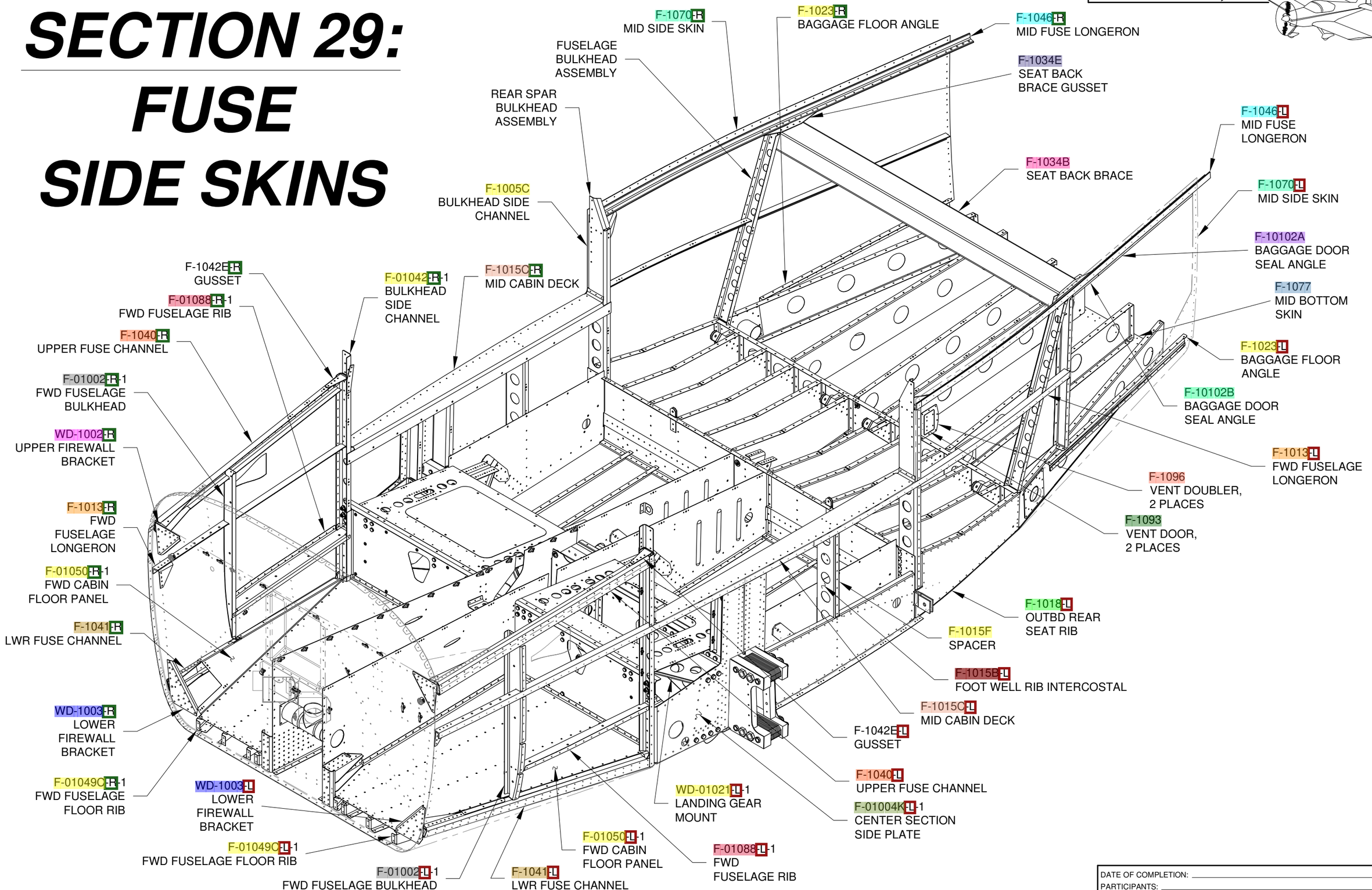
# SECTION 29: FUSE SIDE SKINS




DATE OF COMPLETION: _____
PARTICIPANTS: _____

**NOTE: Figures 1 and 2 show the F-1046-R Mid Fuse Longeron; the left mid fuse longeron is a mirror of the right.**

Step 1: Cut the F-1046-L and -R Mid Fuse Longerons from AA6-125X3/4X3/4 per the dimensions in Figure 1.

Step 2: Mark the skin rivet line on both the F-1046-L and -R Mid Fuse Longerons as shown in Figure 1.

**NOTE: The F-1046B Longeron Bending Template is used for both the F-1046 Mid Fuse and F-1013 Fwd Fuse Longerons. Mark it as shown in Figure 2 to eliminate future confusion. The markings on the other side of the template are shown on Page 29-3, Figure 1.**

Step 3: Place one of the ends of the F-1046-R Mid Fuse Longeron in a padded vise and prelude the free end. Using a rubber mallet, firmly strike it adjacent to the vise to produce a bend. Repeat this process at one inch intervals to produce a curve that matches the F-1046B Longeron Bending Template within a sixteenth of an inch. See Figure 3.

Check the curve often to prevent overbending. The mid fuse longeron can be placed in a six-inch vise without removing any of the bend, so it is easy to add more curve later. Remove curve by clamping the mid fuse longeron at the required point and pulling back slightly.

Check that the mid fuse longeron does not bend out of plane vertically as it is being bent in the horizontal direction. If this occurs, rotate the mid fuse longeron 90°, clamp it in a vise, bend it back straight with your hands, then recheck the curve with the template.

Repeat this step to curve the F-1046-L Mid Fuse Longeron.

Step 4: Flush the side edge of the F-1046B Longeron Bending Template with the vertex of the F-1046-R Mid Fuse Longeron (see Figure 2 for the proper orientation of both parts), flush the aft edge of the longeron bending template with the aft end of the mid fuse longeron, then clamp the parts together. Match-Drill #30 the mid fuse longeron using the longeron bending template as a drill guide (do not match-drill the holes marked "F-1046-L only" in Figure 3). Take care when drilling to ensure that the drill is perpendicular to the longeron bending template. Trim the forward end of the mid fuse longeron flush with the edge of the longeron bending template. Flip the longeron bending template over and repeat this step to match-drill the F-1046-L Mid Fuse Longeron.

Step 5: Deburr the F-1046-L and -R Mid Fuse Longerons.

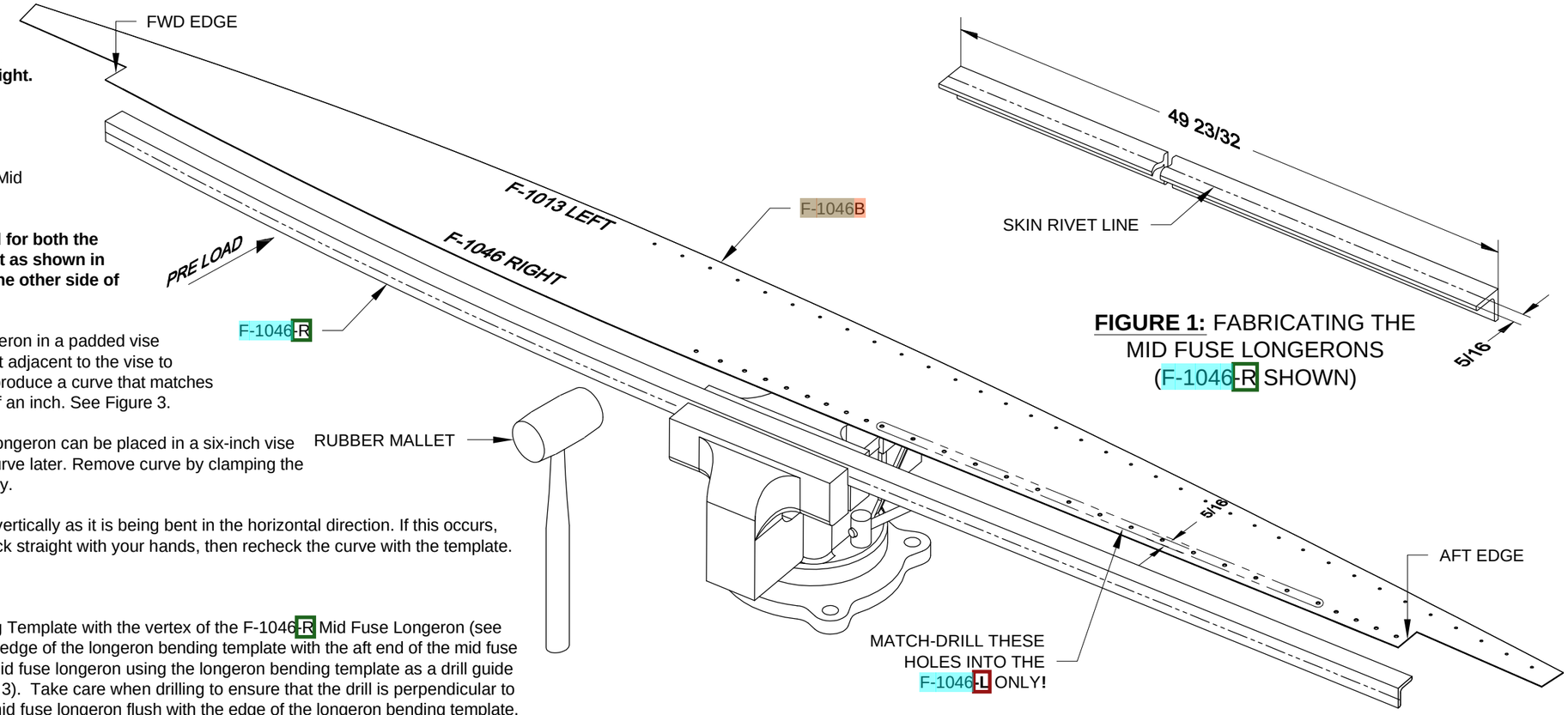



**FIGURE 1:** FABRICATING THE MID FUSE LONGERONS (F-1046-R SHOWN)

**FIGURE 2** BENDING THE MID FUSE LONGERONS

Step 6: Cut the F-1013-L and -R Fwd Fuselage Longerons from AA6-125X3/4X3/4 per the overall length dimensions in Figure 3.

**NOTE: Figures 3 shows marks on the flanges of the F-1013-R Fwd Fuselage Longeron which are made in Step 7. The marks on the F-1013-L Fwd Fuselage Longeron are made on the opposite flanges.**

Step 7: Mark the F-1013-L and -R Fwd Fuselage Longerons at the four locations shown in Figure 3.

Mark the skin rivet line, shown in Figure 3, on both fwd fuselage longerons.

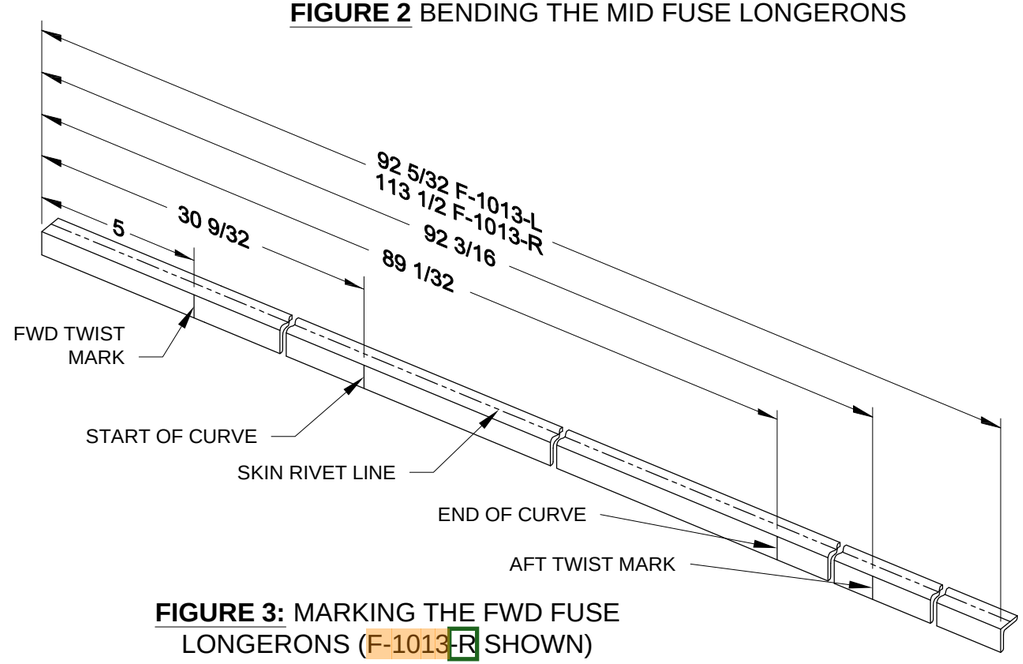



**FIGURE 3:** MARKING THE FWD FUSE LONGERONS (F-1013-R SHOWN)

Step 1: Using the technique employed to curve the F-1046 Mid Fuse Longerons, curve the F-1013-R Fwd Fuse Longeron between the "start of curve" mark and the "end of curve" mark. The curve must match the F-1046B Longeron Bending Template within a sixteenth of an inch. See Figure 1.

Repeat this step to curve the F-1013-L Mid Fuse Longeron.

Step 2: Clamp the F-1013-R Fwd Fuse Longeron to the F-1046B Longeron Bending Template. Match the fwd edge of the longeron bending template with the "start of curve" mark and flush the long edge of the longeron bending template with the vertex of the fwd fuse longeron. Match-Drill #40 the mid fuse longeron using the longeron bending template as a drill guide. Repeat this step to match-drill the F-1013-L Fwd Fuse Longeron.

Step 3: Clamp the F-1013-R Fwd Fuse Longeron in a padded vise at the "forward twist mark". Twist the fwd fuse longeron with a crescent wrench as shown in Figure 2 to obtain the dimension shown in Figure 3. Clamp the fwd fuse longeron at the "aft twist mark" . Repeat the process using the twist direction shown in Figure 1 to obtain the dimension shown in Figure 3.

Step 4: Deburr the F-1013-L and -R Fwd Fuse Longerons.

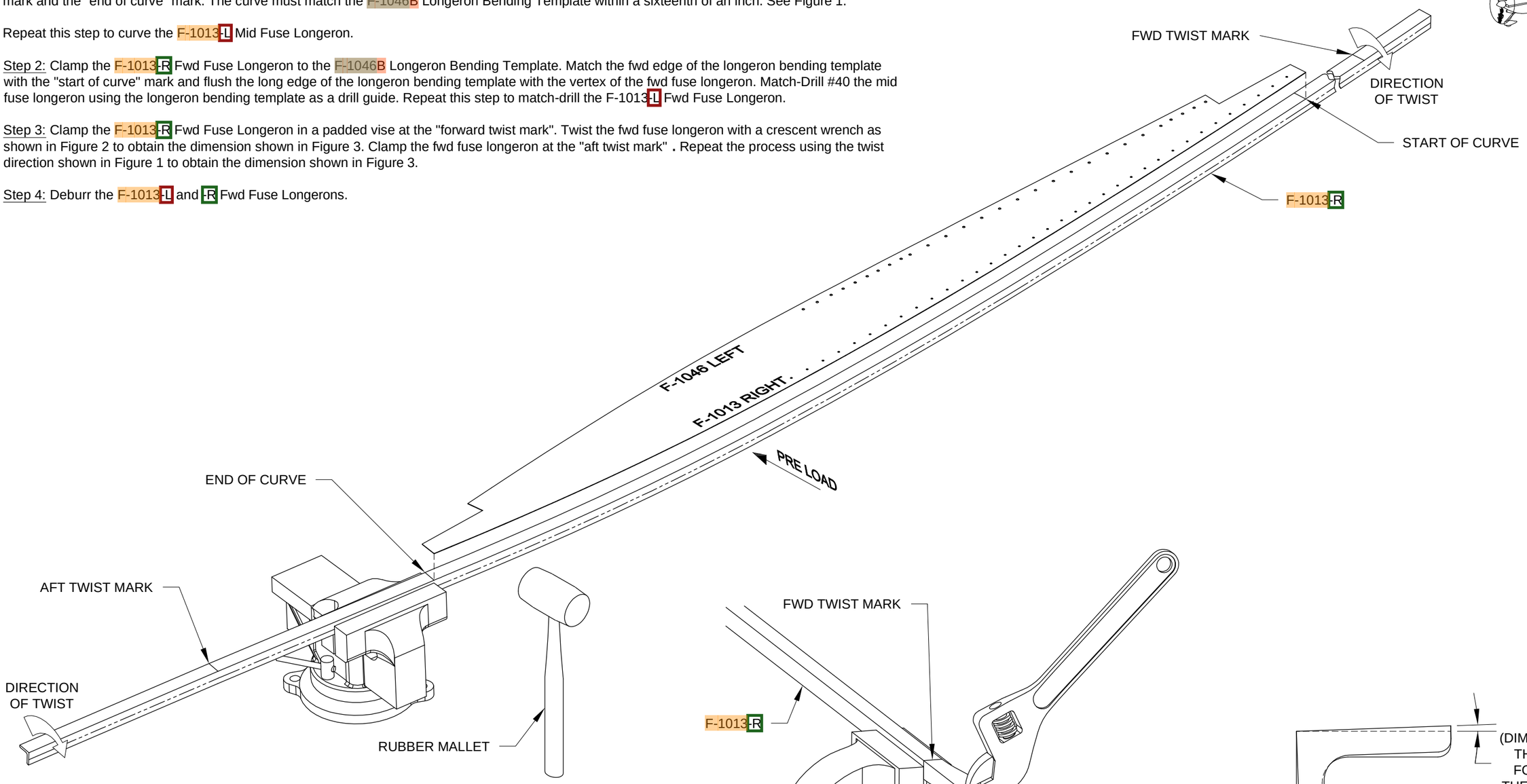



**FIGURE 1:** BENDING THE FWD FUSE LONGERONS
(F-1013-R SHOWN)




**FIGURE 2:** TWISTING THE FWD FUSE LONGERONS
(FORWARD END OF F-1013-R SHOWN)

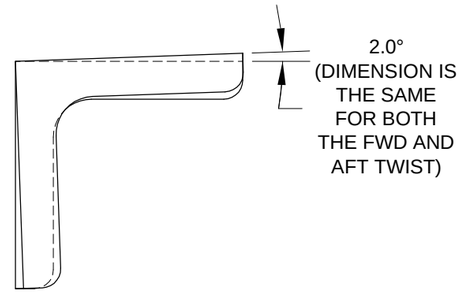



**FIGURE 3:** FINAL TWIST
(FORWARD END OF F-1013-R SHOWN)

Step 1: Make a Clamping Block from hardwood or tightly grained equivalent per the dimensions given in the three view in Figure 1.

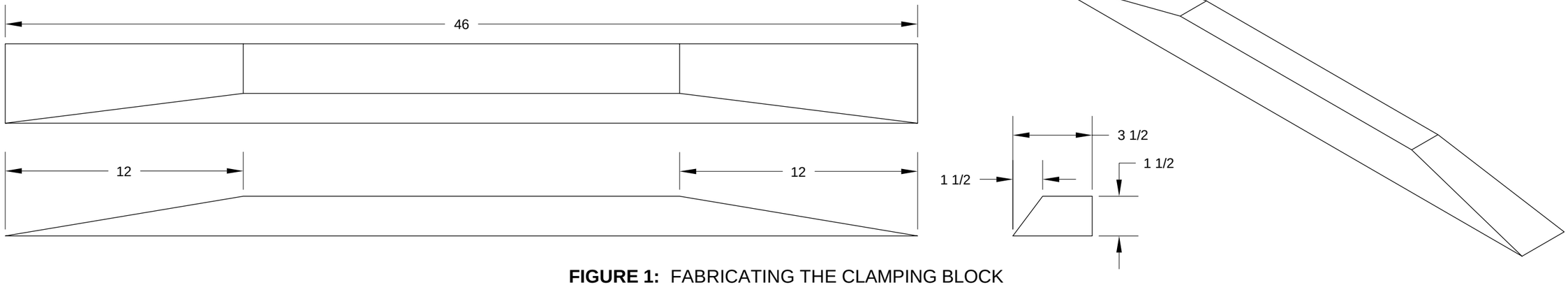



**FIGURE 1:** FABRICATING THE CLAMPING BLOCK

Step 2: Fabricate the F-1070A and B Roll Construction Angles per the dimensions in Figure 2 (the F-1070A is shown, and the F-1070B is its mirror image). Drill a #40 hole in the end of both roll construction angles per the dimensions in Figure 2.

Step 3: Cleco the #40 hole in the F-1070A Roll Construction Angle to the alignment hole (called out in Figure 3) in the F-1070-R Mid Side Skin. With the roll construction angle parallel to the bottom edge (indicated in Figure 3) of the mid side skin, match-drill #40 all of the holes along the bottom edge of the mid side skin into the roll construction angle. Separate the two parts. Cleco the original #40 hole in the F-1070A Roll Construction Angle to the #40 hole in the F-1070B Roll Construction Angle, and clamp the remaining portions together (see Page 29-5, Figure 1 for their orientation). Match-Drill #40 all of the holes in the F-1070A Roll Construction Angle into the F-1070B Roll Construction Angle. Separate the two parts and set them aside.

