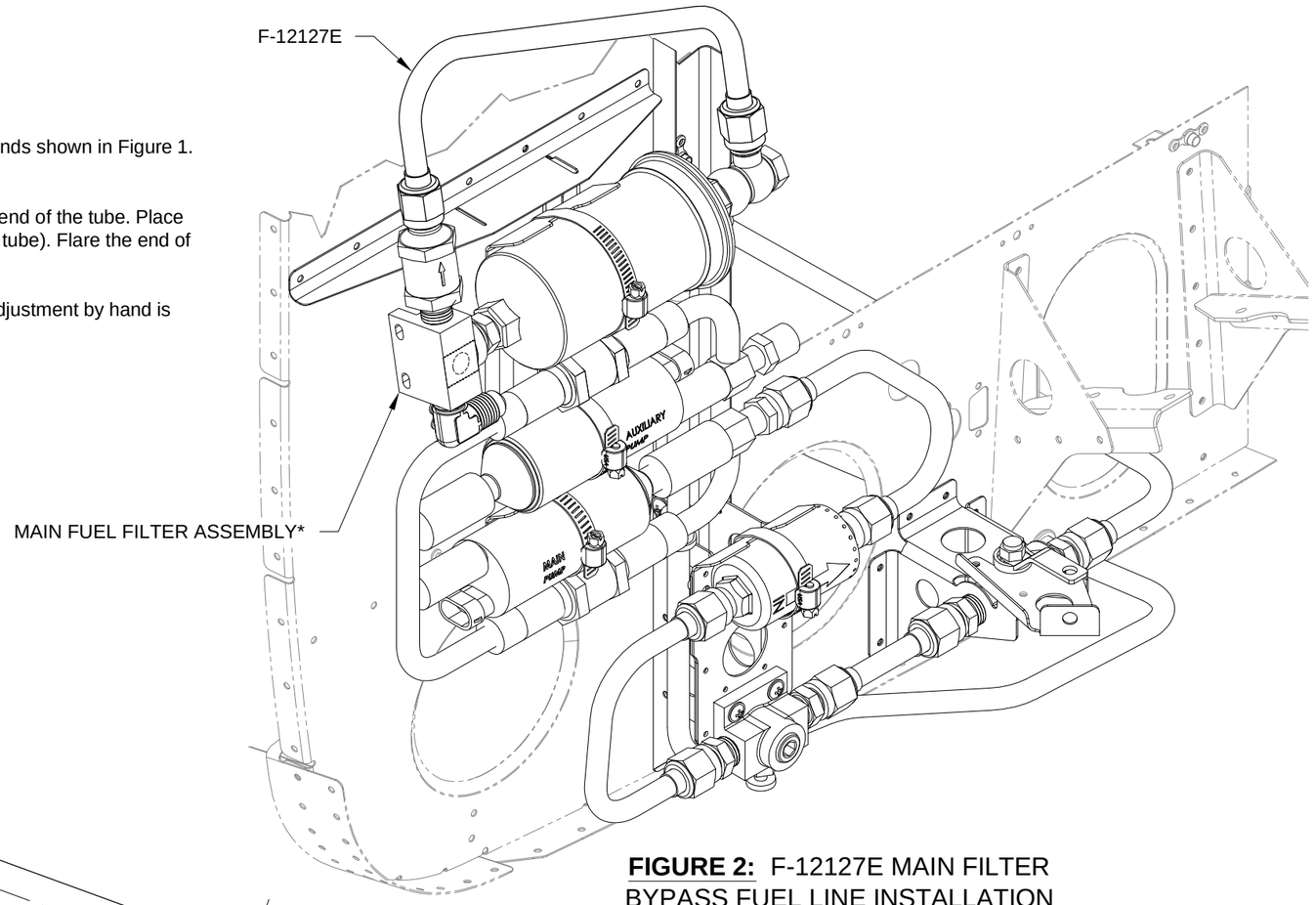



**FIGURE 2:** F-12127E MAIN FILTER BYPASS FUEL LINE INSTALLATION

10 9/16
[268.3 mm]

16
[406.4 mm]

**NOTE: This page refers to components provided in the powerplant kit, denoted by (*).**

Step 1: Straighten 12 23/32 in. [323.1mm] of ATO-035X3/8 tubing. Make the F-12127F by starting at the pump end.

Measure 1 in. [25.4 mm] from the pump end of the tube and mark the start of bend line.

Measure 4 1/32 in. [102.4 mm] from the pump end of the tube and mark the end of bend line.

Make the 174° bend going to the pump by referencing Figure 1. The clocking and position of the ends are critical, but minor deviations along the length of the fuel line are acceptable.

Step 2: Place the nut then the sleeve called out in Figure 1 over the pump end of the tubing. Flare the pump end of the tube.

Step 3: Make the 6° bend going to the adaptor by referencing Figure 1. Place the nut then sleeve called out in Figure 1 over the adaptor end of the tubing. Flare the end of the tube (check to make sure the other nut and sleeve did not fall off).

Step 4: Attach the F-12127F to the Rotax Fuel Pump Assembly* and the Main Fuel Filter Assembly* as shown in Figure 2. A small amount of bending/adjustment by hand is acceptable.

Step 5: Tighten the clamp holding the Main Fuel Filter Assembly*.

Step 6: Check all fuel lines for clearance and chaffing on surrounding structure and components. Check that all fittings and connections are tightened.

