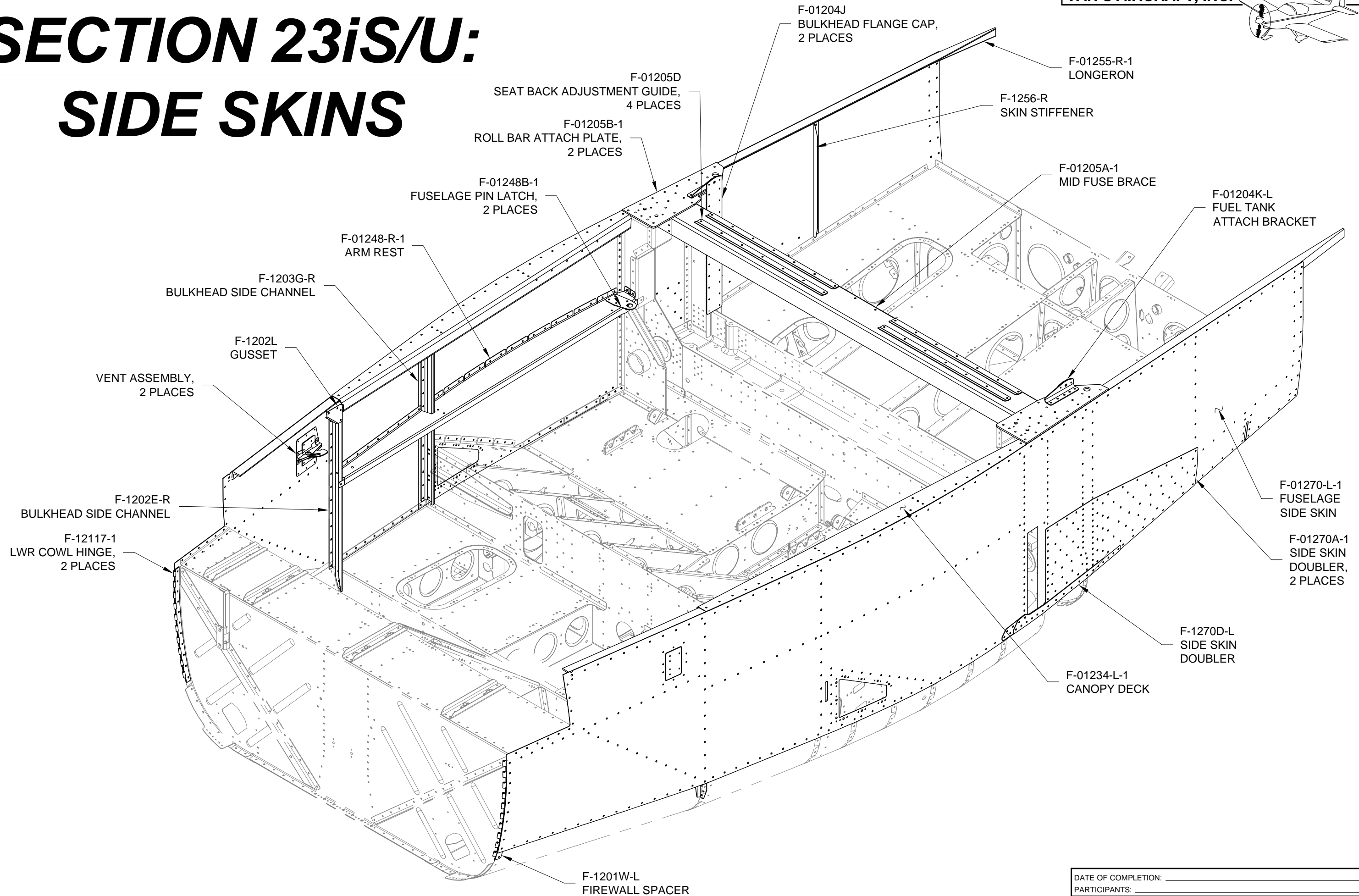


SECTION 23iS/U: SIDE SKINS



F-01204J
BULKHEAD FLANGE CAP,
2 PLACES

F-01255-R-1
LONGERON

F-1256-R
SKIN STIFFENER

F-01205D
SEAT BACK ADJUSTMENT GUIDE,
4 PLACES

F-01205B-1
ROLL BAR ATTACH PLATE,
2 PLACES

F-01205A-1
MID FUSE BRACE

F-01248B-1
FUSELAGE PIN LATCH,
2 PLACES

F-01204K-L
FUEL TANK
ATTACH BRACKET

F-01248-R-1
ARM REST

F-1203G-R
BULKHEAD SIDE CHANNEL

F-1202L
GUSSET

VENT ASSEMBLY,
2 PLACES

F-01270-L-1
FUSELAGE
SIDE SKIN

F-01270A-1
SIDE SKIN
DOUBLER,
2 PLACES

F-1270D-L
SIDE SKIN
DOUBLER

F-1202E-R
BULKHEAD SIDE CHANNEL

F-12117-1
LWR COWL HINGE,
2 PLACES

F-01234-L-1
CANOPY DECK

F-1201W-L
FIREWALL SPACER

DATE OF COMPLETION: _____			
PARTICIPANTS: _____			
DATE: 01/15/18	REVISION: 0	RV-12iS	PAGE: 23iS/U-01



NOTE: This page describes making the left longeron. The right is a mirror of the left.

Step 1: Mark a line on F-01255-L-1 as shown in Figure 1.

Step 2: Trim the corner on the aft end of the F-01255-L-1 as shown in Figure 1.

Step 3: Open the angle of F-01255-L-1 with a padded vise and 1/2 inch socket as shown in Figure 4 from forward end of the longeron to the marked line. See Figure 1 and 5.

Step 4: Clamp F-01255-L-1 in a padded vise at the marked line as shown in Figure 1. Use a crescent wrench, as shown in Figure 3, to twist F-01255-L-1 inboard per the dimensions in Figure 1.

When finished, the entire top surface of the F-01255-L-1 should be planar including the just-twisted portion. See Figure 5.

Step 5: Deburr the edges of F-01234-L-1.

Step 6: Position F-01234-L-1 and F-01255-L-1 as shown in Figure 2. Use a scrap piece of .025 thick aluminum to simulate F-01270-L-1. F-01234-L-1 should overhang F-01255-L-1 by .025 inches.

With the forward edge of the F-01234-L-1 flush with the marked line on F-01255-L-1, clamp F-01234-L-1 to F-01255-L-1 for match-drilling. See Figure 1.

NOTE: When match-drilling F-01255-L-1, start at the forward end and move aft, initially drilling every other hole and placing clecos as drilling progresses. Periodically check edge alignment (confirming .025 inch minimum overhang) and adjust as needed.

Step 7: Match-Drill #30 F-01255-L-1 using the F-01234-L as a drill guide. Take care when drilling to ensure that the drill is perpendicular to the surface.

Step 8: Remove F-01234-L-1, then deburr F-01255-L-1.

Step 9: Repeat the above steps for F-01255-L-1.

