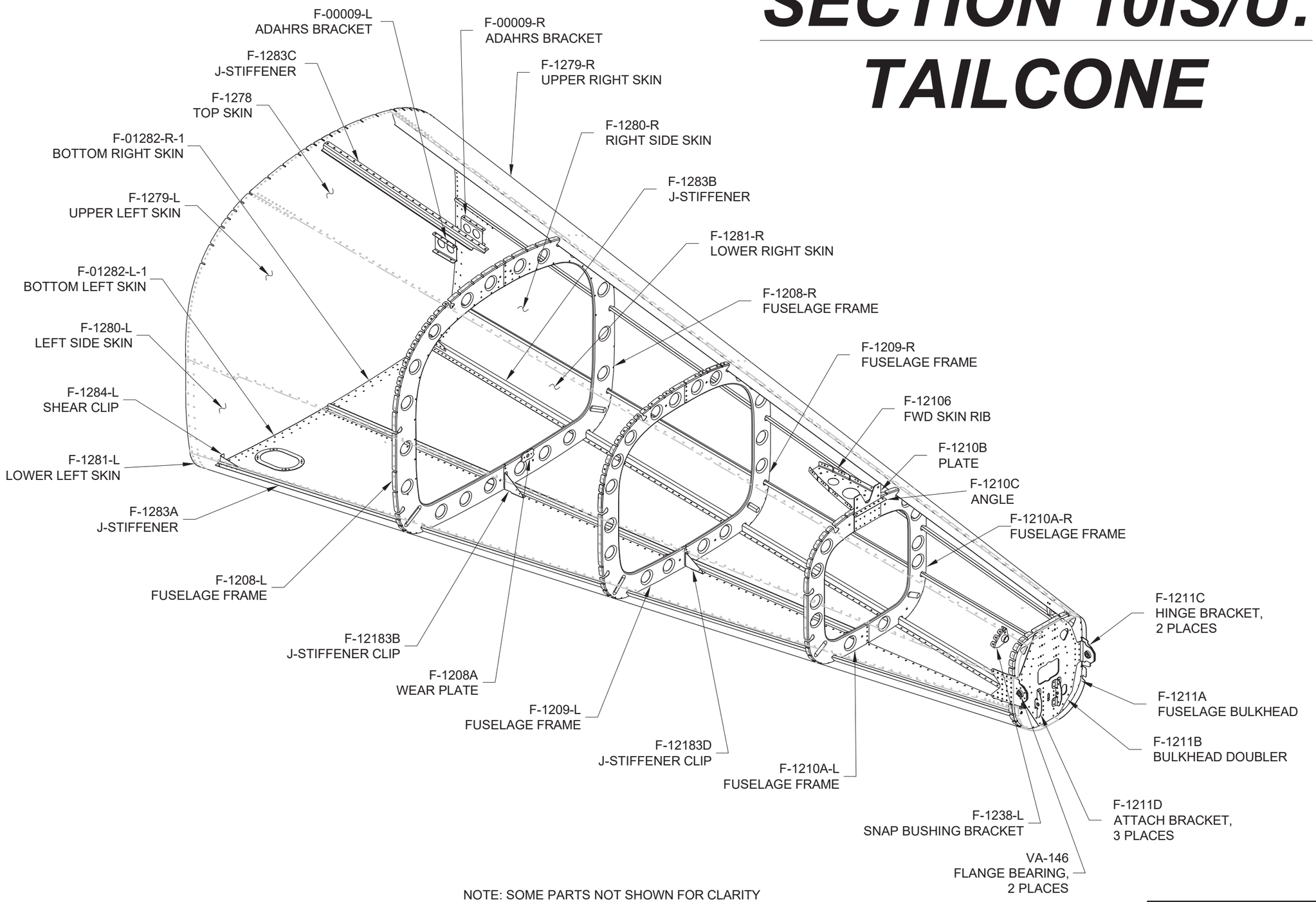
SECTION 10iS/U: TAILCONE



NOTE: SOME PARTS NOT SHOWN FOR CLARITY

DATE OF COMPLETION: _____
PARTICIPANTS: _____

Step 1: Identify the tailcone skins. The F-1278 Top Skin does not have a J-stiffener formed on either of the long edges. The F-01282-L-1 Bottom Left Skin has J-stiffeners formed on both of the long edges, while the F-01282-R-1 Bottom Right Skin has only one. The remaining tailcone skins have a J-stiffener formed on one edge, and each left skin is mirrored by a right.

Step 2: Prepare the skins shown in Figure 1 for a lap joint by deburring and breaking (Section 5K) the edges. The edges to be lap joints are called out in Figure 1. Both edges of the F-1278 Top skin must break in the same direction. The remaining skins must break in the same direction as the J-stiffener. Begin with the F-01282-R-1 Bottom Right Skin, since it is least likely to be seen. When breaking the edges of the F-1278 Top Skin gradually increase the break angle toward the aft end.

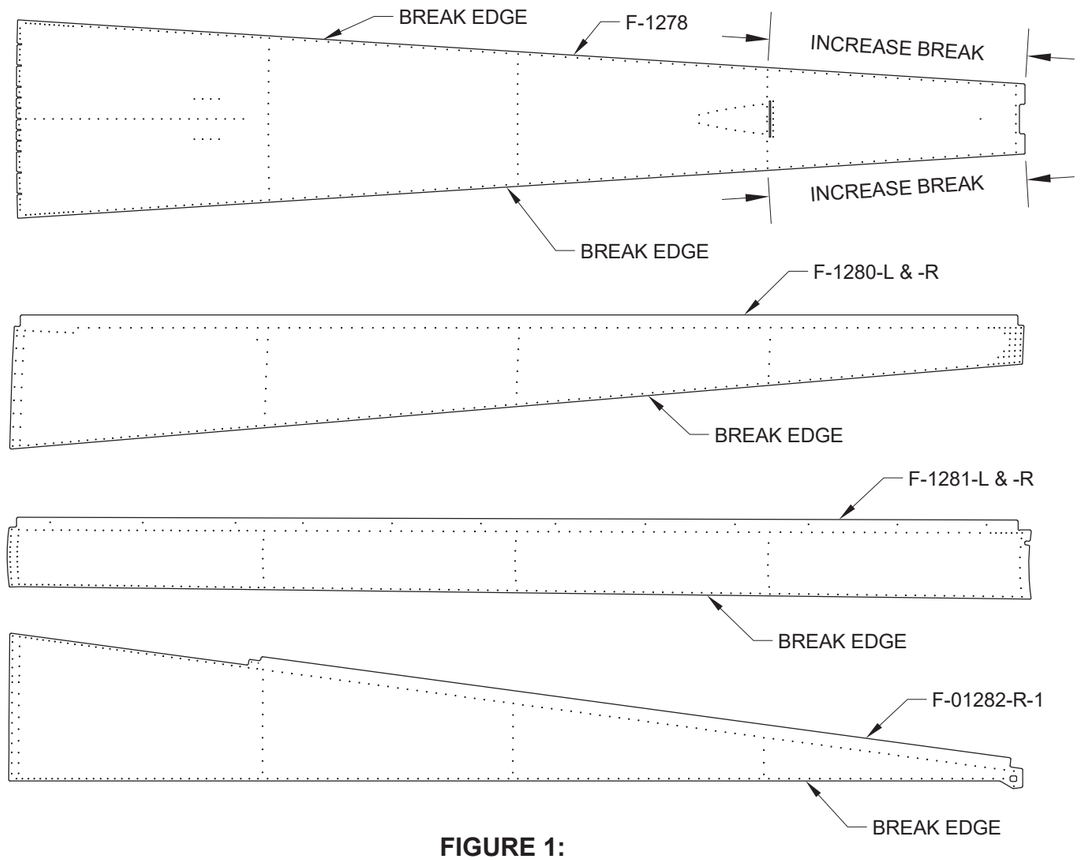


FIGURE 1:
TAILCONE SKINS (SHOWN FLAT)

Step 3: Flute the F-1210C Angle at the places called out in Figure 2. Each flute needs to 'hump' in the same direction as the five-hole flange. With the five-hole flange pointing up, align the holes in the four-hole flange of the angle to the full scale illustration in Figure 2. Increase the two flutes until the five-hole flange matches the curve shown in Figure 2.

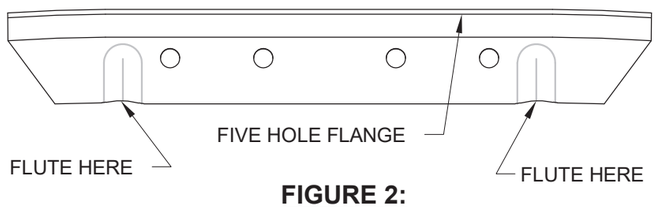


FIGURE 2:
F-1210C FLUTES (FULL SCALE)

Step 4: Flute the F-1208-L & -R, F-1209-L & -R, and F-1210A-L & -R Fuselage Frames to align the flange holes. Flute the 'hump' of any humped flanges toward the web of each fuselage frame.

NOTE: The F-1208A Wear Plate may be rotated 180° once prior to replacement.

Step 5: Rivet the F-1208A Wear Plate to the F-1208-R Fuselage Frame as shown in Figure 3.

Step 6: Cleco, then, using the rivets called out in Figure 3, rivet the F-12183A & B J-Stiffener Clips and F-1208-L & -R Fuselage Frames. Cleco, then rivet the F-12183C & D J-Stiffener Clips and F-1209-L & -R Fuselage Frames.

Hereafter, refer to the riveted F-1208-L & -R and F-12183A & B as the F-1208 Frame, and the F-1209-L & -R and F-12183C & D as the F-1209 Frame.

