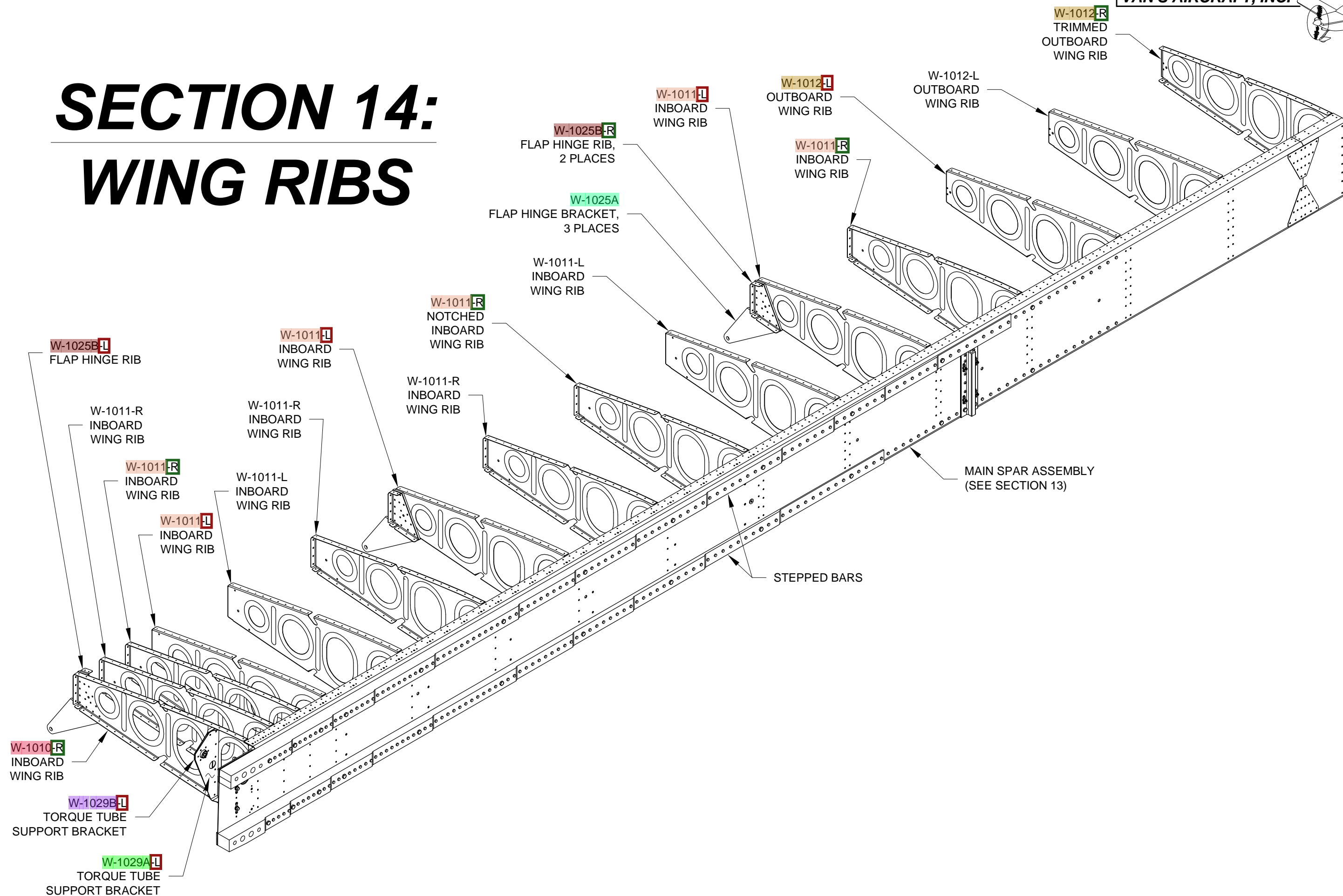




# SECTION 14: WING RIBS

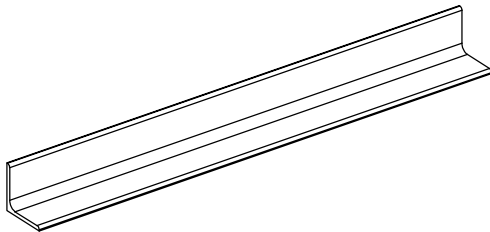




**Note:** This entire section depicts the wing rib installation for the left wing only. The right wing is a mirror of the left.

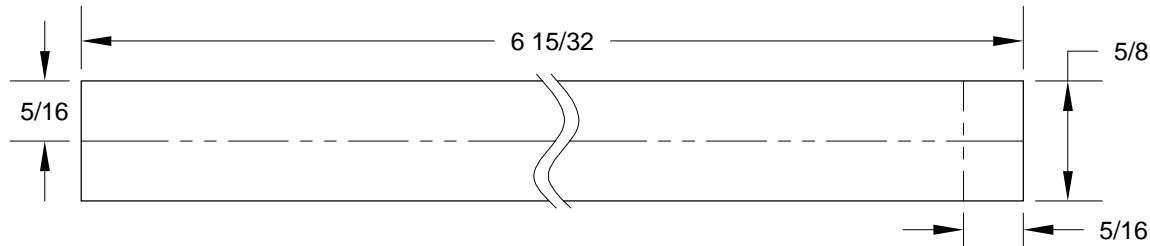
Step 1: Flute and straighten all ribs per Section 5N.