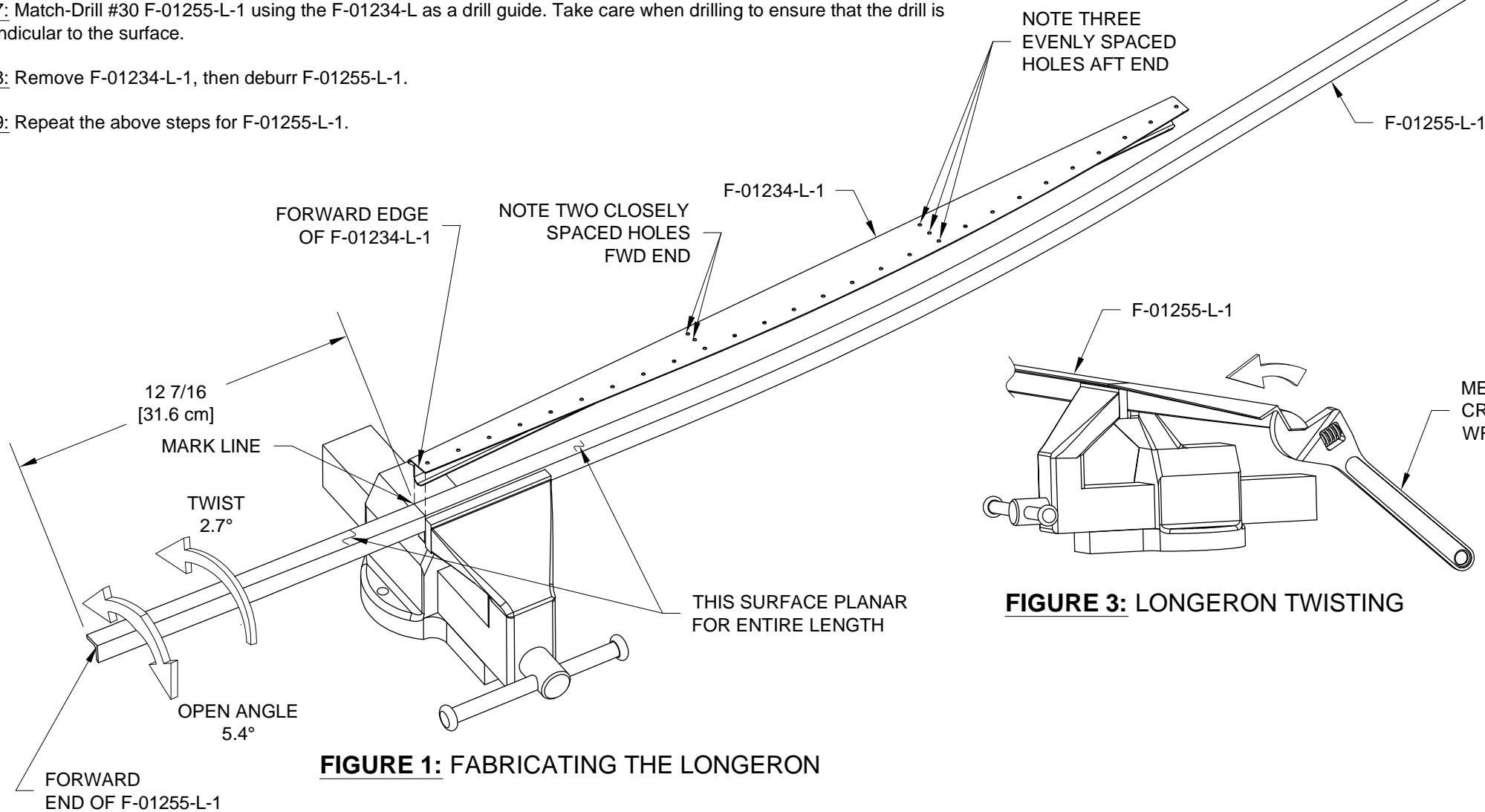


FIGURE 1: FABRICATING THE LONGERON

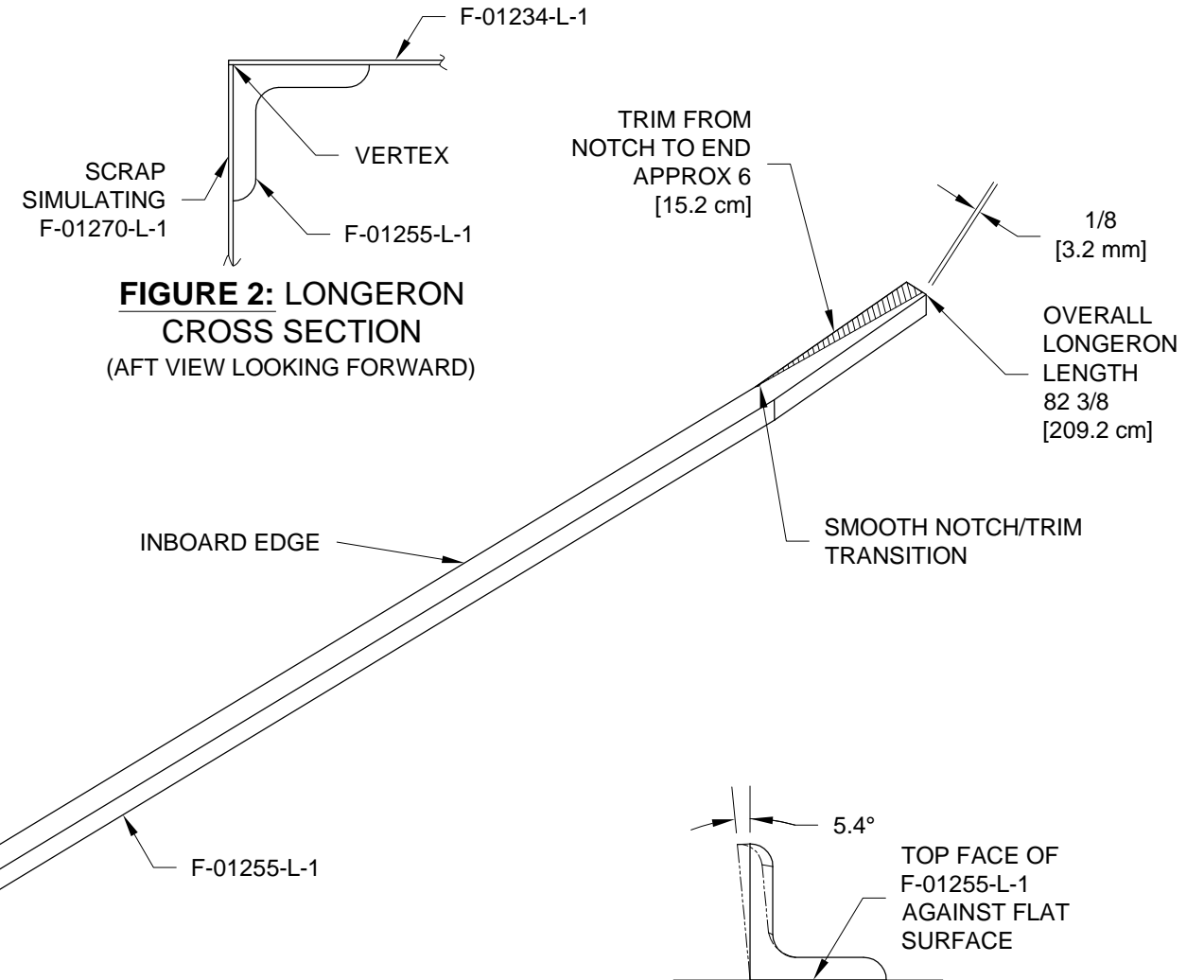


FIGURE 2: LONGERON CROSS SECTION (AFT VIEW LOOKING FORWARD)