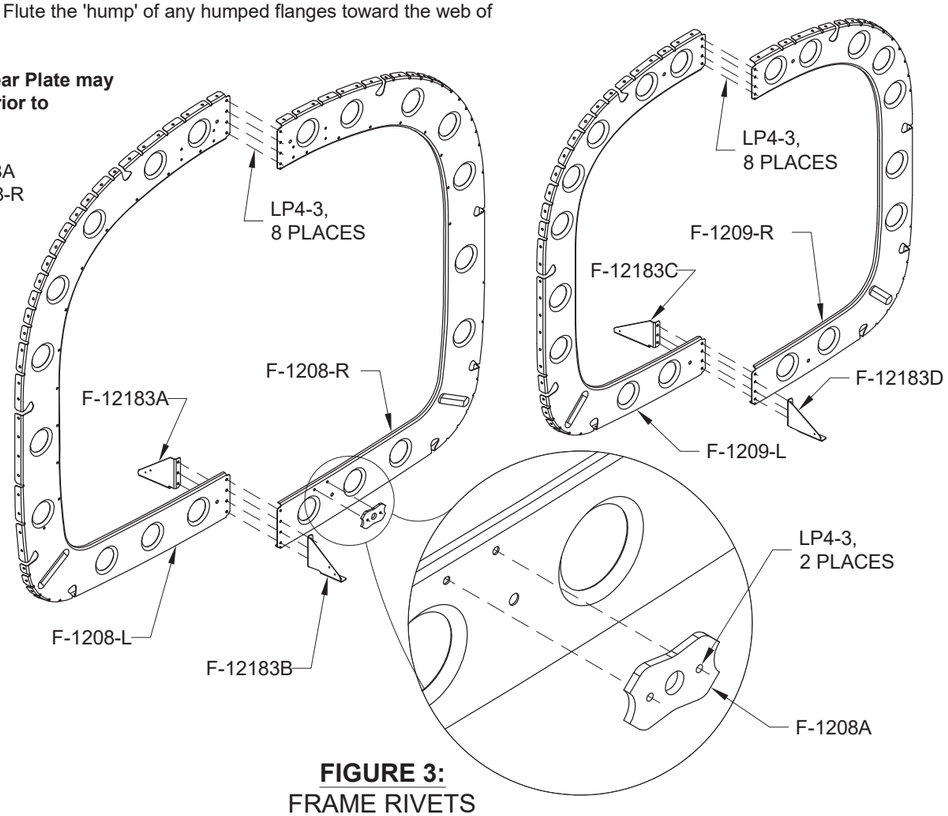


FIGURE 3:
FRAME RIVETS

Step 7: Cleco the F-1210B Plate, and F-1210C Angle to the F-1210A-L & -R Fuselage Frames, as shown in Figure 4.

Step 8: Match-Drill #30 the two holes from the F-1210A-L & A-R Fuselage Frames into the F-1210C Angle as called out in Figure 4. Disassemble and deburr.

Step 9: Final-Drill #12 the F-1210B Plate at the holes called out in Figure 4.

Step 10: Rivet the F-1210A-L & A-R Fuselage Frames, F-1210B Plate, F-1210C Angle, and F-12183E J-Stiffener Clip together using the rivets called out in Figure 4.

Hereafter, refer to the riveted F-1210A-L & -R, F-1210B, F-1210C and F-12183E as the F-1210 Frame.

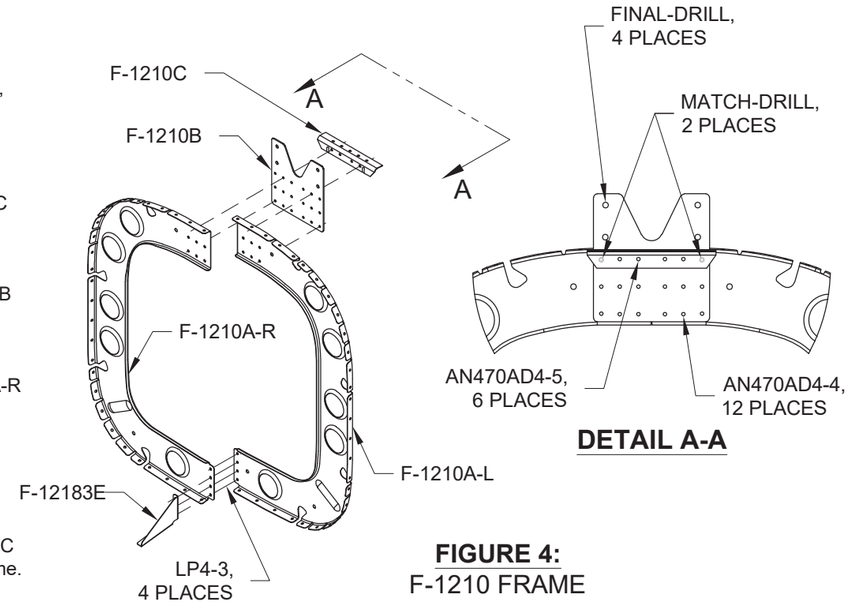


FIGURE 4:
F-1210 FRAME

Step 1: Remove the tabs from the F-1211B Bulkhead Doubler and deburr the bends called out in Figure 1.

Step 2: Machine countersink the holes in the F-1211B Bulkhead Doubler called out in Figure 1.

Step 3: Separate the F-1211D Attach Brackets by removing the material called out in Figure 2. Deburr.

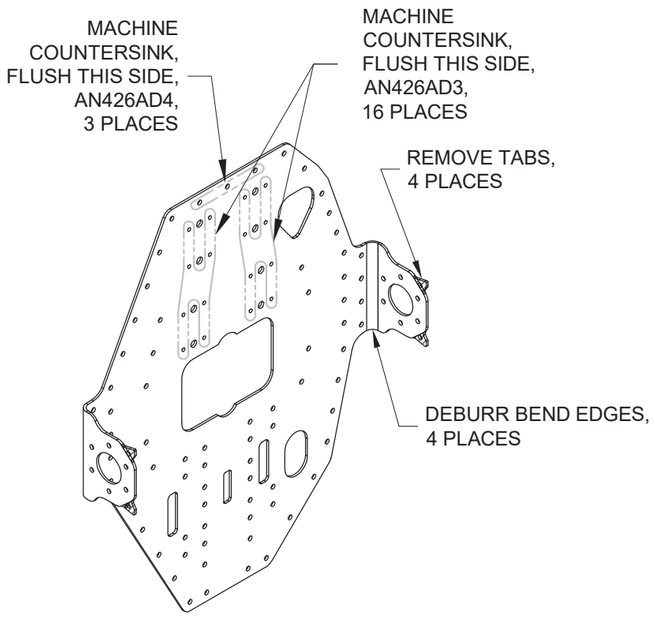


FIGURE 1:
F-1211B PREPARATION

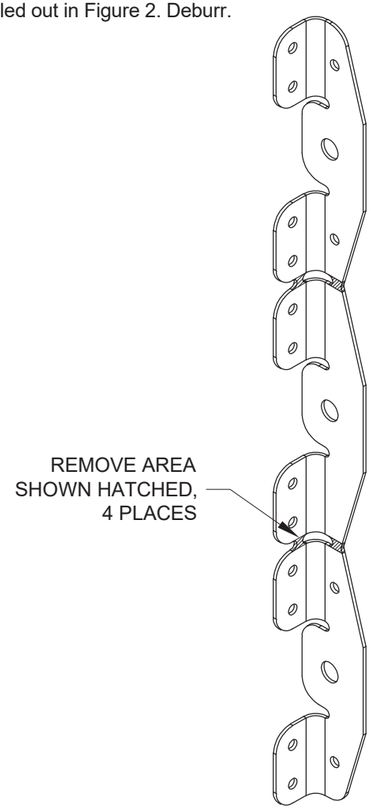


FIGURE 2:
F-1211D SEPARATION

Step 4: Mark, then separate the F-1284-L & -R Shear Clips by removing the areas shown hatched in Figure 3.

Step 5: Mark, then separate the F-1211C-L & -R Hinge Brackets by removing the areas shown hatched in Figure 4.

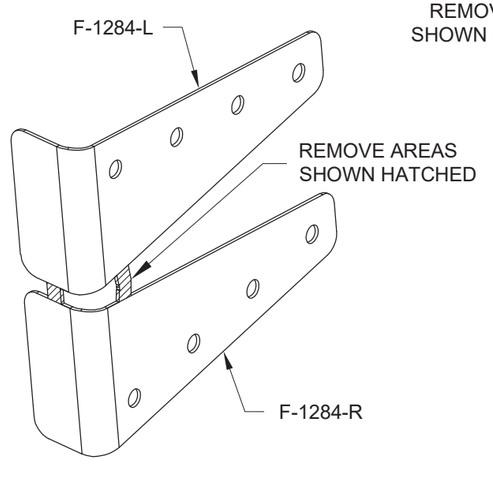


FIGURE 3:
F-1284 SEPARATION

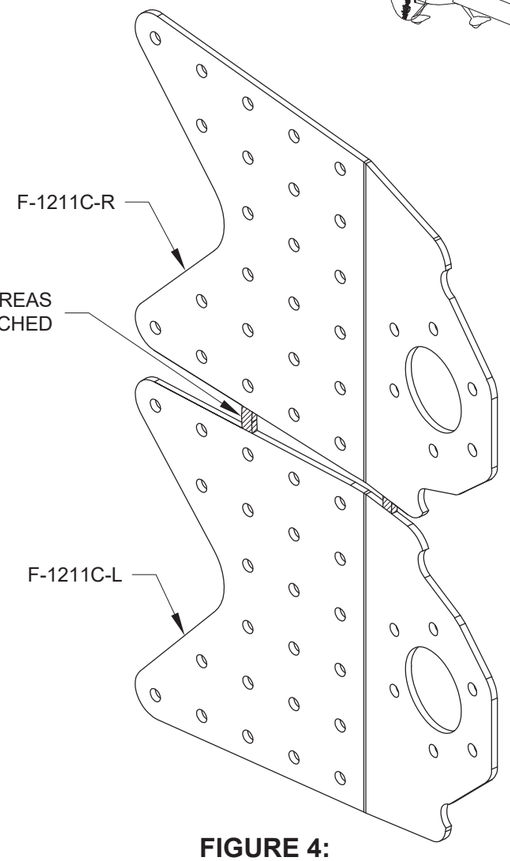


FIGURE 4:
F-1211C SEPARATION

CAUTION: In Step 1 deburr only enough to locate the bushing.

Step 1: Rivet the F-1211D Attach Brackets together per Figure 1. Deburr the 1/4 in. holes per call-outs. Install the bushing (oversize before press fit) as shown. If necessary use a C-clamp with a small socket opposite the bushing.

Step 2: Flute the F-1211A Fuselage Bulkhead as called out in Figure 2 only enough to reduce the slight pucker in the flange. Cracking may result from excessive force.

Step 3: Cleco the F-1211B Bulkhead Doubler to the F-1211A Fuselage Bulkhead as shown in Figure 2.

Step 4: Final-Drill #12 the 3/16 holes called out in Figure 2. Disassemble, deburr, clear away chips, and re-cleco in place.

Step 5: Cleco the F-1211G-1 Tail Skid Bracket and the F-1211D Attach Brackets (with bushing flange on the outboard side) to the F-1211A Fuselage Bulkhead and F-1211B Bulkhead Doubler.

Step 6: Rivet the F-1211A Fuselage Bulkhead to the F-1211B Bulkhead Doubler, using the rivets indicated in Figure 2.

