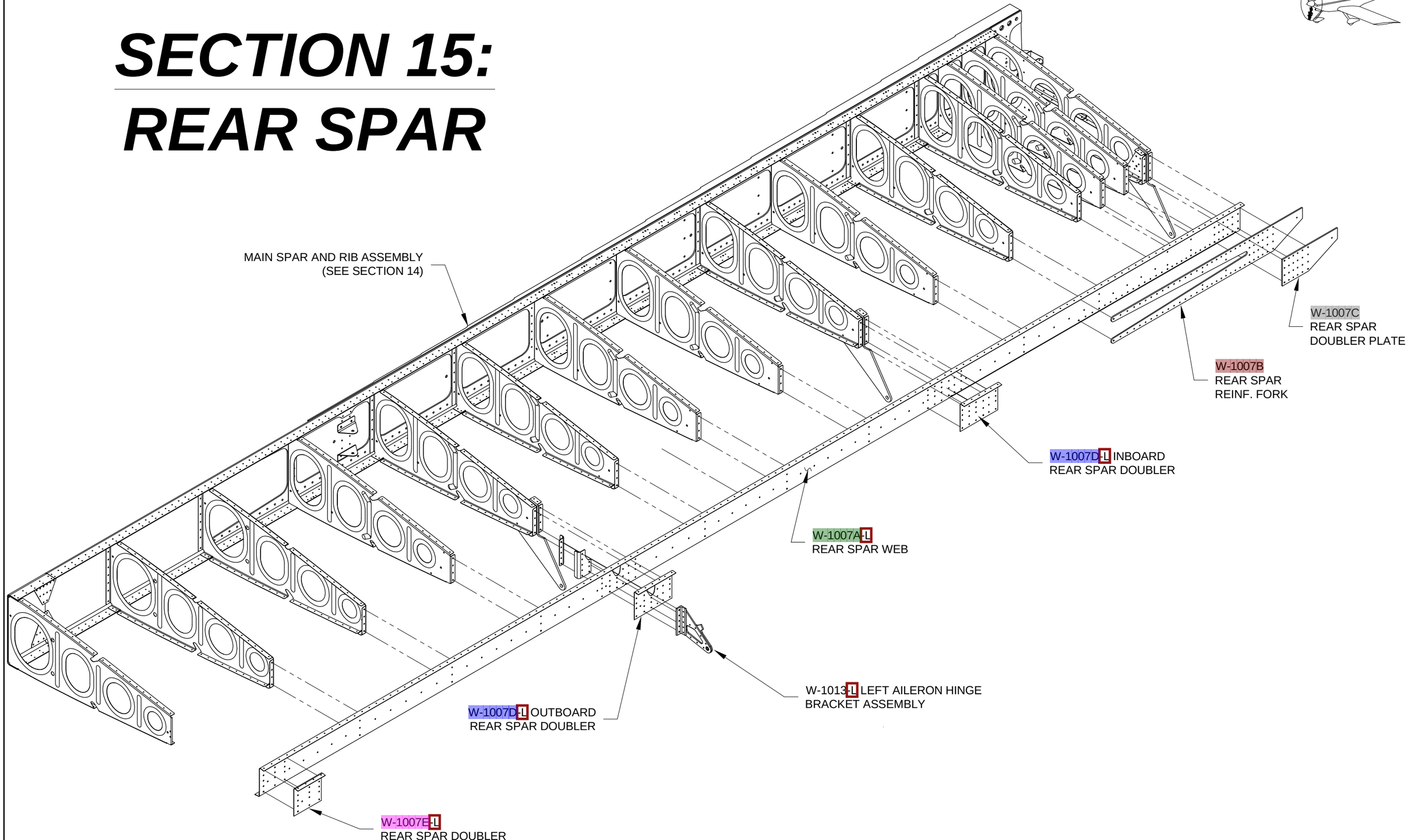
SECTION 15:
REAR SPAR



Note: Before working on assembling the aileron hinge bracket assemblies, refer to page 15-1 to become familiar with the bracket's orientation as installed on the aircraft.

Step 1: Trim off the tab on both W-1013A Aileron Hinge Bracket Spacers as shown in Figure 1.

