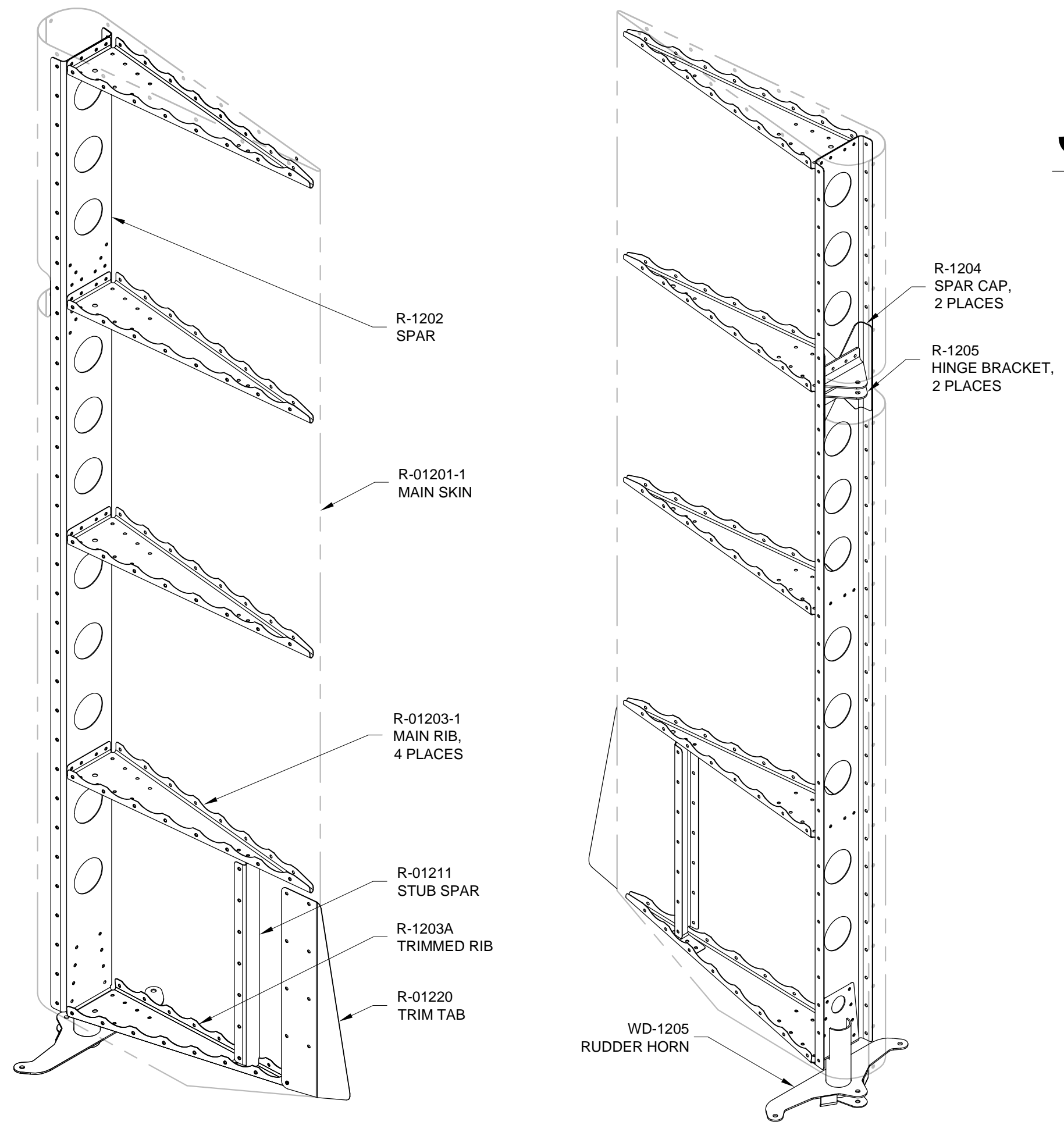


SECTION 7: RUDDER



Step 1: Read all steps prior to construction.

Step 2: Separate the R-1204 Spar Caps by removing the material shown hatched in Figure 1.

Deburr all the edges of both spar caps.

Step 3: Mark both of the R-1204 Spar Caps with a centerline on the surface that will nest against the R-1202 Spar web as shown in Figure 3.

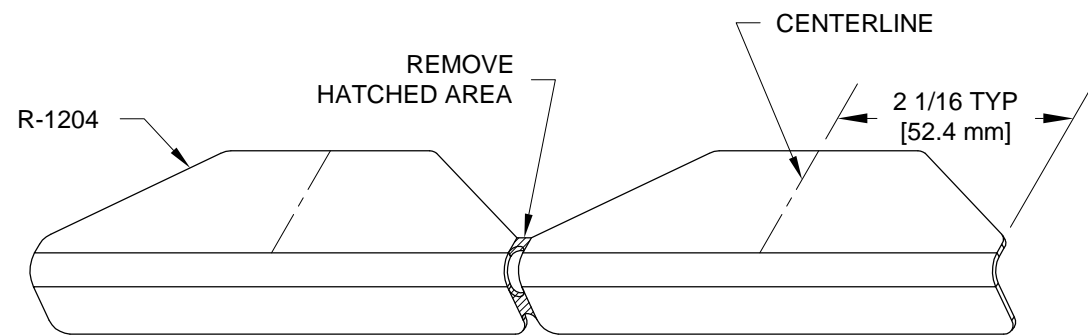


FIGURE 1: SPAR CAP PREPARATION

Step 4: Final-Drill #30 the 1/8 inch holes in the R-1205 Hinge Brackets as called out in Figure 2.

Step 5: Final-Drill #12 the 3/16 inch holes in the R-1205 Hinge Brackets as called out in Figure 2.

Step 6: Separate the R-1205 Hinge Brackets by removing the the material shown hatched in Figure 2.

Deburr all the edges and drilled holes of both hinge brackets.