Step 4: Draw a line between the two rivets holes shown in the detail view in Figure 3. Offset this line per the dimension in the detail view and extend the line to intersect the trailing edge. Draw the "Start of Roll Line" between this intersection and the center of the relief notch as shown in Figure 3.

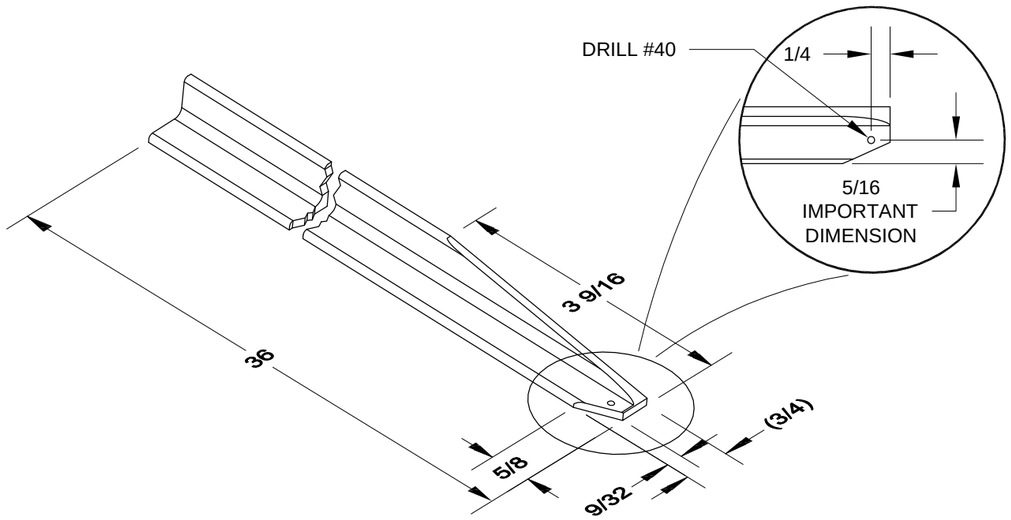



**FIGURE 2:** FABRICATING THE ROLL CONSTRUCTION ANGLE

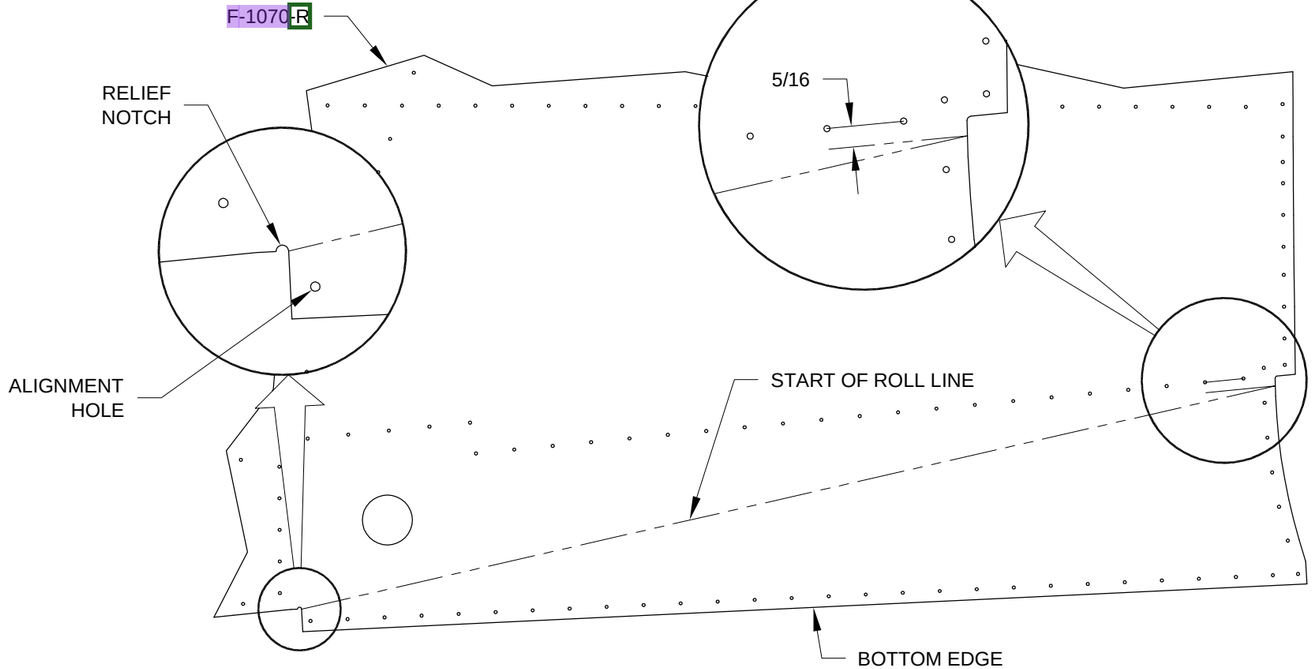



**FIGURE 3:** MARKING THE ROLL LINE

Step 1: Align the "Start of Roll Line" (see Page 29-4, Figure 3) on the F-1070-R Mid Side Skin with the edge of a table. Align the Clamping Block with the "Start of Roll Line", then clamp it and the mid side skin to the table. As shown in Figure 1, cleco the F-1070A and B Roll Construction Angles to the mid side skin, and clamp two vise grips onto either end of the roll construction angles. Double check that you are about to bend the skin in the correct direction; the outboard face of the skin should be down against the table with the inboard face up.

Step 2: Roll the skin into a cone that terminates in a sharp bend at the forward end. The roll is created with the aft vice grip handle, and the sharp bend is naturally formed at the forward end (the sharp bend is finished in Step 3). Twist the F-1070A and B roll construction angles with the aft vise grip and at the same time push the aft end down and inwards towards the table. Use the extra roll construction angle which extends aft of the vise grip as a handle for your other hand. The twisting and pushing motion must be balanced. Twisting too much will create a crease along the edge of the roll construction angles; pushing to hard will create a sharp bend in the middle of the roll. Do not try to complete the roll in one iteration.
The finished roll should look similar to Figure 2.

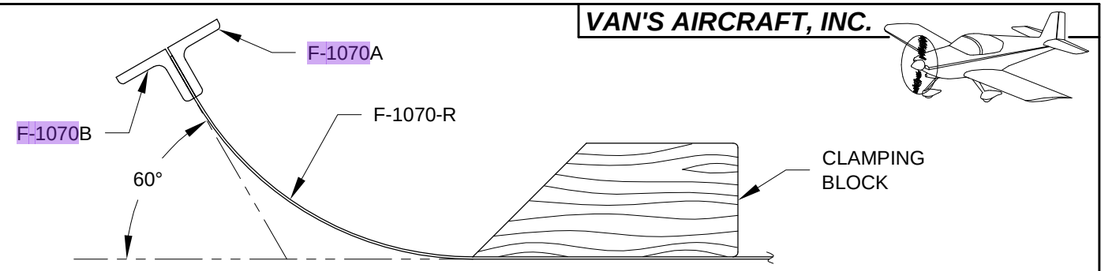



**FIGURE 2:** THE AFT ROLL DIMENSIONS

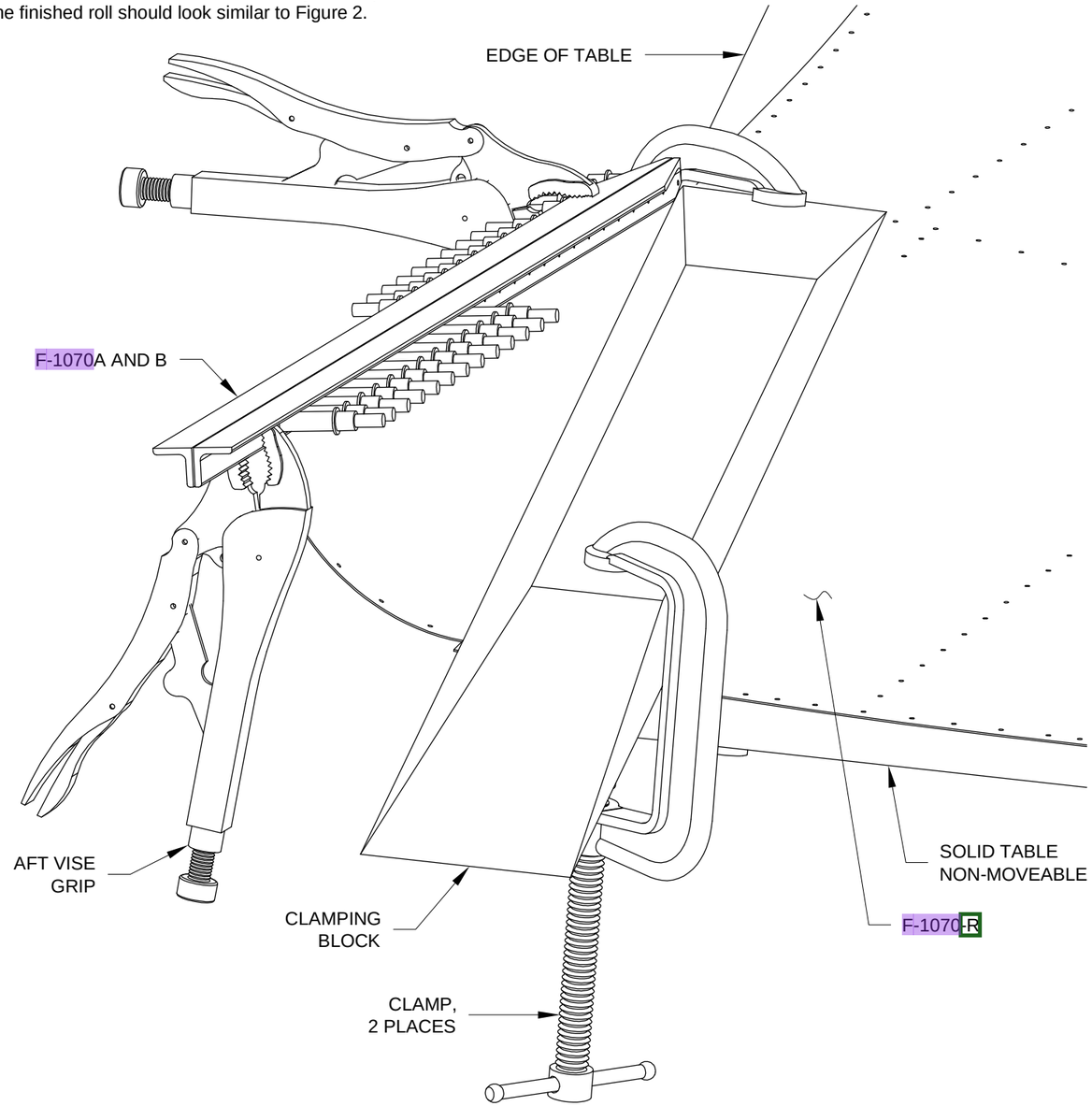



**FIGURE 1:** ROLLING THE MID SIDE SKIN

Step 3: Remove the four, forward most clecos from the F-1070A and B Roll Construction Angles. Twist the roll construction angles with the forward vise grip, then strike the roll construction angles with a rubber mallet to finish forming the sharp radius at the front of the roll.

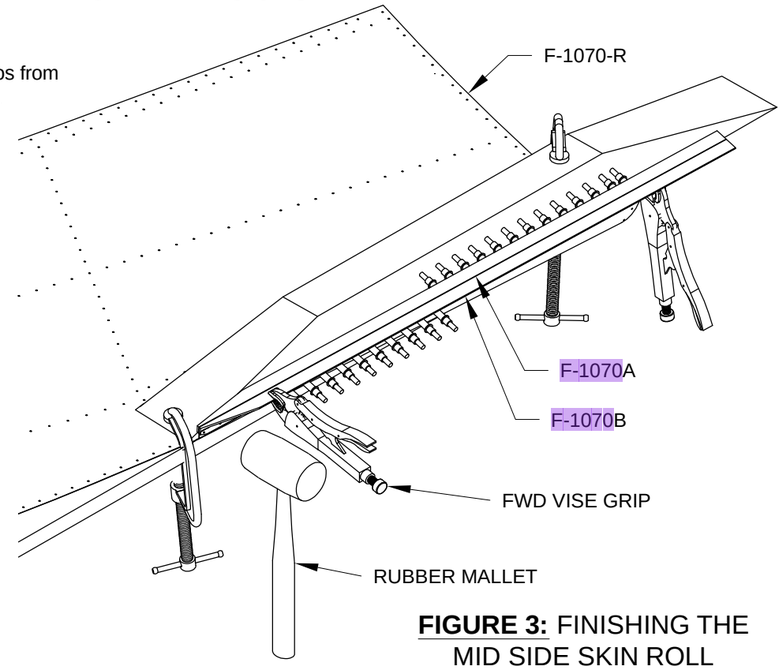



**FIGURE 3:** FINISHING THE MID SIDE SKIN ROLL

Step 4: Remove the F-1006B Bulkhead from the Tailcone Assembly. Cleco the F-1070-R Mid Side Skin and the bulkhead to the underlying structure and check that the mid side skin is properly formed. See Figure 4.

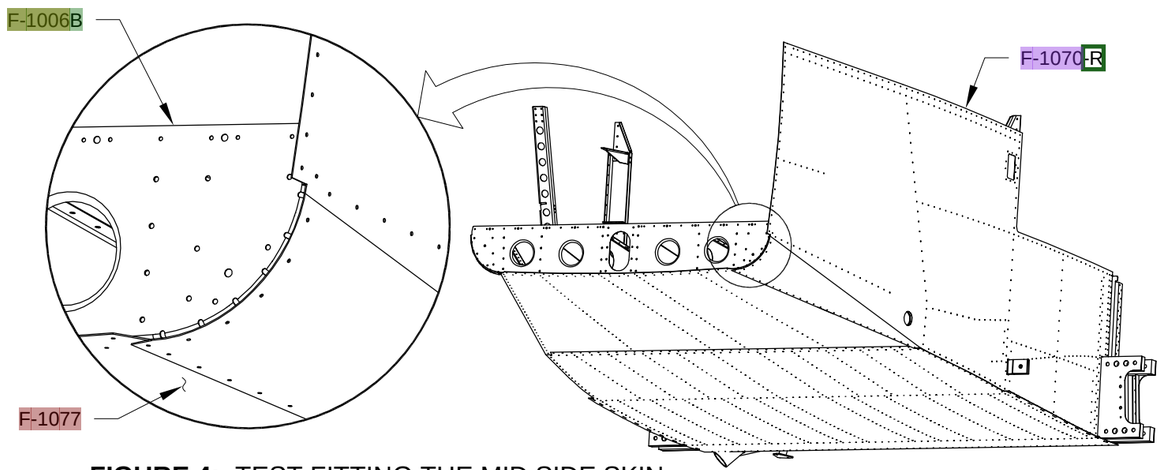



**FIGURE 4:** TEST FITTING THE MID SIDE SKIN

Step 1: Cut the F-10102A and B Baggage Door Seal Angle from AA6-063 X 3/4 X 3/4. Use the dimensions given in Figure 1.

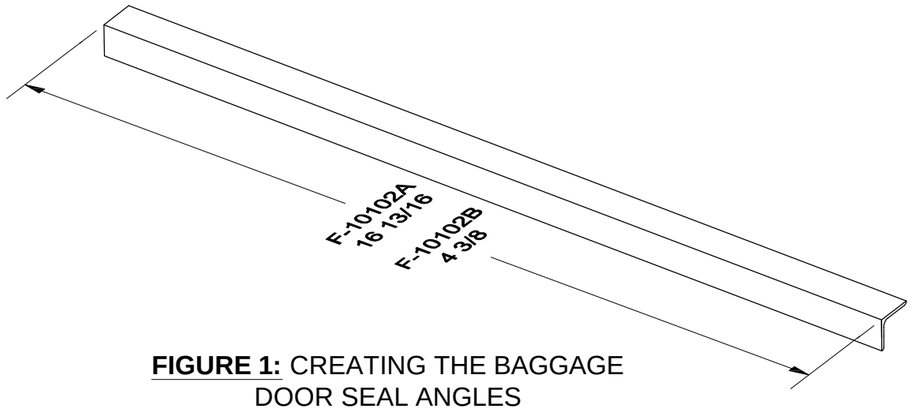



**FIGURE 1:** CREATING THE BAGGAGE DOOR SEAL ANGLES

Step 2: Cleco the F-1034B Seat Back Brace and the F-1034E Seat Back Brace Gusset to the F-1046-L Mid Fuse Longeron as shown in Figure 2. Butt the forward end of the F-10102A Baggage Door Seal Angle against the aft edge of the seat back brace gusset. Offset the entire length of the baggage door seal angle a 1/16" inboard of the mid fuse longeron as shown in Figure 3, then clamp the baggage door seal angle to the mid fuse longeron.

Step 3: Match-Drill #30 and cleco the holes in the F-1046-L Mid Fuse Longeron into the F-10102A Baggage Door Seal Angle.

Step 4: Butt the aft end of the F-10102B Baggage Door Seal Angle against the forward end of the F-10102A Baggage Door Seal Angle (see Figures 2 and 4). Offset the F-10102B Baggage Door Seal Angle a 1/16" inboard of the mid fuse longeron and clamp it in position.

Step 5: Match-Drill #30 and cleco the six holes common to the F-1046-L Mid Fuse Longeron, F-1034B Seat Back Brace, and F-1034E Seat Back Brace Gusset into the F-10102B Baggage Door Seal Angle.

Final-Drill #30 the remaining holes common to the parts shown in Figure 2 that have not yet been drilled.

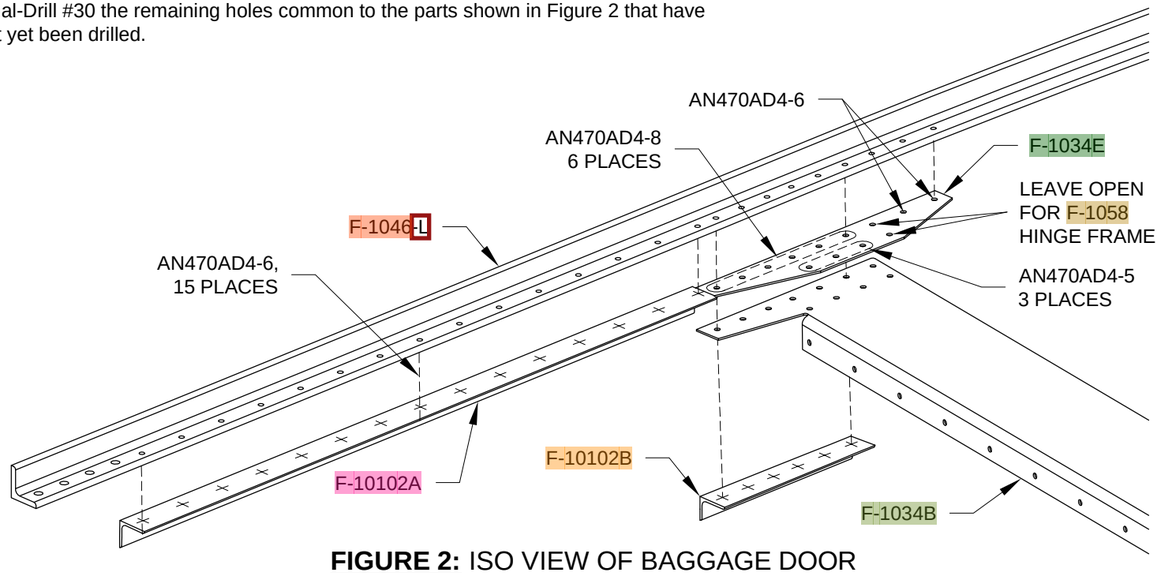



**FIGURE 2:** ISO VIEW OF BAGGAGE DOOR SEAL ANGLE INSTALL

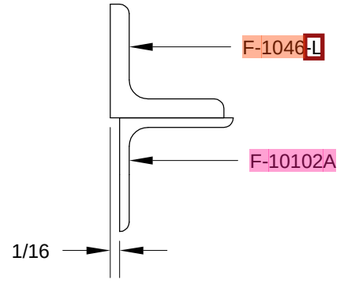



**FIGURE 3:** BAGGAGE DOOR SEAL ANGLE OFFSET

Step 6: Draw a line on the flange of the F-10102A and B Baggage Door Seal Angles 3/8" from the lower face of the F-1046-L Mid Fuse Longeron as shown in Figure 4. Remove the baggage door seal angles and trim off the portion of the flange below this line. Note that once trimmed, the flange on F-10102B will be shorter than the flange on F-10102A.