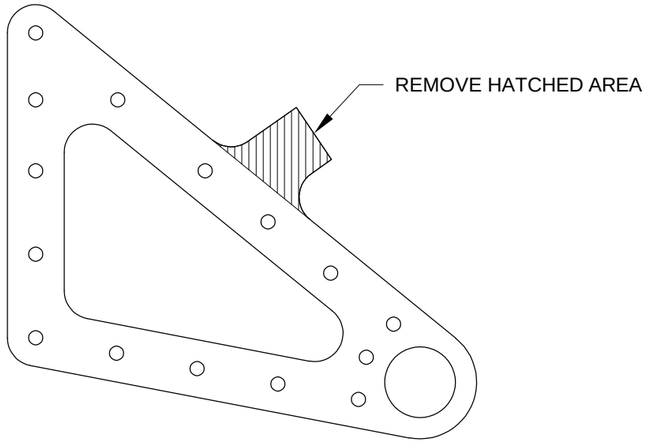


FIGURE 1: HINGE BRACKET SPACER TRIM FOR OUTBOARD AILERON HINGE BRACKET ASSEMBLIES

Step 2: Cleco the W-1013A TRIMMED Aileron Hinge Bracket Spacer, W-1013C-LX and W-1013C-R Alleron Hinge Bracket Sides together as shown in Figure 2. Match-Drill #30 all common attach holes. Machine countersink the aft holes (as indicated in Figure 2) on the **inboard** face of the W-1013C-R Aileron Hinge Bracket Side for the head of an AN426AD4 rivet. Repeat this process for the right outboard aileron bracket assembly.

Step 3: Disassemble outboard aileron bracket assemblies. Thoroughly deburr the edges and holes in all parts. Prime all parts.

Step 4: Press a BEARING COM-3-5 into both W-1013A TRIMMED Aileron Hinge Bracket Spacers as shown in Figure 2. Use a 7/16 inch, 3/8 inch drive socket to push and a 9/16 inch, 3/8 inch drive socket to push into. Squeeze with a vise or c-clamp.

Step 5: Cleco the assemblies back together per Step 2. Press the aft ends of the assemblies together to insure that the BEARING COM-3-5 bearings are seated into the recesses on the aileron hinge bracket sides and not spreading the assemblies aft edges apart.

Step 6: Rivet the assemblies together using the rivet callouts shown in Figure 2. Set the rivets in a random pattern to inhibit warping in the final assemblies. Set both the W-1014-L and W-1014-R Outboard Aileron Bracket Assemblies aside, to be installed after the W-1002 Top Inboard Wing Skin and W-1003 Top Outboard Wing Skin are riveted in place. This will allow access to buck the outboard-most rivet on the upper flange of the W-1007A-L Rear Spar Web.