Step 2: Cut a piece of AA6-063X3/4X3/4, 7 13/16 inches long as shown in Figure 1.



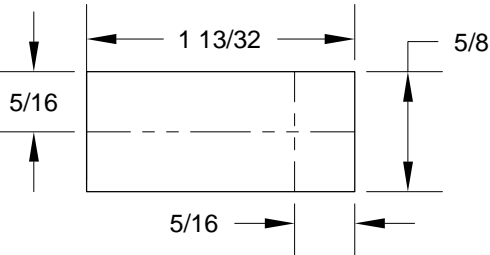
**FIGURE 1: CUTTING THE W-1029C ANGLE**

Step 3: Cut a piece of .063 2024-T3 ALCLAD and mark the alignment lines per the dimensions in Figure 2.



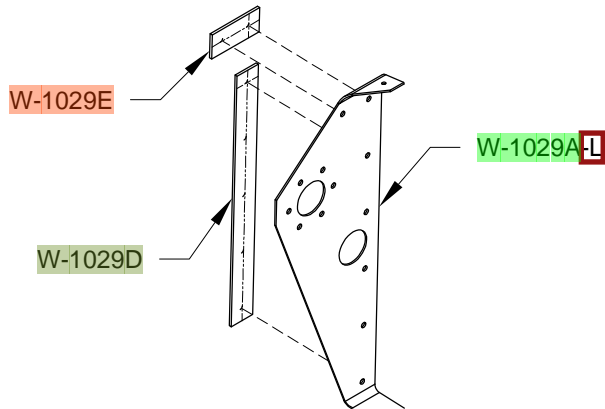
**FIGURE 2: CUTTING AND MARKING THE W-1029D SPACER**

Step 4: Cut a piece of .063 2024-T3 ALCLAD and mark the alignment lines per the dimensions in Figure 3.



**FIGURE 3: CUTTING AND MARKING THE W-1029E SPACER**

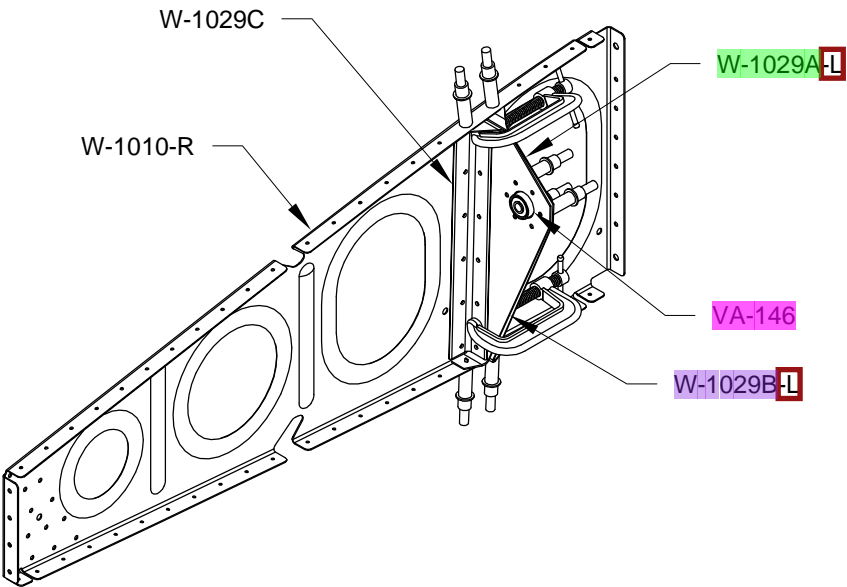
Step 5: Clamp W-1029A-L Torque Tube Support Bracket, W-1029D Spacer and W-1029E Spacer together with the centerlines drawn in steps 2 and 3 aligned with the holes in the support bracket as shown in Figure 4. Match-Drill the spacers #30 using the torque tube support bracket as a drill guide.



Step 6: Cleco the VA-146 Flange Bearing in-between the W-1029A-L and W-1029B-L Torque Tube Support Brackets. Cleco the assembly to the upper and lower flanges of the W-1010-R Inboard Wing Rib as shown in Figure 5. (The support brackets cleco into the fourth and fifth holes back from the front of the main flange not counting the tab.) Clamp the W-1029C Angle flush against the aft face of the W-1029B-L Torque Tube Support Bracket and the inboard face of the inboard wing rib.

Step 7: Match-Drill #30 and cleco the W-1010-R Inboard Wing Rib to the W-1029C Angle using the holes in the rib as a drill guide.