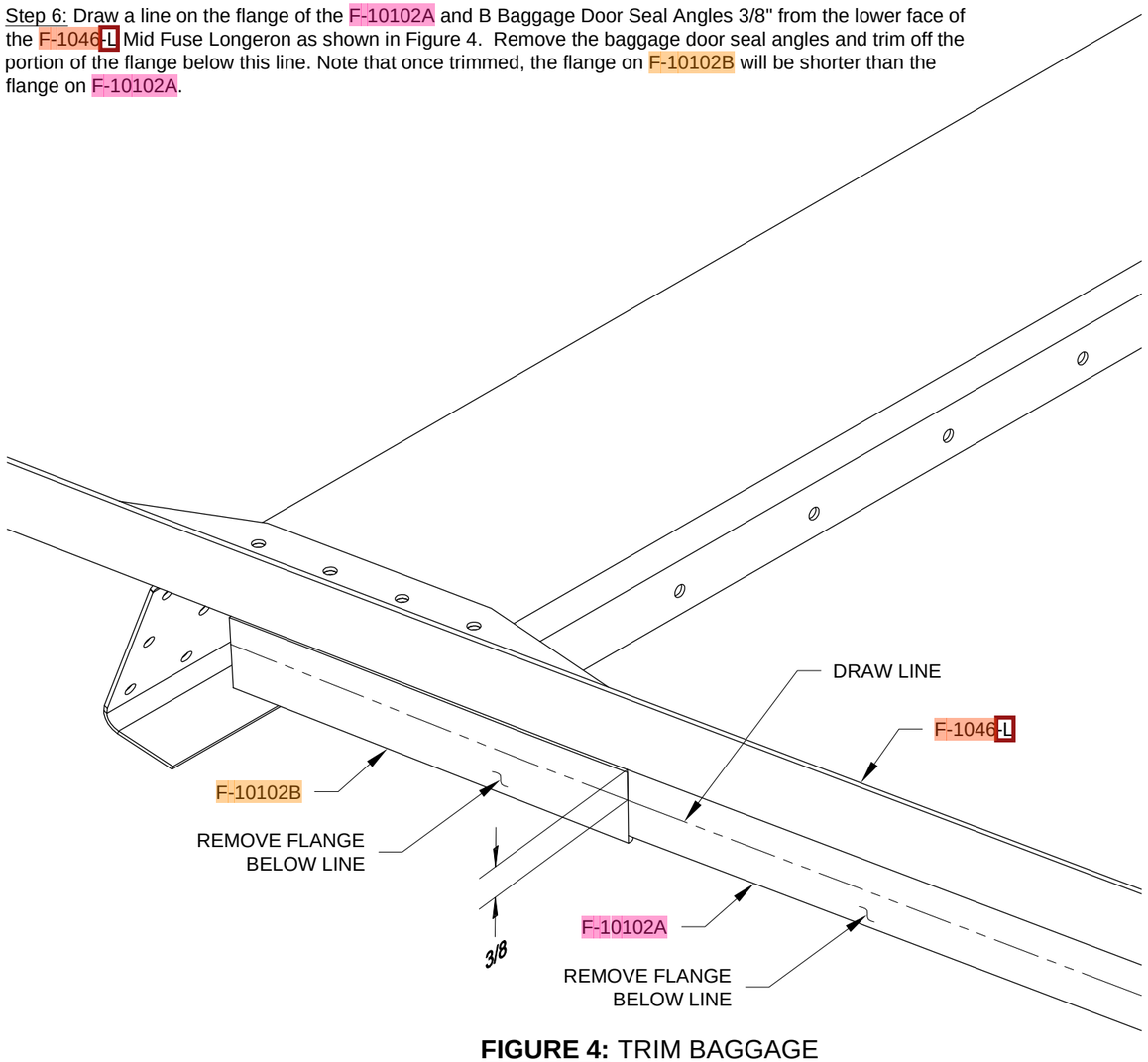
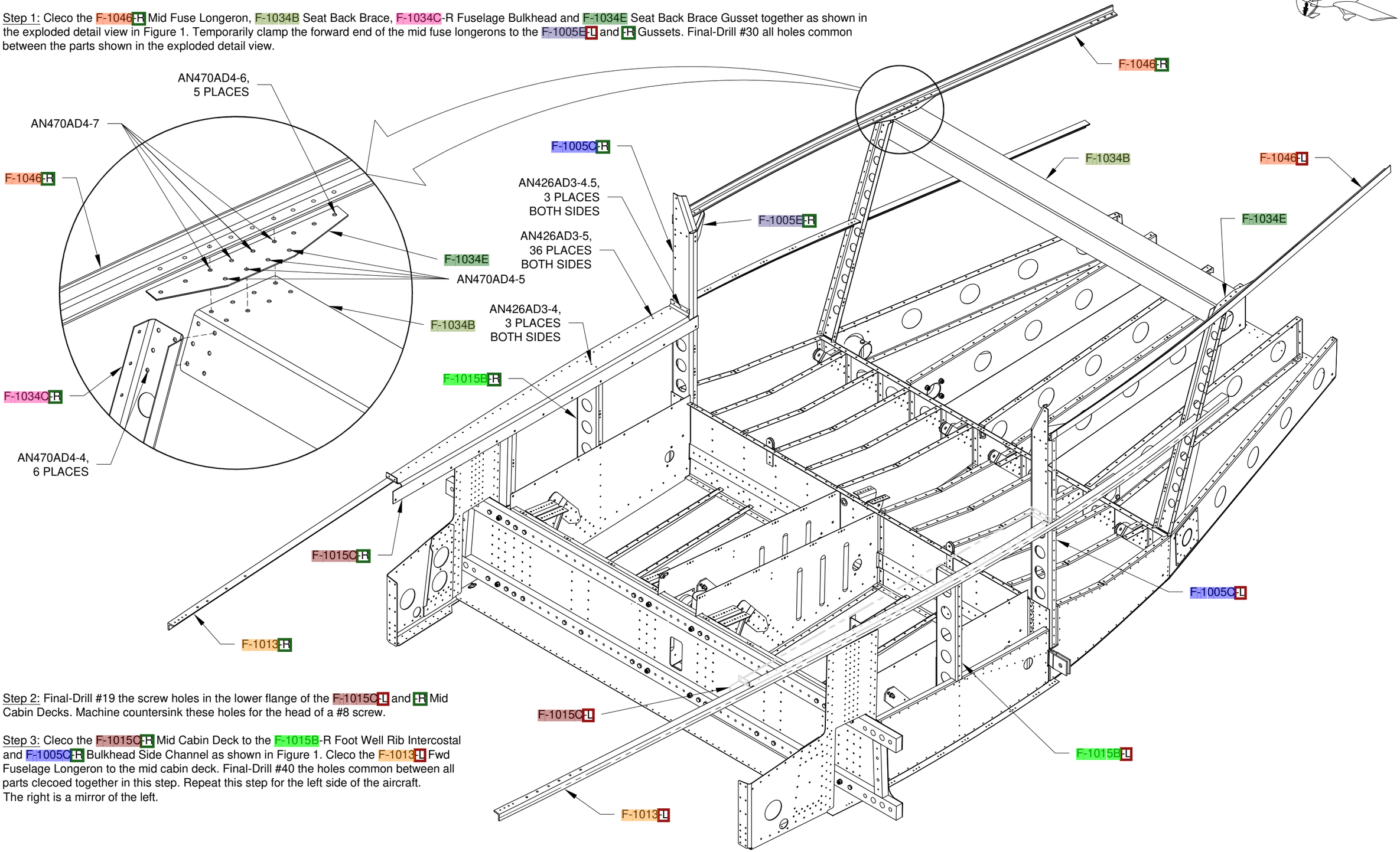



**FIGURE 4:** TRIM BAGGAGE DOOR SEAL ANGLES

**NOTE: Ignore rivet callouts on this page until Page 29-16.**

Step 1: Cleco the F-1046-R Mid Fuse Longeron, F-1034B Seat Back Brace, F-1034C-R Fuselage Bulkhead and F-1034E Seat Back Brace Gusset together as shown in the exploded detail view in Figure 1. Temporarily clamp the forward end of the mid fuse longerons to the F-1005E-L and -R Gussets. Final-Drill #30 all holes common between the parts shown in the exploded detail view.




Step 2: Final-Drill #19 the screw holes in the lower flange of the F-1015C-L and -R Mid Cabin Decks. Machine countersink these holes for the head of a #8 screw.

Step 3: Cleco the F-1015C-R Mid Cabin Deck to the F-1015B-R Foot Well Rib Intercostal and F-1005C-R Bulkhead Side Channel as shown in Figure 1. Cleco the F-1013-L Fwd Fuselage Longeron to the mid cabin deck. Final-Drill #40 the holes common between all parts clecoed together in this step. Repeat this step for the left side of the aircraft. The right is a mirror of the left.

**FIGURE 1:** DRILLING THE LONGERONS TO THE SUBSTRUCTURE
(MOST OF THE FORWARD FUSELAGE ASSEMBLY IS NOT SHOWN FOR CLARITY)

**Note: Ignore rivet callouts on this page until Page 29-16.**

Step 1: Cut the F-10100 Baggage Door Shim into F-10100A and B Baggage Door Shims as shown in Figure 1. Remove the tabs and deburr the edges of both parts. Set the F-10100B Baggage Door Shim aside until attaching the tailcone.

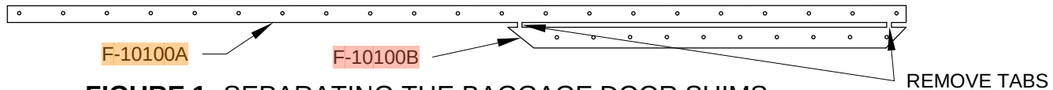



**FIGURE 1:** SEPARATING THE BAGGAGE DOOR SHIMS

Step 2: Final-Drill #30 all the holes in the upper flange (flange not common to skin) of the F-1023-L and -R Baggage Floor Angles. Deburr and dimple (for a flush head on upper side) these holes now.

Step 3: Cleco the F-1023-L Baggage Floor Angle and F-10100A and F-10101 Baggage Door Shims to the F-1070-L Mid Side Skin as shown in Figure 2. Final-Drill #40 the holes common between these parts except the holes marked  in Figure 2 do not drill.

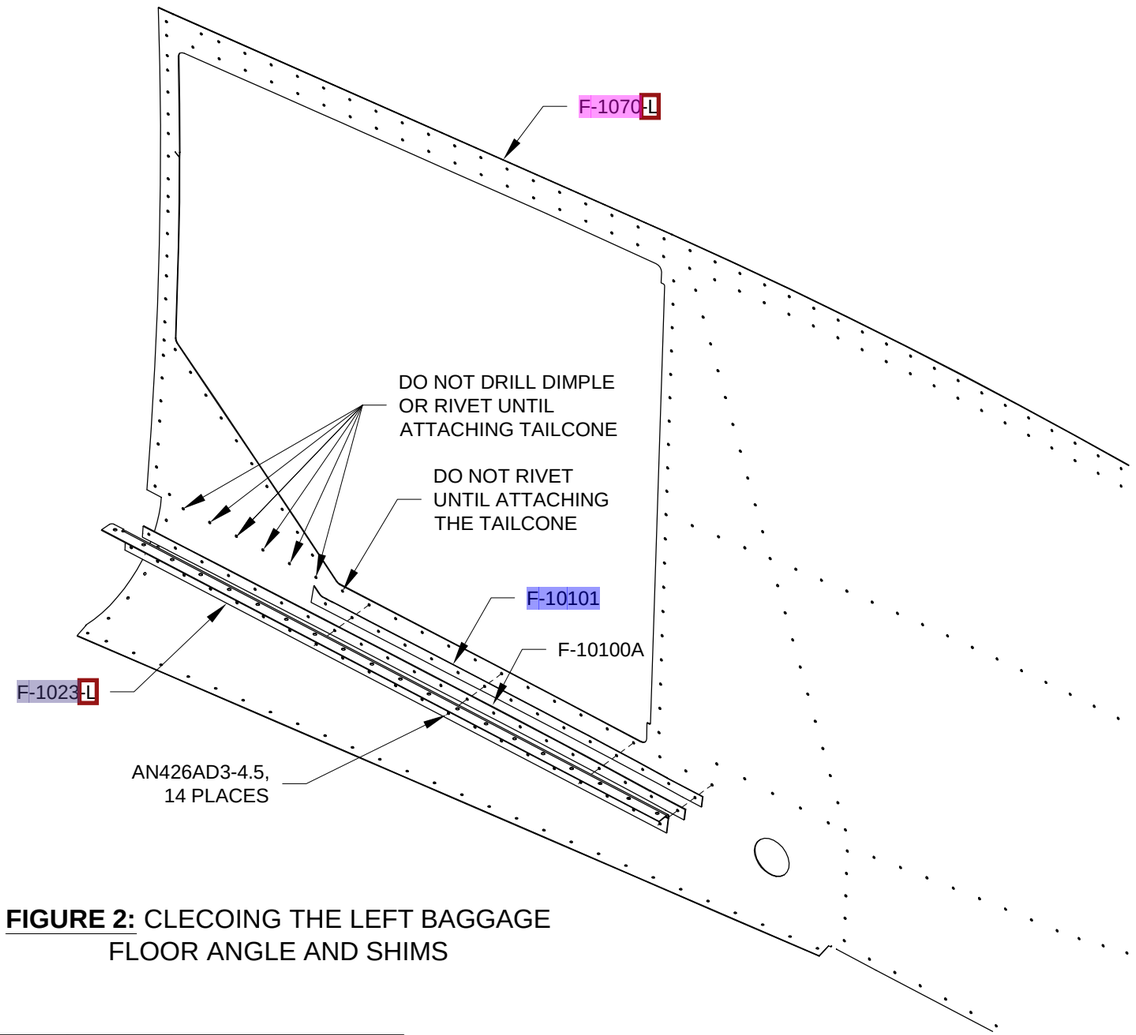



**FIGURE 2:** CLECOING THE LEFT BAGGAGE FLOOR ANGLE AND SHIMS

Step 4: Cleco the F-1023-R Baggage Floor Angle to the F-1070-R Mid Side Skin as shown in Figure 3. Final-Drill #40 all the holes common between these parts.

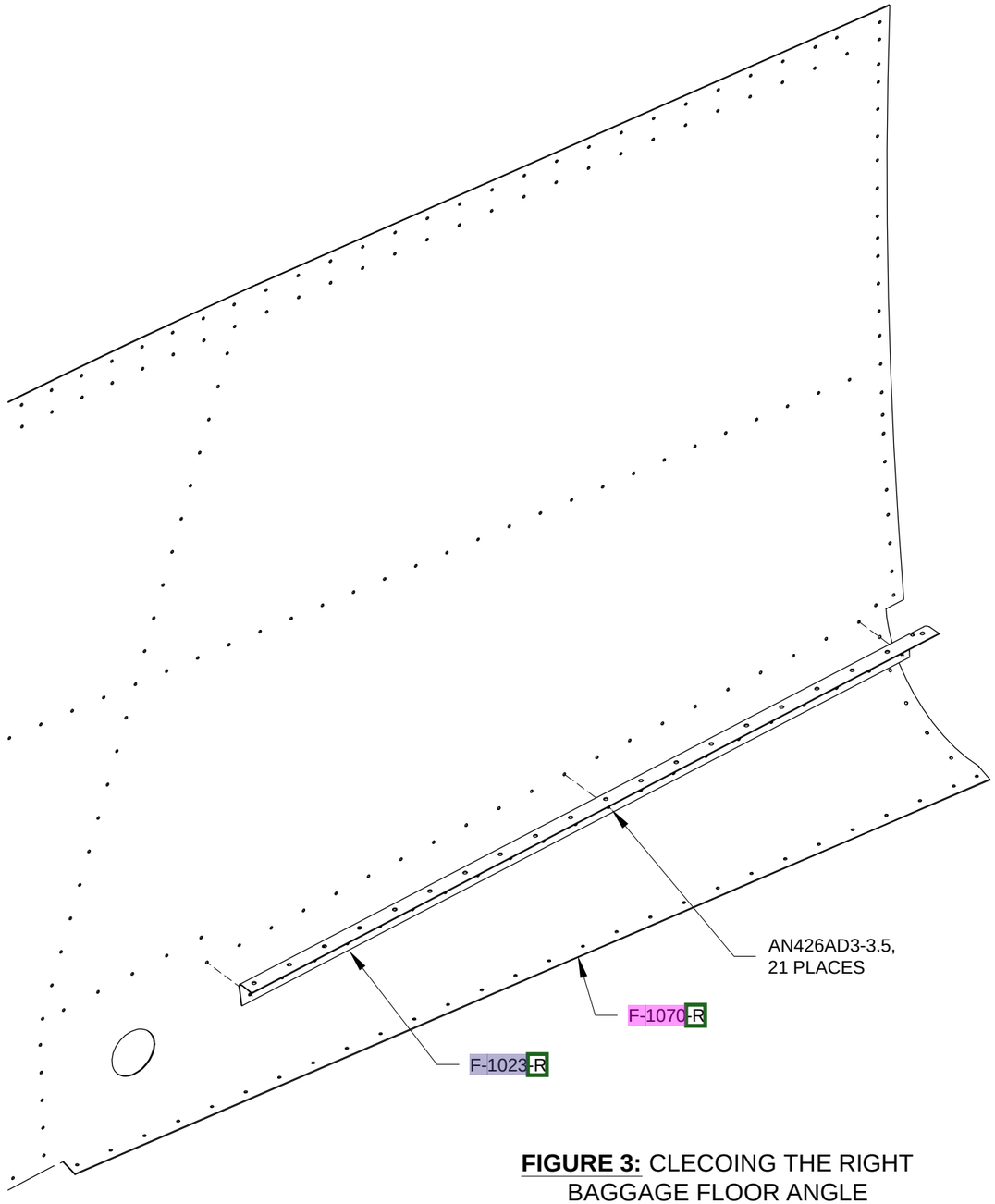



**FIGURE 3:** CLECOING THE RIGHT BAGGAGE FLOOR ANGLE

**NOTE: Ignore rivet callouts on this page until Page 29-16.**

Step 1: Cleco the F-1070-L and F-1070-R Mid Side Skins and the two F-1015F Spacers to the under structure as shown in Figure 1.

Step 2: Using the callouts on Page 29-15, Figure 1 mark the holes that are **not** drilled in this section. Final-Drill #40 all the remaining 3/32 inch holes common to the the F-1070-L and F-1070-R Mid Side Skins and pre-punched under structure. Final-Drill #30 all the 1/8 inch holes in the wingroot area, indicated on Page 29-15, Figure 1.

Step 3: Position the F-1046-R Mid Fuselage Longeron on the F-1005E-R Gusset as shown in Figure 2. Clamp the parts together. Match-drill #30 and cleco the holes in the gusset into the mid fuselage longeron.

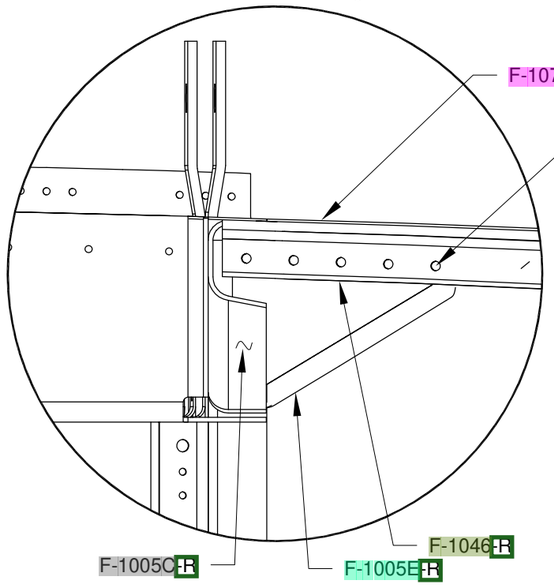



**FIGURE 2:** MATCH-DRILLING THE FWD FUSELAGE LONGERON TO THE GUSSET

Step 4: Align the lines drawn on the outboard face of the F-1046-L and -R Mid Fuse Longerons with the corresponding holes in the mid side skins. Match-Drill #40 the longerons using the skin as a drill guide **at only the locations fwd of the F-1034C Fuselage Bulkhead see Page 29-15.**

Align the lines drawn on the outboard face of the F-1013-L and -R Fwd Fuse Longerons with the corresponding holes in the mid side skins. Match-Drill #40 the fwd fuselage longerons using the mid side skins as drill guides.

Step 5: Check the distance between the aft most rivet hole and the aft end of the F-1013-L and -R Fwd Fuse Longerons per the dimensions in Figure 3. Pull away the F-1070-L and -R Mid Side Skins and trim the longerons if neccessary (or wait until fwd fuselage longerons are disassembled, but don't forget).