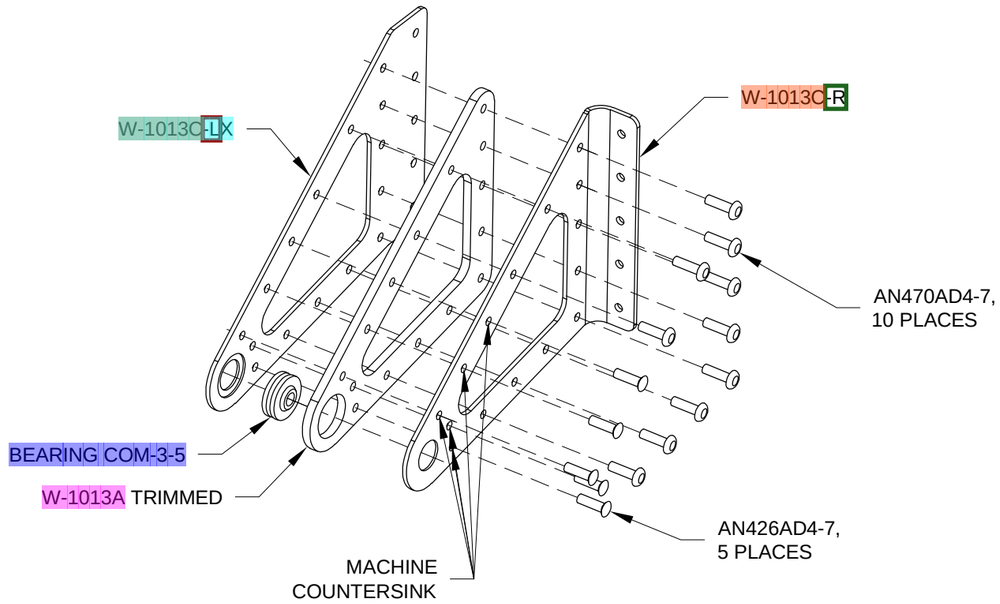


FIGURE 2: W-1014-L OUTBOARD AILERON BRACKET ASSEMBLY

Note: As shown in Figure 3, there is a slightly larger edge distance for the hole at one end of the W-1013G-L & -R Angle Brackets than at the other end. When orienting the parts in later steps, the hole with the larger edge distance is placed on the bottom and the flange with this hole attaches to the spar web.

Step 7: First label (see Figure 3 below), then separate the W-1013FG Aileron Angle Bracket into individual parts as shown in Figure 3. Separate the part at the three holes that are offset to the edge of one of the flanges. Cut perpendicular to the part, and trim away material the width of the hole across the entire part (file/sand if necessary).

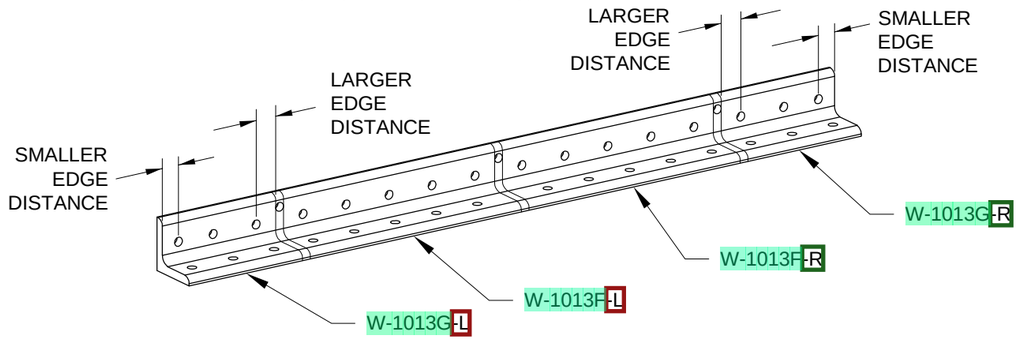


FIGURE 3: SEPARATING THE W-1013FG AILERON ANGLE BRACKET

Step 1: If necessary, straighten the W-1013D & E Aileron Hinge Side Brackets as much as possible by clamping the parts in a bench vise and applying firm hand pressure. Sight along the edges to verify straightness and re-adjust as required.

Step 2: Cleco together all of the parts shown in Figure 1 for the W-1013-L & -R Aileron Hinge Brackets (with the BEARING COM-3-5 bearings in place). Be sure to orient the W-1013F Aileron Angle Brackets to place the hole with the larger edge distance at the top, and, as previously noted, orient the W-1013G Aileron Angle Brackets to place the hole with the larger edge distance on the bottom. Final-Drill #30 all of the common holes.

Step 3: Draw a line on the flange of the W-1013F Angle Brackets that matches the sloped edge of the W-1013D Side Brackets. Disassemble the parts, trim the flange along the line, then deburr the edge.

Machine countersink the three holes in the W-1013D-L & -R Side Brackets flush on the outboard side. Machine countersink the three lower holes in the W-1013F-L & -R for the flush rivets common to the W-1013G-L & -R. Disassemble, deburr, and prime all parts.

Step 4: Cleco the Left and Right Aileron Hinge Bracket assemblies back together and rivet them as called out in Figure 1. Set the rivets in a random pattern to inhibit warping.