Step 7: Rivet the F-1211D Attach Brackets and F-1211G-1 Tail Skid Bracket to the F-1211 Assembly using the rivets indicated in Figure 2.

Hereafter refer to the F-1211A Fuselage Bulkhead and the F-1211B Bulkhead Doubler as the F-1211 Assembly.

Step 8: Rivet the nutplates to the F-1211 Assembly as shown using hardware indicated in Figure 2.

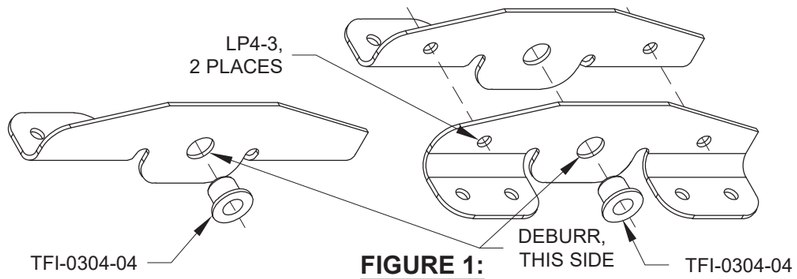


FIGURE 1:
F-1211D PREPARATION

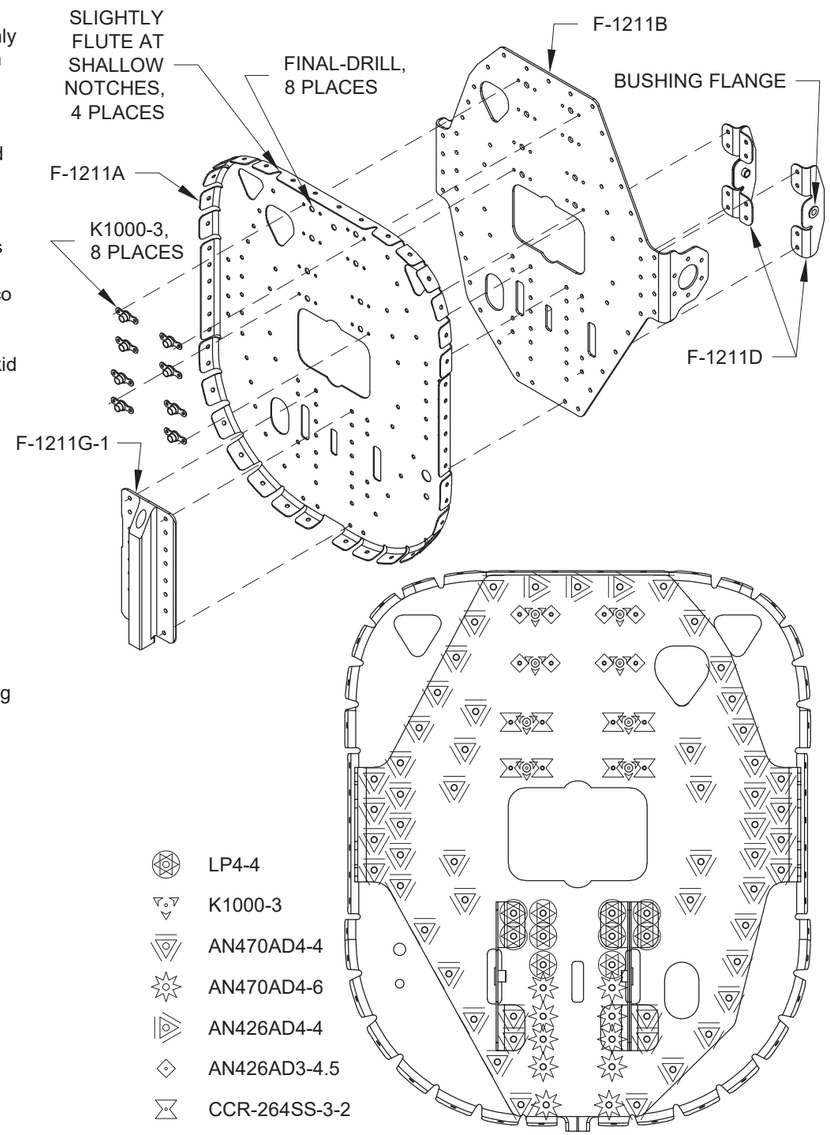


FIGURE 2:
F-1211 ASSEMBLY

Step 9: Cleco the F-1211C-L & -R Hinge Brackets and the VA-146 Flange Bearings to the F-1211 Assembly as shown in Figure 3.

Step 10: Final-Drill #30 the holes common to the F-1211C-L & -R Hinge Brackets, the VA-146 Flange Bearings, and the F-1211 Assembly. Cleco each hole before drilling the next. Disassemble, deburr, then re-cleco in place.

Step 11: Rivet the F-1211C-L & -R Hinge Brackets and the VA-146 Flange Bearings to the F-1211 Assembly as shown in Figure 3.

Step 12: Insert the snap bushing into the F-1211 Assembly called out in Figure 3.

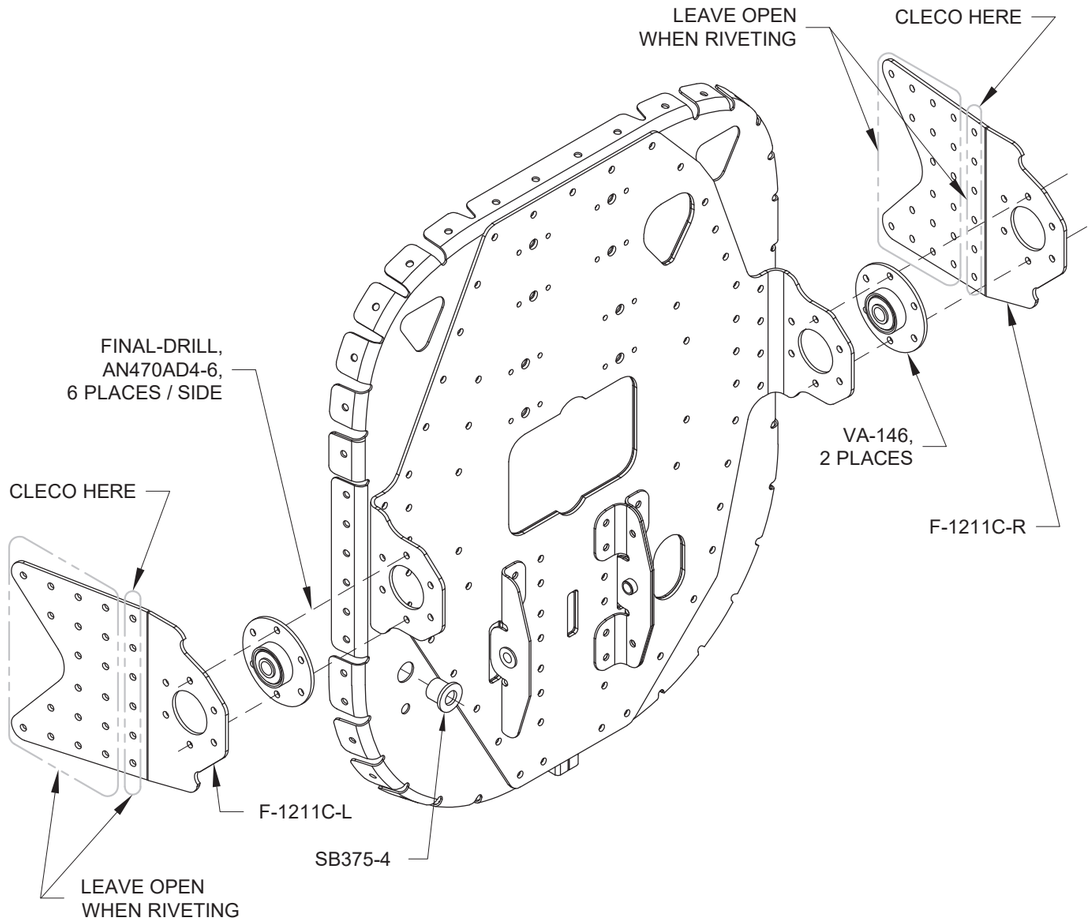


FIGURE 3:
BUSHINGS AND HINGE BRACKETS

Step 1: With the Stabilator Assembly on a workbench, check the fit of the F-1211 Assembly hinges with the Stabilator Assembly hinge brackets. The F-12191 and F-12192 Hinge Spacers installed on Page 09iS/U-02 should fit tightly on each side of the bearing. The F-1211 Assembly hinges may flex slightly inboard or outboard during installation. Ensure that there is minimal lateral play and binding throughout the stabilator travel. Use one washer between the bolt head and bracket during fit check.