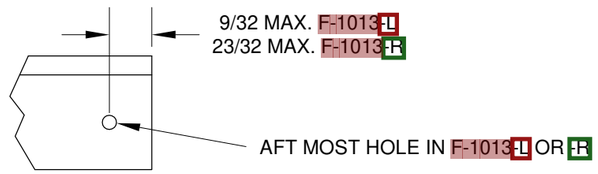



**FIGURE 3:** FWD FUSELAGE LONGERON LENGTH

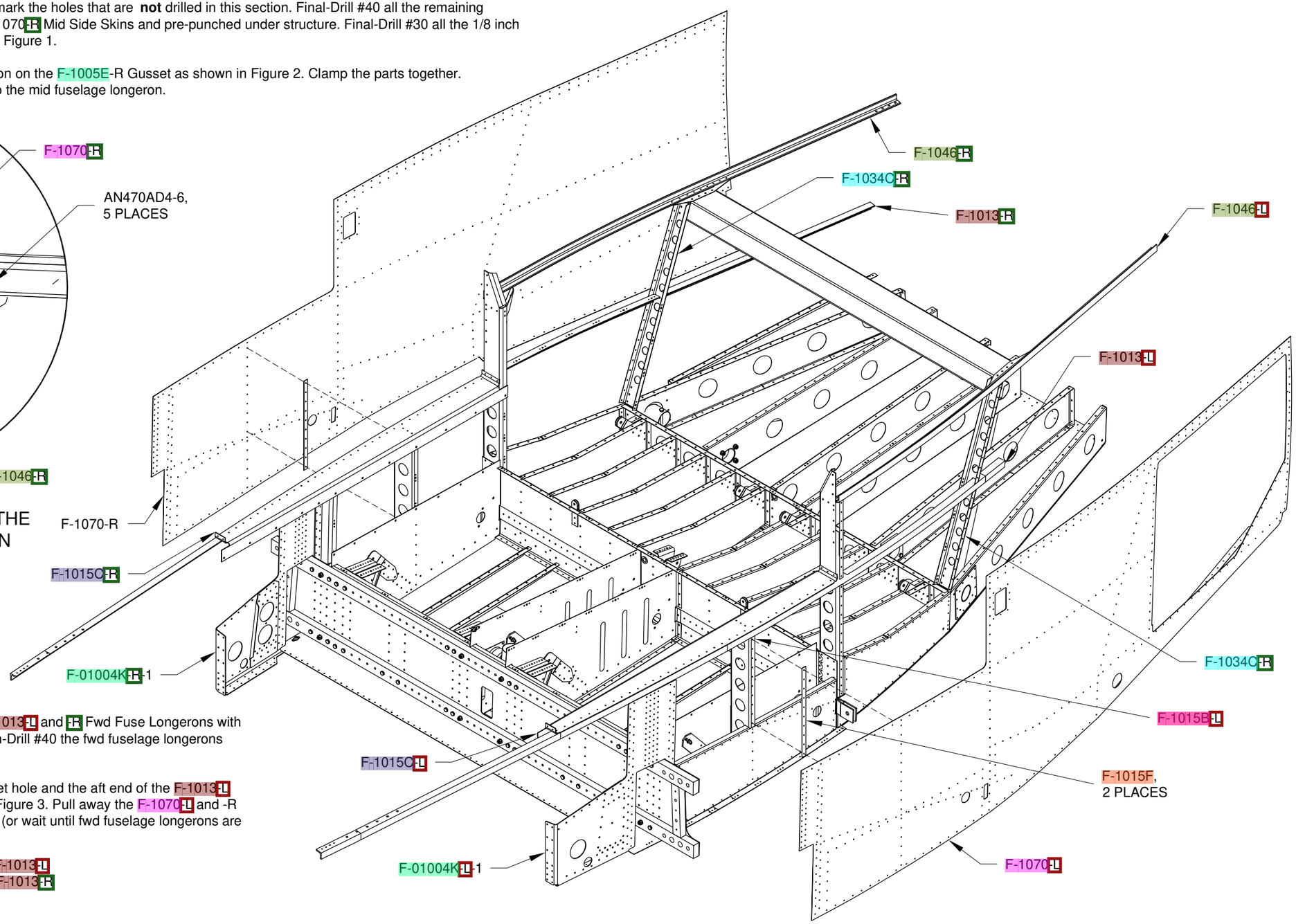



**FIGURE 1:** CLECOING THE MID SIDE SKINS
(MOST OF THE FORWARD FUSELAGE ASSEMBLY NOT SHOWN FOR CLARITY)

Step 1: Create two wooden spacer blocks about an inch in length, similar to those shown in Figure 1. Insert the spacer blocks into the ends of the F-1041-L Lwr Fuse Channel. Clamp the forward end of the channel into a vise and the aft end with a crescent wrench. After double checking the twist direction, use the crescent wrench to twist the lwr fuselage channel to match the dimensions given in Figure 2. Repeat this step to modify the F-1041-R Lwr Fuse Channel. The right channel is a mirror of the left.

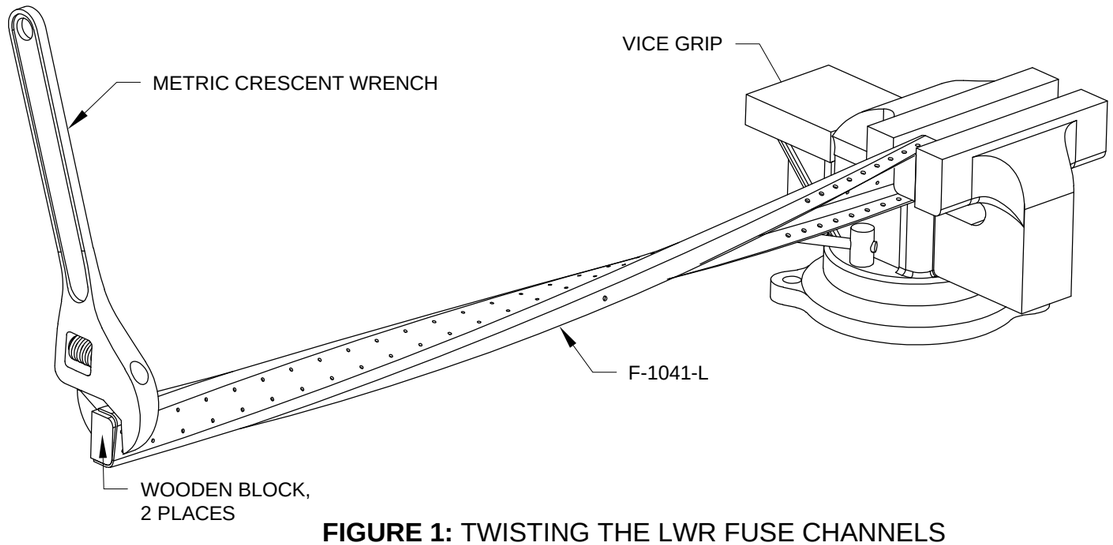



**FIGURE 1:** TWISTING THE LWR FUSE CHANNELS
(SWEATY GRUNTING HUMAN NOT SHOWN FOR CLARITY)

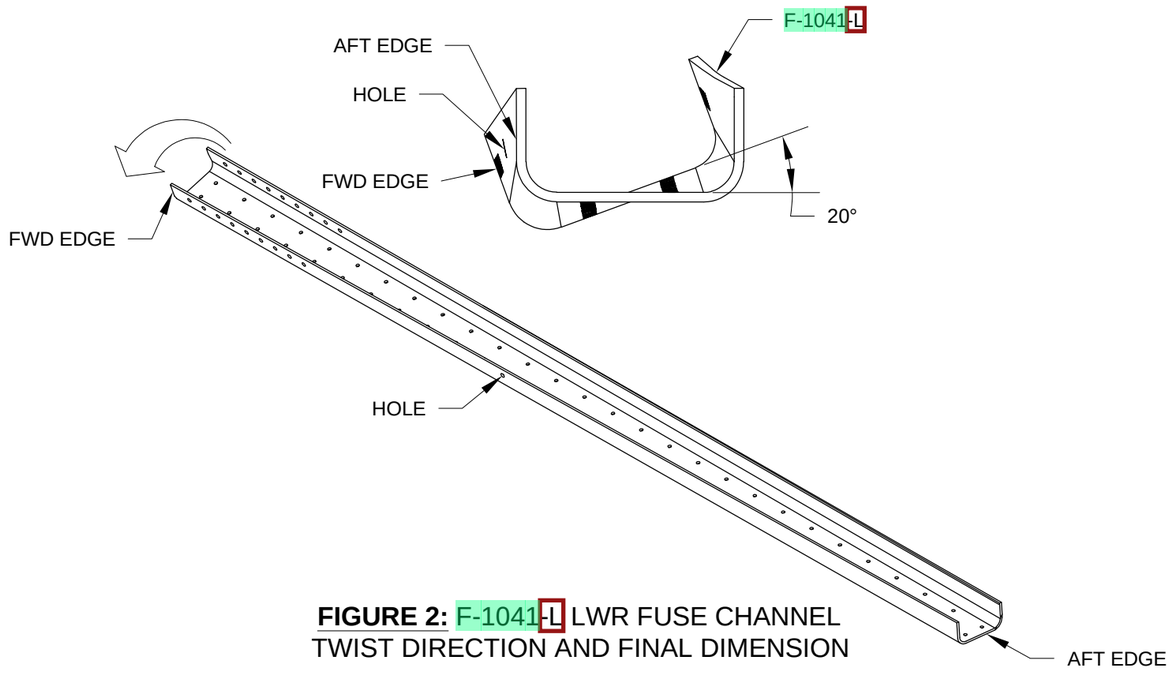



**FIGURE 2:** F-1041-L LWR FUSE CHANNEL
TWIST DIRECTION AND FINAL DIMENSION

Step 2: After double checking the twist direction, use the same method as Step 1 to twist the F-1040-L Upper Fuse Channel to match the dimensions given in Figure 3. Repeat this step to modify the F-1040-R Upper Fuse Channel. The right upper fuse channel is a mirror of the left.

Step 3: Machine countersink the nutplate attach holes and rivet the nutplates in F-1040-L and -R as shown in Figure 3.

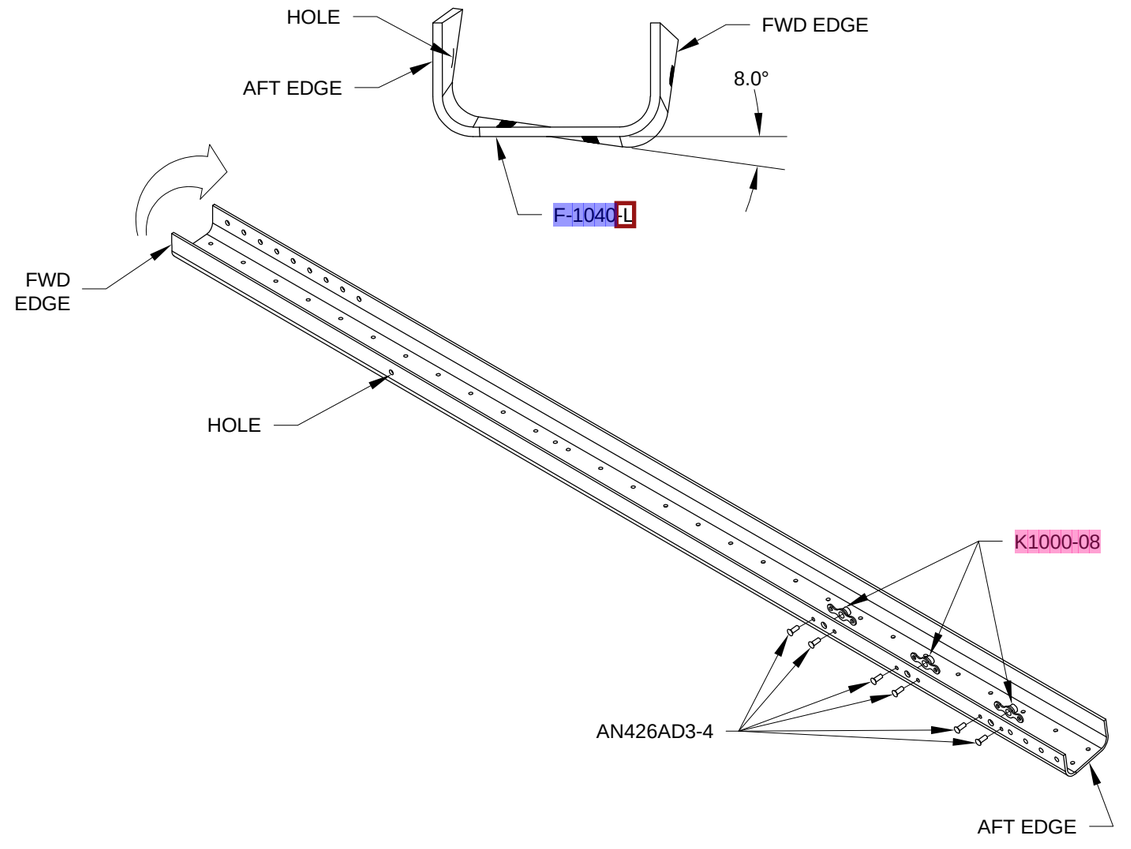



**FIGURE 3:** F-1040-L UPPER FUSE CHANNEL TWIST DIRECTION AND FINAL DIMENSIONS

Step 1: Remove the vinyl from the inside face of both F-01069-1 Fwd Side Skins. Using the dimensions given in Figure 1, draw the "Start of Roll Line" and the "End of Roll Line" on the F-01069-R-1 Fwd Side Skin. Repeat this step for the F-01069-L-1 Fwd Side Skin. The left fwd side skin is a mirror of the right.

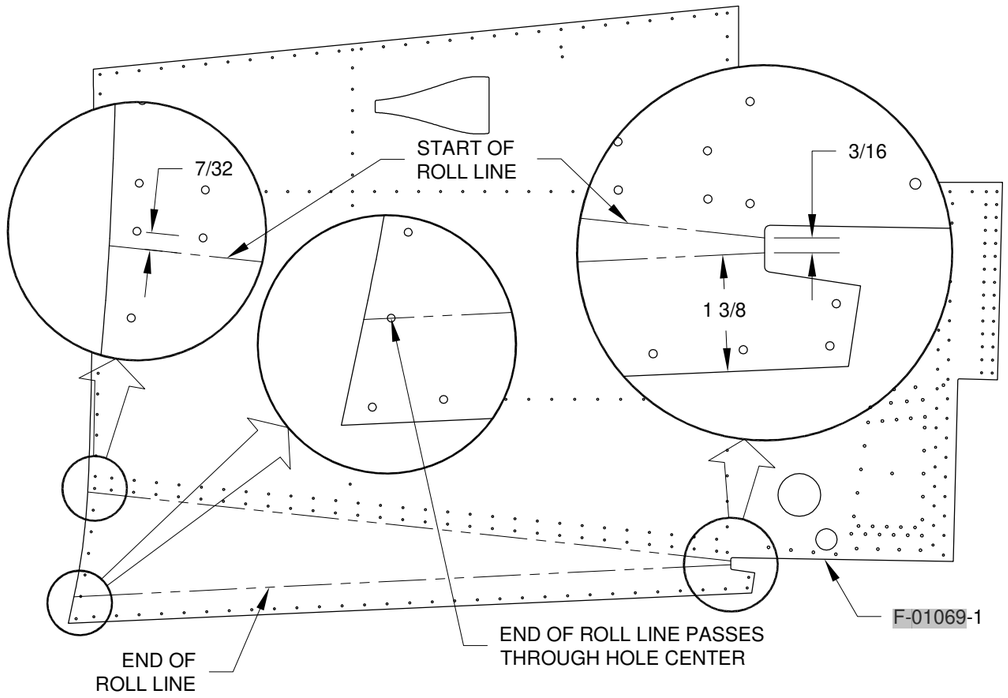



**FIGURE 1:** MARKING THE CURVE LINES

Step 2: Modify the Clamping Block to match the dimensions given in Figure 2. Note the radius along the bottom edge of the clamping block. If using a normal 2x4 it is permissible to use the manufactured radius even though it may be slightly larger than 1/8 inch.

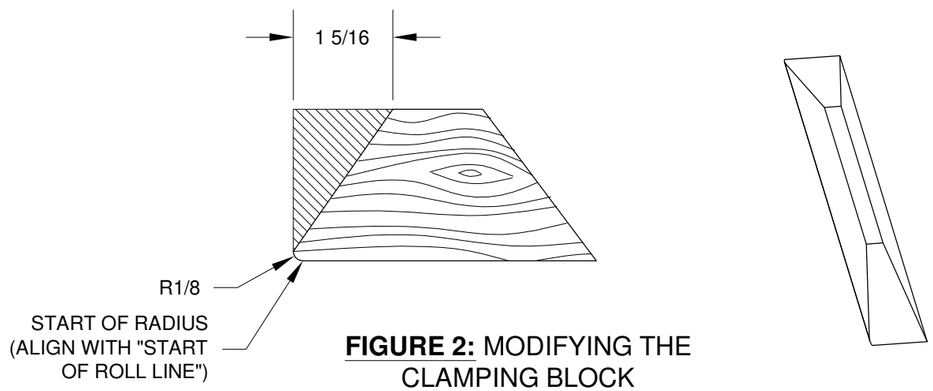



**FIGURE 2:** MODIFYING THE CLAMPING BLOCK

Step 3: Clamp the F-01069-R-1 Fwd Side Skin to a table, as shown in Figure 3, using the Clamping Block. Align the "Start of Radius" (see Figure 2) with the "Start of Roll Line" (see Figure 1). Be sure to align the "Start of Radius" not the edge of the block with the "Start of Roll Line"! Double check that you are about to bend the fwd side skin in the correct direction, the outboard face of the skin should be down against the table with the inboard face up.

Align the flange edges of the F-1070A and B Roll Construction Angles with the "End of Roll Line" on the F-01069-R-1 Fwd Side Skin, then clamp them in place as shown in Figure 3.

Step 4: Roll the F-01069-R-1 Fwd Side Skin into a cone that terminates in a sharp bend at the aft end of the "Roll Lines". The roll is created with the forward vice grip, and the sharp bend is naturally formed at the aft end (the sharp bend is finished in Step 5). Twist the F-1070A and B Roll Construction Angles with the forward vise grip and at the same time push the forward end down and inwards towards the table. Use the extra roll construction angle which extends forward of the vise grip as a handle for your other hand. The twisting and pushing motion must be balanced. Twisting too much will create a crease along the edge of the roll construction angles; pushing to hard will create a sharp bend in the middle of the roll. Do not try to complete the roll in one iteration. The finished roll should look similar to Figure 4.

Step 5: Twist the F-1070A and B Roll Construction Angles with the aft vise grip, then strike the roll construction angles with a rubber mallet to finish forming the sharp radius at the aft end of the roll.

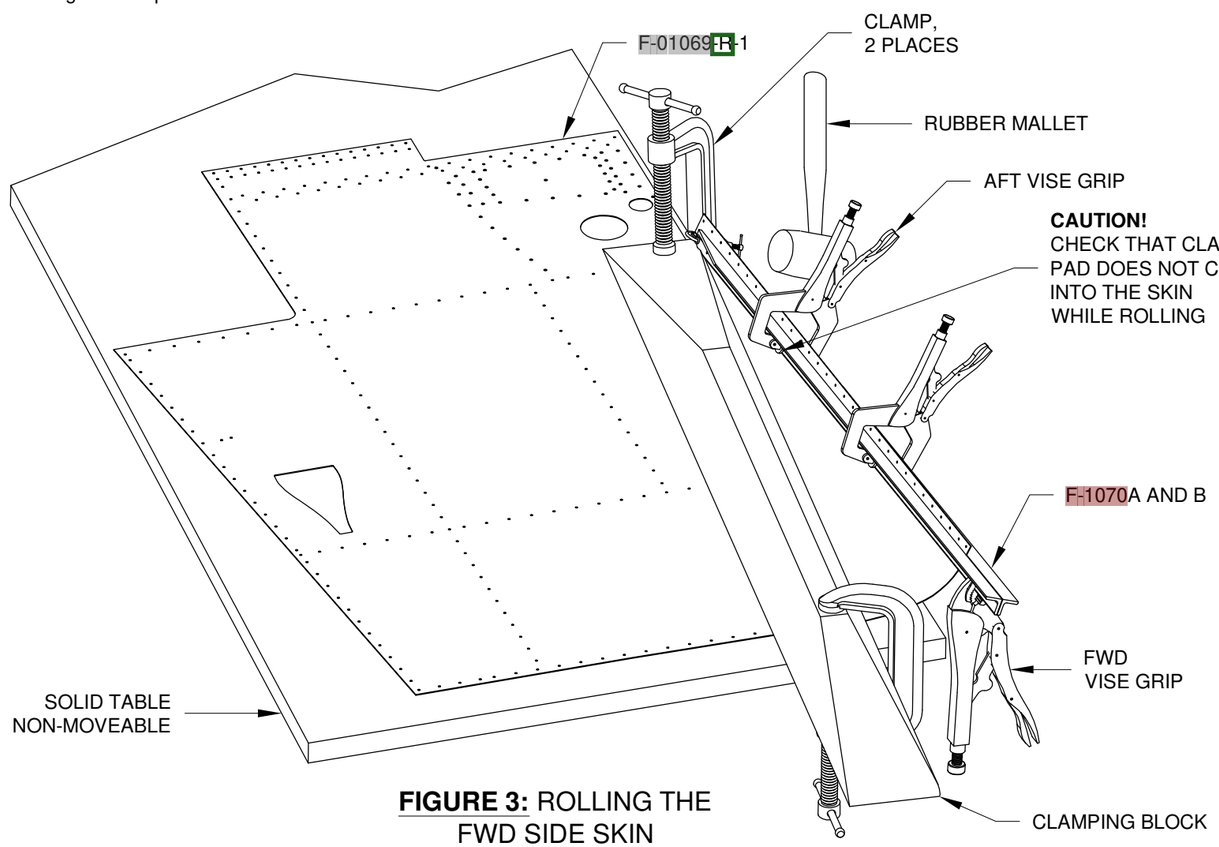



**FIGURE 3:** ROLLING THE FWD SIDE SKIN

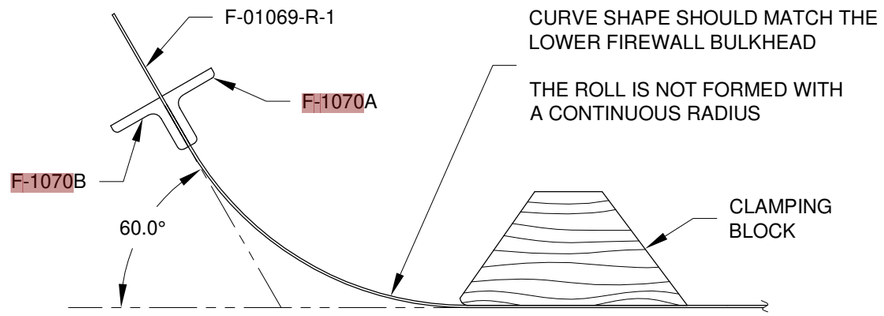



**FIGURE 4:** FWD ROLL DIMENSIONS

**NOTE: Ignore rivet callouts on this page until Page 29-16.**

Step 1: Cleco the F-01042B-1 Clip to the F-01042-L-1 Bulkhead Side Channel as shown in the lower blow up detail in Figure 2. Mark the location of the forward edge of the bulkhead side channel flange onto the clip. Remove the clip from the bulkhead side channel. Using the mark as a bend line, clamp the clip in padded vice jaws, then bend the clip to match the dimensions given in Figure 1. Mark as F-01042B-L-1. Bend the F-01042B-R-1 Clip, a mirror of the F-01042B-L-1 Clip, for the other side of the aircraft.