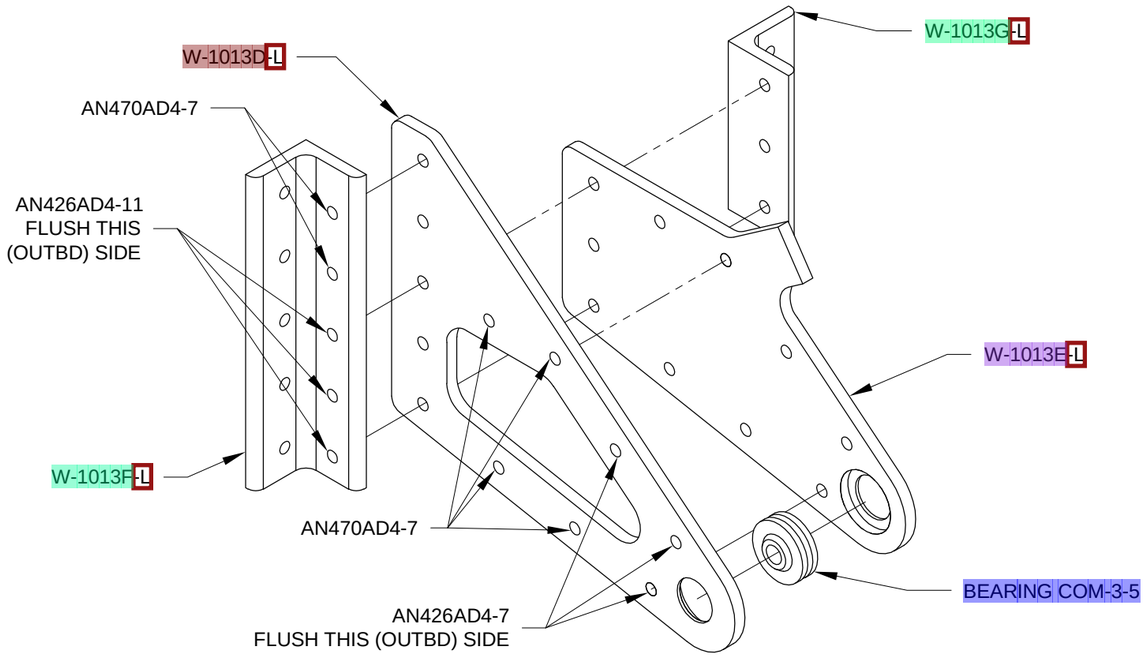


FIGURE 1: W-1013-L INBOARD AILERON BRACKET ASSEMBLY

Step 5: Label, then separate the Aileron Attach Doubler into individual parts by removing the shaded areas shown in Figure 2.

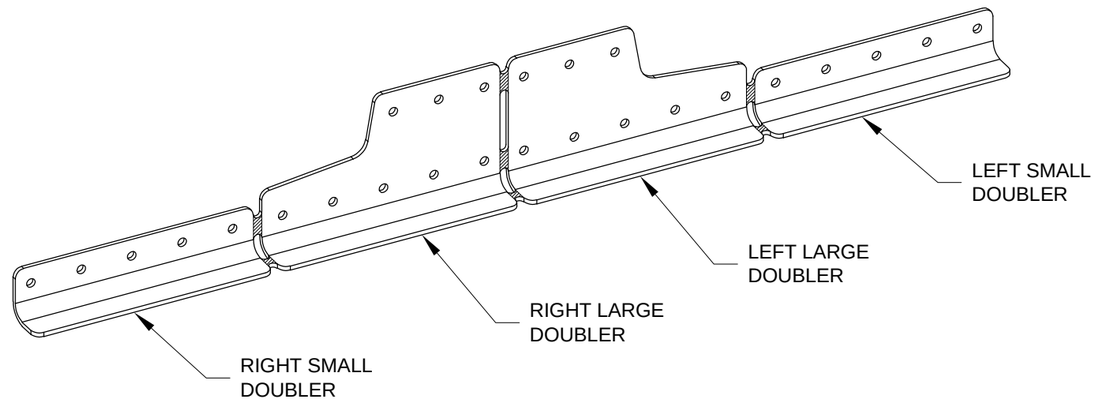


FIGURE 2: SEPARATE THE W-00007CD AILERON ATTACH DOUBLERS

Step 1: With the W-1007D Rear Spar Doubler Plate oriented as shown in Figure 1 draw a line parallel with the edge of the doubler per the dimensions given. Repeat this process on all four rear spar doubler plates.