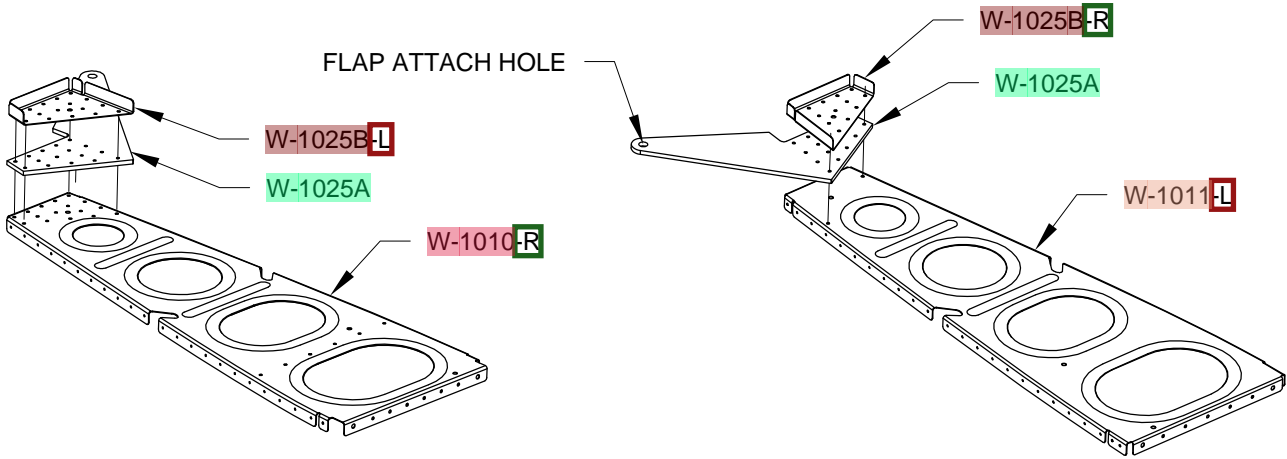
Step 8: Match-Drill #30 and cleco the W-1029A-L and W-1029B-L Torque Tube Support Brackets to the W-1029C Angle at two attach points using the support brackets as a drill guide. Use a right angle drill or extension bit for best results. Match-drill the holes common between the torque tube support brackets and the VA-146 Flange Bearing. Disassemble all parts from the inboard wing rib. Cleco the W-1029B-L Torque Tube Support Bracket to the angle at the two locations just drilled and Match-Drill #30 the remaining attach holes.



**FIGURE 5: MATCH-DRILLING W-1029C ANGLE**

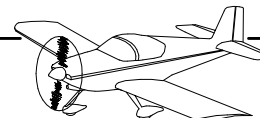
Step 9: Cleco the W-1025B-L Flap Hinge Rib and W-1025A Flap Hinge Bracket to the W-1010-R Inboard Wing Rib as shown in Figure 7. Final-Drill all common attach holes in the assembly to #30.

Step 10: Cleco the W-1025B-R Flap Hinge Rib and W-1025A Flap Hinge Bracket to the two alignment holes in the W-1011-L Inboard Wing Rib as shown in Figure 8. Match-Drill #30 the inboard wing rib using the holes in the flap hinge rib and bracket as a drill guide. Final-Drill #30 the two alignment holes. Repeat this process to create two assemblies as shown in Figure 8. Ream the flap attach hole in all flap hinge brackets to 3/8.