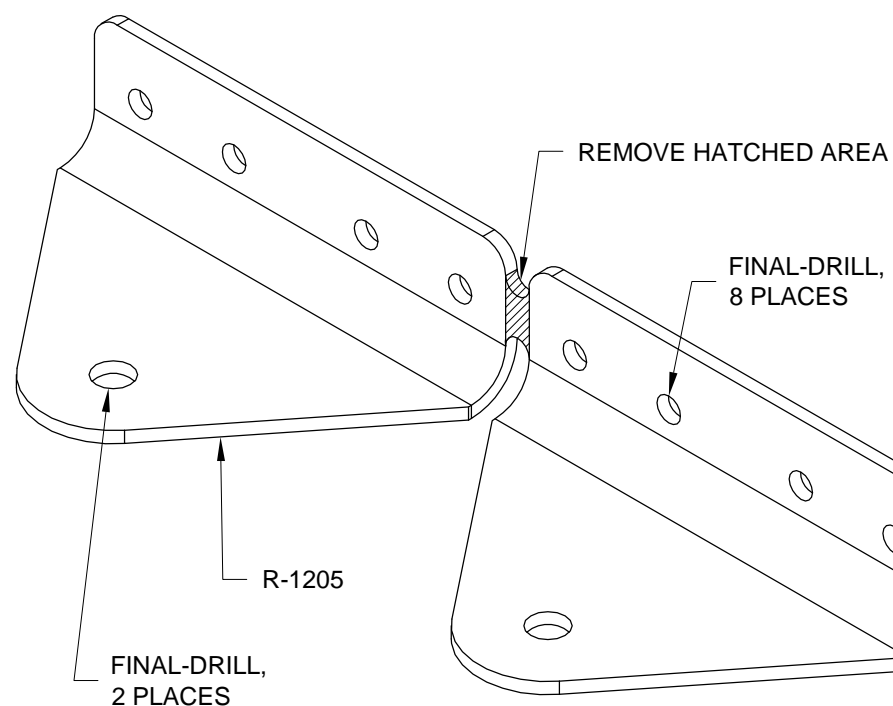


FIGURE 2: HINGE BRACKET PREPARATION

Step 7: Position the R-1204 Spar Caps between the flanges of the R-1202 Spar so the centerline shows through the middle set of holes in the spar web as shown in Figure 3. Adjust the bend of each spar cap, as necessary, to nest against the inner surfaces of the spar web and flange as shown in Figure 3, Detail A-A.

Clamp the spar caps in place. Mark the spar caps left or right so they can be installed in the same position as drilled.

Step 8: Match-Drill #30 the holes from the R-1202 Spar into the R-1204 Spar Caps per call-out in Figure 3. Cleco each hole before drilling the next. First match-drill the holes in the spar web, unclamp and clear away any chips, cleco the spar caps back in place. Then match-drill the holes in the spar flanges.

Remove the spar caps, deburr all drilled holes, and clear away any chips.

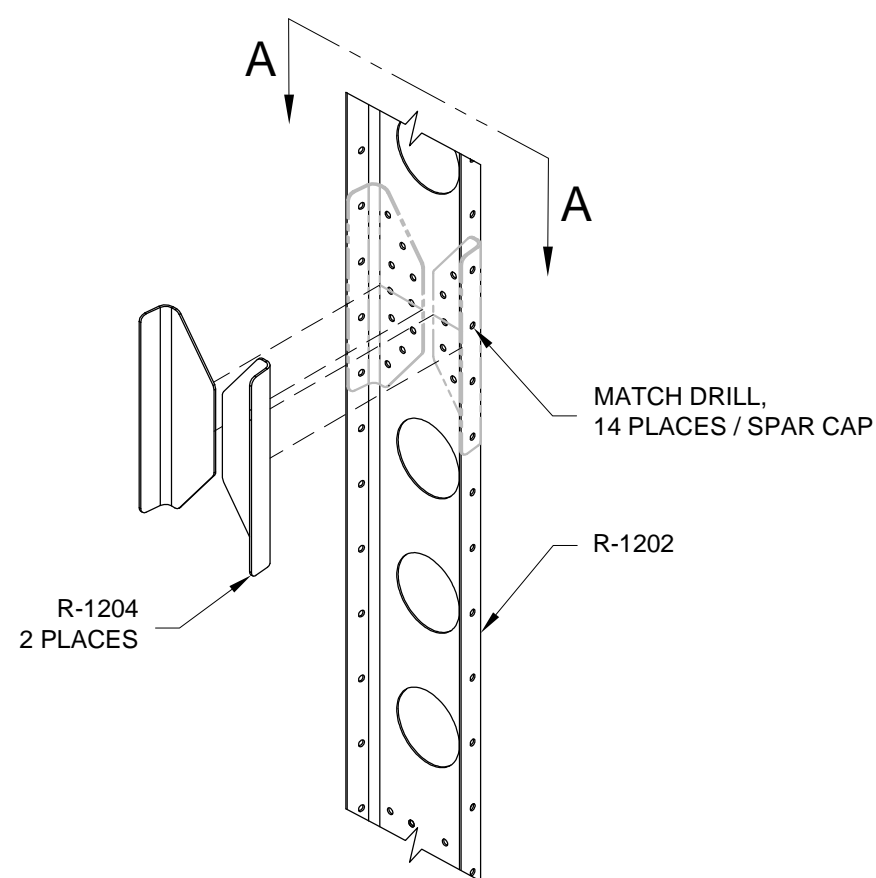
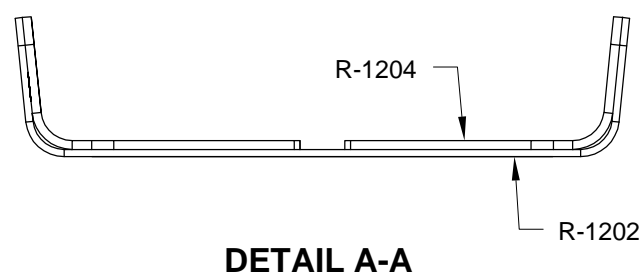


FIGURE 3: POSITION SPAR CAPS



DETAIL A-A

Step 9: Final-Drill the holes in the WD-1205 Rudder Horn as shown in Figure 4.

Step 10: Cleco the R-1204 Spar Caps, the R-1205 Hinge Brackets and the WD-1205 Rudder Horn to the R-1202 Spar. Position clecos on the web of the spar as shown in Figure 4. Hereafter refer to this assembly as the Rudder Spar Assembly.