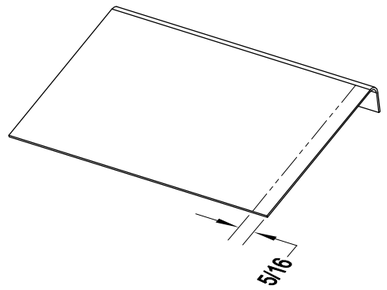


FIGURE 1: MARKING W-1007D

Step 2: Align the W-1007E Rear Spar Doubler Plate by nesting the upper flange underneath the upper flange of the W-1007A-L Rear Spar Web and aligning the doubler plate's outboard edge with outboard edge of the rear spar web. Match-Drill #30 all holes used to attach the doubler plate to the web of the rear spar web using the rear spar web as a drill guide. Match-Drill #40 all common attach holes in the upper flange of the rear spar web and the rear spar doubler plate using the rear spar web as a drill guide. This will create W-1007E-L.

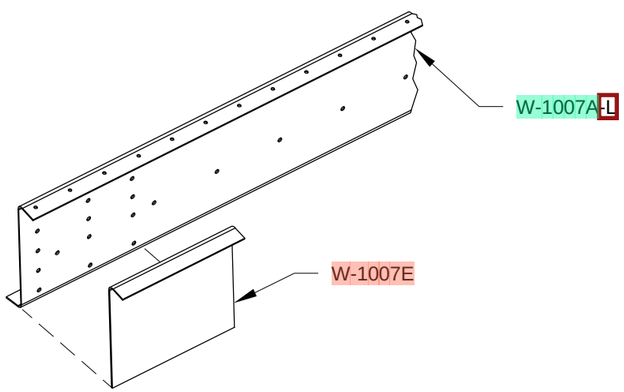


FIGURE 2: MATCH-DRILLING THE REAR SPAR DOUBLER PLATE

Step 3: Align the W-1007D Rear Spar Doubler Plates by nesting the upper flange underneath the upper flange of the W-1007A-L Rear Spar Web and centering the line drawn in step 1 with the outboard-most row of attach holes (inboard-most row on right wing) for each doubler plate. Match-Drill #30 all holes used to attach the doubler plate to the web of the rear spar web, using the rear spar web as a drill guide. Match-Drill #40 all common attach holes in the upper flange of the rear spar web and the rear spar doubler plate using the rear spar web as a drill guide. This will create an W-1007D-L INBOARD DOUBLER and W-1007D-L OUTBOARD DOUBLER, see the isometric view on page 15-1.

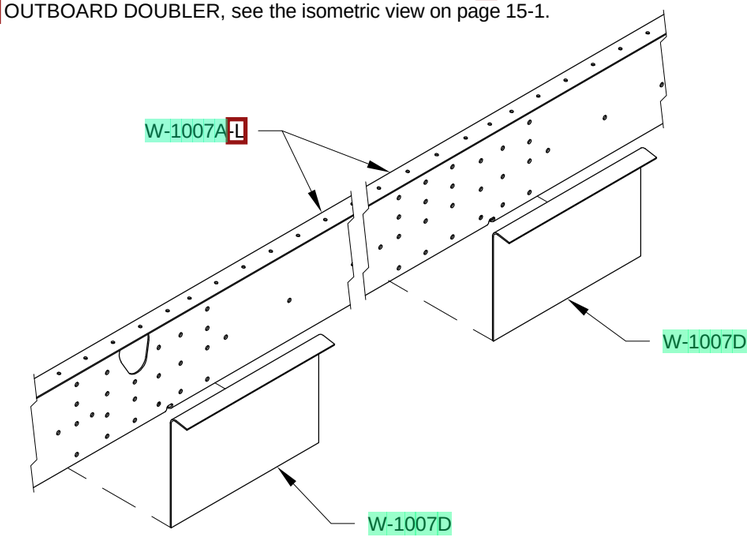


FIGURE 3: MATCH-DRILL THE W-1007D REAR SPAR DOUBLER PLATES

Step 4: With the the W-1007D Outboard Rear Spar Doubler Plate clecoed in place, trace the aileron pushrod hole in the W-1007A-L Rear Spar Web onto the doubler plate. Remove the doubler plate.

Mark, center punch and pilot drill #30 the center of the radii as shown in Figure 4. Remove the remaining material. Smooth the edges of the hole as required.