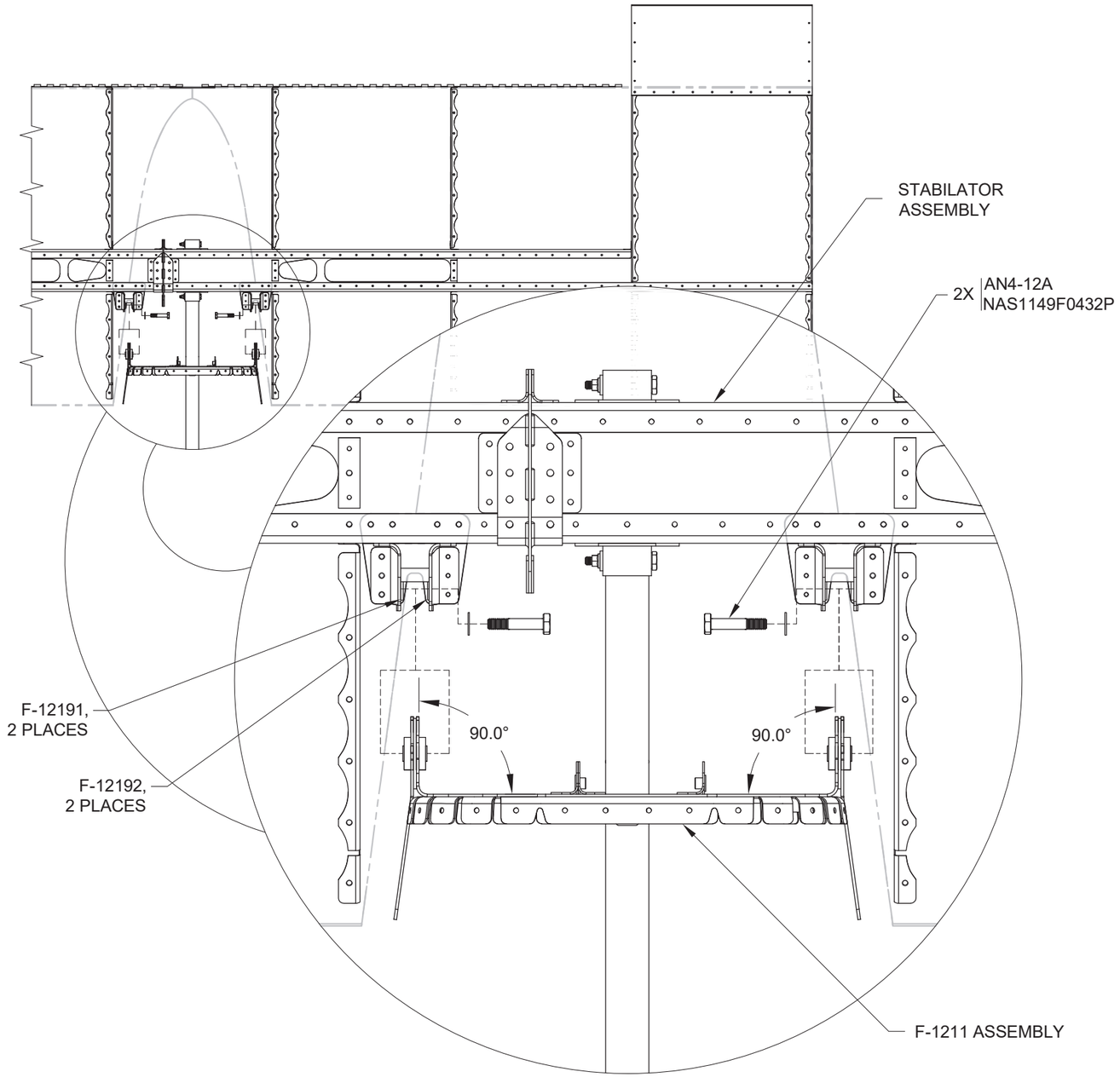


FIGURE 1:
STABILATOR HINGE WASHERS

Step 1: Place the F-01282-L-1 & -R-1 Bottom Left and Right Skins on a flat surface.

Step 2: Trim the called out material from the F-01282-L-1 Bottom Left Skin as shown in Figure 1.

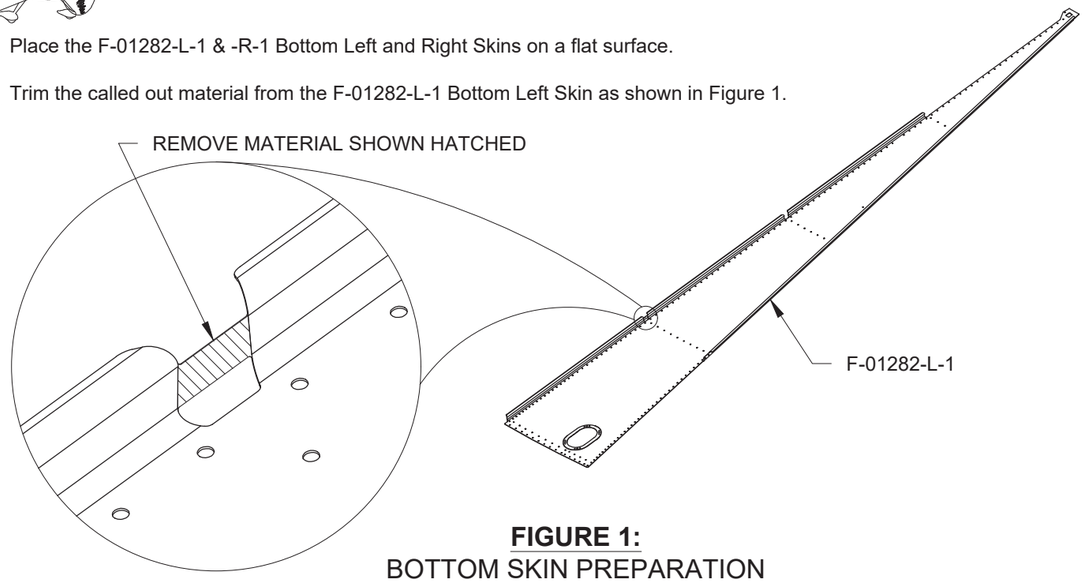


FIGURE 1:
BOTTOM SKIN PREPARATION

Step 3: Rivet the F-1284-L & -R Shear Clips to the F-1283A & B J-Stiffeners using rivets called out in Figure 2.

Step 4: Cleco the F-1283A & B J-Stiffeners to the F-01282-L-1 & -R-1 Bottom Left and Right Skins.

Step 5: Match-Drill #30 the holes in each of the F-01282-L-1 & -R-1 Bottom Left and Right Skins into the F-1283A & B J-Stiffeners called out in Figure 2.

Remove, clear away chips, deburr and re-cleco.

Step 6: Rivet the F-1283A & B J-Stiffeners only to the J-stiffener of the F-01282-L-1 & -R-1 Bottom Left and Right Skins using rivets called out in Figure 2.

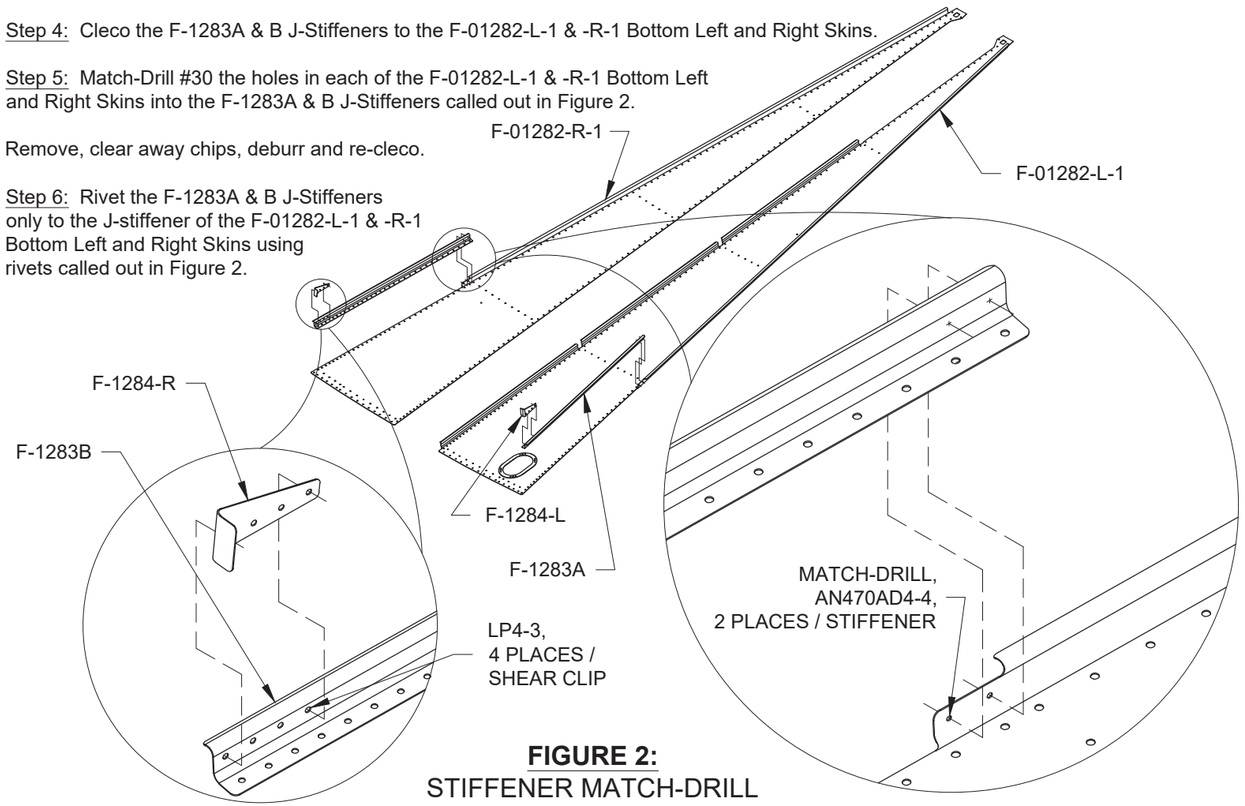


FIGURE 2:
STIFFENER MATCH-DRILL

Step 7: Place the F-01282-L-1 Bottom Left Skin upside down across two sawhorses that are at least 38 inches tall. Locate the forward sawhorse just forward of where the F-1208 Frame will be, and the rear sawhorse just aft of where the F-1210 Frame will be. See Figure 3.

Step 8: Hook the J-stiffener cutout of the F-1208, F -1209 and F-1210 Frames onto the J-stiffener of the F-01282-L-1 Bottom Left Skin. Cleco each fuse frame to the left bottom skin.

Step 9: Hook the J-stiffener of the F-01282-R-1 Bottom Right Skin into the J-stiffener cutout of the F-1208, F -1209 and F-1210 Frames. If the J-stiffeners interfere with J-stiffener cutouts in the fuse frames, either the J-stiffeners can be bent or the J-stiffener cutouts in the frames can be enlarged slightly until the J-stiffeners clear. Cleco the bottom right skin to the F-01282-L-1 Bottom Left Skin and frames.