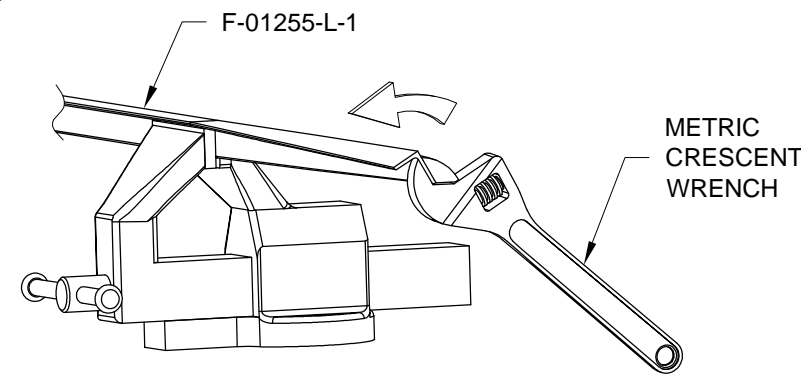


FIGURE 3: LONGERON TWISTING

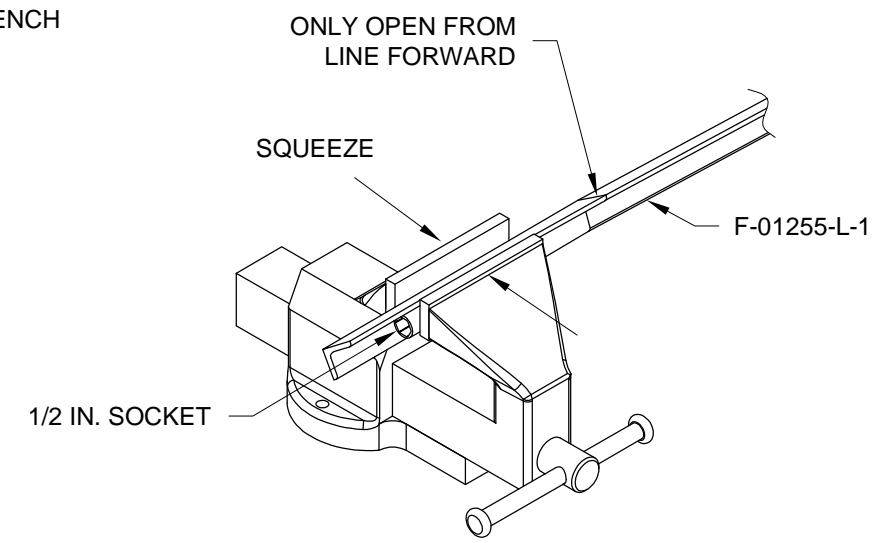


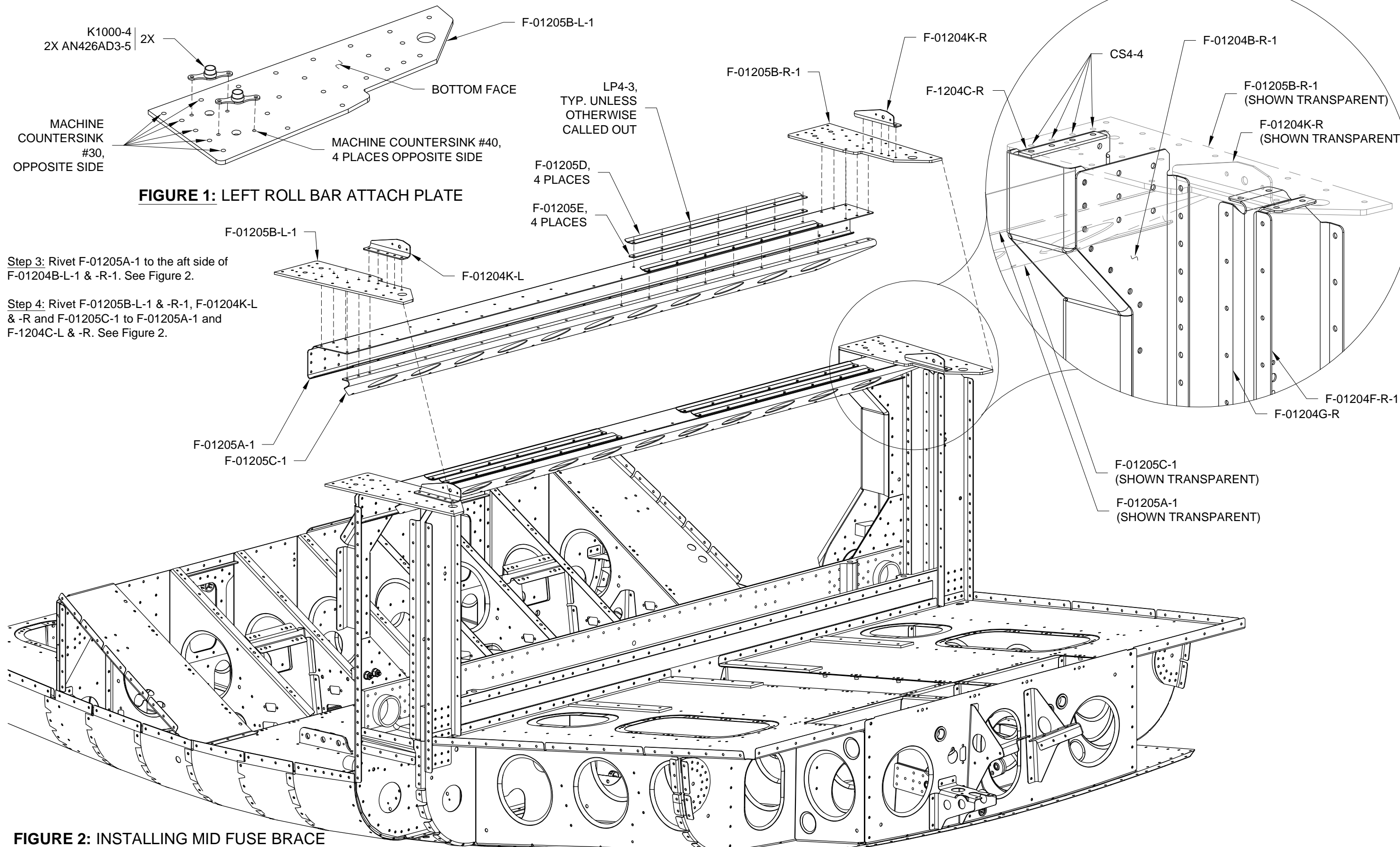
FIGURE 4: LONGERON OPENING



Step 1: Machine countersink the top face of each F-01205B-1 as shown in Figure 1 to create mirrored left and right parts F-01205B-L-1 & -R-1.

Step 5: Rivet F-01205D and F-01205E onto the F-01205A-1 as shown in Figure 2 (only the right side is shown, mirror what is shown for the left).

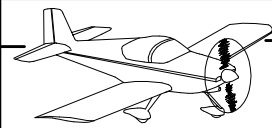
Step 2: Rivet nutplates to F-01205B-L-1 & -R-1 as shown in Figure 1 (temporarily thread a bolt into each nutplate while riveting).



Step 3: Rivet F-01205A-1 to the aft side of F-01204B-L-1 & -R-1. See Figure 2.

Step 4: Rivet F-01205B-L-1 & -R-1, F-01204K-L & -R and F-01205C-1 to F-01205A-1 and F-1204C-L & -R. See Figure 2.

F-01205C-1 (SHOWN TRANSPARENT)
F-01205A-1 (SHOWN TRANSPARENT)



NOTE: The steps on this page show only the right side. Mirror the following operations for the left.

Step 1: Machine countersink the rivet holes in F-01204J as shown in Figure 1.

Step 2: Rivet F-01204J to F-01204F-R-1, F-01204G-R, and F-01204K-R as shown in Figure 1.

MACHINE COUNTERSINK
24 PLACES

AN426AD3-3.5
24 PLACES

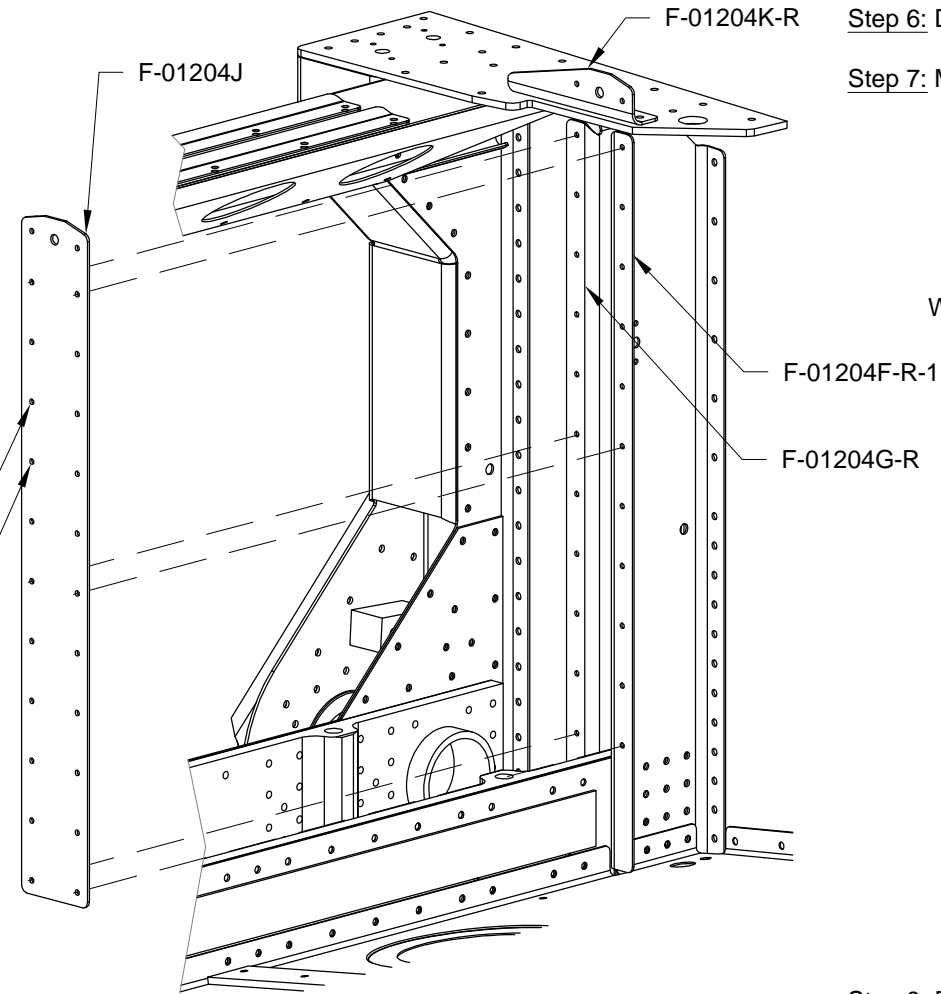


FIGURE 1: F-01204J INSTALLATION

Step 3: Cut apart then deburr F-1203H-L & -R as shown in Figure 2.

Step 4: Dimple the two holes in the end of F-1203G-R as indicated in Figure 3.

Step 5: Rivet F-1203H-R to F-1203G-R as shown in Figure 3.

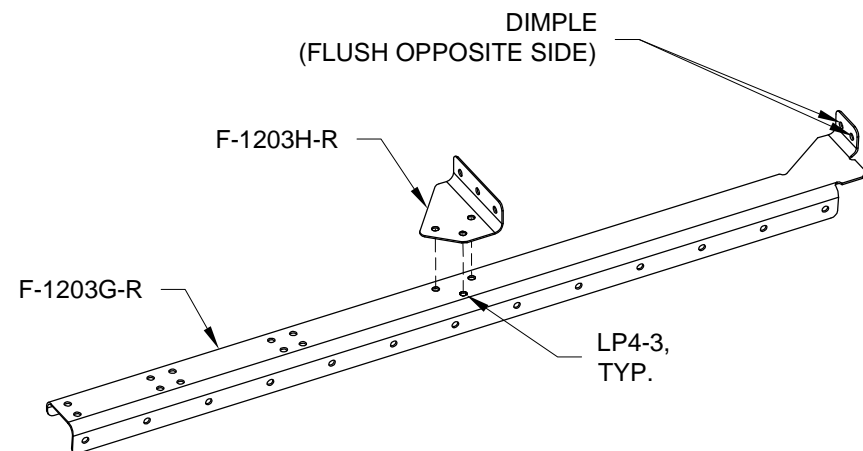


FIGURE 3: INSTALLING THE ARM REST BRACKET

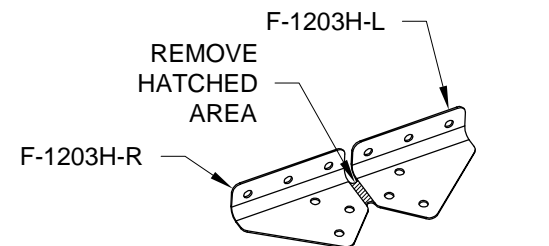


FIGURE 2: SEPARATING THE ARM REST BRACKETS

Step 6: Dimple the holes in F-01234-R-1 except as indicated in Figure 4.