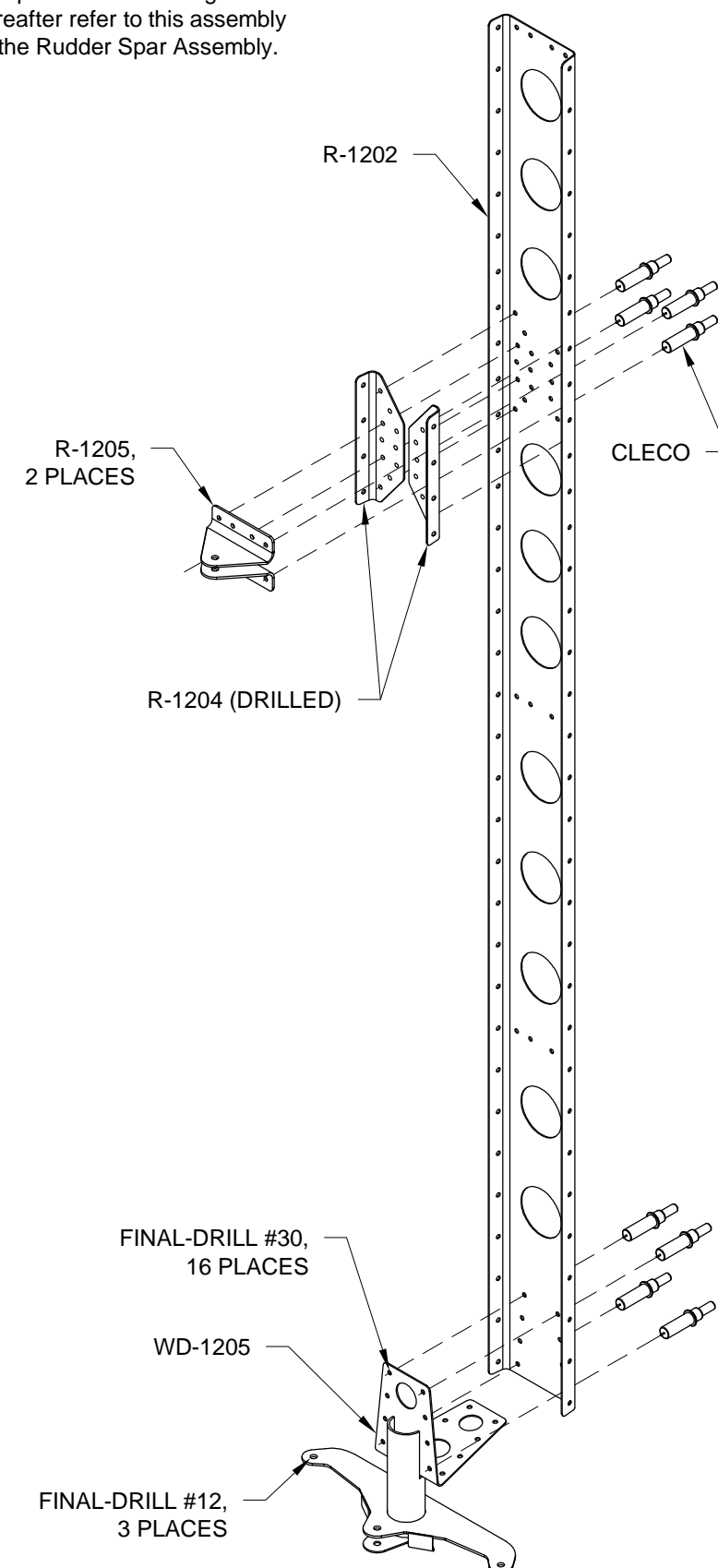
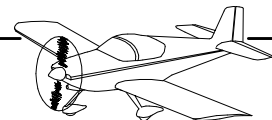


FIGURE 4: RUDDER SPAR ASSEMBLY



Step 1: Check the rudder hinge alignment by temporarily attaching the Lower Hinge Assembly to the V-Stab Assembly. Temporarily attach the Rudder Spar Assembly to the V-Stab Assembly as shown in Figure 1.

When installing the hinge hardware, use one washer between the bolt head and R-1205 Hinge Bracket, one washer between nut and hinge bracket, and only one washer between each hinge bracket and upper hinge assembly. Begin with the same hardware order for the Lower Hinge Assembly. NAS1149F0332P thin washers may be substituted for NAS1149F0363P washers to adjust clearance between hinge brackets.

Once a fit is confirmed, make note of the washers used. Detach the Rudder Spar Assembly.