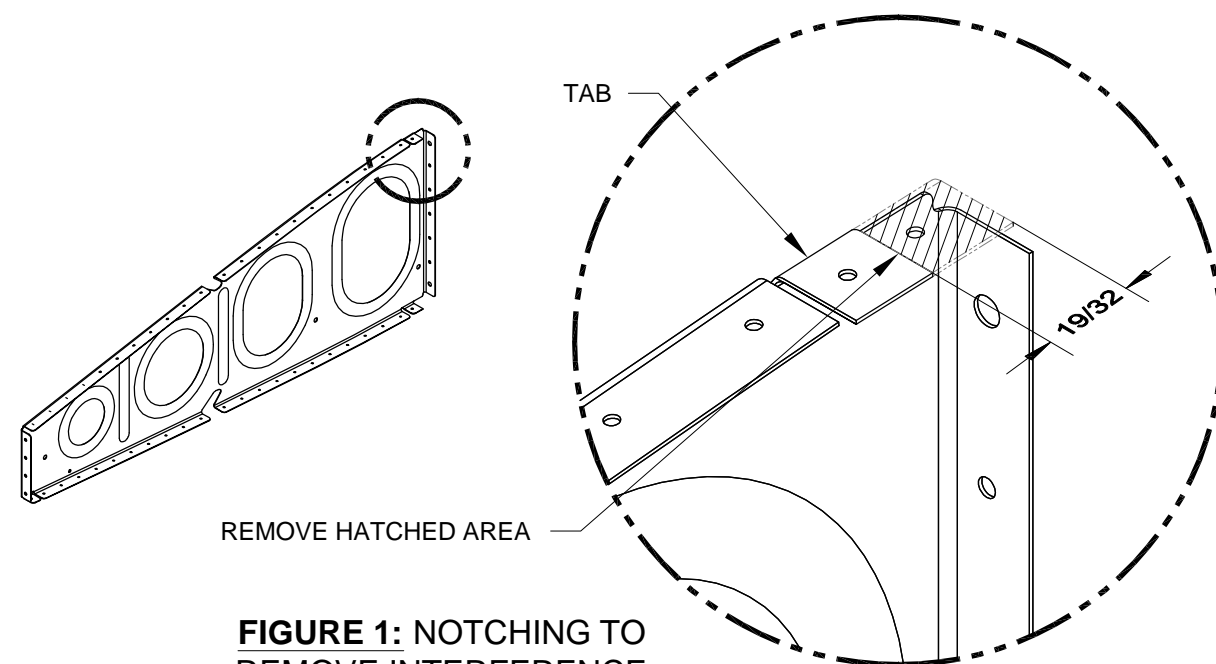


**FIGURE 7: INBOARD FLAP HINGE ASSEMBLY**

**FIGURE 8: OUTBOARD FLAP HINGE ASSEMBLIES**

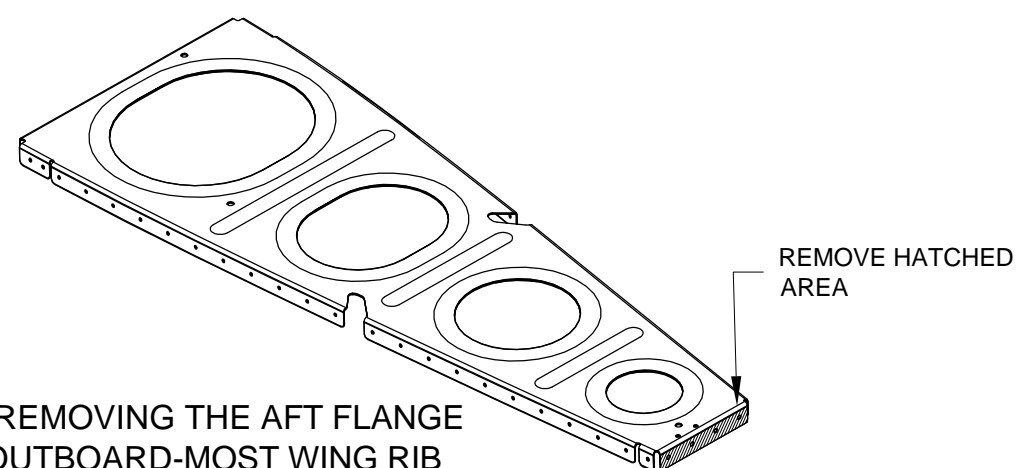


Step 1: Remove the flange and flange radius from the top and bottom tabs of a **single W-1011-R** Inboard Wing Rib as shown in Figure 1. This notch will remove interference between the outboard-most tank attach nutplate and the **W-1011-R** Inboard Wing Rib that attaches to the main spar assembly at that span wise location. The amount of trim is the same on both the top and bottom tab.



**FIGURE 1: NOTCHING TO REMOVE INTERFERENCE**

Step 2: Remove the aft flange but not the flange radius from the **W-1012-R** Outboard Wing Rib as shown in Figure 2.



**FIGURE 2: REMOVING THE AFT FLANGE OF THE OUTBOARD-MOST WING RIB**

Step 3: Cleco the **W-1010-R** Inboard Wing Rib, **W-1011-L/R** Inboard Wing Ribs and **W-1012-L/R** Outboard Wing Ribs to the main spar assembly as shown in the isometric view on Page 14-1.

Match-Drill to #12 the upper and lower attach points on the **W-1010-R** and all the **W-1011-L/R** Inboard Wing Ribs that will be attached with bolts to the main spar assembly (see Page 14-6, Figure 1), using the holes in the main spar assembly as a drill guide. Use a wood block to support the forward flange of the ribs while drilling.

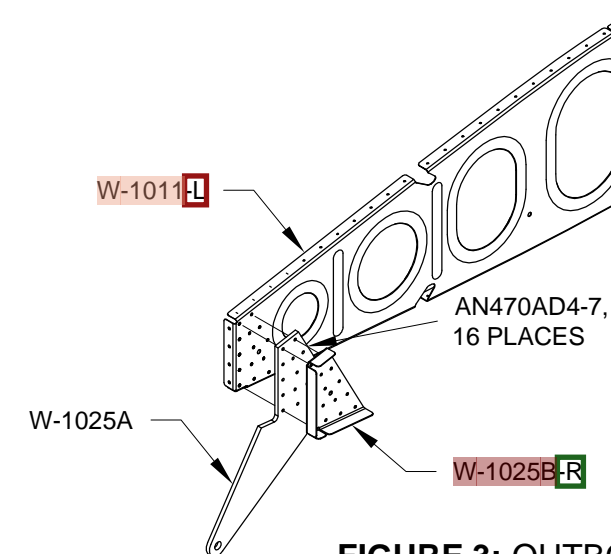
Final-Drill #30 all the remaining common attach holes in the forward flange of the ribs and web of the main spar assembly.

Final-Drill #40 all the common attach holes in the upper and lower rib tabs and the flanges of the main spar assembly.

Step 4: Disassemble the ribs from the main spar assembly. Disassemble the **W-1025A** Flap Hinge Brackets and **W-1025B-L** Flap Hinge Ribs from the inboard ribs.

Deburr all holes in all parts. Prime all parts if/as desired.

Step 5: Cleco the **W-1025B-R** Flap Hinge Rib and **W-1025A** Flap Hinge Bracket to the **W-1011-L** Inboard Wing Rib. Rivet the flap hinge rib and flap hinge bracket to the inboard wing rib as shown in Figure 3. Repeat this process to create two assemblies using the **W-1011-L** Inboard Wing Rib.