Step 7: Machine countersink the match-drilled holes in F-01255-R-1 that correspond to the holes just dimpled in F-01234-R-1.

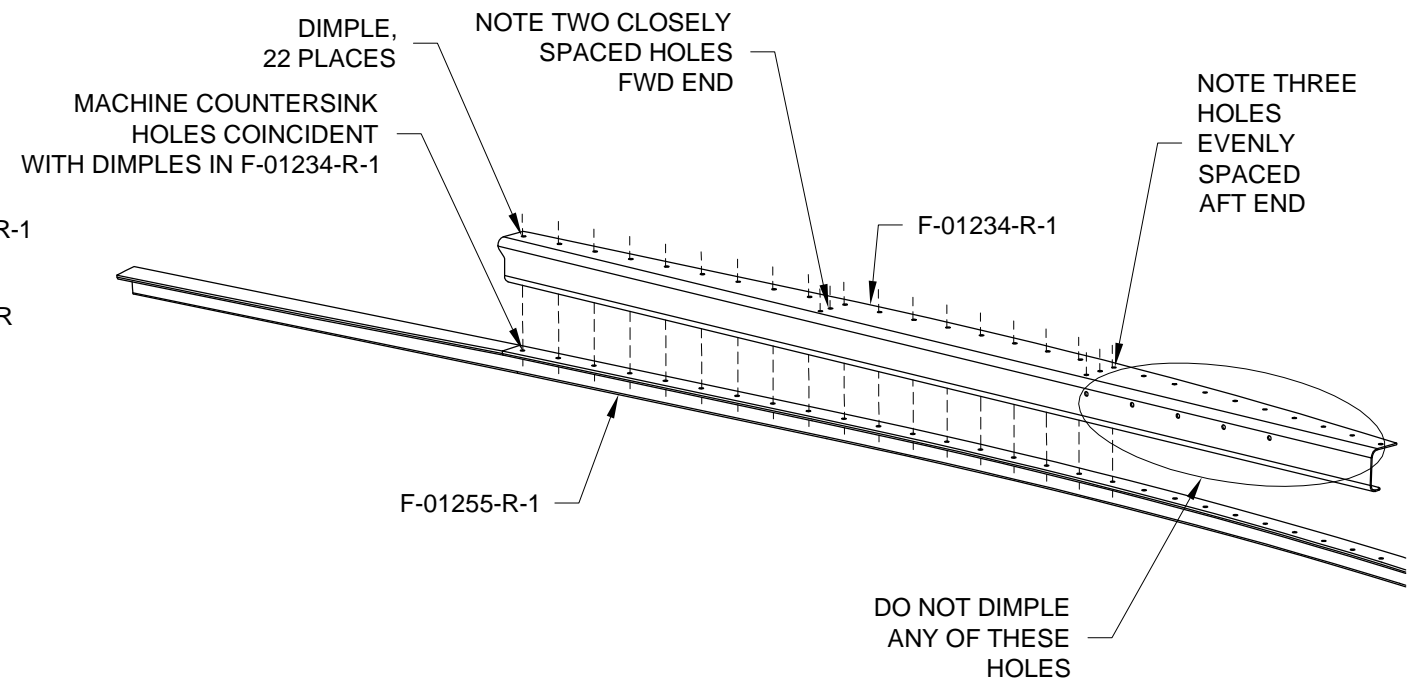


FIGURE 4: COUNTERSINKING CANOPY DECK

Step 8: Remove the tab from the notch in F-01248-R-1 as shown in Figure 5.

Step 9: Repeat and mirror Steps 1 through 8 for the left side.

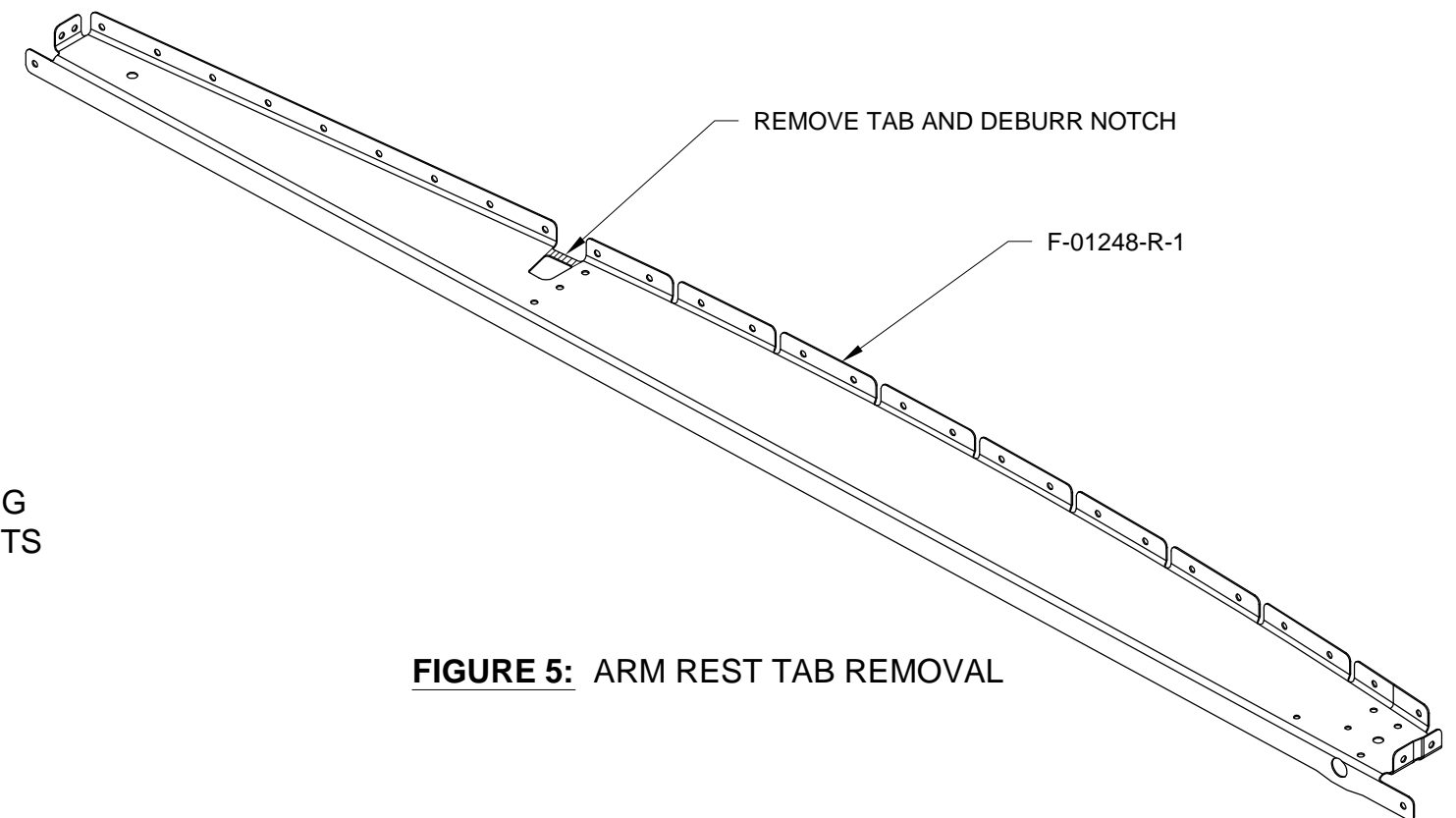


FIGURE 5: ARM REST TAB REMOVAL



NOTE: The following steps are for the right side. Mirror what is shown for the left.

NOTE: Reference Figure 1 for Steps 1-4.

Step 1: Rivet F-1202E-R to F-01202F-1. Rivet F-1203G-R to F-01203A-1.

Step 2: Match-Drill #30 the forward tab of F-01248-R-1 to F-1202E-R and the aft tab to F-1204H.

Deburr all match drilled holes.

Step 3: Rivet F-01248B-1 to F-01248-R-1.

Step 4: Rivet F-01248-R-1 to F-1202E-R, F-1204H, F-1204C-R and F-1203H-R.

NOTE: When installing the F-01255-L-1 and -R-1 in Step 5, it may be necessary to detail the notches in F-01204B-R-1, F-1204C-R, F-01205A-1, F-01205B-R-1, F-01204F-R-1, and F-01204G-R with a file to clear the flanges of the longerons. See Figure 2.

Step 5: Insert and cleco F-01234-R-1 and F-01255-R-1 into the fuselage skeleton. Cleco the F-01234-R-1 to the upper tab in F-1203G-R.