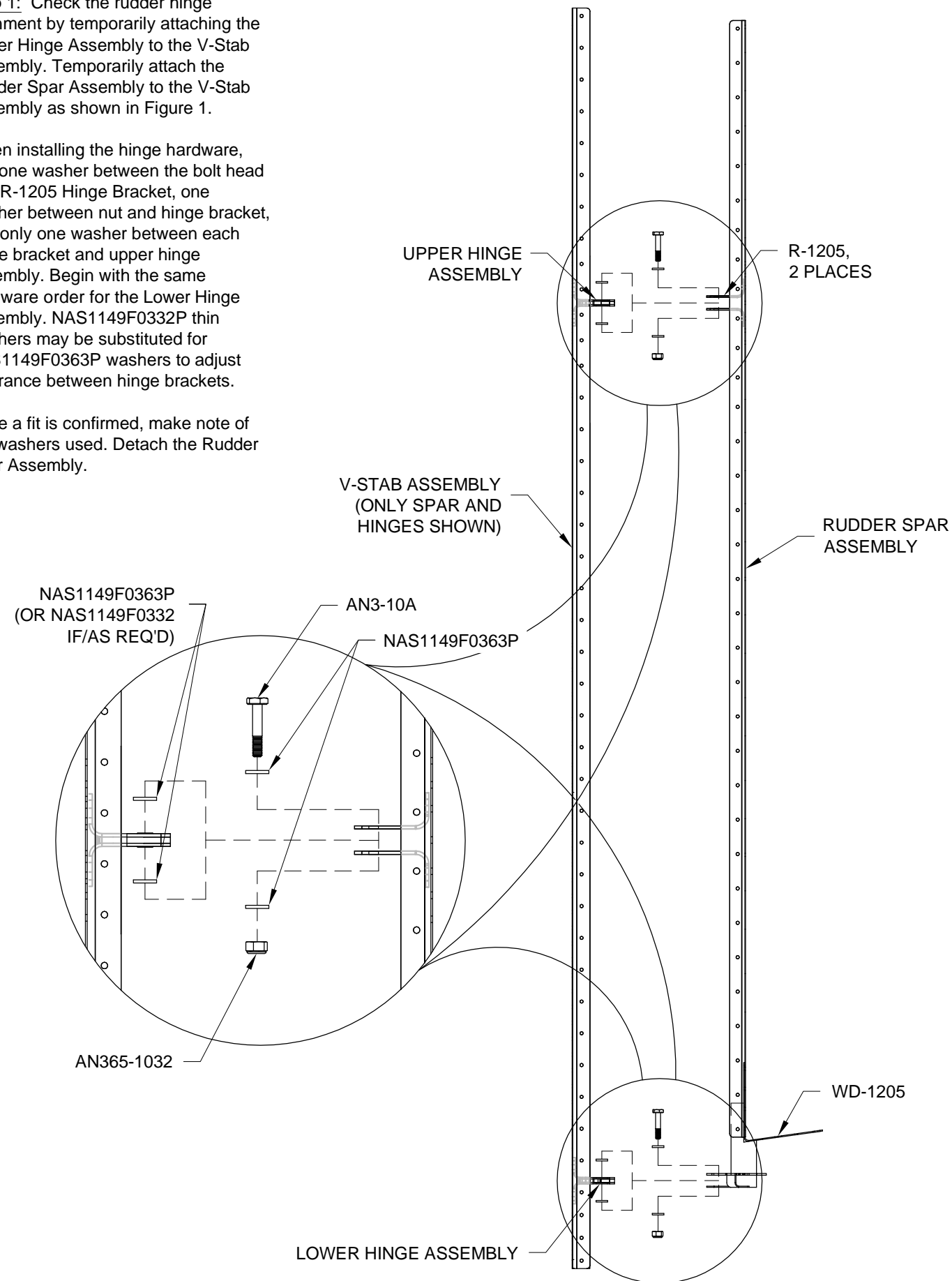


FIGURE 1: CHECK HINGE SPACING

Step 2: Remove the R-1205 Hinge Brackets and WD-1205 Rudder Horn, (not shown). Rivet the R-1204 Spar Caps and the R-01203-1 Main Rib to the R-1202 Spar. Rivet only the four holes common to the main rib. See the rivet call-out in Figure 2.

Step 3: Rivet the R-1205 Hinge Brackets to the R-1204 Spar Caps and R-1202 Spar. Rivet the remaining holes in the spar caps to the spar. See the rivet call-outs in Figure 2.

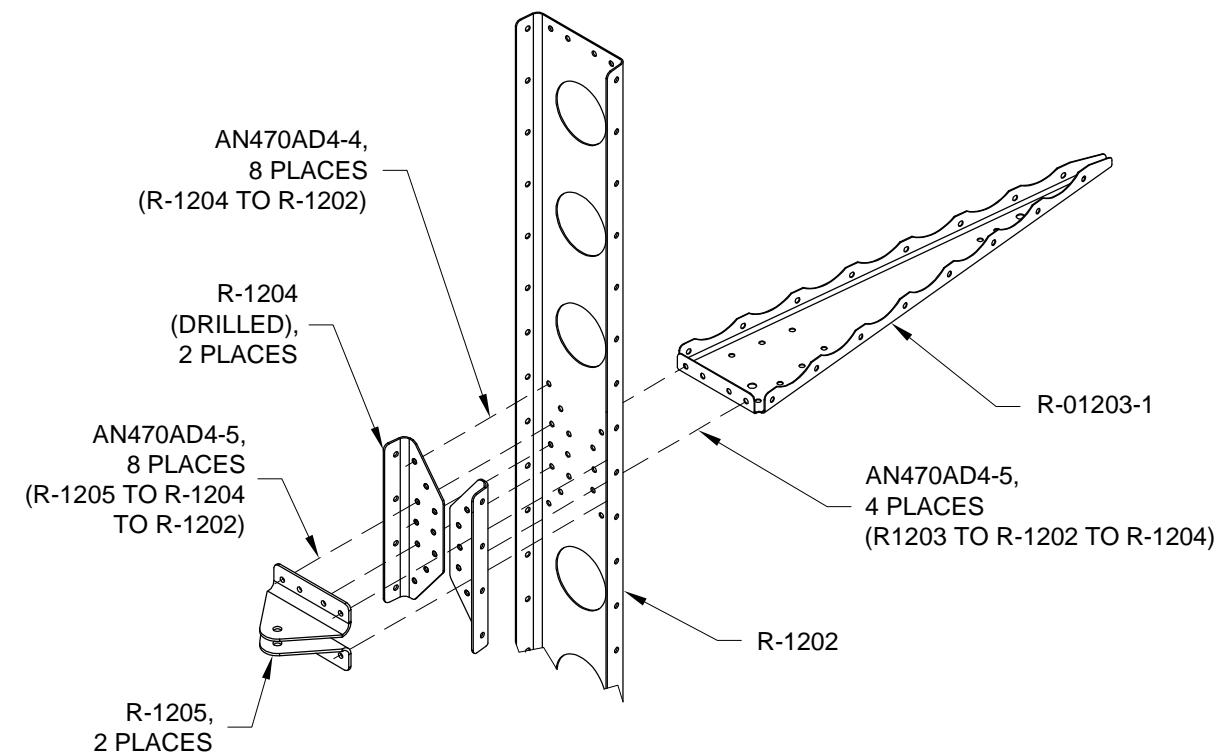


FIGURE 2: UPPER HINGE BRACKET ATTACHMENT

Step 4: Remove the forward flange from one R-01203-1 Main Rib per the dimension in Figure 3. Deburr the trimmed edge. Hereafter refer to this trimmed rib as the R-1203A Trimmed Rib.