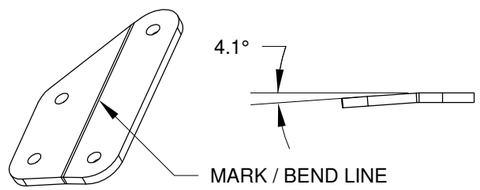
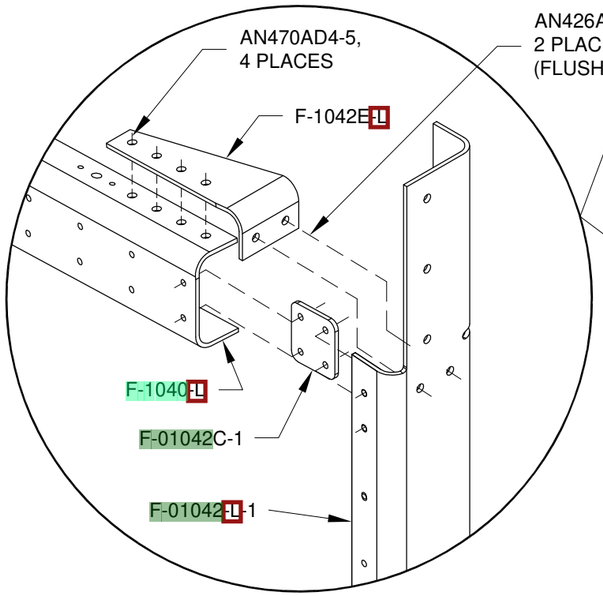
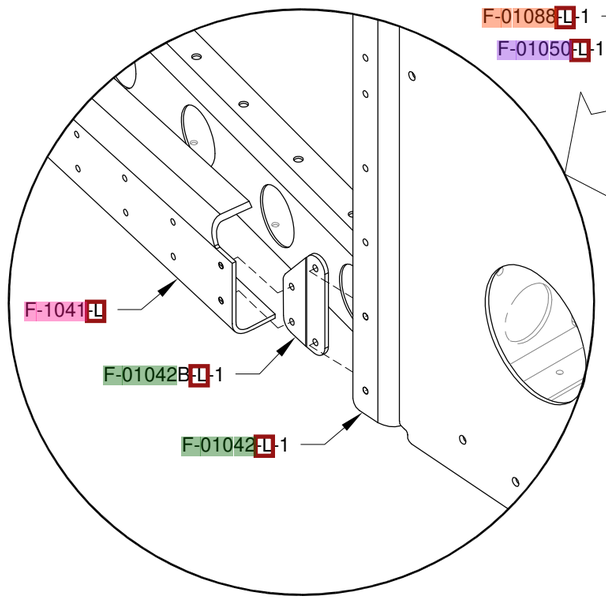



**FIGURE 1:** BENDING THE F-01042B-L-1 CLIP

Step 2: Break the F-1042E into a F-1042E-L Gusset and F-1042E-R Gusset. Deburr the edges on both parts.

Step 3: Cleco the F-01050-L-1 & -R-1 Fwd Cabin Floor Panels to the understructure. Cleco the F-01002-L-1 & -R-1 Fwd Fuselage Bulkheads, F-1040-L and -R Upper Fuse Channels, F-1041-L and -R Lwr Fuse Channels, F-01042B-L-1 & -R-1 Clips, F-01042C-1 Clips, F-1042E-L and -R Gussets and F-01088-L-1 & -R-1 Fwd Fuselage Ribs to the fwd fuselage understructure see Figure 2. Note the special cleco callouts for the upper and lwr fuse channels.




Step 4: Adjust the flange angles along the sides of the F-1001A Firewall Bulkhead using a straight edge placed against the F-1013-L and -R Fwd Fuselage Longerons, F-1040-L and -R Upper Fuselage Channels and F-1041-L and -R Lwr Fuselage Channels as a guide.

Step 5: Remove the F-1041-L and -R Lwr Fuse Channels and cleco them to the F-01042B-L-1 & -R-1 Clips and the F-01069-L-1 & -R-1 Fwd Side Skins, see Figure 2. Cleco the fwd side skins to the understructure. Be sure that the clips are on the inside of the F-01042-L-1 & -R-1 Bulkhead Side Channels.

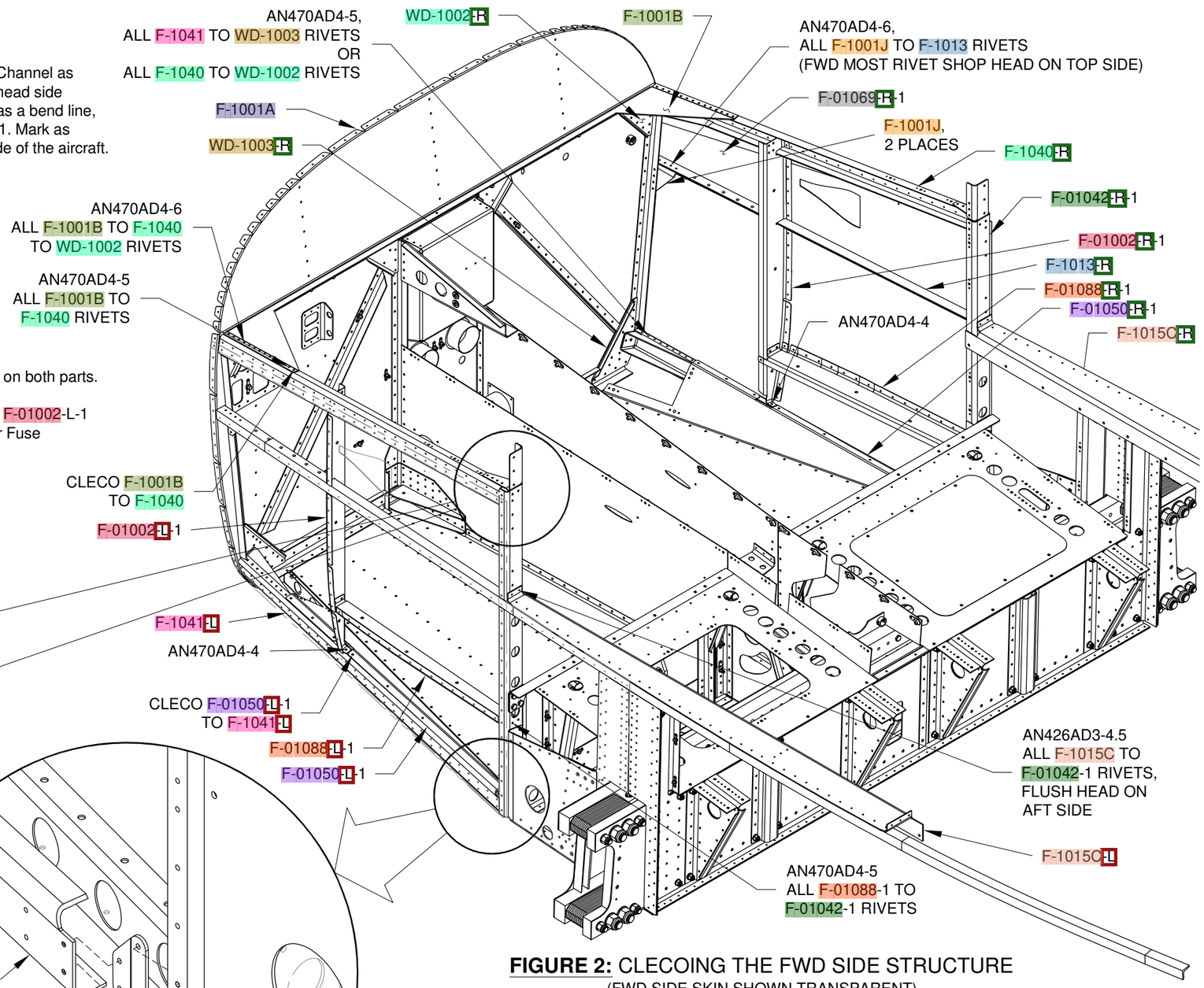



**FIGURE 2:** CLECOING THE FWD SIDE STRUCTURE
(FWD SIDE SKIN SHOWN TRANSPARENT)

Step 1: Match-Drill #40 the holes in the F-01069-L-1 & -R-1 Fwd Side Skins and the F-1040-L and -R Upper Fuse Channels common to the WD-1002-L and -R Upper Firewall Brackets. Use a small block of wood to hold the flange on the firewall brackets tight against the channels. Match-Drill #40 the holes in the fwd side skins and the F-1041-L and -R Lower Fuse Channels common to the WD-1003-L and -R Lower Firewall Brackets. Final-Drill #40 the remaining holes in the webs of the upper and lower fuse channels including the upper most row of holes in the upper channel not common to the fwd side skin. See Figure 1 and Figure 2.

Step 2: Final-Drill #40 the holes common between the F-1001A Firewall Bulkhead and the F-01069-L-1 & -R-1 Fwd Side Skin. See Figure 1.

Step 3: Flush the forward ends of the F-1013-L and -R Fwd Fuselage Longerons against the inside face of the F-01069-L-1 & -R-1 Fwd Side Skins, then clamp them to the F-1001J-L and -R Longeron Gussets. Match-Drill #40 the holes common between the fwd side skins and the fwd fuselage longerons. With the clamps still in place, match-drill #30 as many of the holes as possible in the upper flange of the longeron gussets into the fwd fuselage longerons. Cleco, remove the clamps, and finish match-drilling the remaining holes.

Step 4: Final-Drill #30 the holes common between the F-01042-L-1 & -R-1 Bulkhead Side Channels and the F-1042E-L and -R Gussets. Final-Drill #30 the holes in the gussets into the upper flange of the F-1040-L and -R Upper Fuse Channels. See Page 29-12, Figure 2.

Step 5: Final-Drill #40 the holes common between the forward flange of the F-1015C-L and -R Mid Cabin Decks and the F-01042-L-1 & -R-1 Bulkhead Side Channels. See Figure 2.

Step 6: Match-Drill #30 the hole in the lower tab of the F-01002-L-1 & -R-1 Fwd Fuselage Bulkheads into the upper flange of the F-1041-L and -R Lwr Fuselage Channels. See Figure 2.

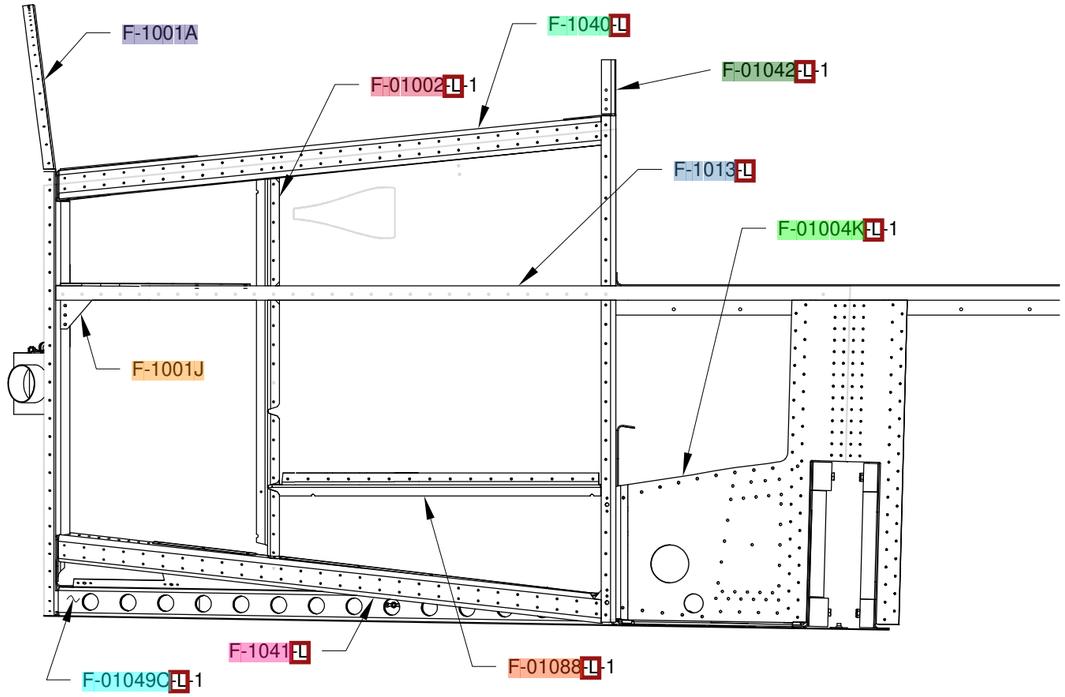



**FIGURE 1:** DRILLING THE F-01069-L-1 & -R-1 FWD SIDE SKINS
(FWD SIDE SKIN SHOWN TRANSPARENT)

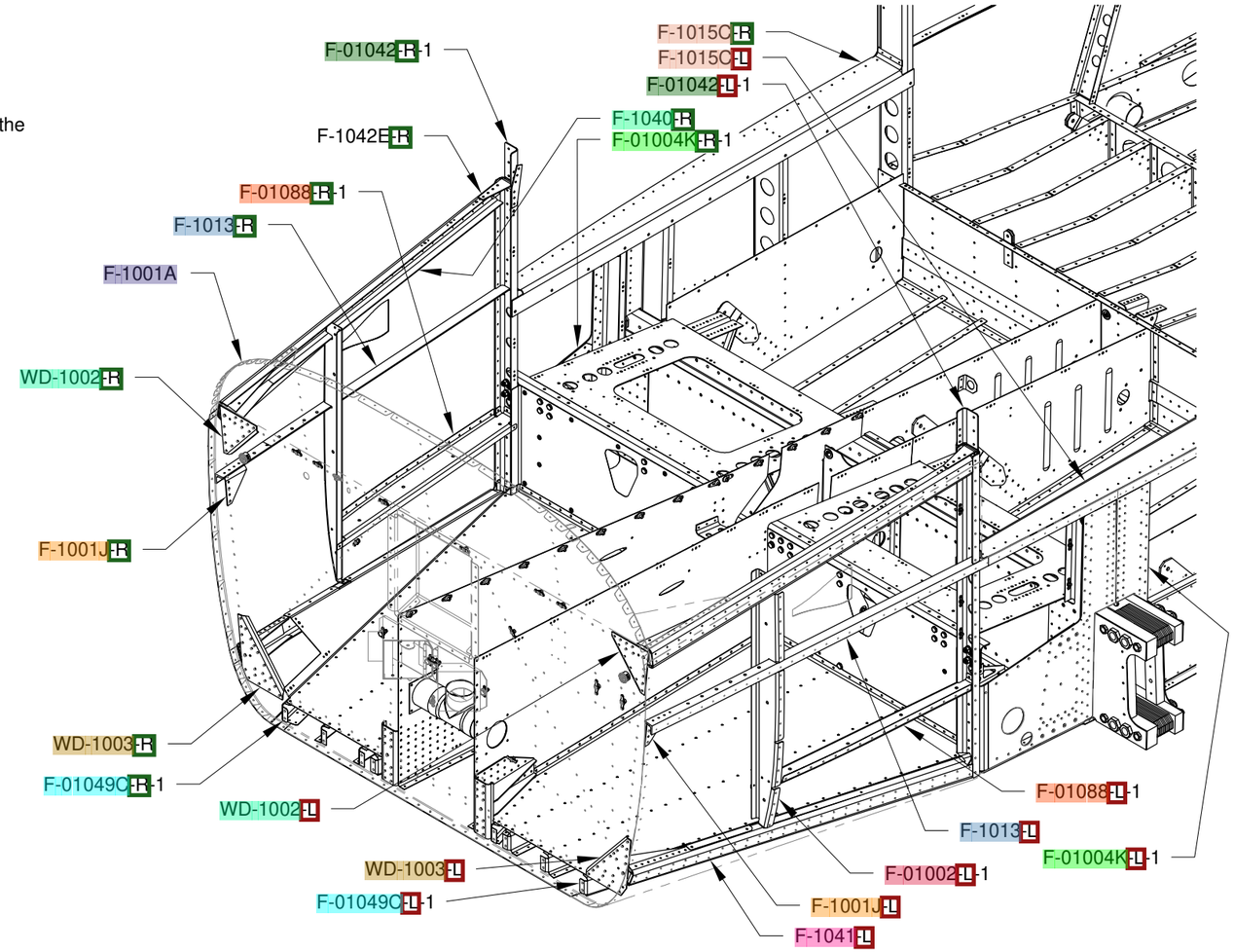



**FIGURE 2:** DRILLING THE UNDERSTRUCTURE
(FWD SIDE SKIN SHOWN TRANSPARENT)

Step 1: Remove the F-01069-L-1 & -R-1 Fwd Side Skins.

Step 2: Cleco the F-1039J Rudder Pedal Drill Jig to the F-1013-L Fwd Fuse Longeron as shown in Figure 1. Double check that the rudder pedal drill jig is not upside-down! Match-Drill #12 the six aft most holes in the rudder pedal drill jig into the fwd fuse longeron. Repeat this step for the right side of the aircraft.

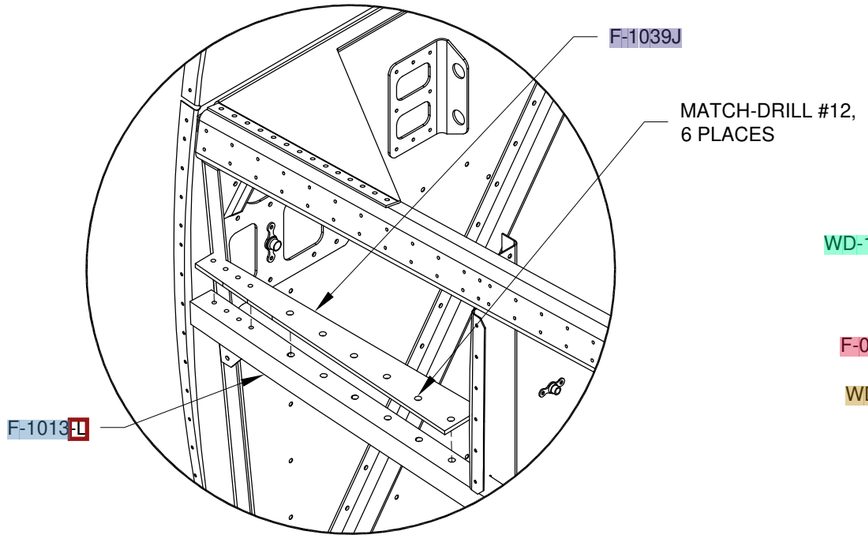



**FIGURE 1:** DRILLING THE RUDDER PEDAL ATTACH HOLES

Step 3: Uncleco and pull back the F-1040 and F-1041 Upper and Lwr Fuselage Channels, clear out all chips then recleco them in place.