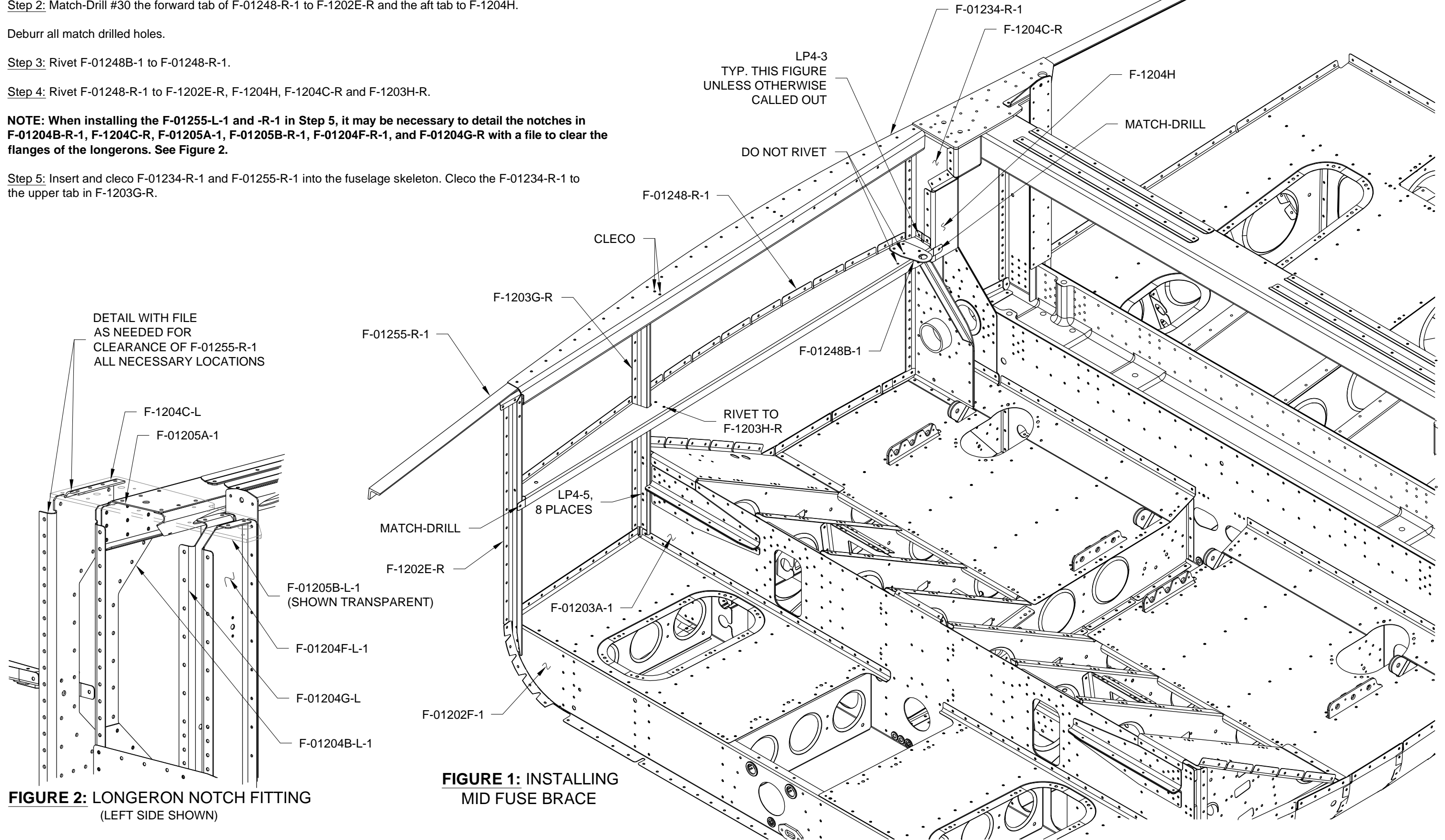


FIGURE 2: LONGERON NOTCH FITTING
(LEFT SIDE SHOWN)

FIGURE 1: INSTALLING
MID FUSE BRACE



Step 1: Cut out the wing spar penetration holes in F-01270-1 to make F-01270-L-1 & -R-1. Start by marking out the shaded areas labeled in Figures 1 and 2.

Step 2: Drill a large hole inside the hatched areas shown in Figures 1 and 2. Use snips to cut close to, but not at the edge of the hatched area. Snip around a final time removing material up to the trim line around the hatched area. Deburr the edge of the hole.

Step 3: Clearly mark F-01270-L-1 & -R-1 left and right! A number of builders have installed the skins on the wrong side!

Step 4: Dimple the screw, then the rivet hole in F-01270-L-1 & -R-1 as shown in Figures 1 and 2.

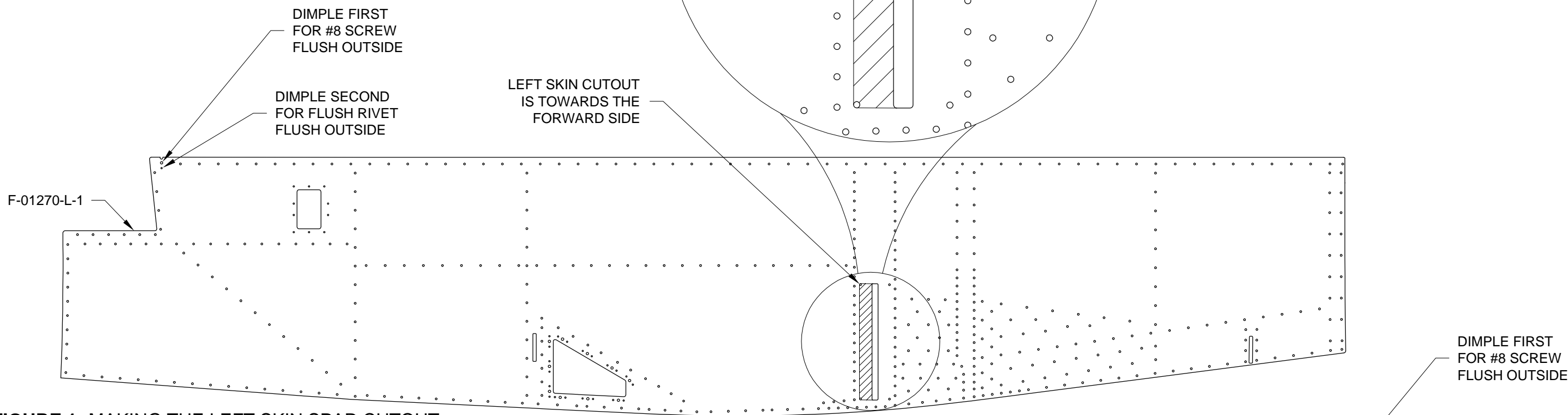
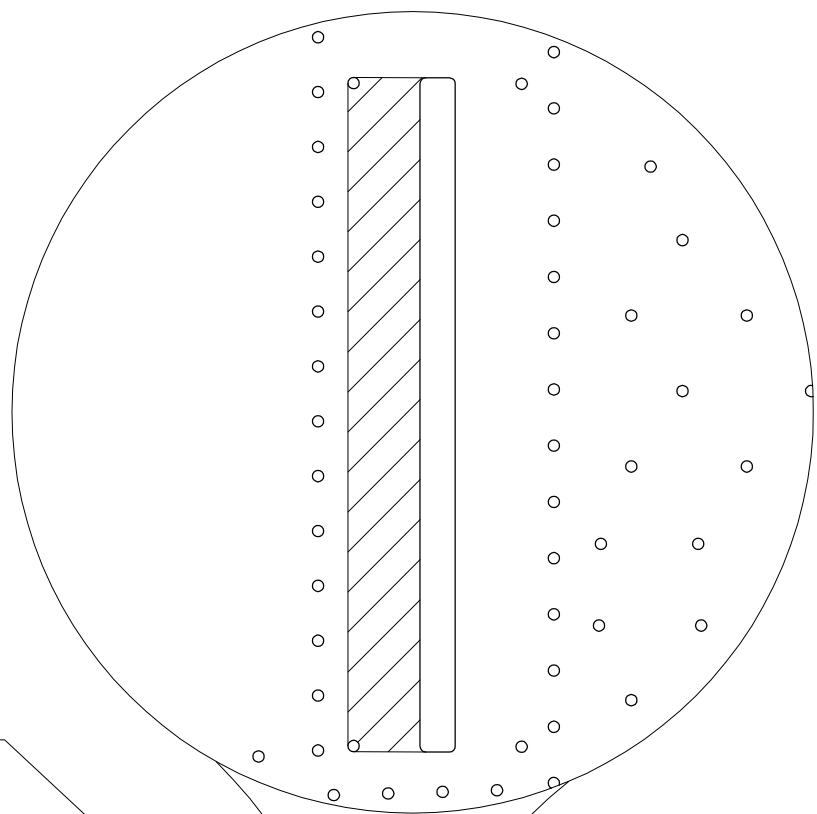


FIGURE 1: MAKING THE LEFT SKIN SPAR CUTOUT

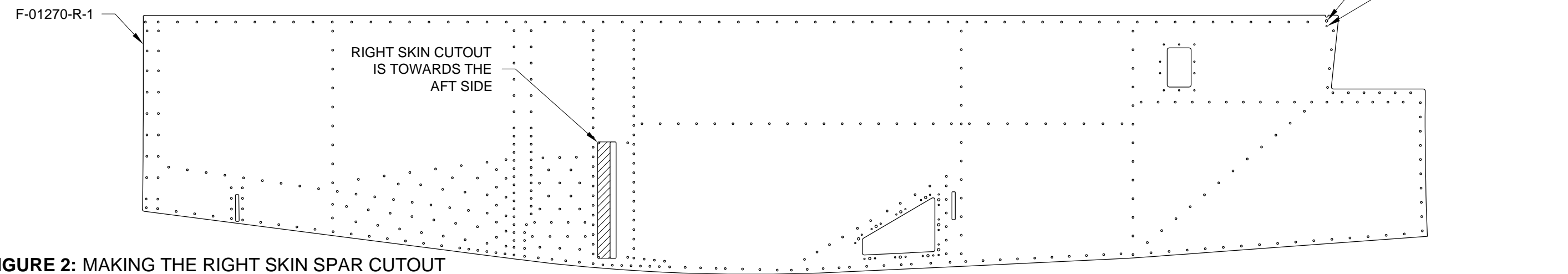
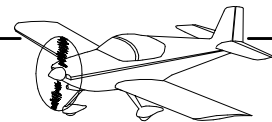


FIGURE 2: MAKING THE RIGHT SKIN SPAR CUTOUT



NOTE: See Figure 1 for all steps on this page.