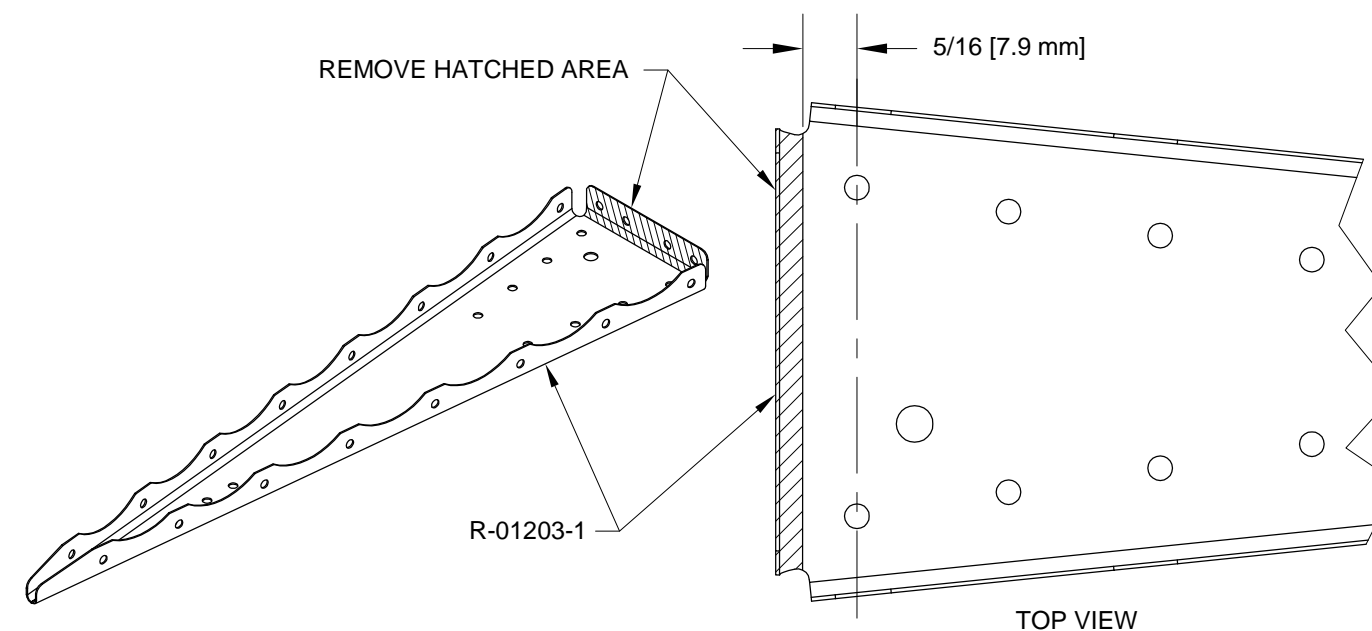


FIGURE 3: REMOVE MAIN RIB FLANGE

Step 1: Rivet the R-1203A Trimmed Rib to the WD-1205 Rudder Horn. Flange orientation and rivet call-outs are shown in Figure 1. Refer to this assembly as the Rudder Horn Assembly.

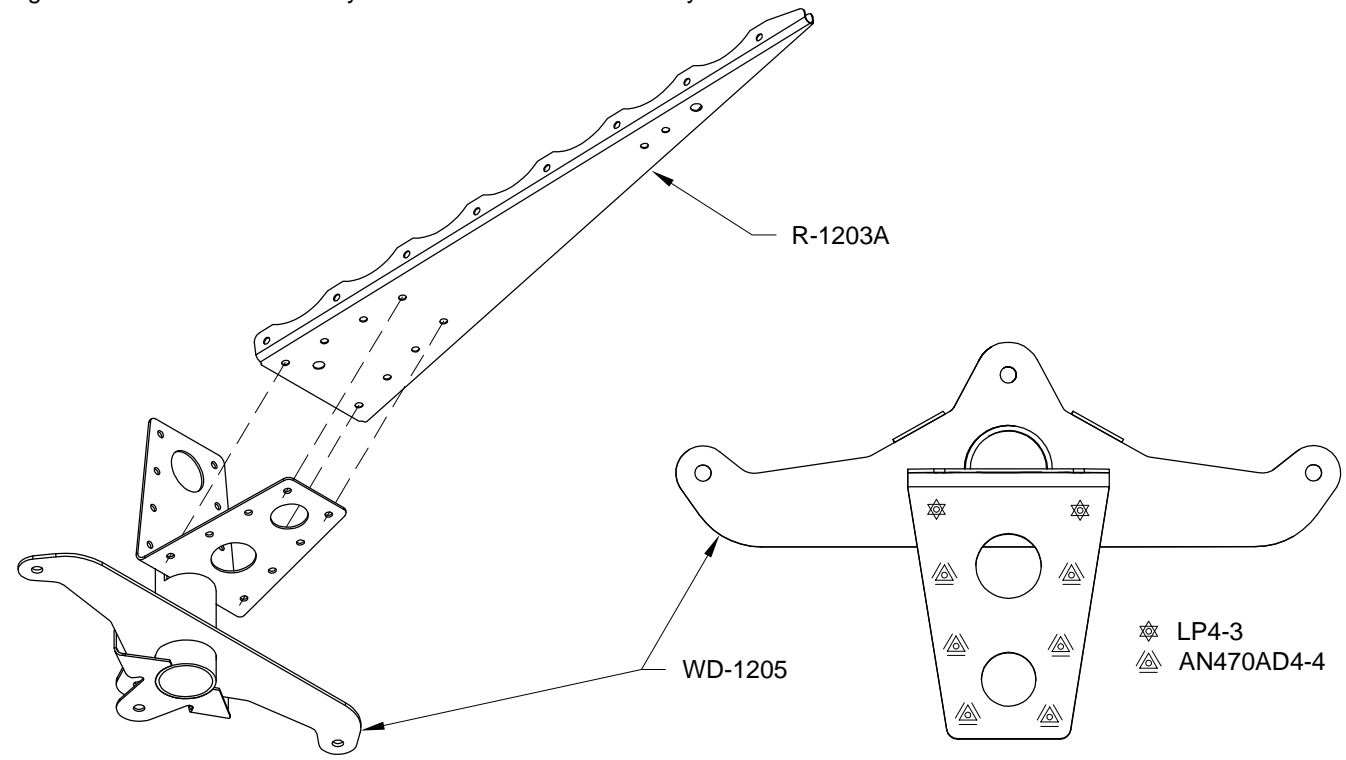


FIGURE 1: RUDDER HORN ASSEMBLY

Step 2: Rivet the Rudder Horn Assembly to the R-1202 Spar, as shown in Figure 2.

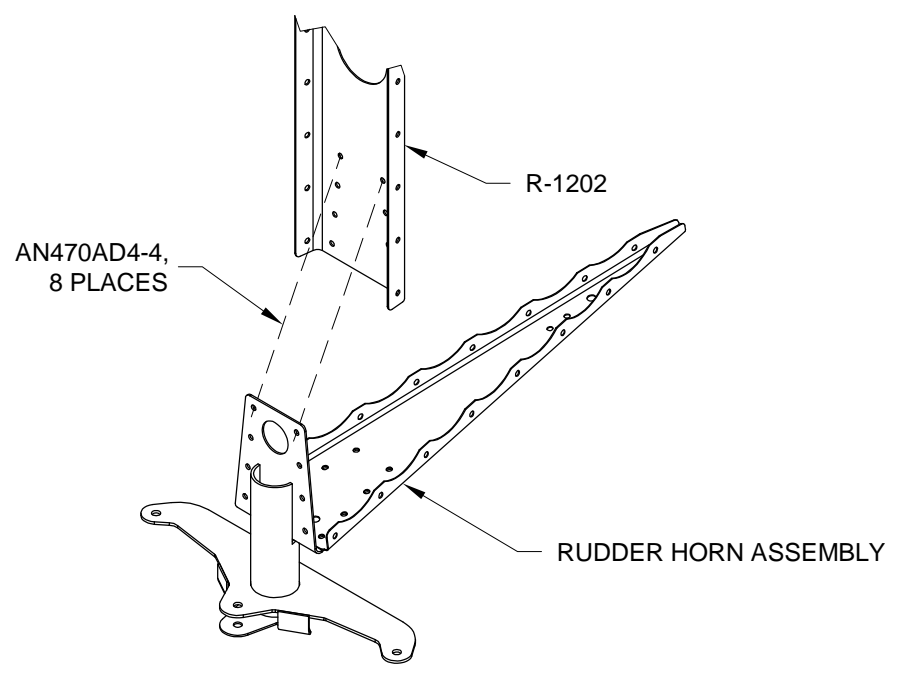


FIGURE 2: RUDDER HORN TO SPAR RIVETS

Step 3: Rivet the three remaining R-01203-1 Main Ribs to the R-1202 Spar. Flange orientations and rivet call-outs are shown in Figure 3.