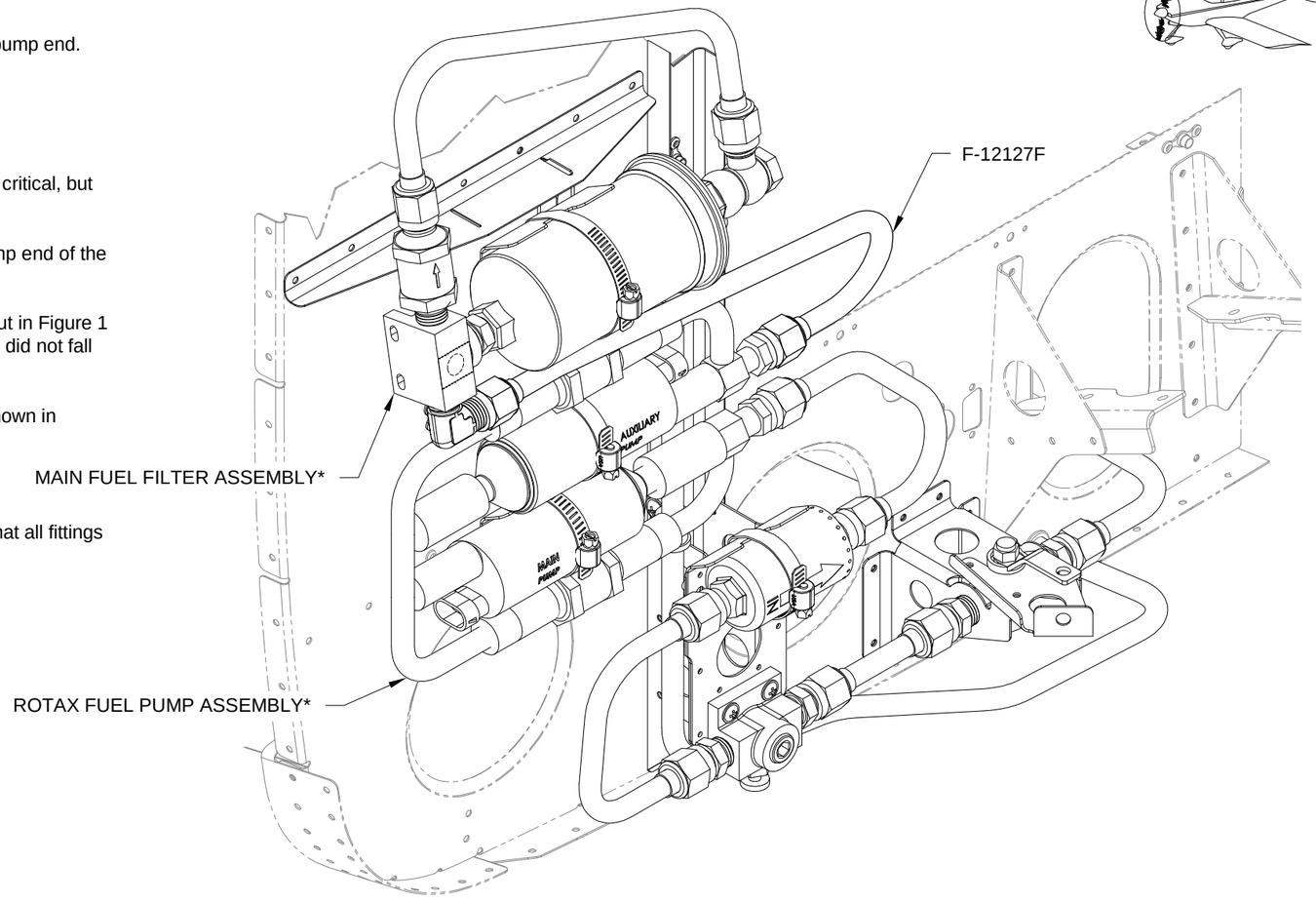



**FIGURE 2:** F-12127F PUMP TO ADAPTOR FUEL LINE INSTALLATION

10 9/16
[268.3 mm]

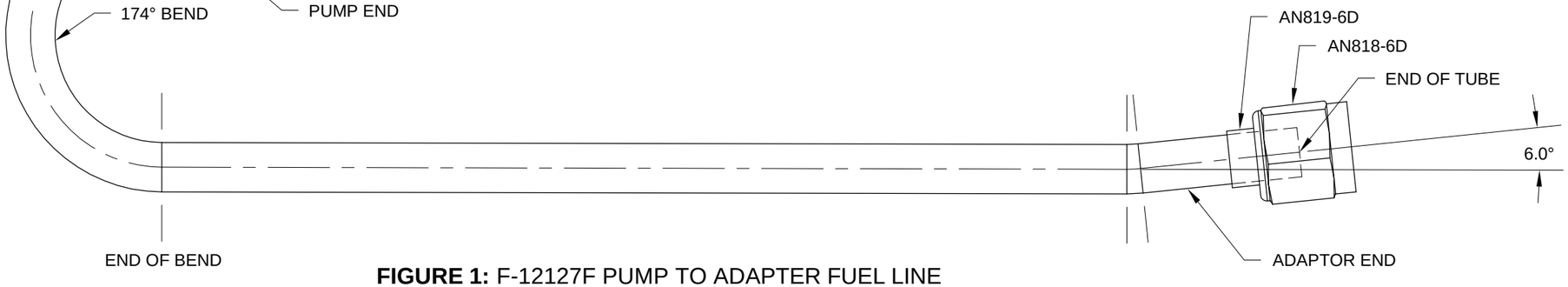



**FIGURE 1:** F-12127F PUMP TO ADAPTER FUEL LINE
(NOTE: CHECK PRINTED SCALE 1:1 PER SECTION 3 BEFORE USING THE TEMPLATE!)

16
[406.4 mm]

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