Step 1: Rivet F-1202L to F-1202E-L & -R.

Step 2: Cleco F-01270-L-1 & -R-1 (double check left and right), F-01270A-1 and F-1270D to the fuselage. Align the aft edge of F-01234-L-1 & -R-1 with the forward edge of F-01205B-L-1 & -R-1.

Align the vertex of F-01255-L-1 & -R-1 with the upper edge of F-01270-L-1 & -R-1. See Page 23iS/U-02 Figure 2. Clamp both parts together.

Align the outboard edge of F-01205B-L-1 & -R-1 with the vertex of F-01255-L-1 & -R-1. Clamp both parts together.

Step 3: Match-Drill #30 all holes common between F-01270-L-1 & -R-1, F-01270A-1, F-1270D and F-01255-L-1 & -R-1. Match-Drill #30 all holes common between F-01205B-L-1 & -R-1 and F-01255-L-1 & -R-1.

Step 4: Machine countersink 120° the hole locations in F-1270D that use flush rivets to make F-1270D-L & -R. See Page 23iS/U-10 Figure 2 for locations.

Step 5: Remove and deburr F-01255-L-1 & -R-1, F-01270-L-1 & -R-1, F-01270A-1 and F-1270D-L & -R. Prime F-01255-L-1 & -R-1. Trim the tab from the aft edge of F-01270-L-1 & -R-1 as shown in the detail view. Break the bottom and aft edge of both side skins (see Section 5.10).

Step 6: Dimple the nutplate holes around the triangular opening in F-01270-L-1 & -R-1 (flush outboard side). The top center nutplate hole is inaccessible with a 3 in. yoke. Dimple these holes using the dies only. Place one die against a solid surface and hit the other with a hammer. Rivet nutplates to these holes as shown.

CAUTION: Do not rivet the holes marked with a triangle in Figure 1! Cleco these holes for later assembly.

NOTE: When riveting, start with the Cherry Rivets in F-01270A-1 and F-1270D-L & -R first. Cherry Rivets require a precise hole. Through holes should not be drilled out.

Step 7: Rivet the F-01270-L-1 & -R-1, F-01270A-1 and F-1270D-L & -R, F-01255-L-1 & -R-1, F-01205B-L-1 & -R-1 and F-01234-L-1 & -R-1 to the fuselage as shown.

See 23iS/U-10 Figure 1 for rivet locations.

Step 8: Separate the F-1256-L & -R. Rivet the F-1256-L & -R to F-1270-L-1 & -R-1.

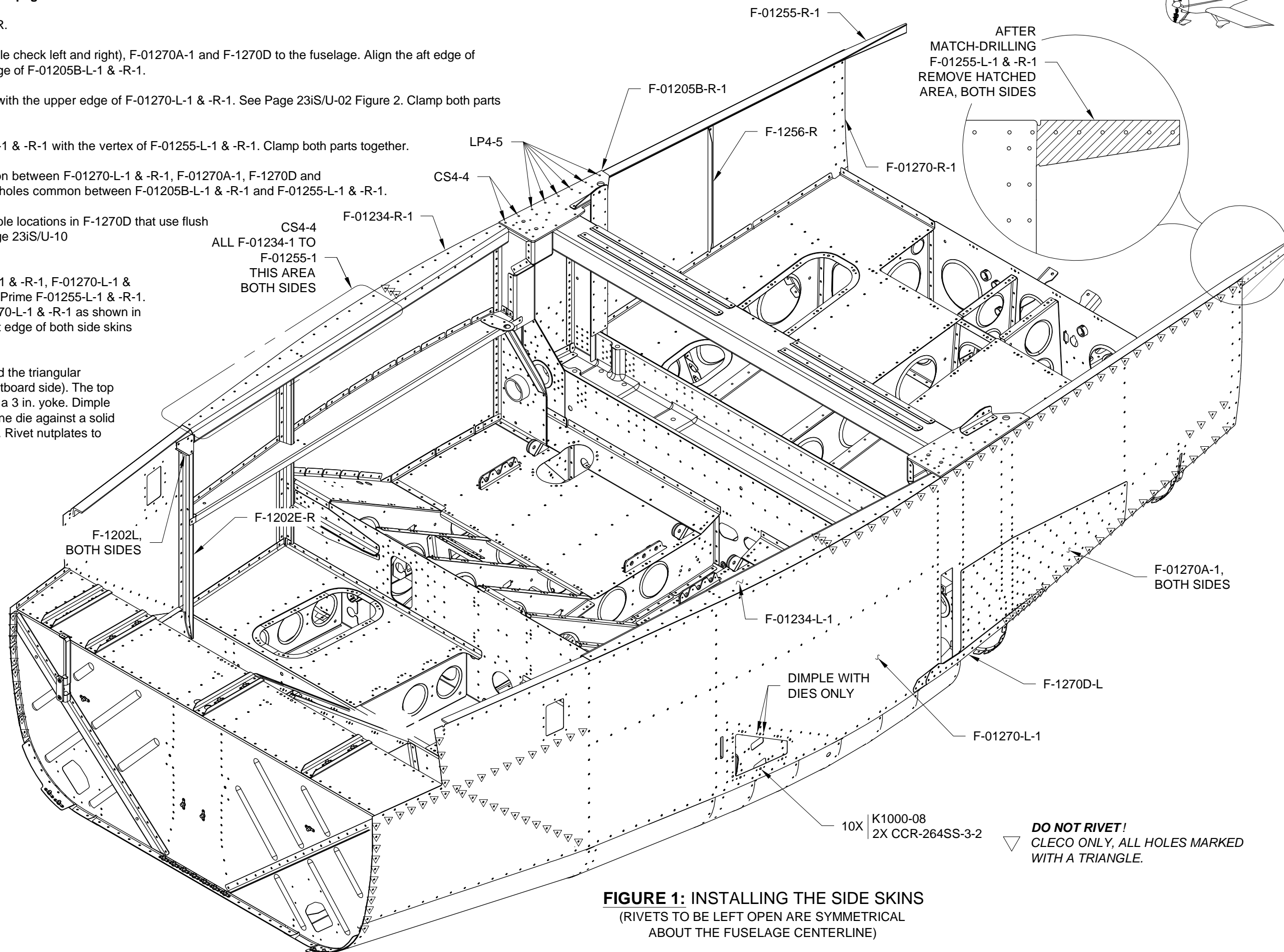


FIGURE 1: INSTALLING THE SIDE SKINS
(RIVETS TO BE LEFT OPEN ARE SYMMETRICAL ABOUT THE FUSELAGE CENTERLINE)



NOTE: Make two vent door assemblies. The instructions on this page show the left side assembly. Repeat these steps for the right side of the aircraft.

Step 1: Separate F-1086 into F-1086A and F-1086B parts as shown in Figure 1. Separate F-1087 into F-1087A and F-1087B parts as shown in Figure 2.