Step 4: Rivet the R-01211 Stub Spar to the two ribs as shown in Figure 3. Note orientation.

Hereafter refer to this assembly as the Rudder Skeleton Assembly.

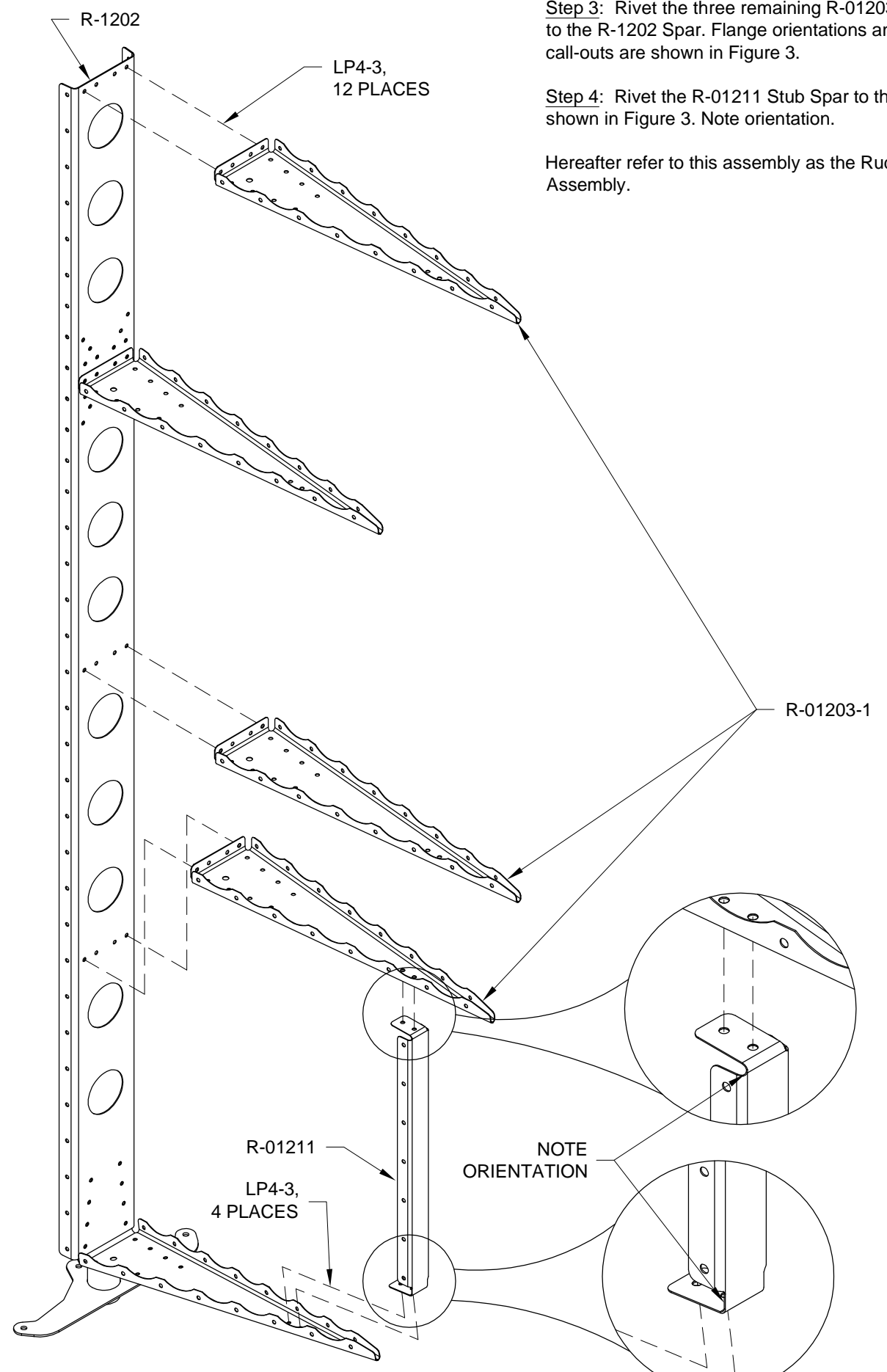
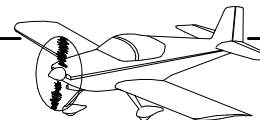


FIGURE 3: RUDDER SKELETON ASSEMBLY



Step 1: Remove the tab, shown hatched, from the lower end of the R-01201-1 Main Skin as shown in Figure 1.

Deburr the trimmed edge.