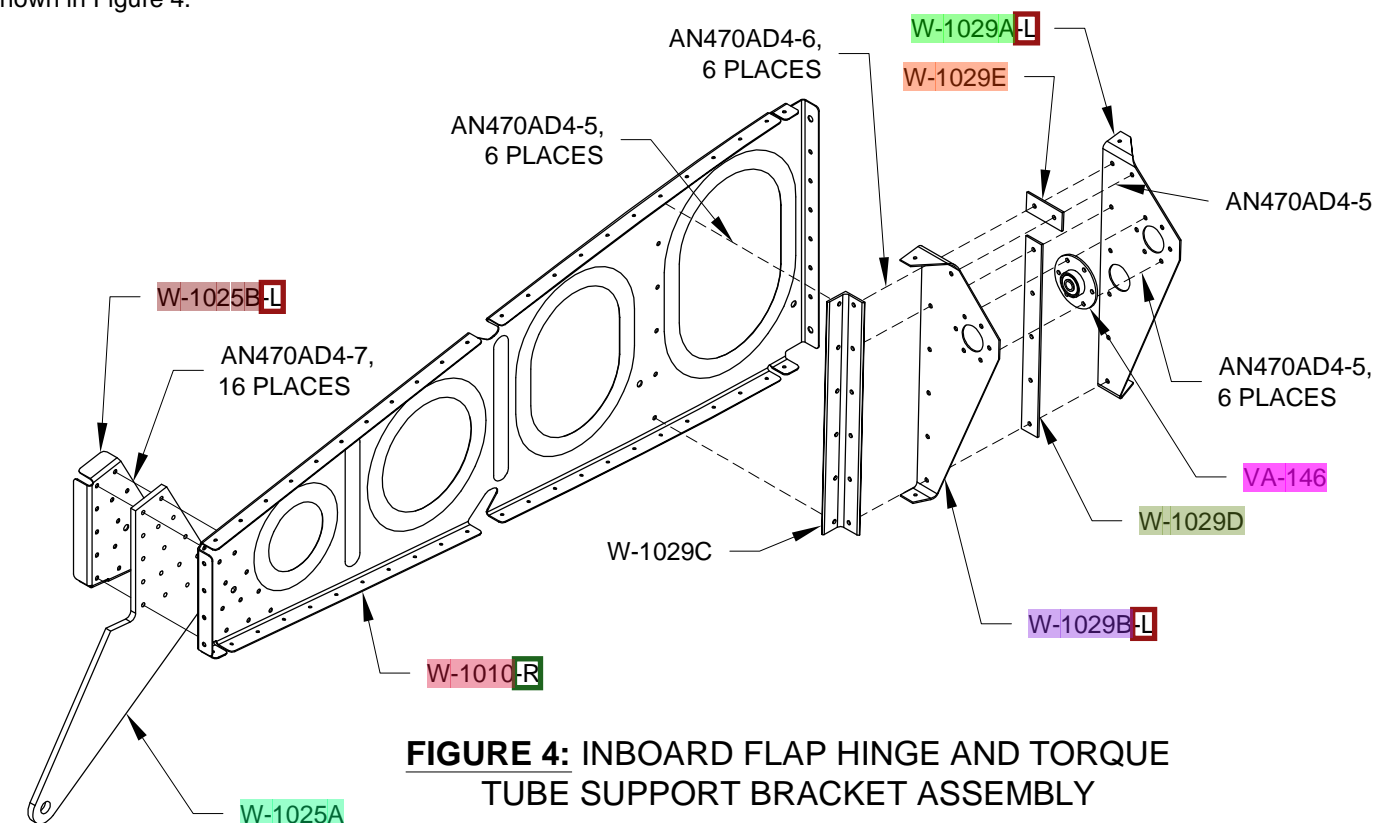


**FIGURE 3: OUTBOARD FLAP HINGE ASSEMBLY**

Step 6: Cleco and rivet the **VA-146** Flange Bearing, **W-1029A-L** and **W-1029B-L** Torque Tube Support Brackets, **W-1029C** Angle, **W-1029D** and **W-1029E** Spacers together as shown in Figure 4.

Step 7: Cleco and rivet the **W-1029C** Angle and support bracket assembly to the web of the **W-1010-R** Inboard Wing Rib as shown in Figure 4.

Step 8: Cleco and rivet the **W-1025B-L** Flap Hinge Rib and **W-1025A** Flap Hinge Bracket to the **W-1010-R** Inboard Wing Rib as shown in Figure 4.