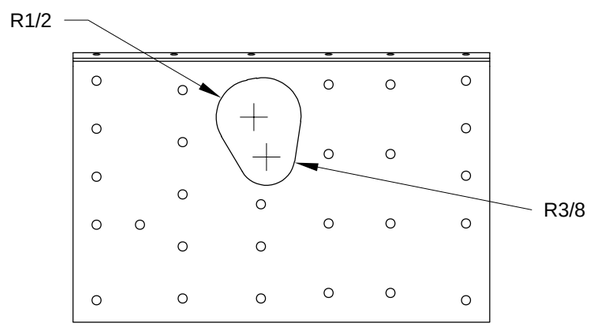


FIGURE 4: COPYING THE AILERON PUSHROD HOLE INTO W-1007D-L OUTBOARD REAR SPAR DOUBLER

Step 1: Cleco the W-1007B Rear Spar Reinforcement Fork, W-1007C Rear Spar Doubler Plate, W-1007D-L INBOARD Rear Spar Doubler, W-1007D-L OUTBOARD Rear Spar Doubler, W-1013-L Aileron Hinge Bracket Assembly and main spar and rib assembly to the W-1007A-L Rear Spar Web as shown in Figure 1. Match-Drill #30 the holes common between the rear spar parts and all three W-1025B Flap Hinge Ribs. Final-Drill #30 all common attach holes that have rivet callouts shown in Figure 2 including all holes that will attach the main wing ribs to the rear spar. Note that all the rib to spar attach points are not shown in Figure 2. Final-Drill #40 the holes common between the lower rear spar web flange and the ribs lower aft tab.

Step 2: Machine countersink the bottom row of rivet holes on the W-1007C Rear Spar Doubler Plate where indicated in Figure 2 for the head of an AN426AD4 rivet. Machine Countersink the holes in the upper flange of the rear spar web that correspond to the W-1007D-L INBOARD, W-1007D-L OUTBOARD and W-1007E-L Rear Spar Doublers. See Figure 2.

Step 3: Disassemble all parts. Deburr the edges and holes for all parts.

Final-Drill #40 and dimple the 26 inboard most holes that are located in the upper flange of the W-1007A-L Rear Spar Web above the W-1007B Rear Spar Reinforcement Fork.

Dimple the holes in the ribs lower aft tab and the holes in the W-1007A-L Rear Spar Web lower flange that correspond to the tabs.

Prime all parts if/as required.