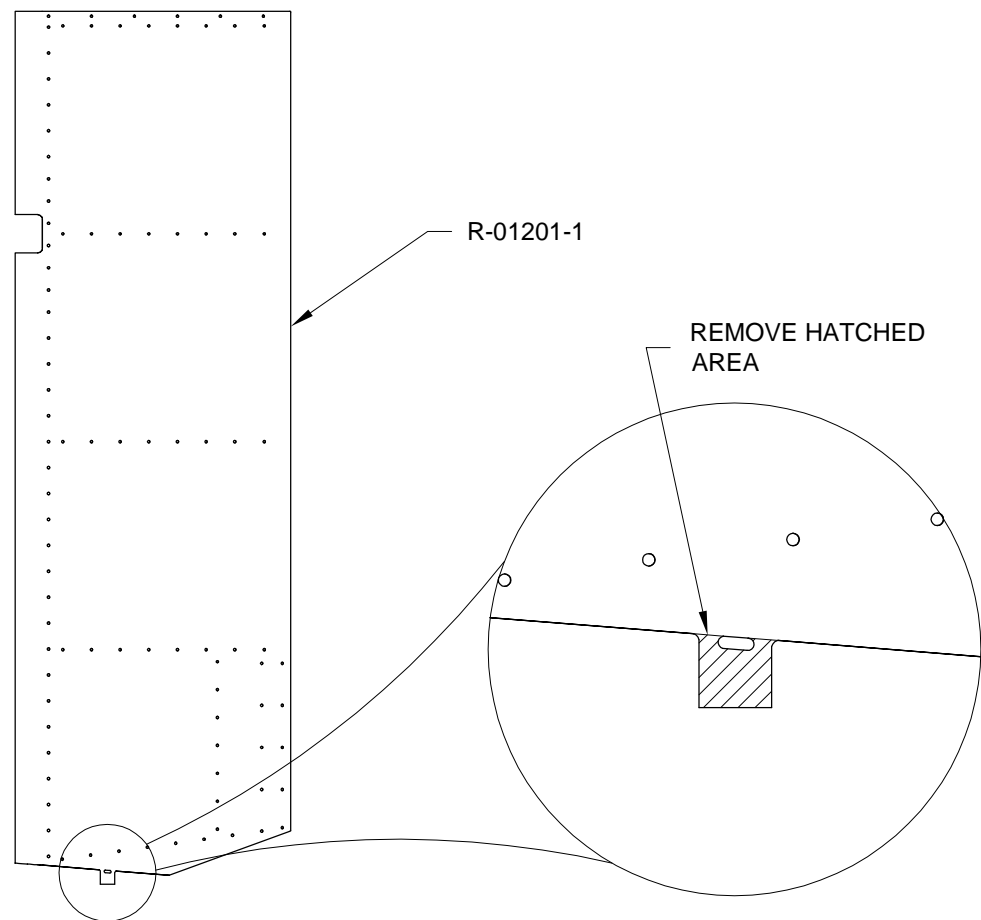


FIGURE 1: TAB REMOVAL

Step 2: Position the R-01201-1 Main Skin over the Rudder Skeleton Assembly. Check for Skin hole alignment with the Rudder Skeleton Assembly. Cleco the entire Skin to the Rudder Skeleton Assembly.

Step 3: Starting nearest to the trailing edge rivet the skin to the Rudder Skeleton Assembly per the call-out in Figure 2. Leave open the top row of holes in the skin and the holes in the region of the trim tab per the call-outs.

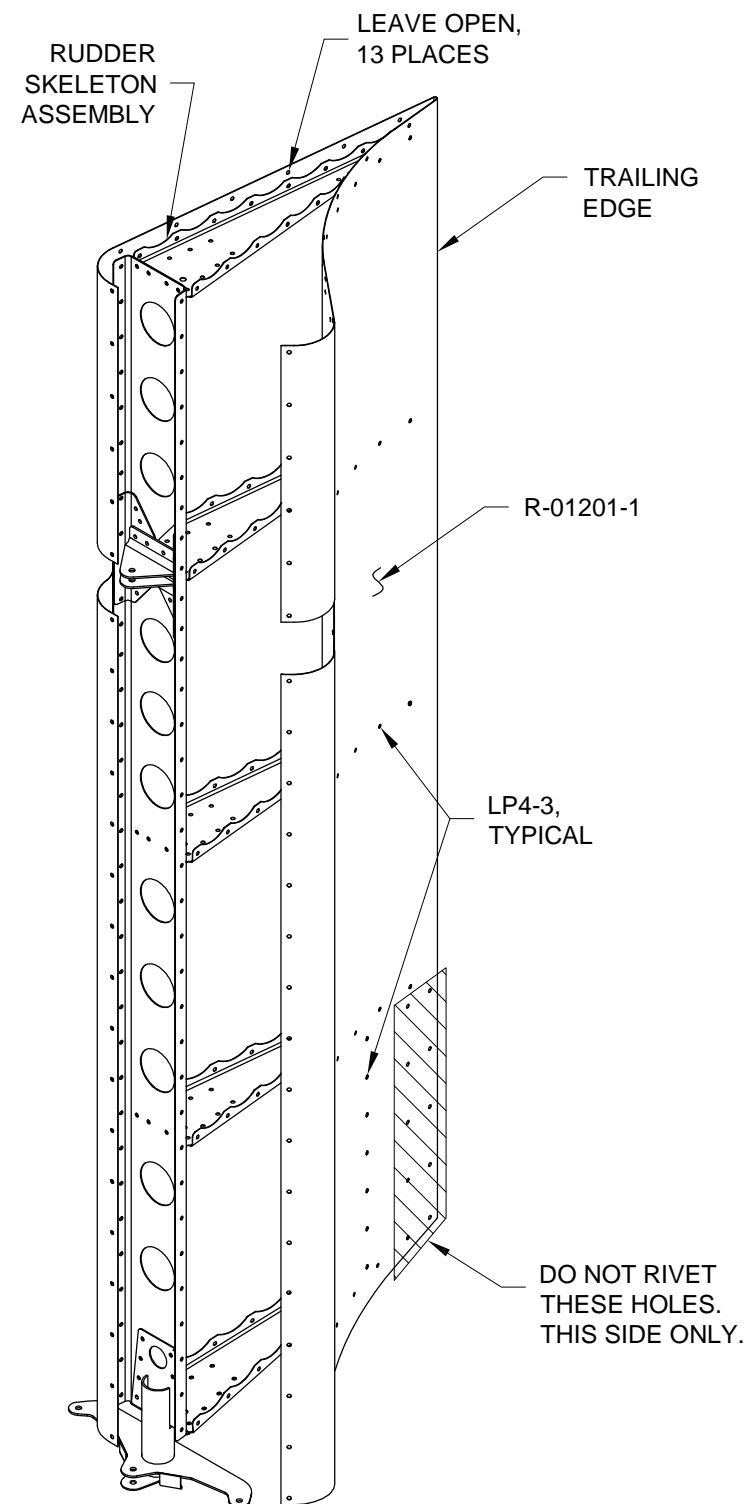


FIGURE 2: SKIN ATTACHMENT

Step 4: Close and rivet the skin on the forward side of the R-1202 Spar. The skin must overlap onto itself as shown in Figure 3.

NOTE: The rudder fiberglass fairing installation instructions are covered in Section 12: Emp Fairings.