**FIGURE 4: INBOARD FLAP HINGE AND TORQUE TUBE SUPPORT BRACKET ASSEMBLY**

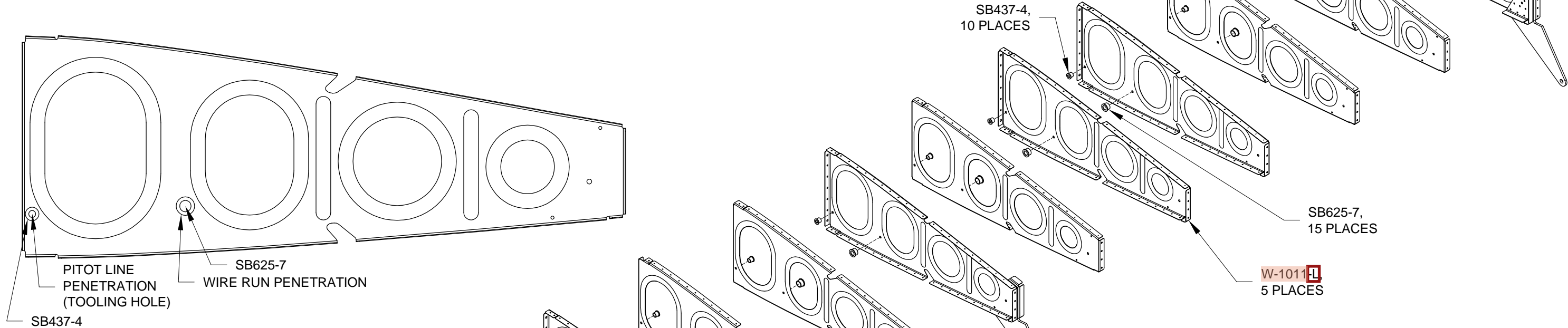


**NOTE:** Before enlarging holes and installing snap bushings, check the snap bushing size by inserting the anticipated wires and AOA lines etc. (see Page 20-3) through a SB625-7 Snap Bushing. If the snap bushing is too big order and install a smaller snap bushing from VAN'S ACCESSORY CATALOG to prevent wires from chaffing. Once the penetration size has been established, enlarge holes to final size using a unibit.

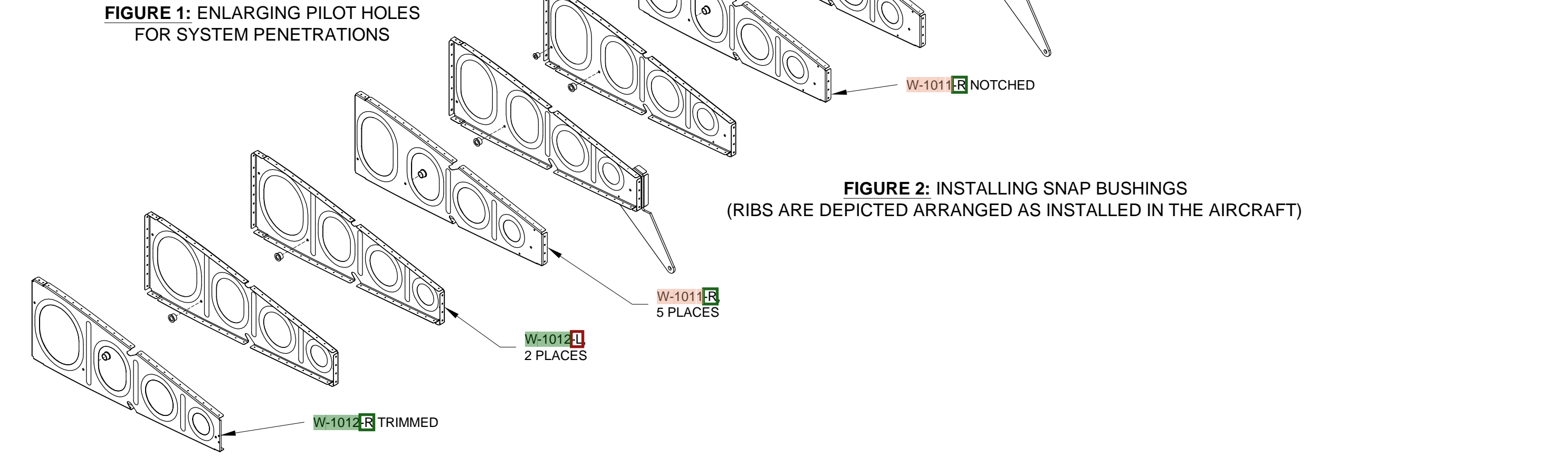
**Step 1:** This step is for the left wing only. Enlarge the forward tooling hole to 7/16 diameter and install a SB437-4 Snap Bushing in the W-1010-R Inboard Wing Rib and all but the two most outboard instances of the W-1011-L/R Inboard Wing Ribs, see Figure 1 and Figure 2.

**Step 2:** Enlarge the wire run pilot hole to 5/8 diameter in all W-1011-L/R Inboard Wing Ribs and W-1012-L/R Outboard Wing Ribs and install SB625-7 Snap Bushings oriented as shown in Figure 2.

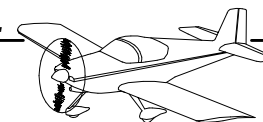
Enlarge the wire run pilot hole to 5/8 diameter in the W-1010-L/R Inboard Wing Rib (this will make a small notch in the W-1029C Angle, which is acceptable). Install an SB625-7 Snap Bushing, inserted from the inboard side of the rib as shown in Figure 2.