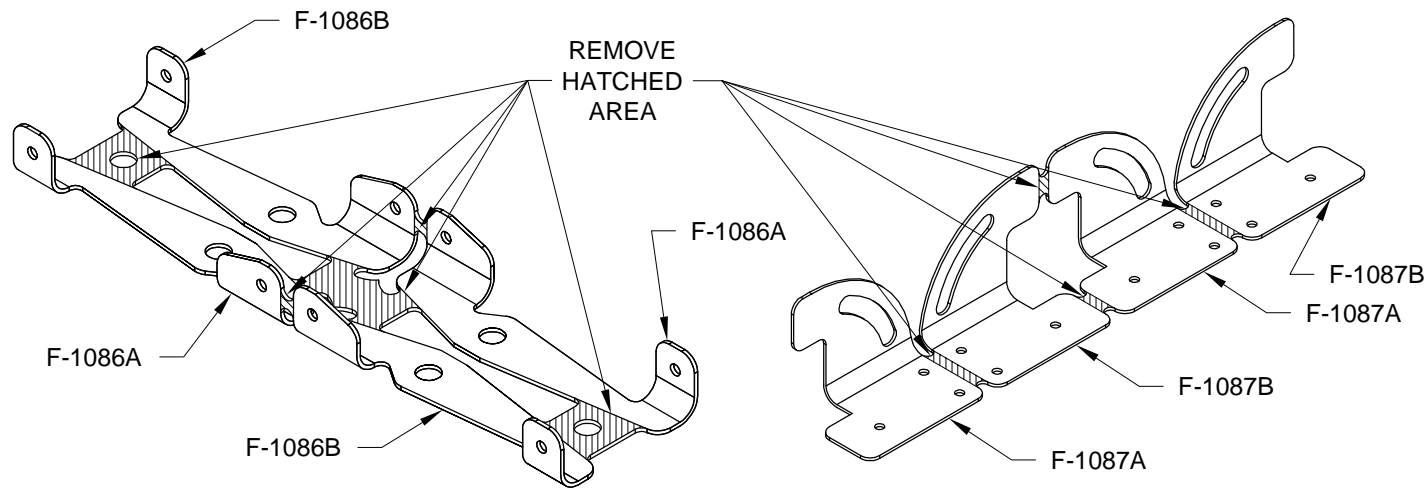


FIGURE 1: CUTTING APART THE VENT BRACKETS

FIGURE 2: CUTTING APART THE VENT SLIDES

Step 2: Cleco together, final-drill #40 all common holes then deburr F-1087A, F-1087B, F-1092 and F-1093 as shown in Figure 3.

Step 3: Machine countersink the holes in F-1093 for flush rivets on the outboard side of the aircraft.

Step 4: File the edges of the slot smooth in F-1087A and F-1087B. Check that an AN525-10R7 screw smoothly slides along the entire length of the slot.

Step 5: Rivet the parts together to make the Vent Door Subassembly shown in Figure 3.

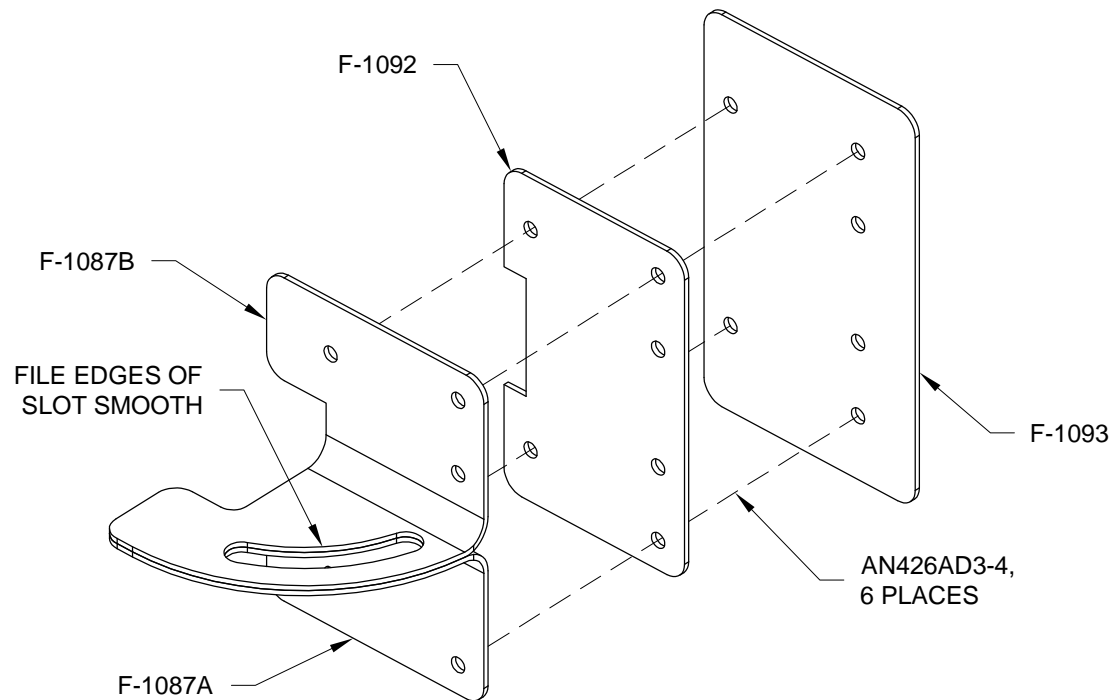


FIGURE 3: VENT DOOR SUBASSEMBLY

Step 7: Install the Vent Door Subassembly as shown in Figure 5.

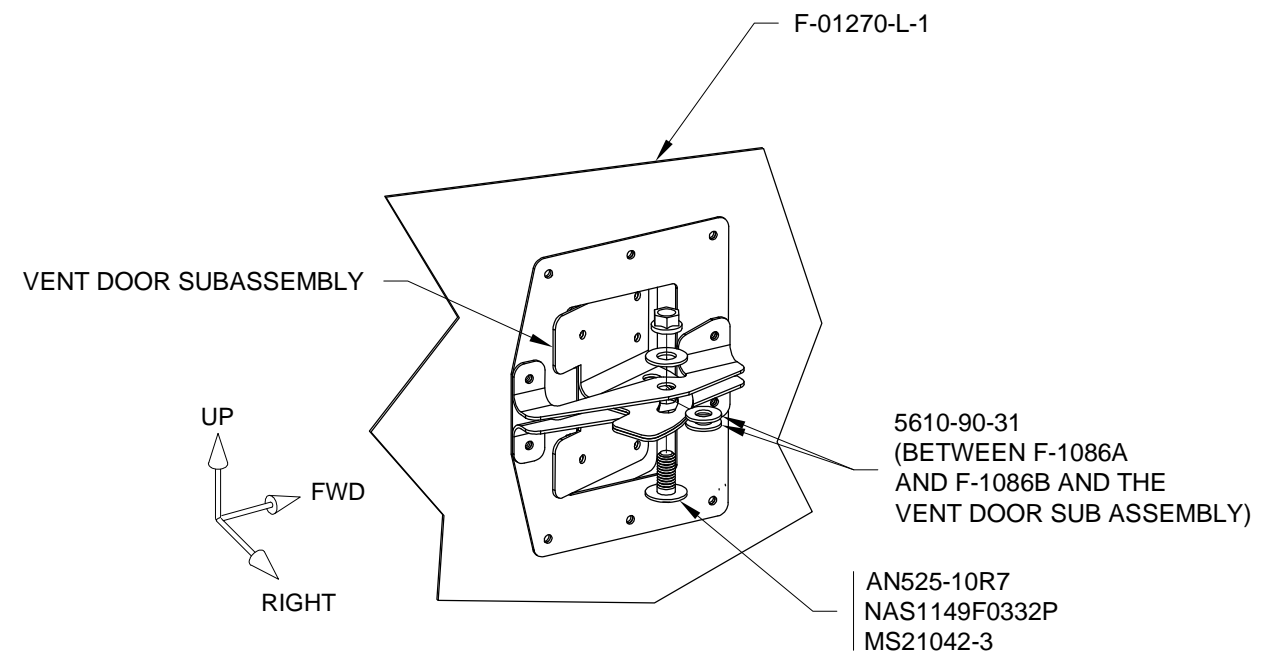


FIGURE 5: INSTALLING THE VENT DOOR SUBASSEMBLY

NOTE: A small block of wood is helpful to keep the tabs of F-1086A and F-1086B separated.

Step 6: Cleco then final-drill #30 all common holes between F-1086A, F-1086B and F-1096 to F-01270-L-1 as shown in Figure 4.

Disassemble, deburr then rivet the parts together.

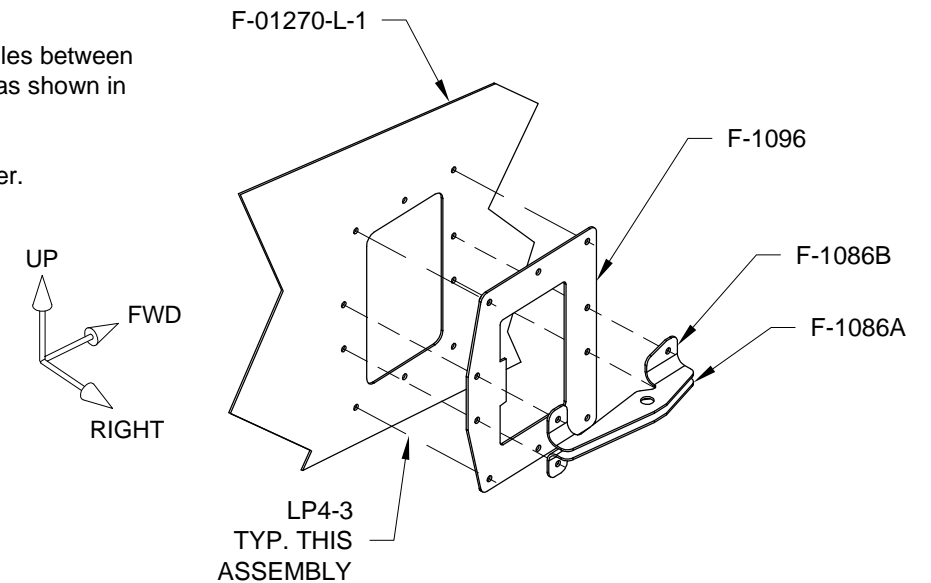


FIGURE 4: ASSEMBLING THE VENT DOUBLER AND BRACKETS



Step 1: Remove the hinge pin and set aside for later use. Fabricate two F-12117-1 from AN257-P4 piano hinge. See Figure 1.