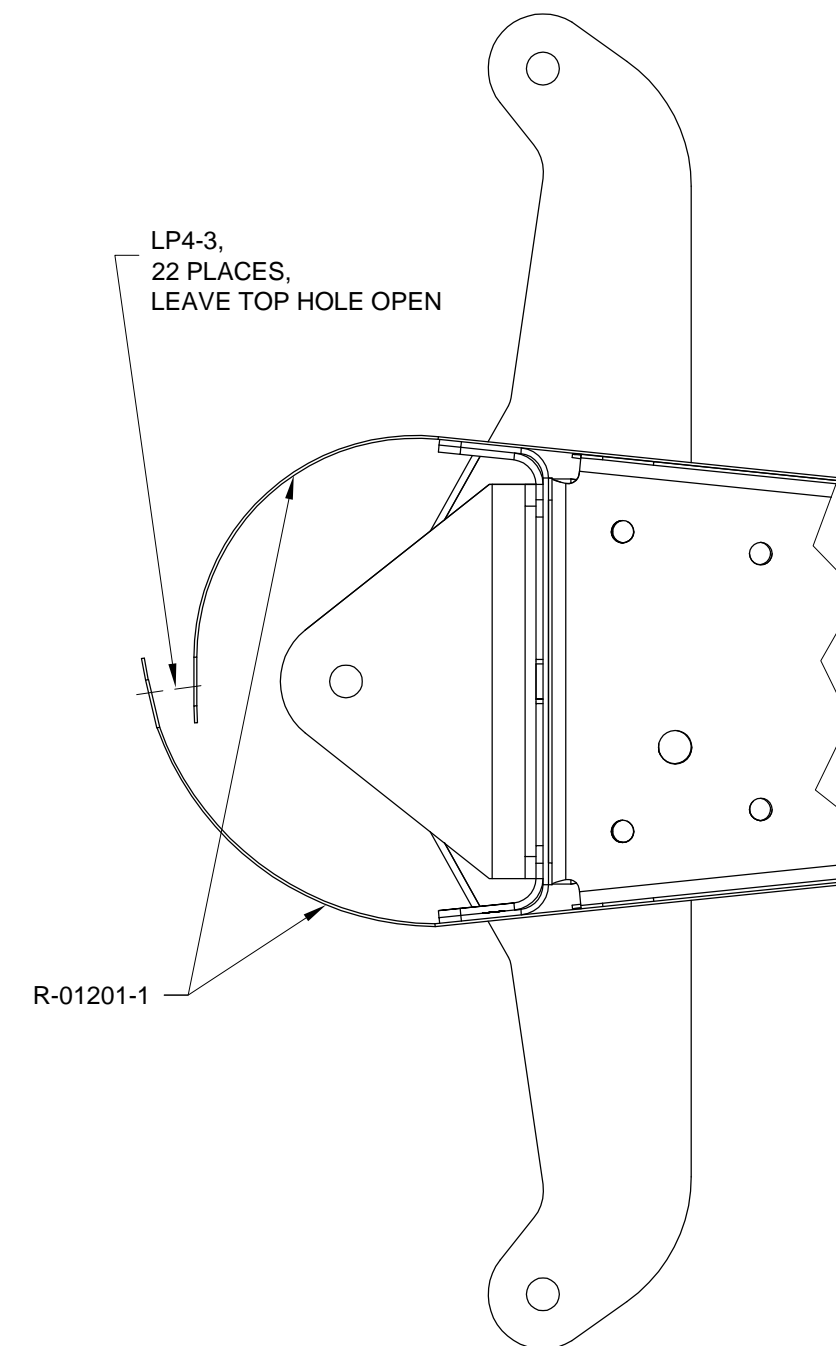


FIGURE 3: SKIN CLOSURE (TOP VIEW)



Step 1: Cleco then rivet the R-01220 Trim Tab to the Rudder Assembly using the rivets called out in Figure 1.

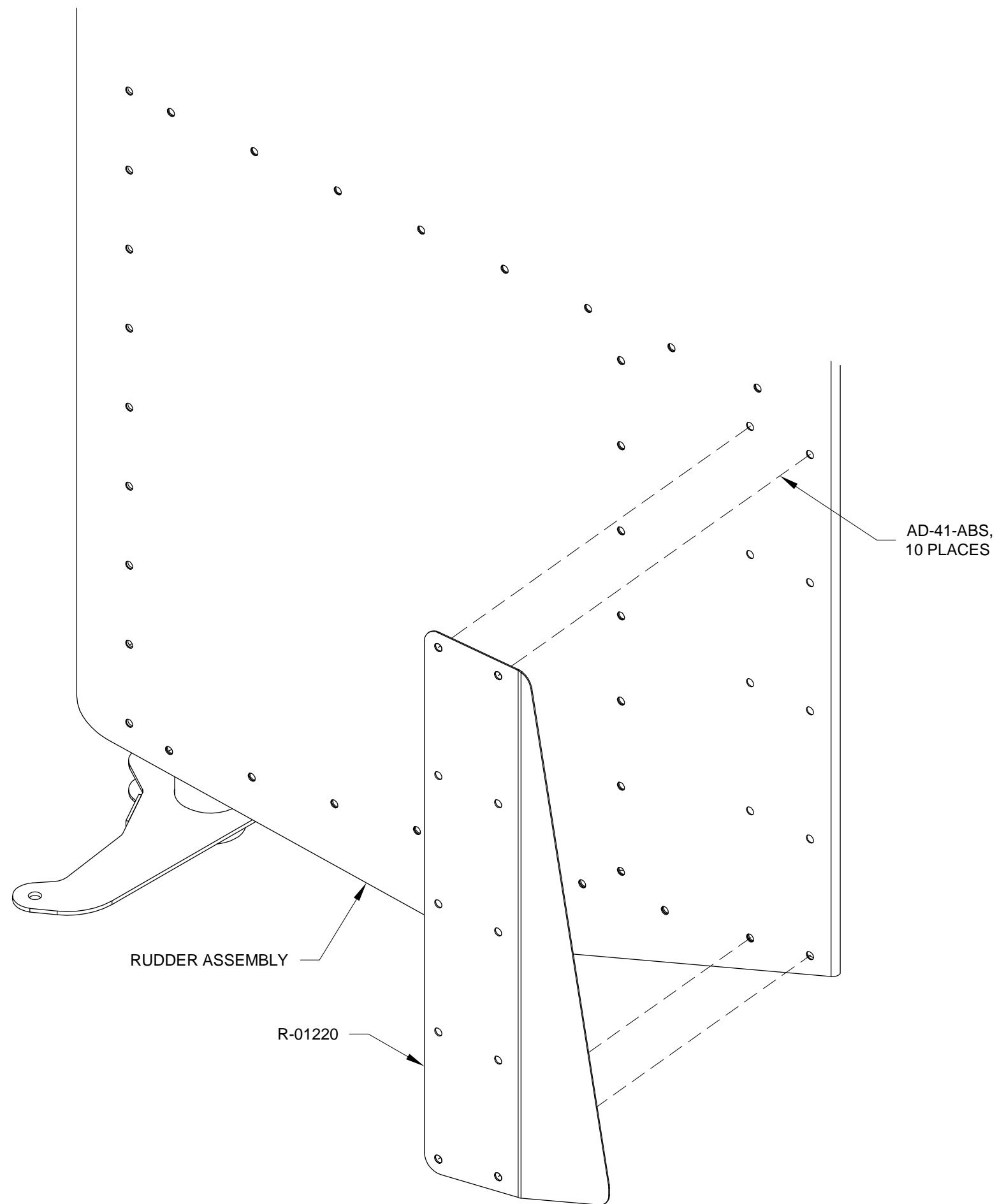


FIGURE 1: INSTALLING THE TRIM TAB