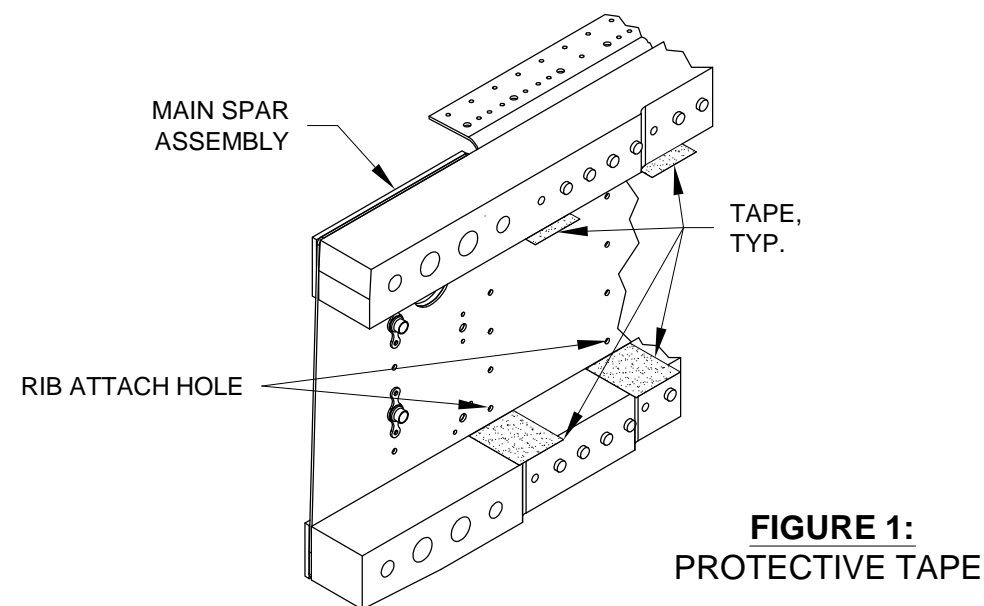
**FIGURE 1: ENLARGING PILOT HOLES FOR SYSTEM PENETRATIONS**



**FIGURE 2: INSTALLING SNAP BUSHINGS**  
(RIBS ARE DEPICTED ARRANGED AS INSTALLED IN THE AIRCRAFT)



Step 1: Apply a protective layer of tape near the rib attach points to cover the stepped bars on the forward side of the main spar assembly as shown in Figure 1. This will help prevent damage to the main spar during riveting.



**FIGURE 1:  
PROTECTIVE TAPE**

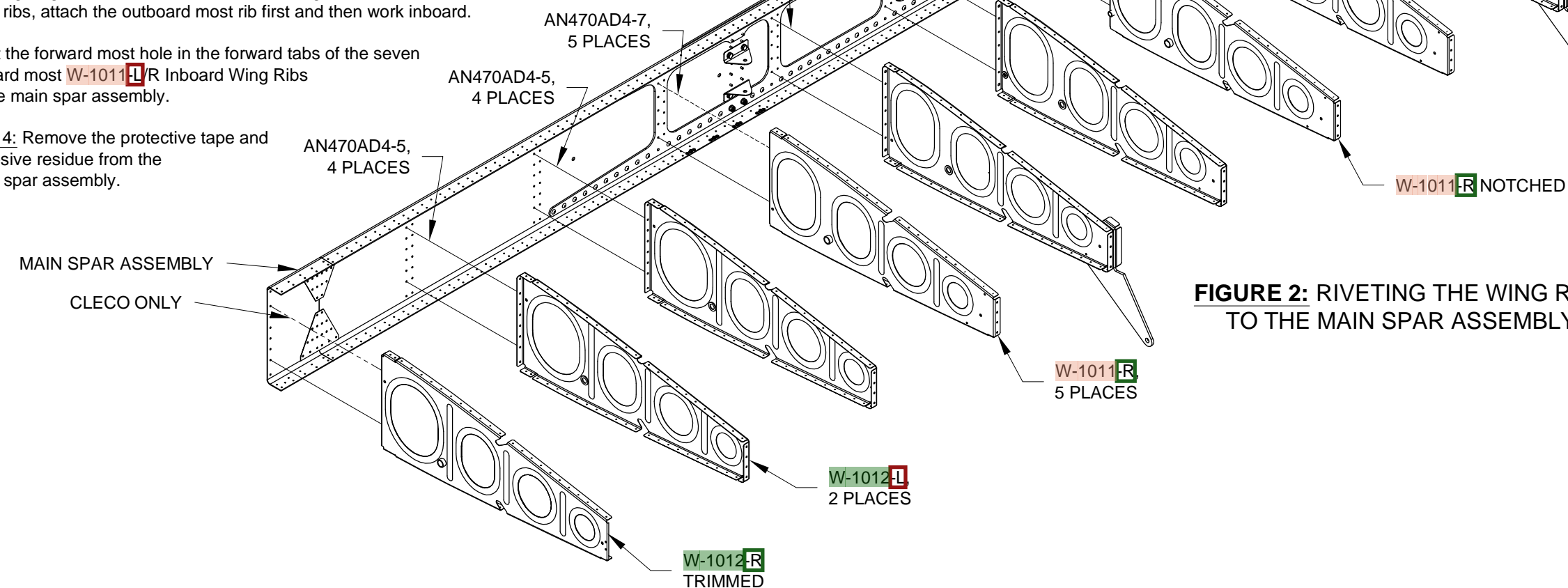
Step 2: Cleco the **W-1010-R** and **W-1011-L** Inboard Wing Ribs and **W-1012-L** Outboard Wing Ribs to the main spar assembly. There may be some misalignment between the holes punched between the C Channel Spar Web and the Doubler at the three most outboard attachment locations for the inboard wing ribs. Run a #30 drill through these holes if required to insert clecos.