Retain unused hinge material for use in Section 29iS/U. See 29iS/U-02 Step 1.

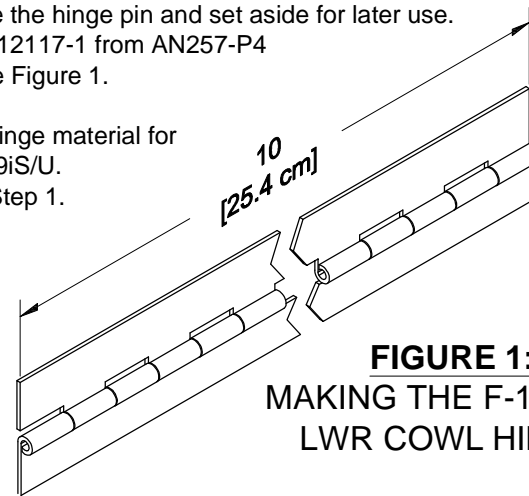


FIGURE 1:
MAKING THE F-12117-1
LWR COWL HINGE

Step 2: Fabricate two F-1201W from AS3-020 aluminum sheet per the dimensions in Figure 2.

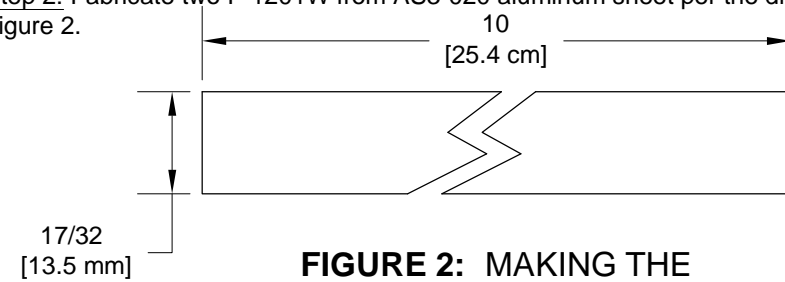


FIGURE 2: MAKING THE
FIREWALL SPACERS

Step 3: Clamp F-1201W and F-12117-1 together with the top and aft edges flush to each other. Mark, punch, then drill #30 the hole shown in Figure 3. Separate and deburr each part when finished.

Step 4: Cleco F-1201W-R and F-12117-1 to fuselage as shown in Figure 4. Align the aft edge of F-1201W-R and F-12117-1 parallel to the face of F-01201C-1 and clamp the parts together.

Step 5: Match-drill #30 F-12117-1 and F-1201W-R to the fuselage as shown in Figure 4. Install clecos as drilling progresses.

Step 6: Deburr, then rivet the F-1201W-R and F-12117-1 to the fuselage. See Figure 4.

Step 7: Repeat the above steps for the left side of the aircraft.

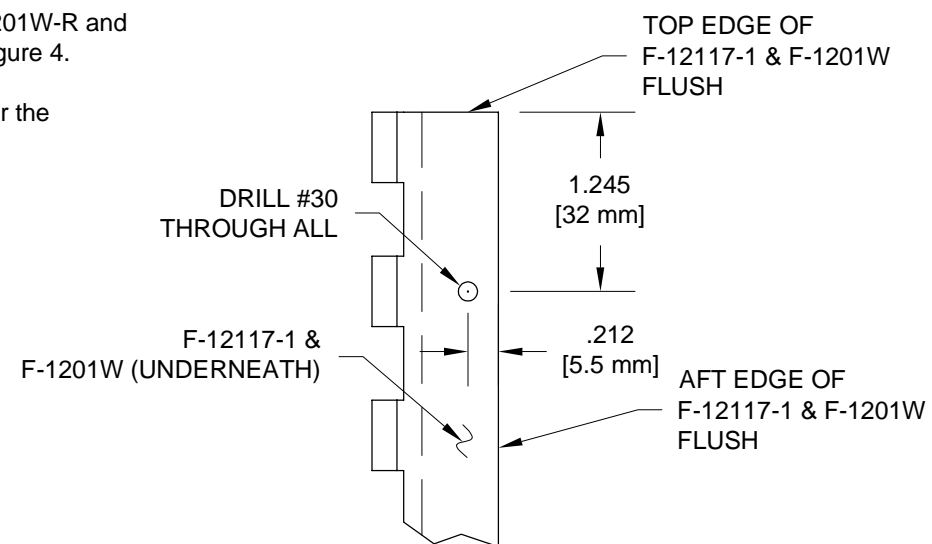


FIGURE 3: DRILLING INITIAL
GUIDE HOLE IN F-1201W & F-12117-1

CLECO
GUIDE HOLES

MATCH-DRILL #30,
10 PLACES
BOTH SIDES

LP4-3,
TYP.

F-1201W-R
(UNDER F-12117-1)
BOTH SIDES

F-12117-1
BOTH SIDES

F-01201C-1

FIGURE 4: INSTALLING THE LWR COWL HINGES

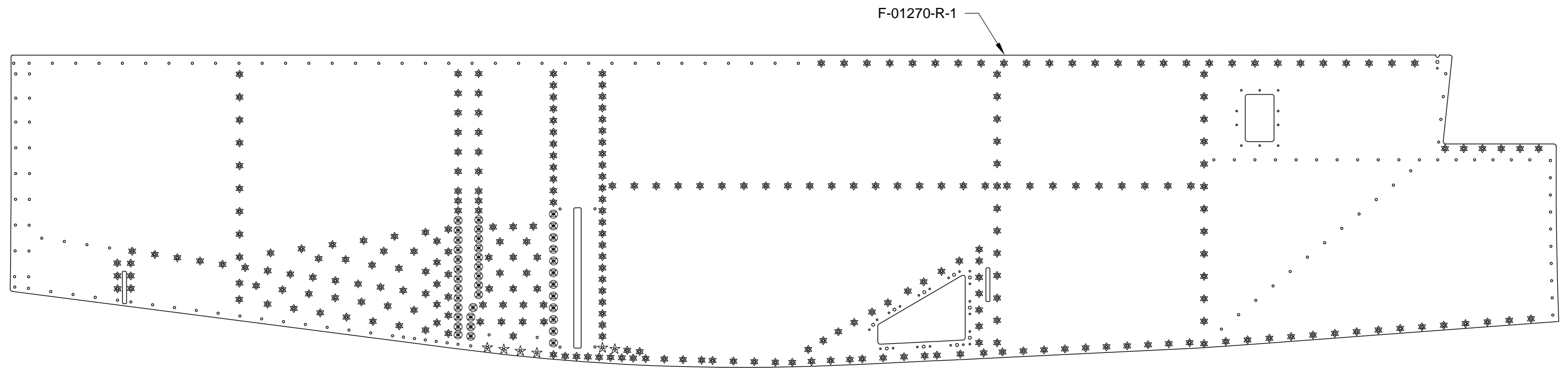


FIGURE 1: SIDE SKIN AND DOUBLERS RIVET CALL-OUTS

- ☆ LP4-3
- ★ CS4-4
- ⊗ CR3213-4-2

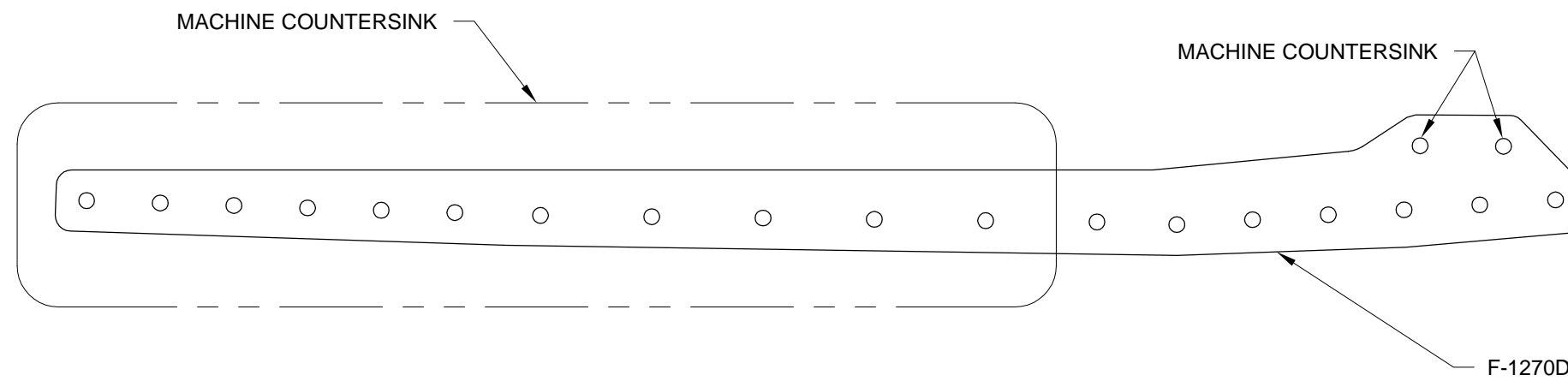


FIGURE 2: DOUBLER COUNTERSINK LOCATIONS