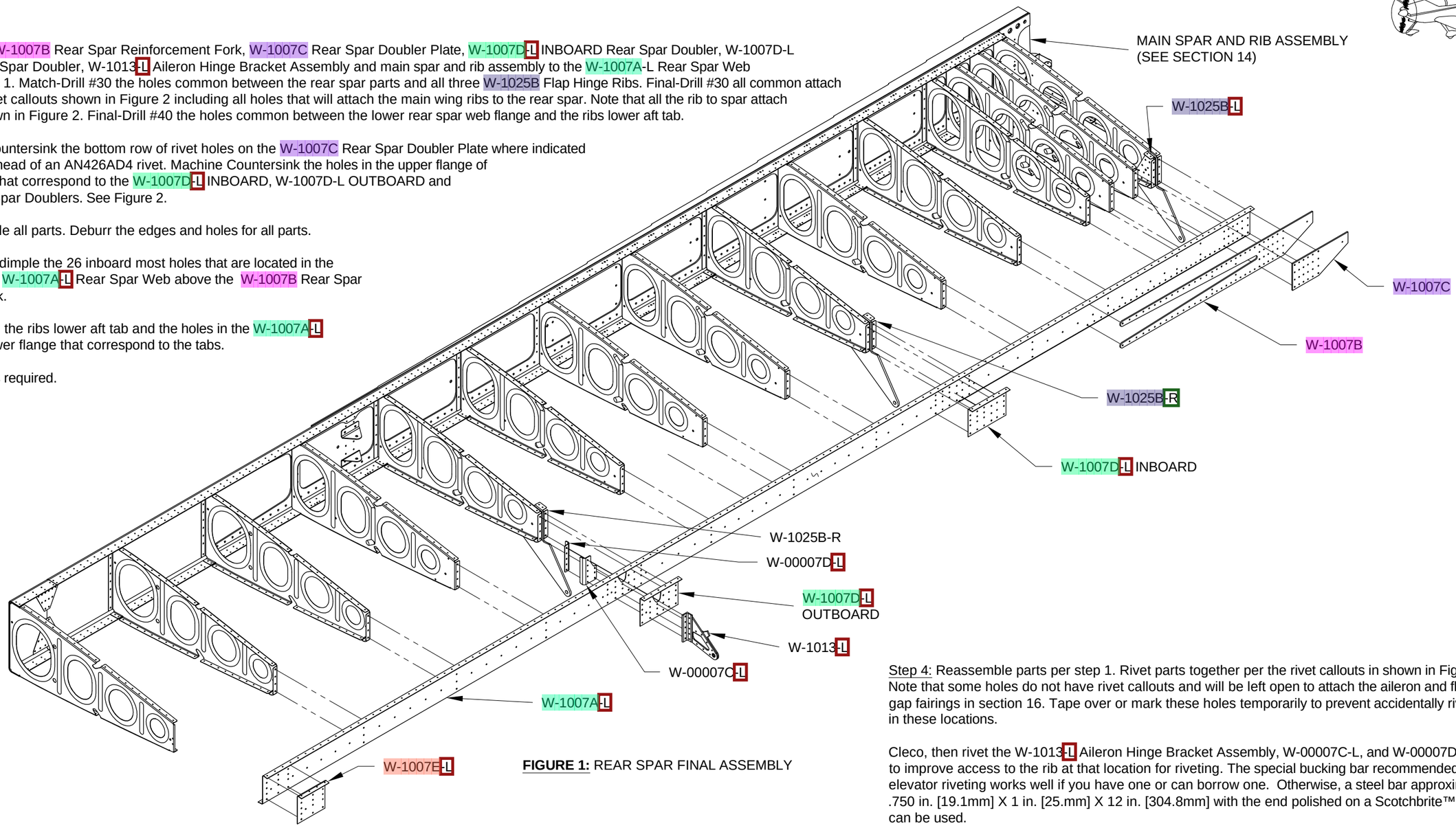


FIGURE 1: REAR SPAR FINAL ASSEMBLY

- AN470AD4-4
- AN470AD4-5
- AN470AD4-6
- AN470AD4-7
- AN470AD4-8
- AN470AD4-9
- AN426AD4-8

Step 4: Reassemble parts per step 1. Rivet parts together per the rivet callouts in shown in Figure 2. Note that some holes do not have rivet callouts and will be left open to attach the aileron and flap gap fairings in section 16. Tape over or mark these holes temporarily to prevent accidentally riveting in these locations.

Cleco, then rivet the W-1013-L Aileron Hinge Bracket Assembly, W-00007C-L, and W-00007D-L last to improve access to the rib at that location for riveting. The special bucking bar recommended for elevator riveting works well if you have one or can borrow one. Otherwise, a steel bar approximately .750 in. [19.1mm] X 1 in. [25.mm] X 12 in. [304.8mm] with the end polished on a Scotchbrite™ wheel can be used.

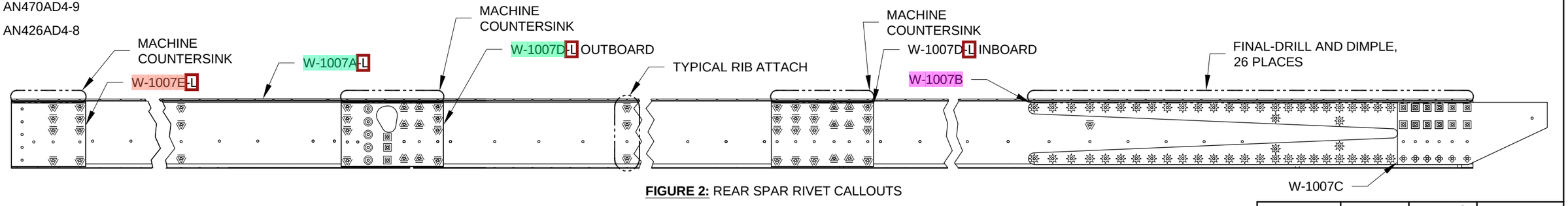


FIGURE 2: REAR SPAR RIVET CALLOUTS

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