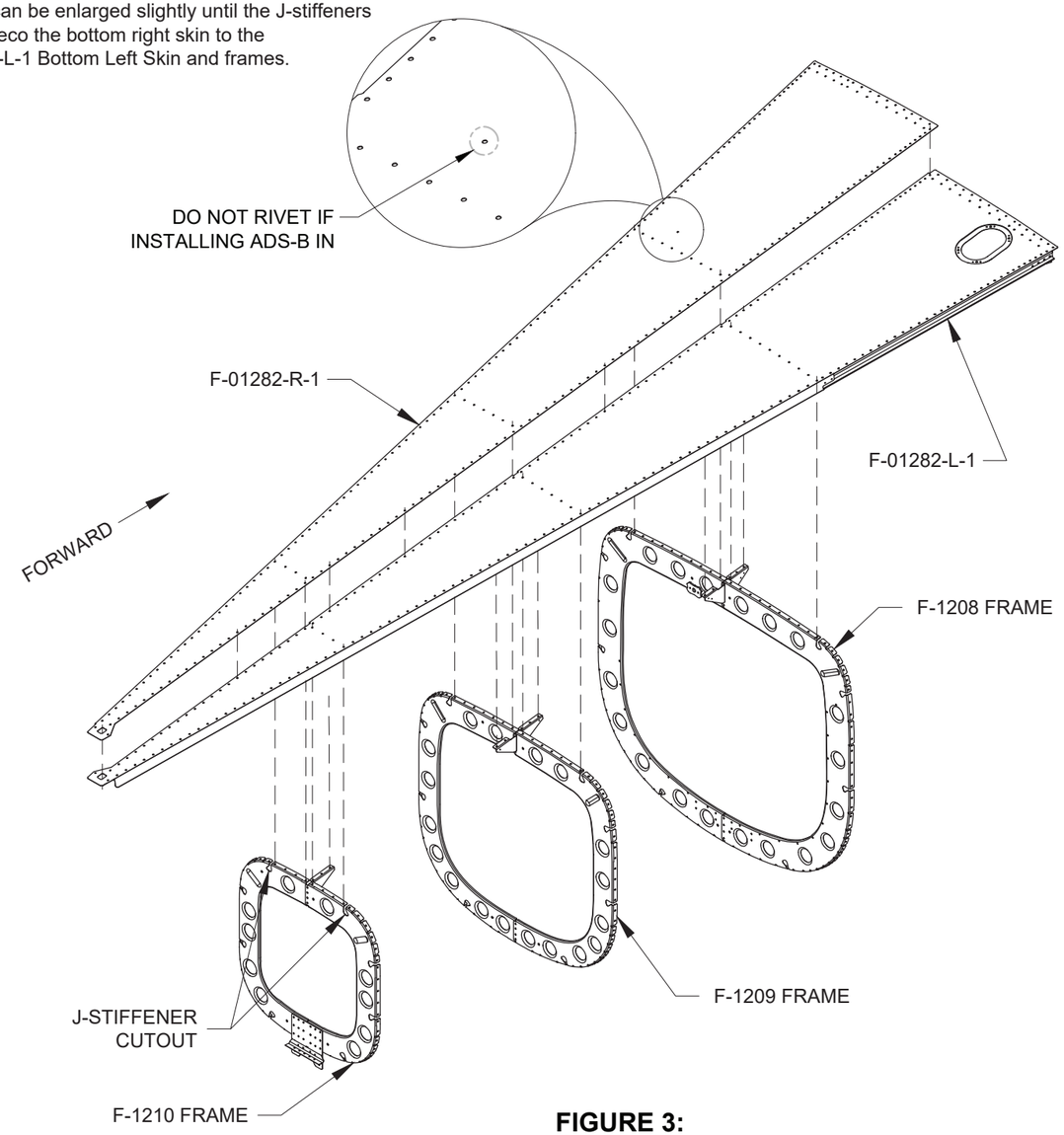


FIGURE 3:
BOTTOM SKIN INSTALLATION

Step 1: Hook the J-stiffeners of the F-1281-L & -R Lower Left and Right Skins into the cutouts in the F-1208, F -1209 and F-1210 Frames. Cleco the lower skins to the frames and F-01282-L-1 & -R-1 Bottom Left and Right Skins. Capture the F-1283A & B J-Stiffeners with the bottom and lower left and right skins.

Step 2: Place masking tape over all of the holes that are within seven inches of the forward edge of each tailcone skin. Those holes will be left open for the remainder of this section.

Step 3: Rivet the F-01282-L-1 & -R-1 Bottom Left and Right Skins together. Rivet the F-1208, F-1209 and F-1210 Frames to the bottom left and right skins. Rivet the F-1281-L & -R Lower Left and Right Skins only to the bottom left and right skins, and the F-1283A & B J-Stiffeners using rivets called out in Figure 1. Leave open all remaining holes in the lower left and right skins.

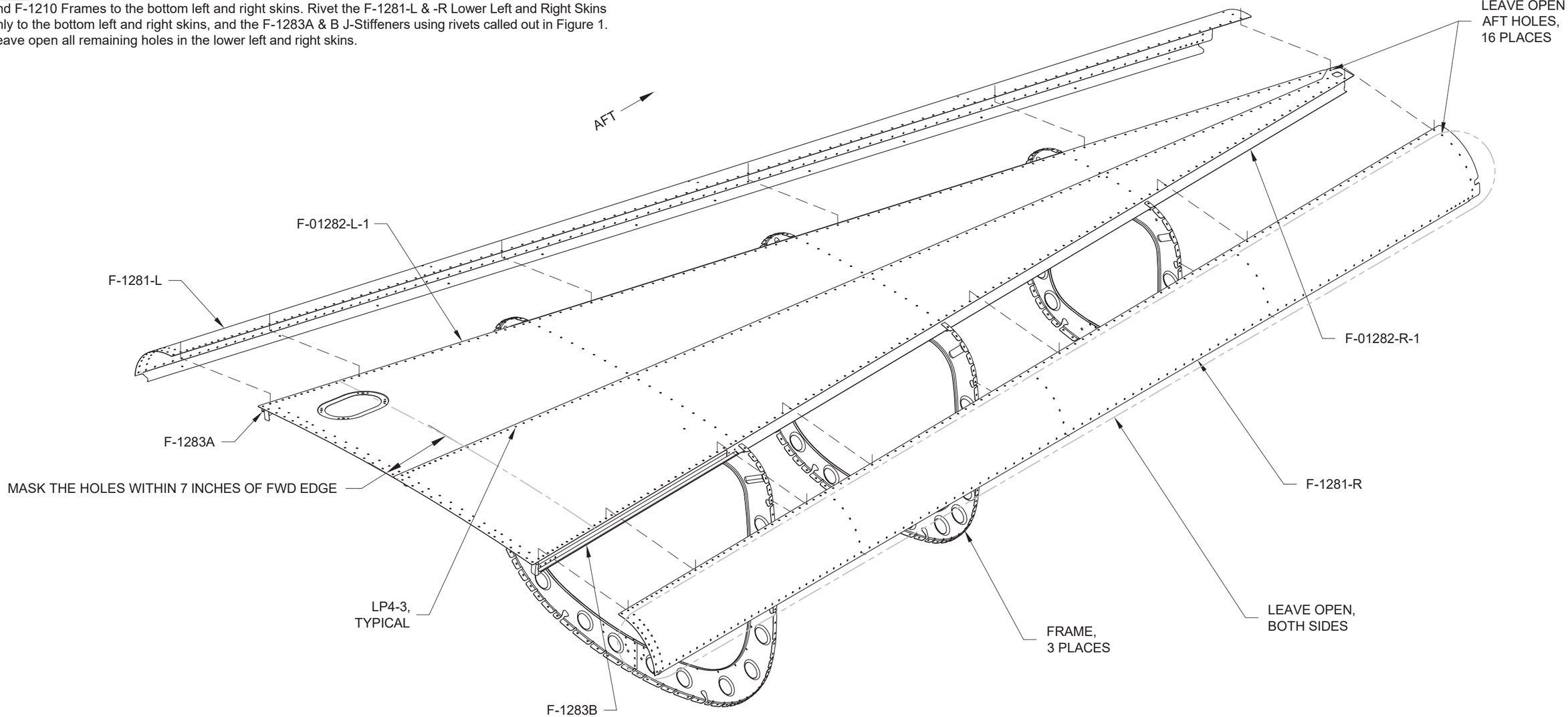


FIGURE 1:
LOWER SKIN INSTALLATION

Step 1: Turn the assembly over so the frames are pointing up. Support the assembly with two sawhorses, one at the F-1208 Frame and one at the F-1210 Frame.

Step 2: Cleco the F-1211 Assembly to the aft end of the existing structure as shown in Figure 1.

Step 3: Hook the J-stiffener of the F-1280-L & -R Left and Right Side Skins into the notches of the F-1208, F-1209, F-1210 Frames. Cleco the left and right side skins to the existing structure as shown in Figure 1.

Step 4: Route a string from the forward end of the existing structure, through the center of each frame, to the F-1211 Assembly. The string will go out through one of the stabilator control cable cutouts and back in through the other stabilator control cable cutout as shown in Figure 1. Return the end of the string to the forward end of the existing structure. Tape both ends of the string to the inside surface of the bottom skin.

NOTE: For the remaining steps in this section, leave the plastic tie wraps loose on the F-1208 Frame and the J-stiffener forward of the F-1208 Frame for additions later.

Step 5: Route the WH-P30-1 Trim Wires through the snap bushing in the F-1211 Assembly aligning the red band of heat shrink around the trim wires with the snap bushing. See Figure 2.

Route the trim wires inside the J-stiffener 'hook' of the F-1281-L Lower Left Skin to the forward edge of the existing structure. At the holes provided in the J-stiffener aft of the F-1208 Fuse Frame secure the trim wires using plastic tie wraps. Coil the remainder of the trim wires and secure the coil to the inside of the lower left skin with tape. See Figure 3.