**NOTE: It is acceptable to trim the flange of the F-1001D and F-1001M Side Angles if required for drill access.**

Step 4: Match-Drill #30 the holes in the lower flange of the F-1040-L and -R Upper Fuse Channels into the WD-1002-L and -R Upper Firewall Brackets.

Step 5: Match-Drill #30 the holes in the F-1001B Firewall Upper Angle into the F-1040-L and -R Upper Fuse Channels and WD-1002-L and -R Upper Firewall Brackets. Match-Drill #30 the remaining holes aft of the firewall brackets common to the firewall upper angle and the upper fuse channels. Remove the cleco from the aft most hole common to these two parts and final-drill the hole #30 on both sides of the aircraft.

Step 6: Match-Drill #30 the holes along the upper and lower flanges of the F-1041-L and -R Lwr Fuse Channels into the WD-1003-L-PC and -R-PC Lower Firewall Brackets.

Step 7: Match-Drill #30 the holes along the outboard flange of the F-01050-L-1 & -R-1 Fwd Cabin Floor Panels into the upper flanges of the F-1041-L and -R Lwr Fuse Channels.

Step 8: Disassemble all the parts used in this section from the understructure. Deburr the parts and the understructure.

Step 9: Machine countersink all the #40 holes in the F-1015C-L and -R Mid Cabin Decks for the head of an AN426AD3 rivet (flush head on opposite side from the understructure).

Machine countersink the holes that are common with the F-01069-L-1 & -R-1 Fwd Side Skins in the F-1013 Fwd Fuselage Longerons, F-1046 Mid Fuselage Longerons, F-01004K-L-1 & -R-1 Center Section Side Plates, F-1040 Upper Fuse Channels, F-1041-L Lower Fuse Channels and F-01042-L-1 & -R-1 Bulkhead Side Channels (see Page 29-1, isometric view and Figure 2).

Machine countersink the holes in the F-1005C-L and -R Bulkhead Side Channels that are common to the F-1070 Mid Side Skins.

Step 10: Machine countersink for double flush rivets the five holes in each F-01004C-L-1 & -R-1 Center Section Bulkhead as shown in the detail view of Figure 2.

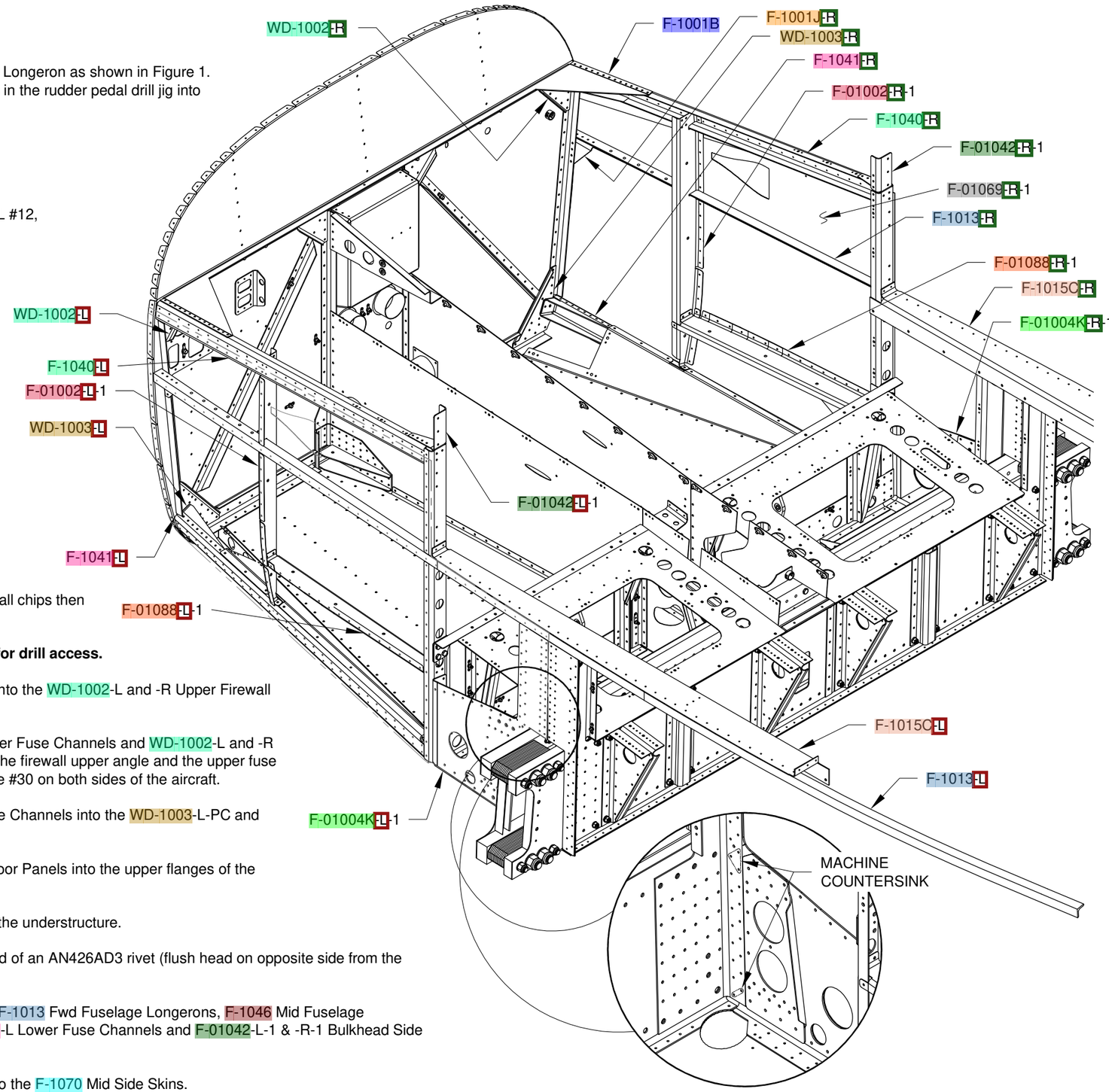



**FIGURE 2:** DRILLING THE UNDERSTRUCTURE
(SIDE SKIN SHOWN TRANSPARENT)

Step 1: Dimple the holes in the F-1001A Firewall Bulkhead, F-01002-L-1 & -R-1 Fwd Fuselage Bulkheads and F-01088-L-1 & -R-1 Fwd Fuselage Ribs that are common to the F-01069-L-1 & -R-1 Fwd Side Skins.

Dimple the single hole in the forward tab of the F-01088-L -1 & -R-1 Fwd Fuselage Ribs.

Dimple the holes in the F-1015B Foot Well Rib Intercostals, F-1015F Spacers, F-1034C Fuselage Bulkheads, F-1023 Baggage Floor Angles and F-10100A and F-10101 Baggage Door Shims (note the shims orientation and the holes **not** to be dimpled on Page 29-8, Figure 2) holes that are common to the F-1070 Mid Side Skins.

Step 2: Using the callouts in Figure 1 dimple the F-01069-L-1 & -R-1 Fwd Side Skins and the F-1070 Mid Side Skins.

Step 3: Remove the hatched area from the baggage door area on the F-1070-L Mid Side Skin as shown in Figure 1.

Step 4: Enlarge the wing wire run location in the F-1070-L and -R Mid Side Skins (see Figure 1) for a snap bushing that will accommodate the wires and pressure lines coming from the wing. Deburr, then install a snap bushing in the wing wire run hole. Because of its custom size the snap bushing is not provided in the kit but can be purchased through Van's Aircraft Accessory Catalog. If this hole is not utilized leave it open.

Step 5: Check that all parts worked with in this section have been deburred. Prime the F-1013-L and -R Fwd Fuse Longerons and the F-1046-L and -R Mid Fuse Longerons. Prime the remaining parts if desired.

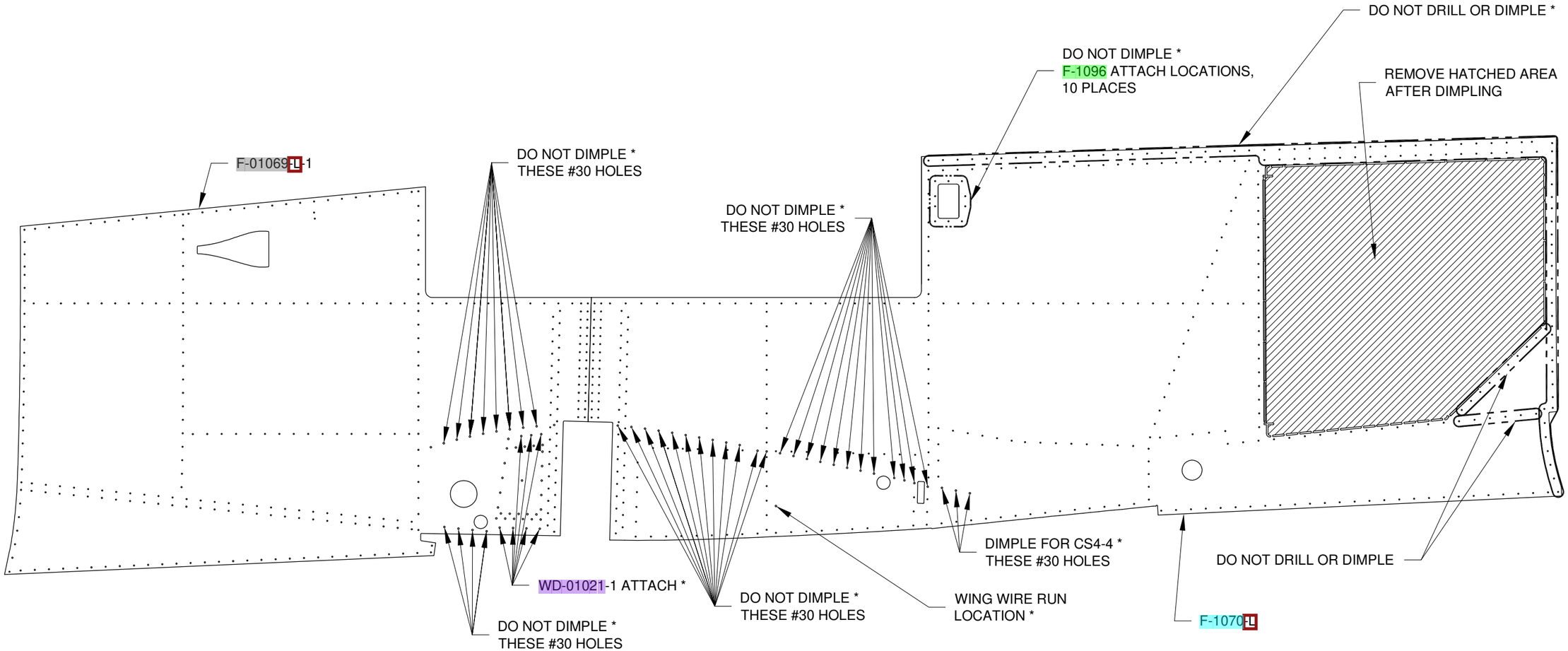



**FIGURE 1:** DIMPLING THE SIDE SKINS
(* CALL-OUTS REFER TO LEFT AND RIGHT SIDE SKINS)

Step 1: Modify the empennage bucking bar created on Page 9-12, Step 3 for use in the rest of this section. See Figure 1.

Step 2: Rivet the F-1034B Seat Back Brace to the F-1034C-L and -R Fuselage Bulkheads per the callouts on Page 29-7, Figure 1. Rivet the seat back brace, F-1034E Seat Back Brace Gusset, F-1046-L Mid Fuse Longeron and F-10102B Baggage Door Seal Angle together per the callouts on Page 29-6, Figure 2. Rivet the F-10102A Baggage Door Seal Angle to the mid fuse longeron per the callouts on Page 29-6, Figure 2.

Rivet the seat back brace and seat back brace gusset to the F-1046-R Mid Fuse Longeron together per the callouts on Page 29-7, Figure 1.

Step 3: Rivet the F-1046-L Mid Fuse Longeron to the F-1005E-L Gusset. Rivet the F-1046-R Mid Fuse Longeron to the F-1005E-R Gusset. Rivet callouts are on Page 29-9, Figure 2.

Step 4: Cleco the F-01002-L-1 & -R-1 Fwd Fuselage Bulkheads, F-1040 Upper Fuse Channels, F-1041 Lwr Fuse Channels and F-1042E Gussets together and to the understructure.

Step 5: Rivet the upper flange of the F-1040 Upper Fuse Channels to the F-1001B Firewall Upper Angle and WD-1002 Upper Firewall Brackets. Rivet the lower flange of the upper fuse channels to the upper firewall brackets. Rivet both the upper and lower flanges of the F-1041 Lwr Fuse Channels to the WD-1003 Lower Firewall Brackets. Rivet callouts are on Page 29-12, Figure 2.

Step 6: Slip the F-1013 Fwd Fuse Longerons into place, then cleco them to the F-1001J Longeron Gussets. Rivet the fwd fuselage longerons to the longeron gussets. See Page 29-12, Figure 2.

Step 7: Rivet the F-1042E Gussets to the F-1042 Bulkhead Side Channels and F-1040 Upper Fuse Channels per the callouts on Page 29-12, Figure 2.

Step 8: Rivet the lower tab on the F-01002-L-1 & -R-1 Fwd Fuselage Bulkheads to the upper flange of the F-1041 Lwr Fuse Channels. Rivet callouts are on Page 29-12, Figure 2.

Step 9: Rivet the F-1023-L Baggage Floor Angle and the F-10100A and F-10101 Baggage Door Shims to the F-1070-L Mid Side Skin per the rivet callouts on Page 29-8, Figure 2 (do not rivet the seven aft most holes marked **do not rivet**). Rivet the F-1023-R Baggage Floor Angle to the F-1070-R Mid Side Skin per the callouts on Page 29-8, Figure 3. Back riveting on a plate works well for this step.

Step 10: Cleco the F-01069-L-1 & -R-1 Fwd Side Skins, F-01042B-1 and C-1 Clips, F-1015F Spacers, F-1070 Mid Side Skins to the fuselage assembly understructure. Check that the forward and mid side skins butt against one another properly.

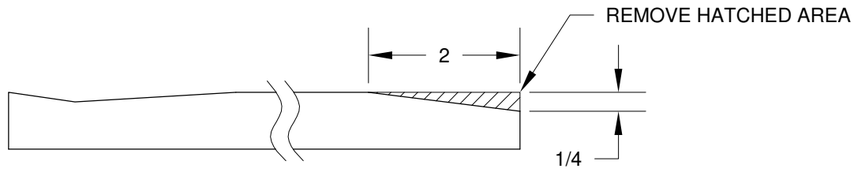



**FIGURE 1:** MODIFYING THE EMPENNAGE BUCKING BAR

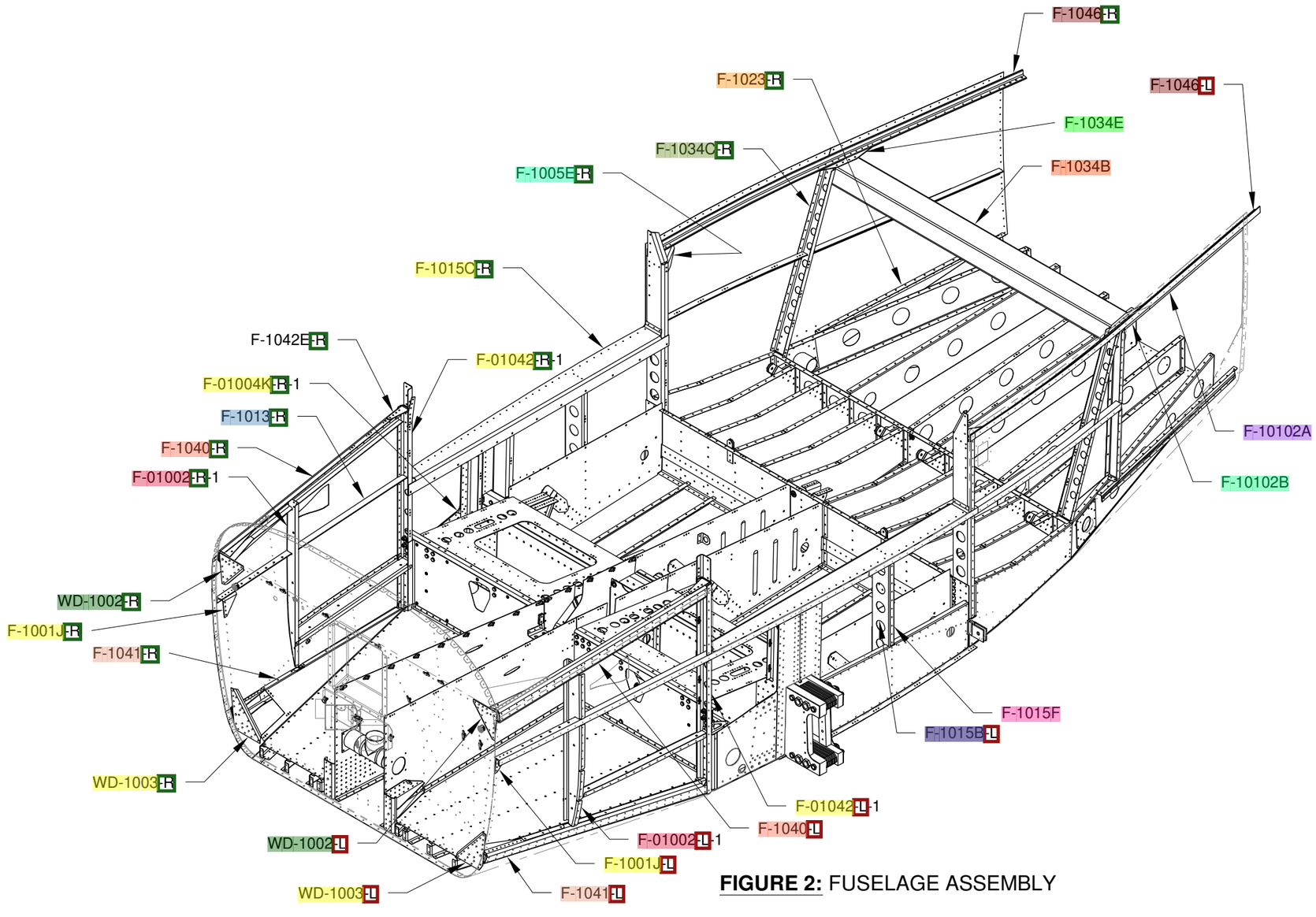



**FIGURE 2:** FUSELAGE ASSEMBLY

Step 1: Start by riveting the double row of rivets on either side of the joint between the F-01069-L-1 & -R-1 Fwd Side Skins and the F-1070 Mid Side Skins. Rivet callouts are in Figure 1, Figure 2 and Page 29-18, Figure 1.

Rivet the F-1070-R Mid Side Skins to the fuselage assembly understructure using the callouts in Figure 1 and Figure 2 **(Only rivet the locations that have callouts)**.

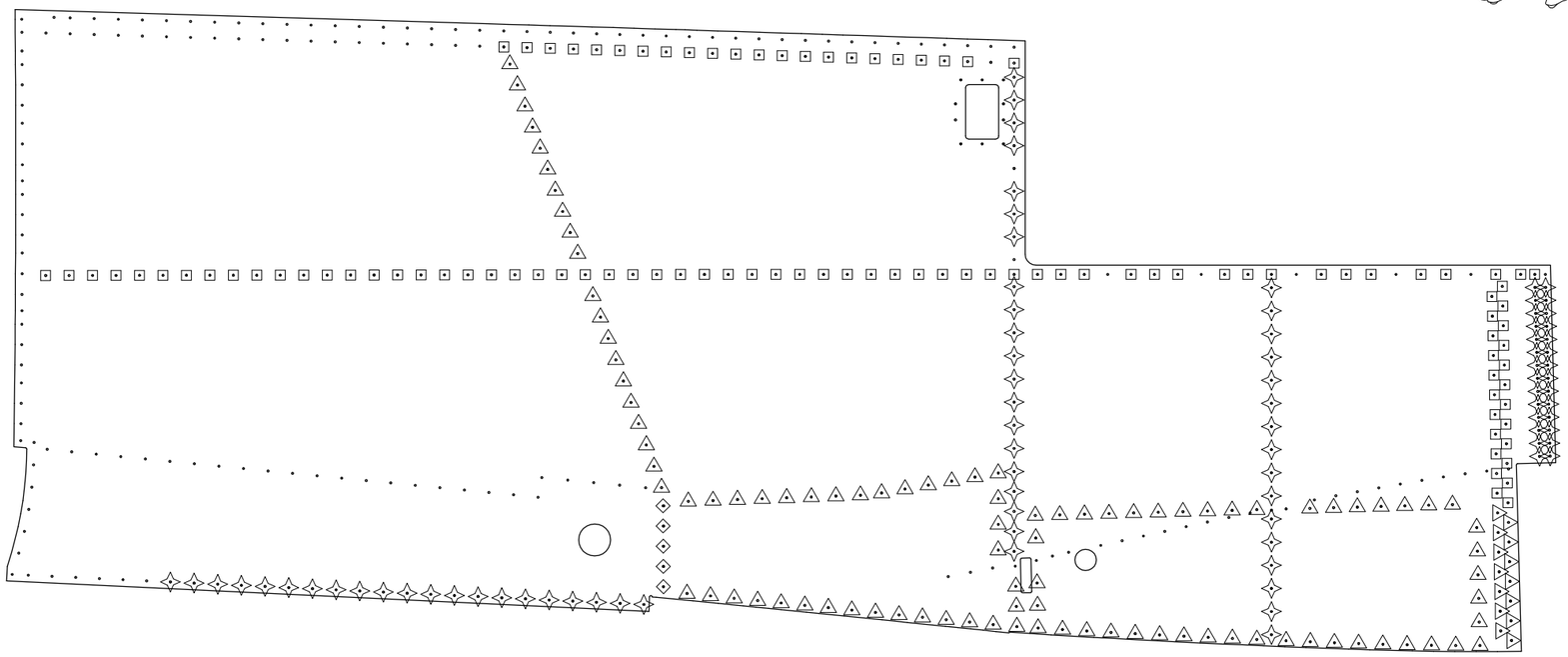
Step 2: Cleco the F-1015C Mid Cabin Decks to the understructure.