Final-Drill #40 the forward most hole in the forward tabs of the seven inboard most **W-1011-L** Inboard Wing Ribs.

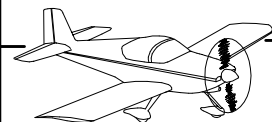
Step 3: Rivet the forward flange of all the wing ribs **except the W-1012-R Trimmed Outboard Wing Rib** to the main spar assembly as shown in Figure 2. The outboard most wing rib will be riveted in assembly with the **W-1009-R** Leading Edge Rib in Section 17. When riveting the three most inboard wing ribs, attach the outboard most rib first and then work inboard.

Rivet the forward most hole in the forward tabs of the seven inboard most **W-1011-L** Inboard Wing Ribs to the main spar assembly.

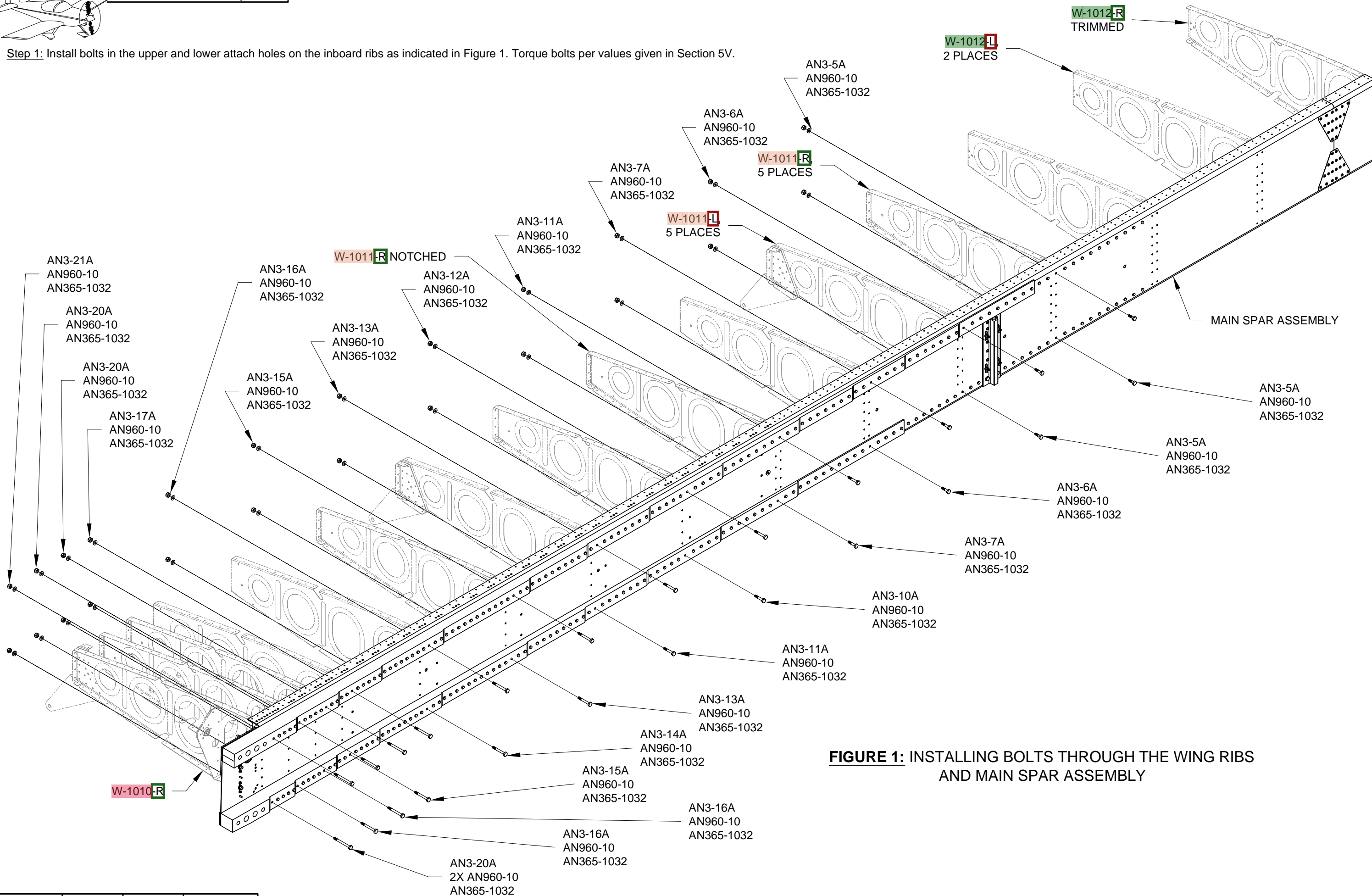
Step 4: Remove the protective tape and adhesive residue from the main spar assembly.



**FIGURE 2: RIVETING THE WING RIBS  
TO THE MAIN SPAR ASSEMBLY**



Step 1: Install bolts in the upper and lower attach holes on the inboard ribs as indicated in Figure 1. Torque bolts per values given in Section 5V.



**FIGURE 1: INSTALLING BOLTS THROUGH THE WING RIBS AND MAIN SPAR ASSEMBLY**