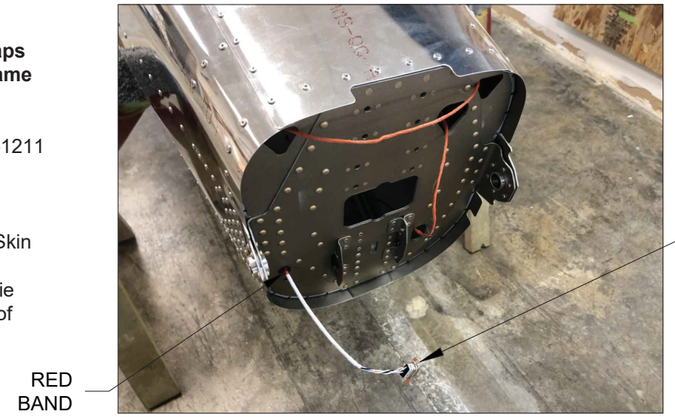


FIGURE 2: STRING AND TRIM ROUTING AFT

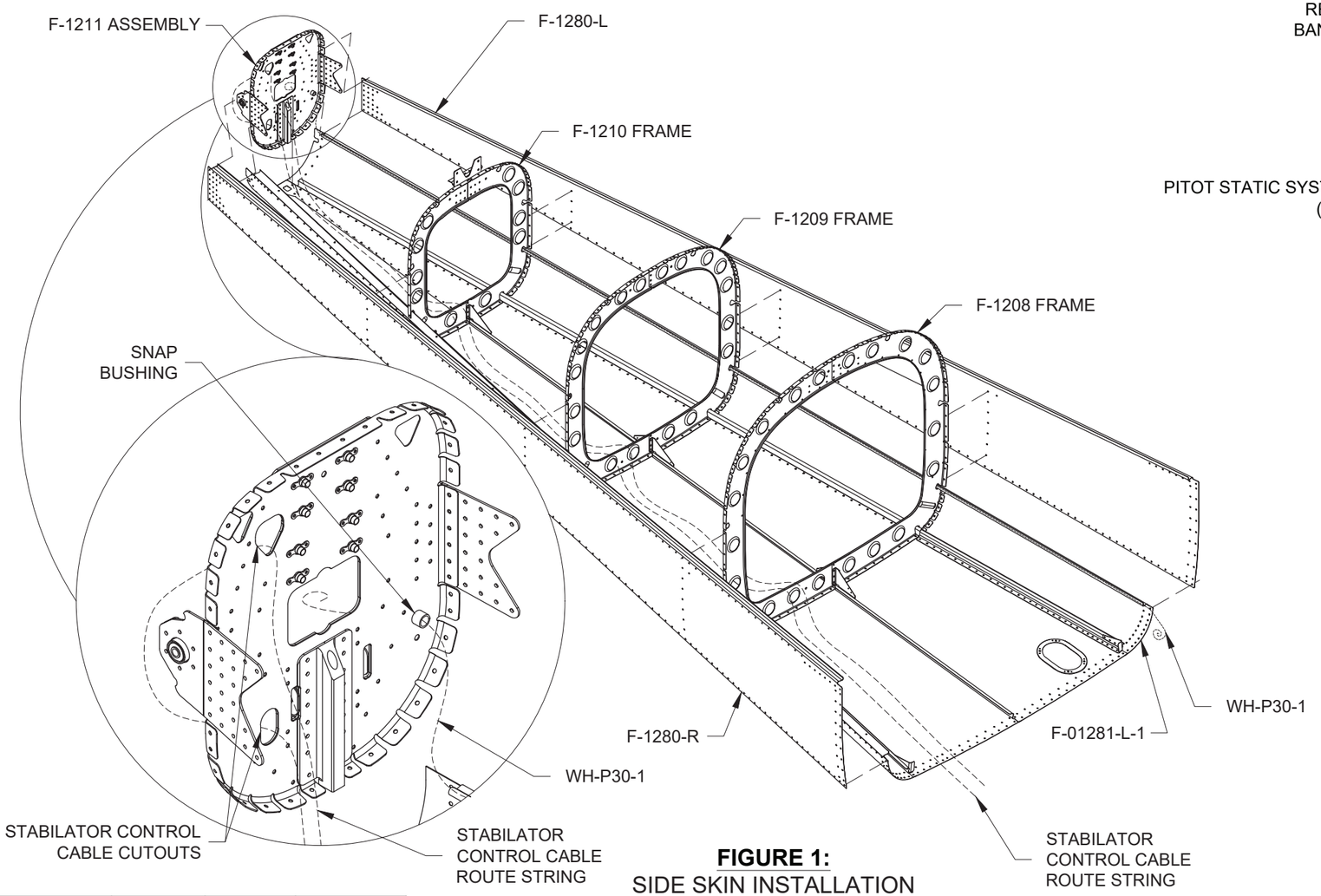


FIGURE 1:
SIDE SKIN INSTALLATION

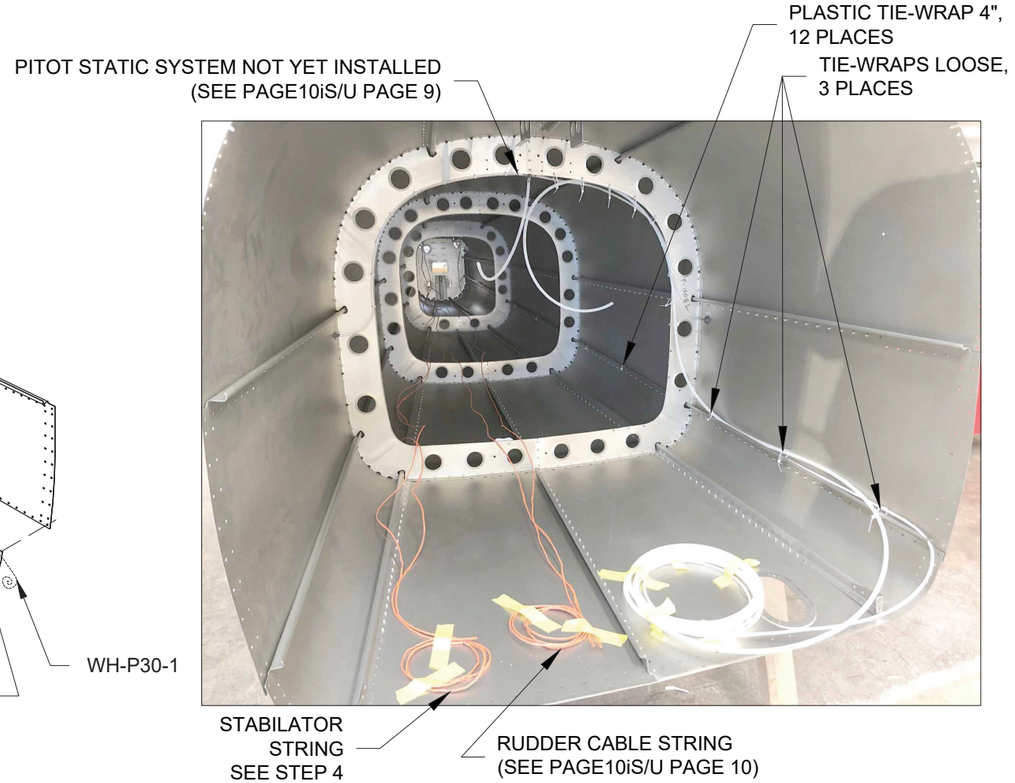


FIGURE 3: STRING AND TRIM ROUTING FORWARD
(F-12183A-E NOT PICTURED)

NOTE: Fabricate F-00013 for Skyview ADAHRS installation only. Omit F-00013 for Garmin EFIS system. Download and read Section 42N before configuring the Static and Pitot lines if you are installing the Garmin EFIS System.

Step 1: Follow the 'Installing the Static Air System' instructions to install the left and right side static sources into the F-1280-L & -R Left and Right Side Skins in the locations called out in Figure 1.

Step 2: Cut two lengths of PT 1/8 CLR PLASTIC each piece 24 inches long to make two F-00012 Static Line Port - Tees.

Step 3: Install the end of one of the F-00012 Static Line Port - Tees over the right static source and install one end of the other static line port - tee over the left static source.

Seal the joint between the static line port-tees and the static source by applying a fillet of RTV silicone sealant as shown in Figure 2.

Route each static line port - tee upward and inboard along the inside flange of the F-1208 Frame as shown in Figure 1.

Secure the right side static line port - tee with plastic tie wraps through the holes along the flange of the frame. See Figure 1.

Install, but do not tighten, the plastic tie wraps on the left side. The left side tie wraps must be left loose so as to allow for other items to be routed along with the static line port - tee.

Step 4: Cut a length of PT 1/4 OD TUBE 15 inches long to make the F-00013 Static Line Tee - ADAHRS.

Step 5: Cut a length of PT 1/8 CLR PLASTIC 7/16 inches long to make the F-00014 Static Line Tee Upsize.

Step 6: Heat then slide the F-00014 Static Line Tee Upsize and F-00013 Static Line Tee - ADAHRS over the forward facing leg of the F PLASTIC TEE as shown in the exploded detail view of Figure 1.

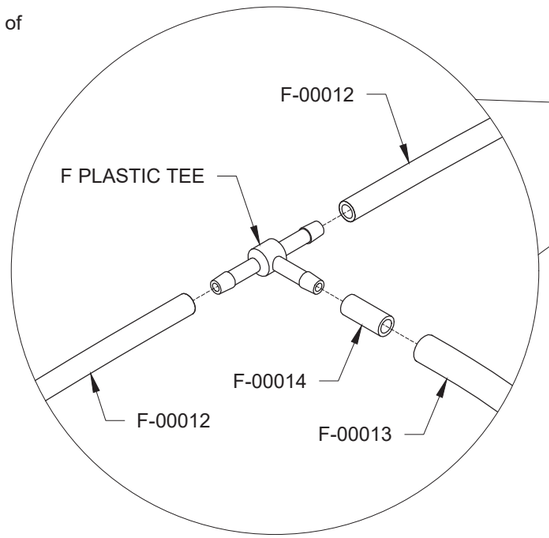
Heat then slide the two F-00012 Static Line Port - Tees onto the remaining legs of the F PLASTIC TEE as shown in the exploded detail view of Figure 1.

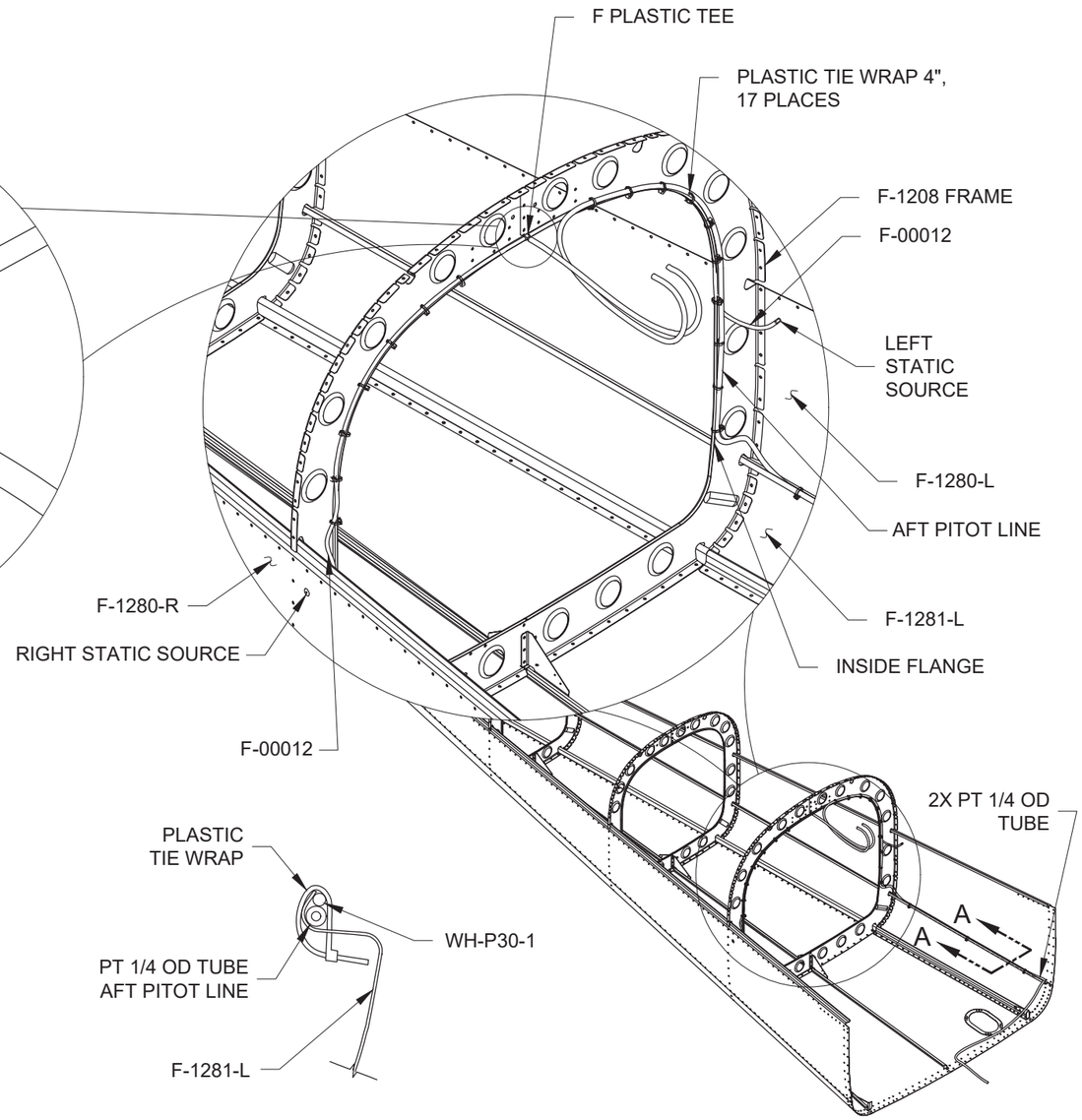
Step 7: The remaining length of PT 1/4 OD TUBE becomes the AFT PITOT LINE. Align one end of the Aft Pitot Line with the forward end of the F-00013 Static Line Tee - ADAHRS. See Figure 1.