Step 3: Rivet the F-1015C Mid Cabin Decks to the F-1005C Bulkhead Side Channels per the callouts on Page 29-7, Figure 1.

Rivet the mid cabin decks to the F-1015B Foot Well Rib Intercostals per the callouts on Page 29-7, Figure 1.

Rivet the mid cabin decks to the F-01042-L-1 & -R-1 Bulkhead Side Channels per the rivet callouts on Page 29-12, Figure 2

Rivet the mid cabin decks to the F-1013 Fwd Fuse Longerons per the callouts on Page 29-7, Figure 1.



△ AN426AD3-3.5
✧ AN426AD3-4
◇ AN426AD3-4.5
▫ AN426AD3-5
▷ AN426AD3-6

**FIGURE 1:** F-1070-R RIVET CALLOUTS

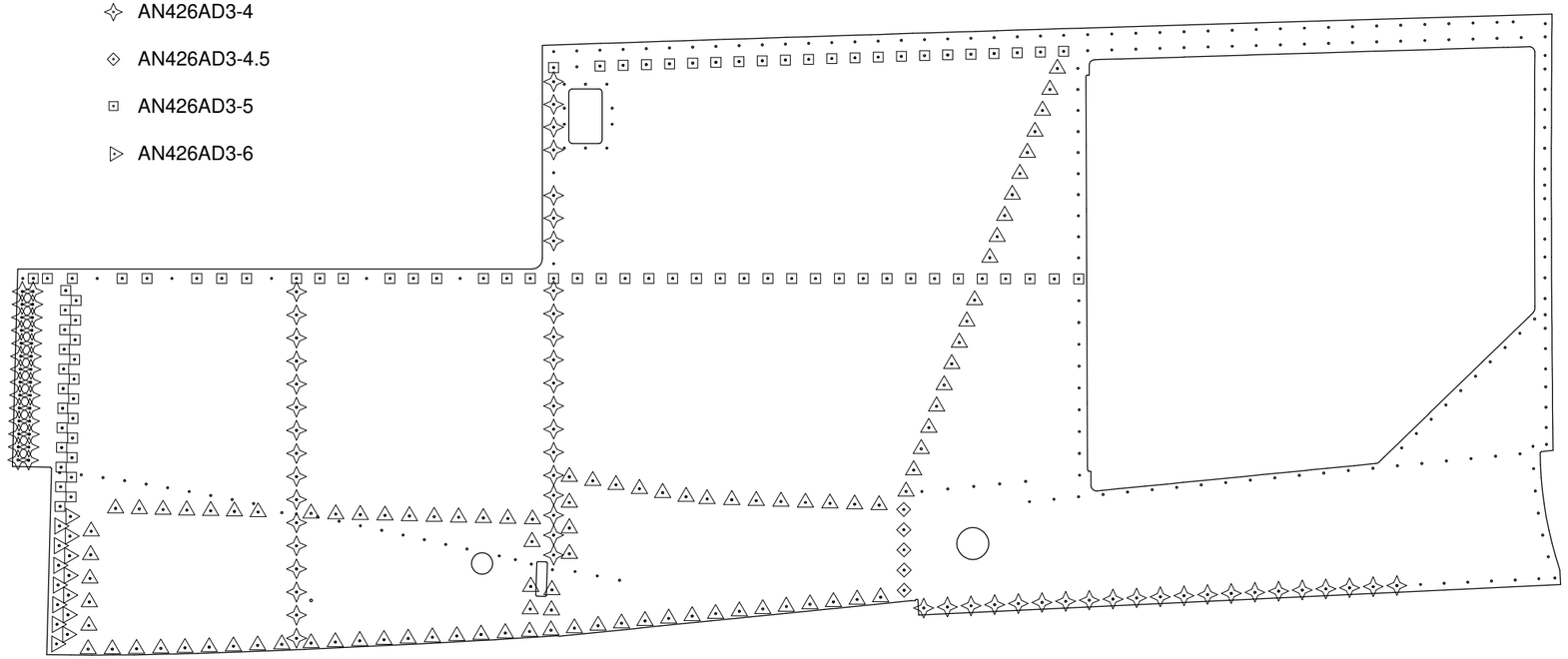


**FIGURE 2:** F-1070-L RIVET CALLOUTS

Step 1: Rivet the F-01069L-1 & FR-1 Fwd Side Skins to the fuselage assembly understructure per the callouts in Figure 1. Begin riveting at the bottom and work upwards. Note the double flush rivets. **Only rivet the locations that have rivet callouts** !

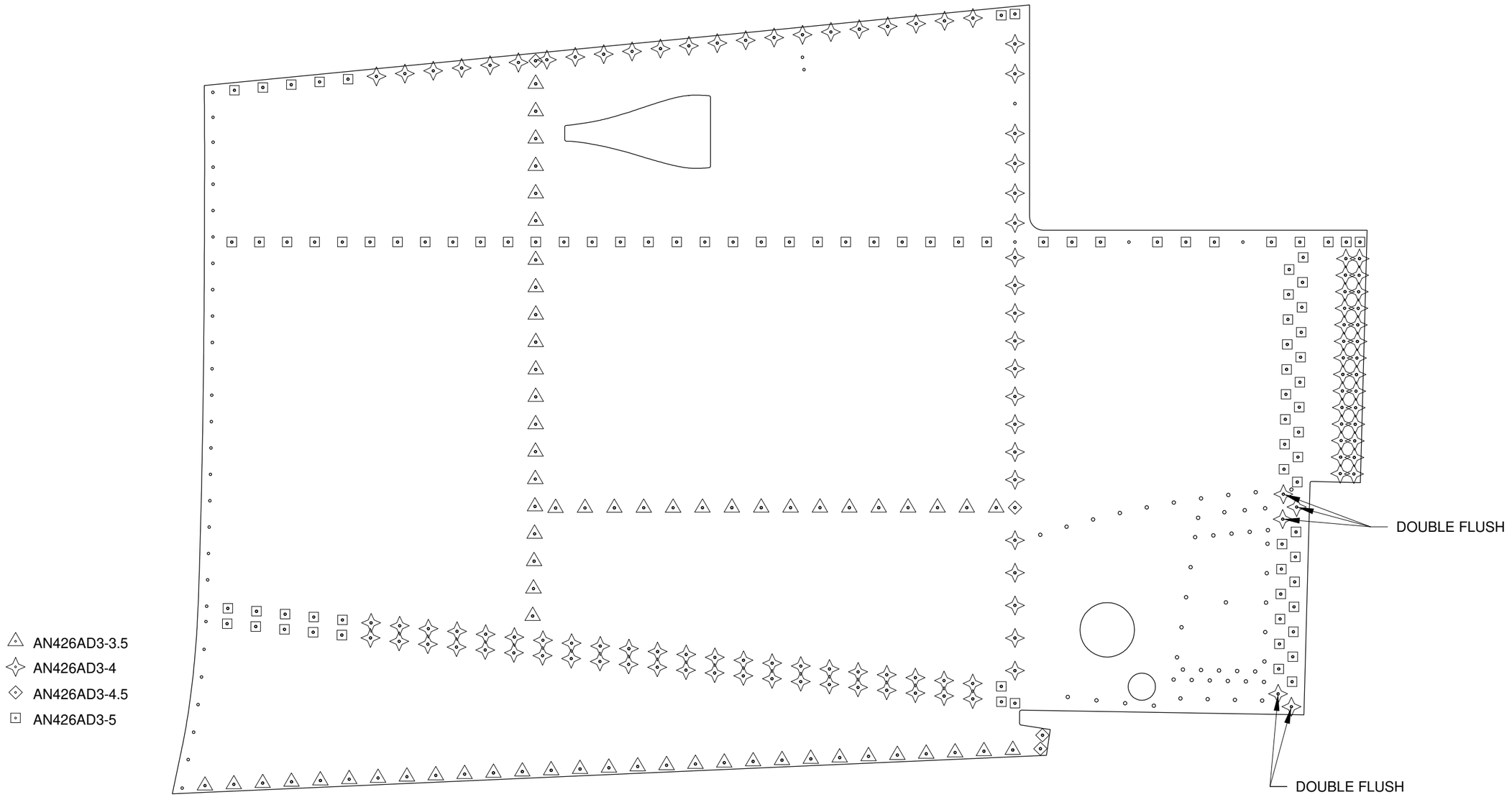



**FIGURE 1:** RIVET CALLOUTS FOR THE FWD SIDE SKINS

Step 1: Cut apart the F-1086 Vent Bracket into two F-1086A and two F-1086B Vent Brackets as shown in Figure 1. Cut apart the F-1087 Vent Slide into two F-1087A and two F-1087B Vent Slides as shown in Figure 2.

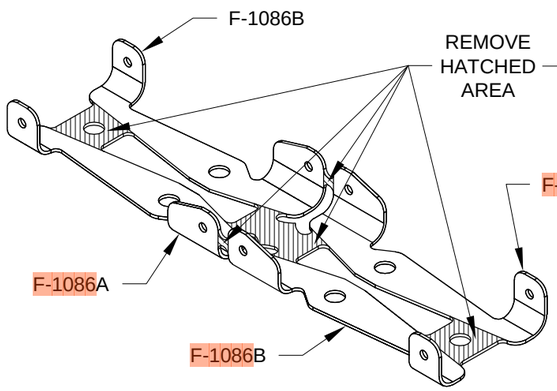



**FIGURE 1:** CUTTING APART THE VENT BRACKETS

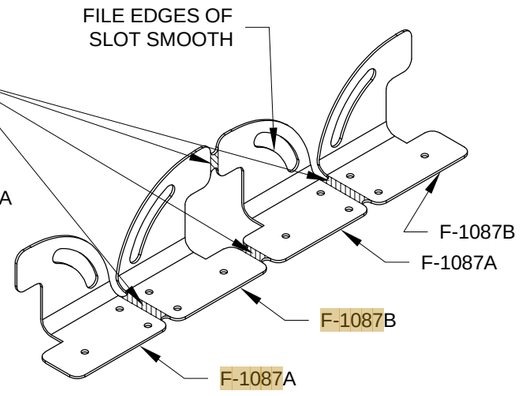



**FIGURE 2:** CUTTING APART THE VENT SLIDES

Step 2: Cleco the F-1087A Vent Slide, F-1087B Vent Slide, F-1092 Vent Door Doubler and F-1093 Vent Door together as shown in Figure 3. Final-Drill #40 the holes common between these parts. This creates the Vent Door Subassembly. Repeat this step to create a second vent door subasssembly.

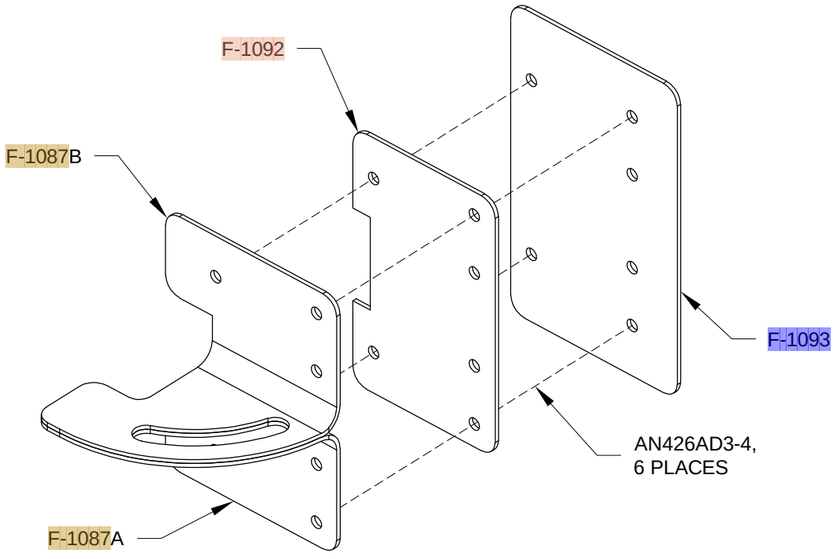



**FIGURE 3:** ASSEMBLING THE VENT DOOR

Step 3: File the edges of the slot smooth in the F-1087A and F-1087B Vent Slides. Check that an AN525-10R7 Screw smoothly slides along the entire length of the slot.

Step 4: Cleco the F-1086A and F-1086B Vent Brackets and the F-1096 Vent Doubler to the F-1070-L Mid Side Skin as shown in Figure 4. Final-Drill #40 the holes common between these parts. Repeat this step for the right side of the aircraft.

Step 5: Machine countersink the holes in the F-1093 Vent Doors and F-1070-L and -R Mid Side Skins to place the flush face on the outboard side of the aircraft. Disassemble the F-1086A and F-1086B Vent Brackets and F-1096 Vent Doublers from the F-1070 Mid Side Skins. Disassemble the Vent Door Subassemblies. Deburr and prime all parts if/as desired.

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

Step 6: Rivet the F-1096 Vent Doubler to the F-1070-L Mid Side Skin as shown in Figure 4 leaving open the four holes that attach the F-1086A and F-1086B Vent Brackets. Rivet the vent brackets using these four holes. Repeat this step for the right side of the aircraft.

Step 7: Machine countersink one side of the VENT-00004 VENT KNOB for the set screw.

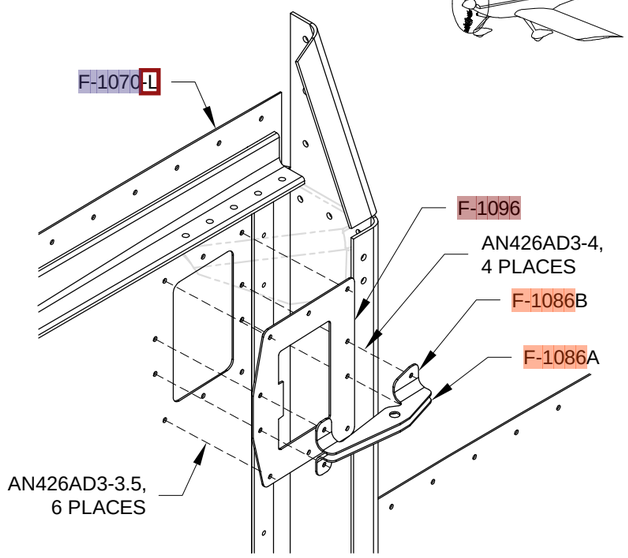



**FIGURE 4:** ASSEMBLING THE VENT DOUBLER AND BRACKETS

Step 8: Insert the tab portion of the Vent Door Subassembly fully into the slot of the VENT-00004 centered on the tab, orient the previously countersunk hole towards the bottom of the vent door as shown in Figure 4.

Step 9: Match Drill #43 the Vent Door Subassembly using the hole in the VENT-00004.

Step 10: Tap 4-40, the VENT-00004 and Vent Door Assembly.

Step 11: Remove the VENT-00004 from the Vent Door Assembly.

Step 12: Rivet the F-1087A Vent Slide, F-1087B Vent Slide, F-1092 Vent Door Doubler and F-1093 Vent Door together as shown in Figure 3. Repeat this step to create a second vent door subassembly.

Step 13: Install the Vent Door Subassembly and VENT-00004 as shown in Figure 5. Install the hardware through the F-1086A and B Vent Brackets and the slot in the vent door subassembly as shown in Figure 5 (place a 5610-90-31 Nylon Washer between F-1086A and F-1086B and the Vent Door Subassembly).

Repeat this step for the right side of the aircraft.

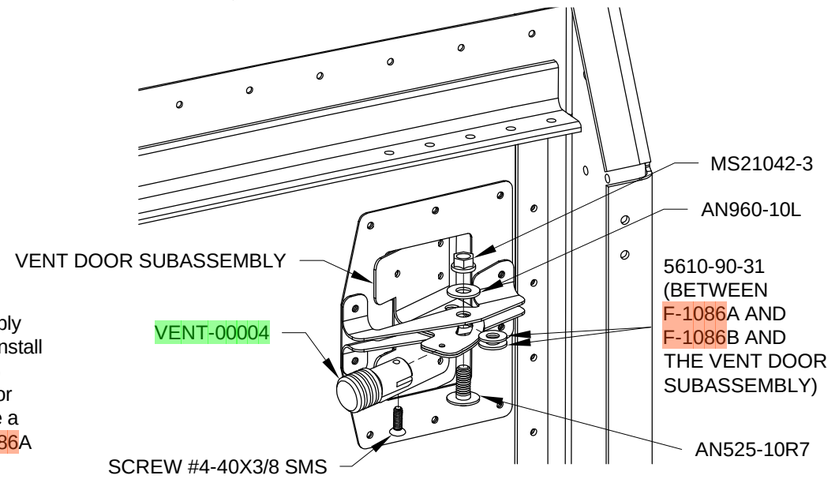



**FIGURE 5:** INSTALLING THE VENT DOOR SUBASSEMBLY
(F-1005E-L NOT SHOWN FOR CLARITY)

Step 1: Install the F-01050-R-1 Fwd Cabin Floor Panel into the fuselage by inserting its forward inboard corner beneath the WD-1004 Nose Gear Tension Fitting, then slide its forward edge beneath the F-1001C Firewall Lower Channel as shown in Figure 1.

Lower the aft end of the fwd cabin floor panel into place and cleco the fwd cabin floor panel to the mating structures. Blind rivet the fwd cabin floor panel into place using the rivets shown in Figure 2.

Install the F-01050-L-1 Fwd Cabin Floor Panel in the same way.