Route the Aft Pitot Line outboard and down the left side F-1208 Frame then to the J-stiffener of the F-1281-L Lower Left Skin as shown in Figure 1.

Route the Aft Pitot Line forward, running inside the J-stiffener 'hook' of the lower skin with the WH-P30-1, as shown in Detail A-A to the forward edge of the existing structure.

Coil the remainder of the Aft Pitot Line and secure the coils to the inside of the lower left skin with tape or string.





DETAIL A-A

FIGURE 1:
STATIC SYSTEM SOURCES

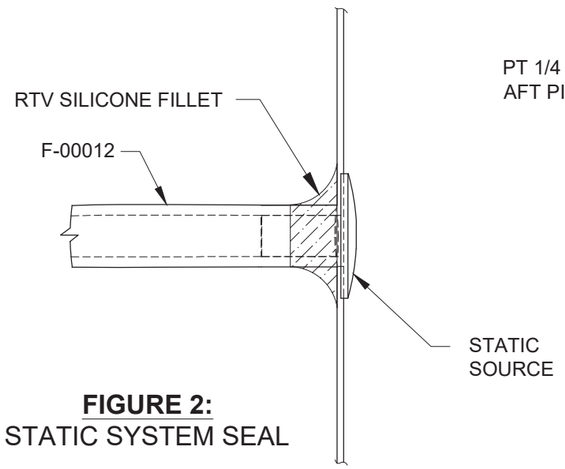


FIGURE 2:
STATIC SYSTEM SEAL

Step 1: Remove the area shown hatched to separate the F-1238-L & -R Snap Bushing Brackets as shown in Figure 1.

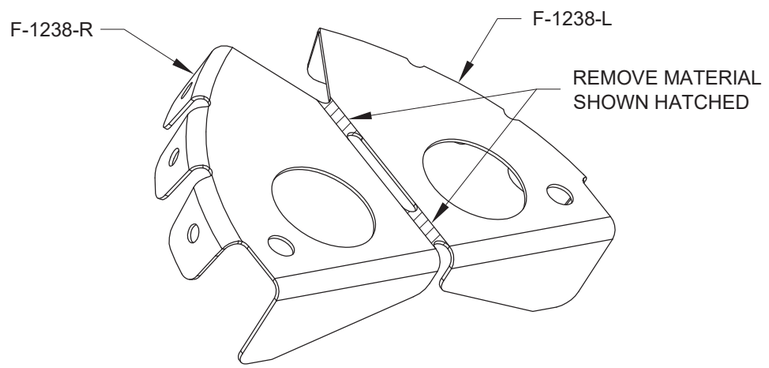


FIGURE 1: SNAP BUSHING BRACKET SEPARATION

NOTE: Steps 2 through 6 explain installation for the F-1279-L Upper Left Skin and F-1238-L Snap Bushing Bracket. Installation for the F-1279-R Upper Right Skin and F-1238-R Snap Bushing Bracket is a mirror of the left and should be done at the same time.

Step 2: Hook the F-1279-L Upper Left Skin J-stiffener into the cutouts in the F-1208, F-1209 and F-1210 Frames. Cleco the upper left skin to the frames and F-1280-L Left Side Skin as shown in Figure 2.

Step 3: Cleco the F-1238-L Snap Bushing Bracket to the F-1279-L Upper Left Skin as shown in Figure 2.

Step 4: Match-Drill #30 the holes called out in the F-1279-L Upper Left Skin J-stiffener into the F-1238-L Snap Bushing Bracket. Cleco the first hole before drilling the next. Then remove, deburr, re-cleco. A 12 inch extended bit may be helpful.

Step 5: Rivet the F-1238-L Snap Bushing Bracket to the F-1279-L Upper Left Skin using the rivets called out in Figure 2.

Step 6: Insert the snap bushing into the F-1238-L Snap Bushing Bracket called out in Figure 2.

Step 7: Route a string from the forward end of the existing structure to the F-1211 Assembly. The string will go through the F-1238-L Snap Bushing Bracket, out through the left rudder control cable cutout, then back in through the right rudder control cable cutout and through the F-1238-R Snap Bushing Bracket as shown in Figure 2. Return the end of the string to the forward end of the existing structure. Tape both ends of the string to the inside surface of the bottom skin.

Step 8: Place masking tape over all of the holes that are within seven inches of the forward edge of each tailcone skin. The masked holes will be left open for the remainder of this section.

Step 9: Rivet all of the open holes of the F-1280-L & -R Left and Right Side Skins. Rivet only the holes in the F-1279-L & -R Upper Left and Right Skins that are common to the left or right side skins. Capture the F-1211C Hinge Bracket when riveting the aft end of each left and right side skin.

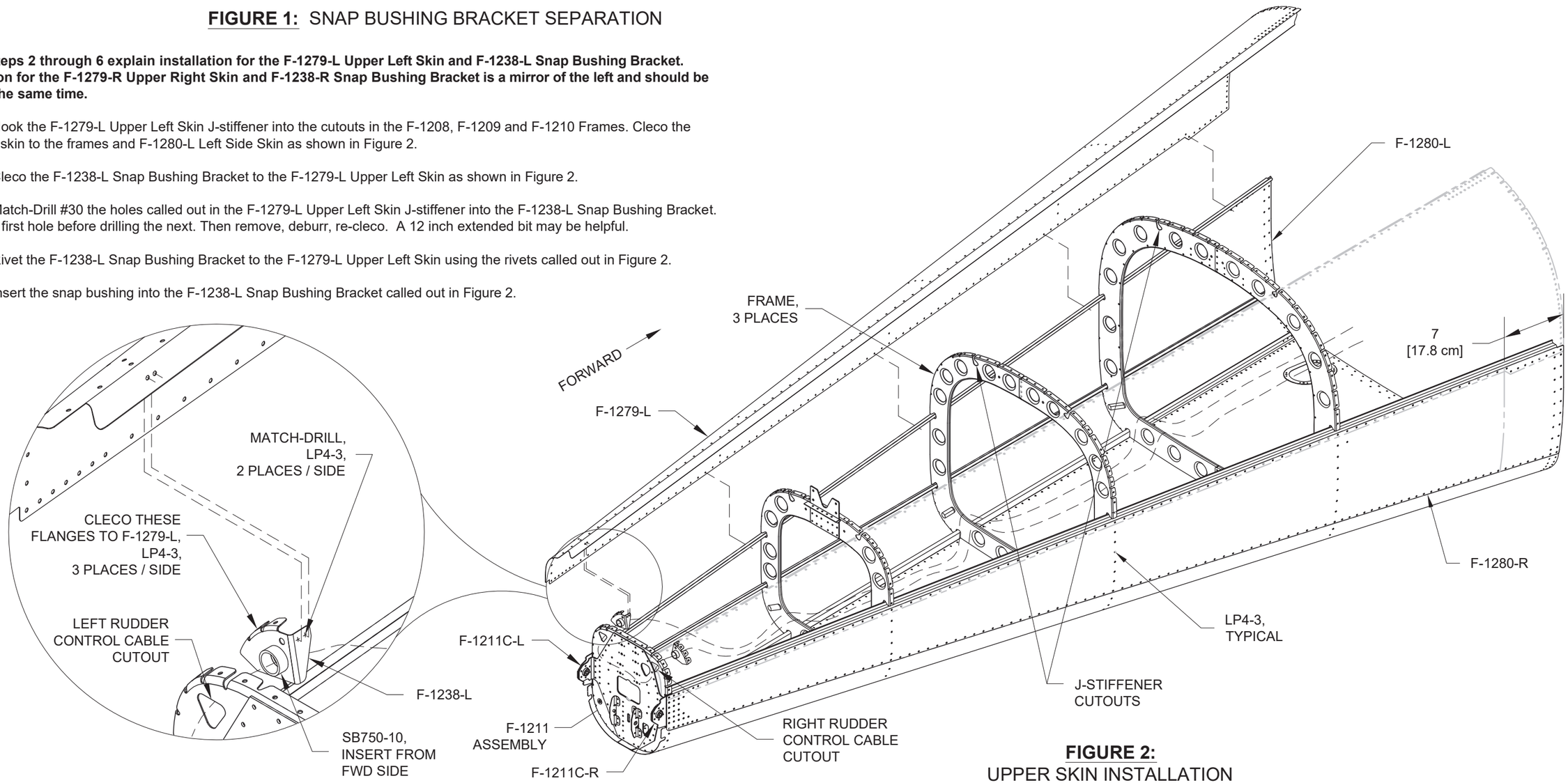


FIGURE 2:
UPPER SKIN INSTALLATION

Step 1: Final-Drill #19 the screw holes of the F-12106 Fwd Skin Rib per call-outs in Figure 1.

Step 2: Dimple #8 the screw holes of the F-12106 Fwd Skin Rib per call-outs in Figure 1.

Step 3: Dimple 3/32 the nutplate attach holes of the F-12106 Fwd Skin Rib per call-outs in Figure 1.

Step 4: Dimple 3/32 the nutplate attach holes of eight nutplates per call-outs in Figure 1.

Step 5: Rivet the dimpled nutplates to the F-12106 Fwd Skin Rib using hardware called out in Figure 1.

Step 6: Guide the F-1210B Plate through the slot in the F-1278 Top Skin. Cleco the Top Skin to the F-1210 Frame. Match-Drill #30 the two outboard-most holes in the F-1210C Angle using the Top Skin as a guide. Check the top skin for deformations caused by the F-1210C Angle at the locations called out in Figure 2. Remove the top skin. Deburr the angle. If deformations were present in the top skin file material from the angle to minimize deformations on the top skin. Cleco the top skin to the F-1208, F-1209 and F-1210 Frames and F-1279-L & -R Upper Left and Right Skins as shown in Figure 2.

Step 7: Rivet the F-12106 Fwd Skin Rib to the F-1278 Top Skin as shown in Figure 2.

Step 8: Cleco, then rivet the F-1283C J-Stiffener to the F-1278 Top Skin as shown in Figure 2, Detail A-A.

Step 9: Cleco, then rivet the F-00009-L & -R ADAHRS Brackets to the F-1278 Top Skin as shown in Figure 2, Detail A-A.

Step 10: Place masking tape over all of the remaining open holes that are within seven inches of the forward edge of the top skin.

Step 11: Rivet all of the remaining, unmasked open holes in the Tailcone Assembly using rivets called out in Figure 2.

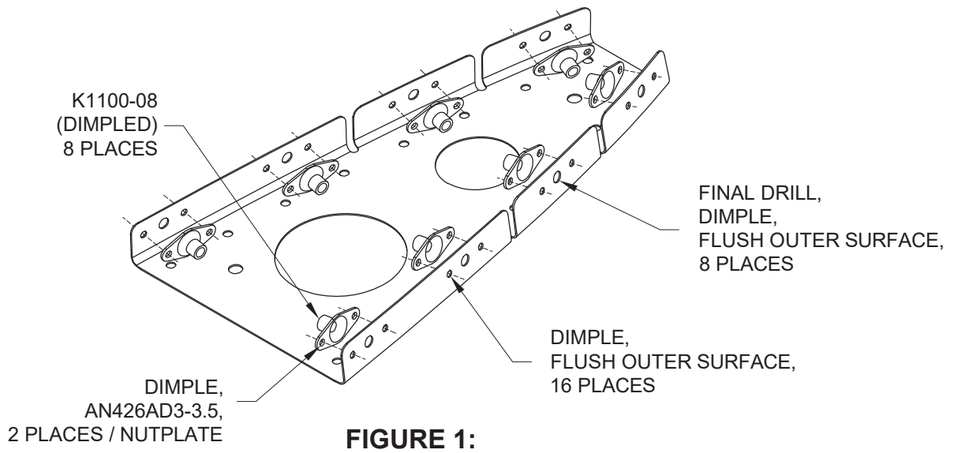
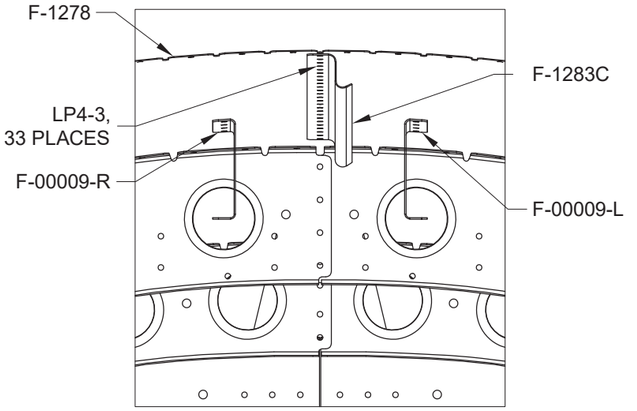


FIGURE 1:
F-12106 PREPARATION



DETAIL A-A
FRONT VIEW - LOOKING AFT

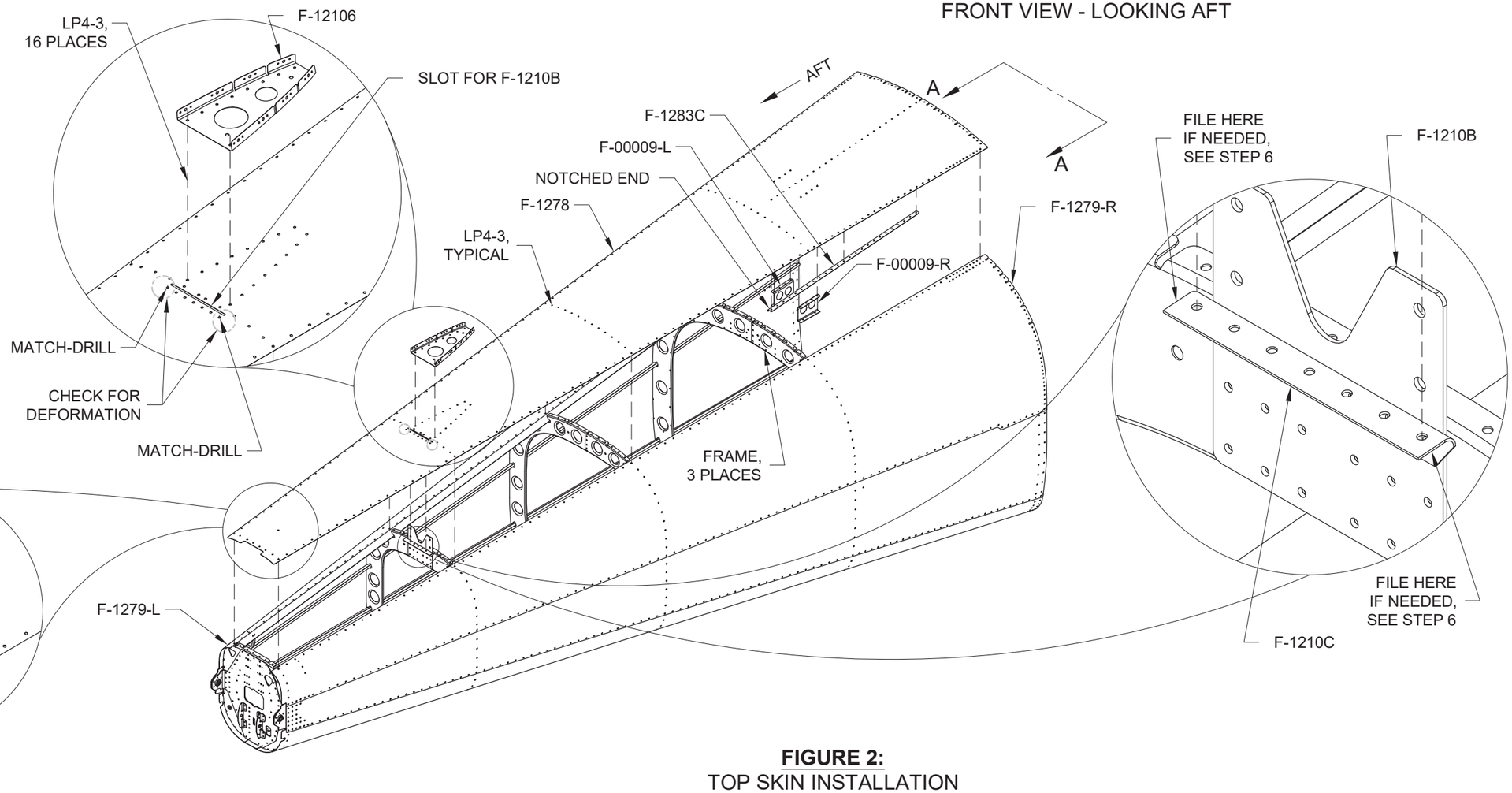


FIGURE 2:
TOP SKIN INSTALLATION

Step 1: Thread NUT-00009 3/8-16 SS Plain Hex Nut onto the BOLT EYE 3/8-16 T.D. Eye Bolt per the dimension in the Figure 1 detail.

Step 2: Screw the eye bolt into F-1211G as shown.

Step 3: Orient the eye bolt parallel to aircraft centerline and tighten the nut to 17.4 ft-lb [23.5 Nm] lubricated.

End of section.

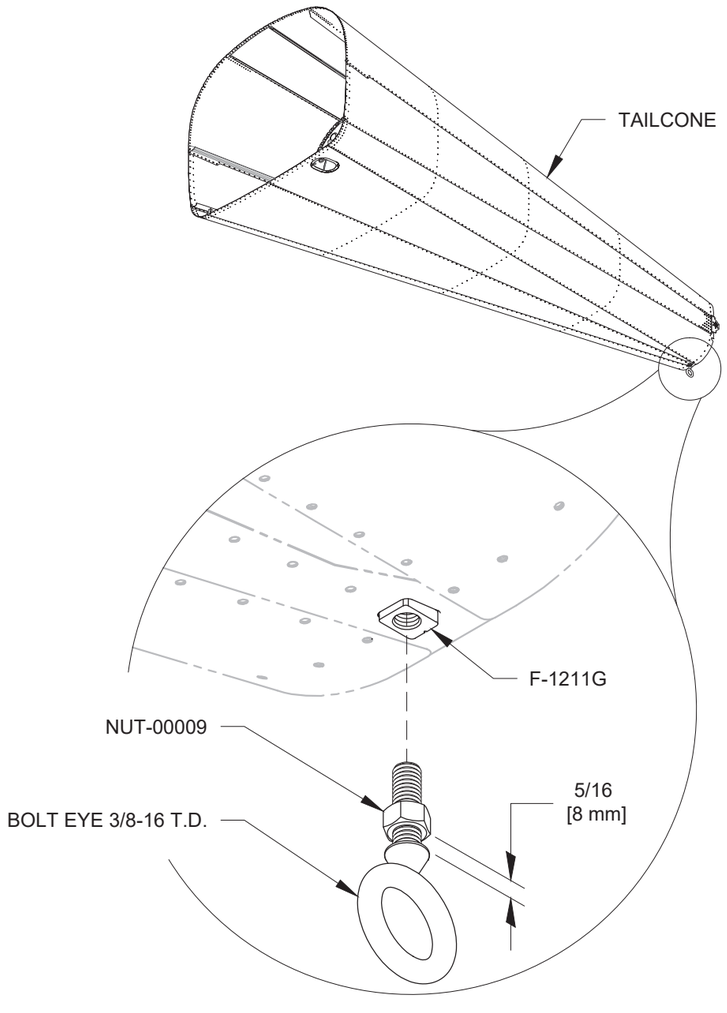


FIGURE 1: EYE BOLT INSTALLATION