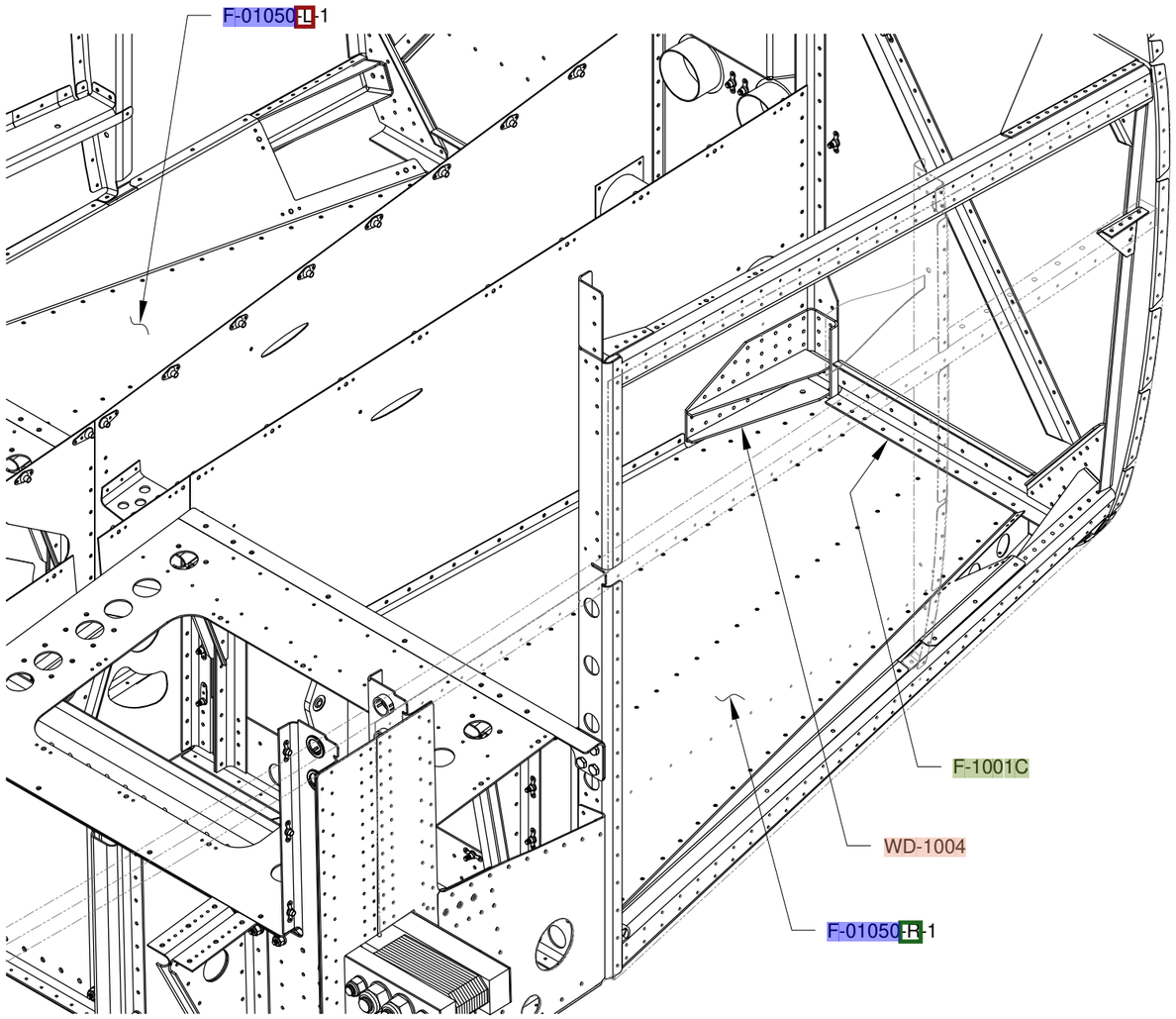



**FIGURE 1:** FWD CABIN FLOOR PANEL INSTALLATION

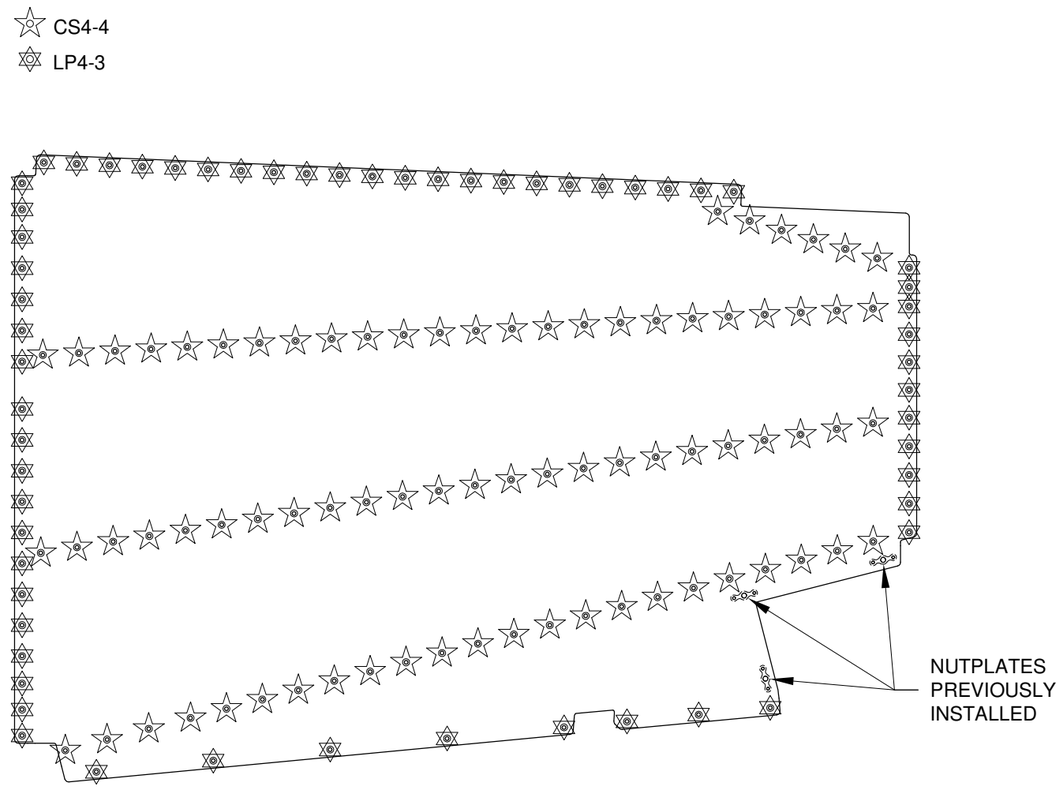



**FIGURE 2:** F-01050-1 RIVET CALLOUT

Step 1: Cleco the F-01004T-L Side Plate Doubler as well as the VA-00277 and VA-00278 Top and Bottom Drill Templates in place as shown in Figure 1.

For correct orientation, notice on the bottom drill template that the aft Ø.250 hole is closer to the edge than the forward Ø.250 hole. Cleco all the holes except the holes that correspond to the flanges of the landing gear mount (the holes within the Ø.250 holes in the drill templates).

Step 2: Enlarge the cutouts in the F-01004A-1 Center Section Bulkhead, F-01004K-L-1 & -R-1 Center Section Side Plates, F-01072-1 Fwd Fuse Bottom Skin, and F-1076 Mid Bottom Skin as required to clear the lower end of each WD-01021-L-1 & -R-1 Landing Gear Mount socket.

Step 3: Temporarily bolt the landing gear mount in place on the center section using the four bolts shown in Figure 2. Use a drilling lubricant such as "Boelube" on the shank of the bolts to ease installation, but be sure not to get any on the threads. Tighten the nuts to the correct installation torque.

**NOTE: To enhance reflectivity, a piece of aluminum foil tape can be applied over the drill templates. The reflection of the drill bit will assist in keeping it perpendicular to the skin while drilling.**

Step 4: Match-Drill #30 the three #30 holes of the F-01069-L-1 Fwd Fuse Side Skin (visible within the Ø.250 holes in the top drill template) into the upper side flange of the WD-01021-L-1 Landing Gear Mount. Be sure to keep the bit perpendicular to the side of the fuselage while drilling, and use a drilling lubricant such as 'Boelube' when drilling steel.

Step 5: Match-Drill #30 the four #30 holes of the F-01069-L-1 Fwd Fuse Side Skin (visible within the Ø.250 holes in the bottom drill template) into the lower side flange of the landing gear mount. Again, be sure to keep the bit perpendicular to the side of the fuselage while drilling, and use a drilling lubricant.

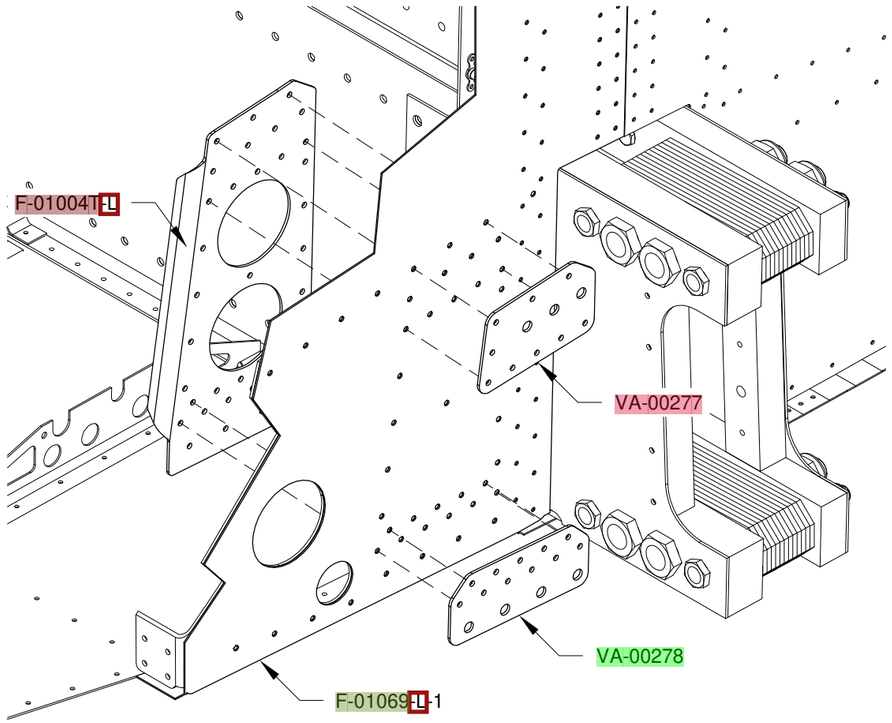



**FIGURE 1:** DRILL TEMPLATES

Step 6: Final-Drill 1/4 one of the #30 holes (made in the previous step) in the lower side flange of the landing gear mount using the hole in the bottom drill template as a guide. Be sure to keep the bit perpendicular to the side of the fuselage while drilling. Insert an AN4 bolt to maintain alignment.

Step 7: Repeat the above step for the remaining three holes.

Step 8: Final-Drill 1/4 one of the #30 holes in the upper flange of the landing gear mount using the hole in the top drill template as a guide. Insert an AN4 bolt to maintain alignment.

Step 9: Repeat the above step for the remaining two holes.

Step 10: Remove the drill templates.

Step 11: Remove the landing gear mount and side plate doubler. Deburr all of the drilled holes and prime the parts if desired.

Step 12: Cleco, then rivet all of the holes in the side plate doubler except for the upper row of three holes as shown in Figure 2.

Step 13: Repeat all of the above steps for the right side of the aircraft.

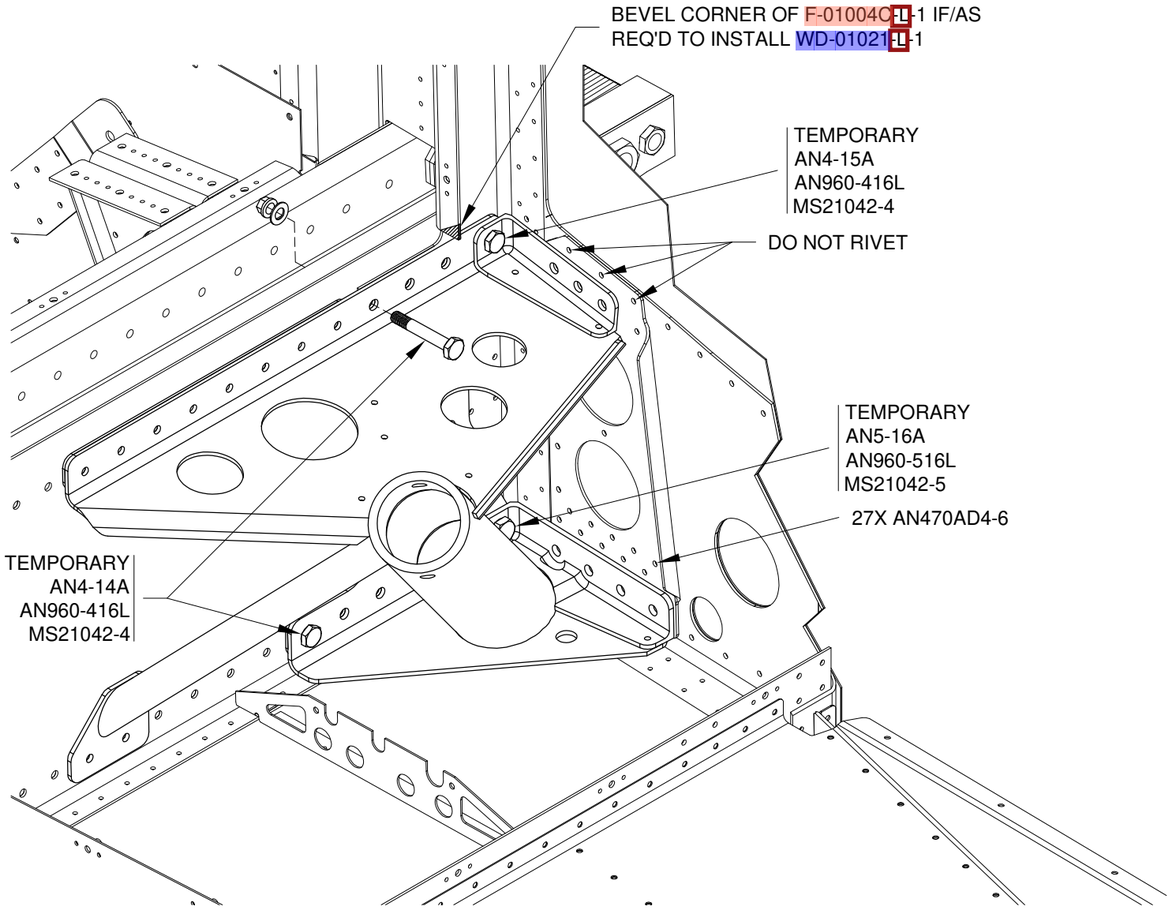
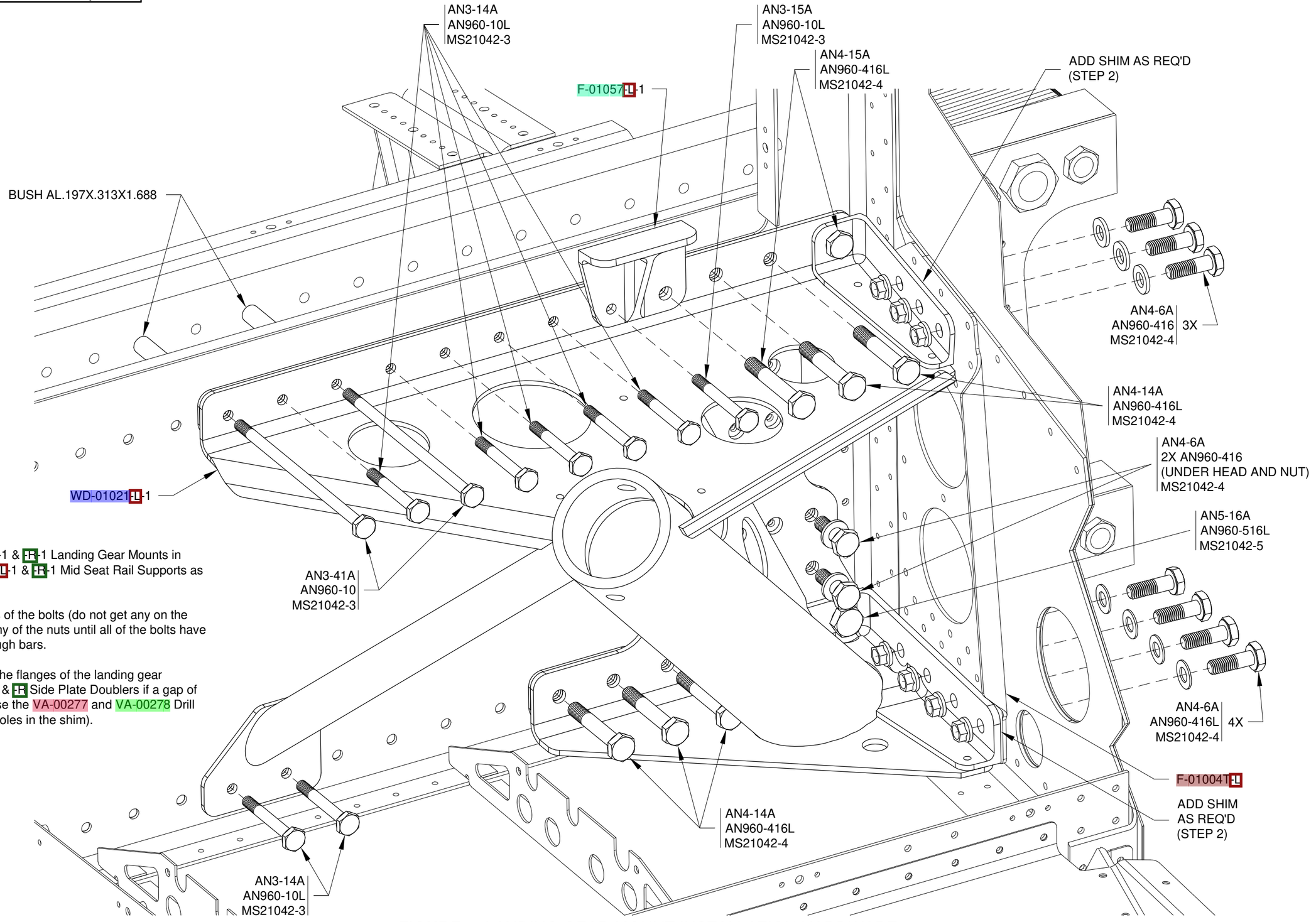



**FIGURE 2:** TEMP INSTALL LANDING GEAR MOUNT




Step 1: Bolt the WD-01021FL-1 & -FR-1 Landing Gear Mounts in place along with the F-01057FL-1 & -FR-1 Mid Seat Rail Supports as shown in Figure 1.

Apply 'Boelube' to the shanks of the bolts (do not get any on the threads) and do not tighten any of the nuts until all of the bolts have been started in the carry through bars.

Step 2: Add a shim between the flanges of the landing gear mount(s) and the F-01004TFL & -FR- Side Plate Doublers if a gap of .040 inches or more exists (use the VA-00277 and VA-00278 Drill Templates to drill the Ø.250 holes in the shim).

**FIGURE 1:** LANDING GEAR MOUNT INSTALLATION HARDWARE
(SOME PARTS OMITTED FOR CLARITY)

Step 1: Cleco then rivet the F-01088-L-1 & -R-1 Fwd Fuselage Ribs to the F-01002-L-1 & -R-1 Fwd Fuselage Bulkheads, F-01042-L-1 & -R-1 Bulkhead Side Channels, and F-01069-L-1 & -R-1 Fwd Side Skins per the rivet callouts in Figure 1.

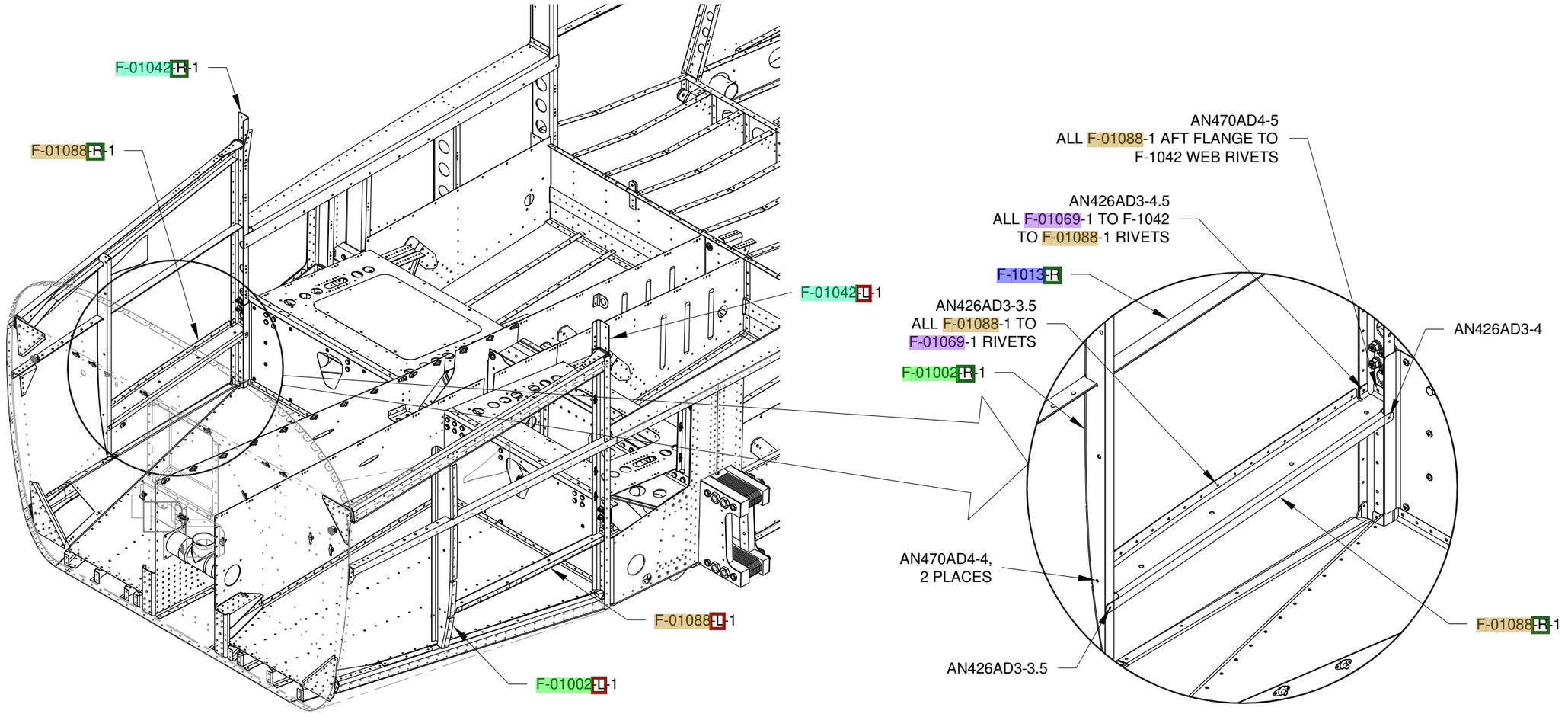



**FIGURE 1:** RIVETING THE FWD FUSELAGE RIBS
(FWD SIDE SKIN AND FIREWALL SHOWN TRANSPARENT)

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