

Section C75-WA-2 Wing Skins



This manual has been prepared for assembly of the wing skins supplied with match drilled parts. This photo assembly manual is intended as a supplement to the drawings. If there is any discrepancy between this manual and the drawings, the drawings supersede this manual. For more information on building standards and allowable tolerances see "Construction Standards for Zenair Light Aircraft" available from Zenith Aircraft Co.



P/N: L
L angles

Cut L angles to fit between the rear ribs, one set for the top and another for the bottom skin (left and right wing)

Two at 330

One at 390

One at 384,

four at 330mm

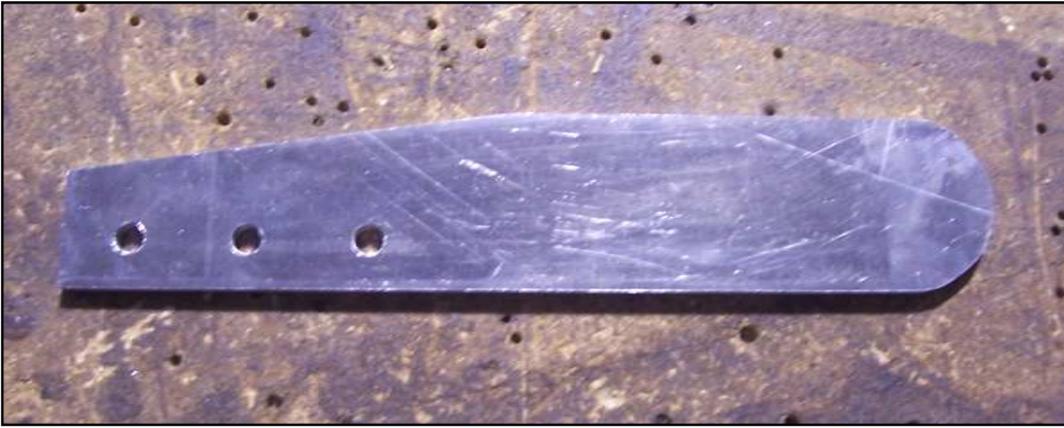
top end L angle 455, bottom 305

Mark the flange center line on the L angles and mark a rivet location 10mm from the end of the L angles. Use a #40 drill bit to predrill the first rivet location in the L angles.



P/N: C75W6-2
O/B Bottom Skin

Cleco the predrilled hole in the L angle to the first hole past the rib rivet line. Position the L angle so the center line is visible through the holes in the Bottom Skin. Back drill through the Bottom Skin into the L angle and Cleco. Use a #30 drill bit to expand the holes and Cleco. Follow the same steps to drill the L angles for the O/B Top Skin as well.



P/N: C75W2-5
Front Upper Strut
Fitting



Note: The first bolt must be inserted from the bottom with the nut towards the inside of the wing to clear the Nose Skin.



Bolt the Front Upper Strut Fitting to the Strut Angle on the Spar with 3 AN4 bolts.

Orientation: The taper is the forward side of the Front Upper Strut Angle.



Screw pieces of plywood to the workbench to secure the Wing Skeleton. Slide pieces of 2"x4" under the Rear Ribs to rotate the Spar till it is vertical.



Use a small level to determine if the Spar is vertical.



Check: Check that the Spar is vertical at several locations down the length of the Spar. This will prevent twist being built into the Wing.

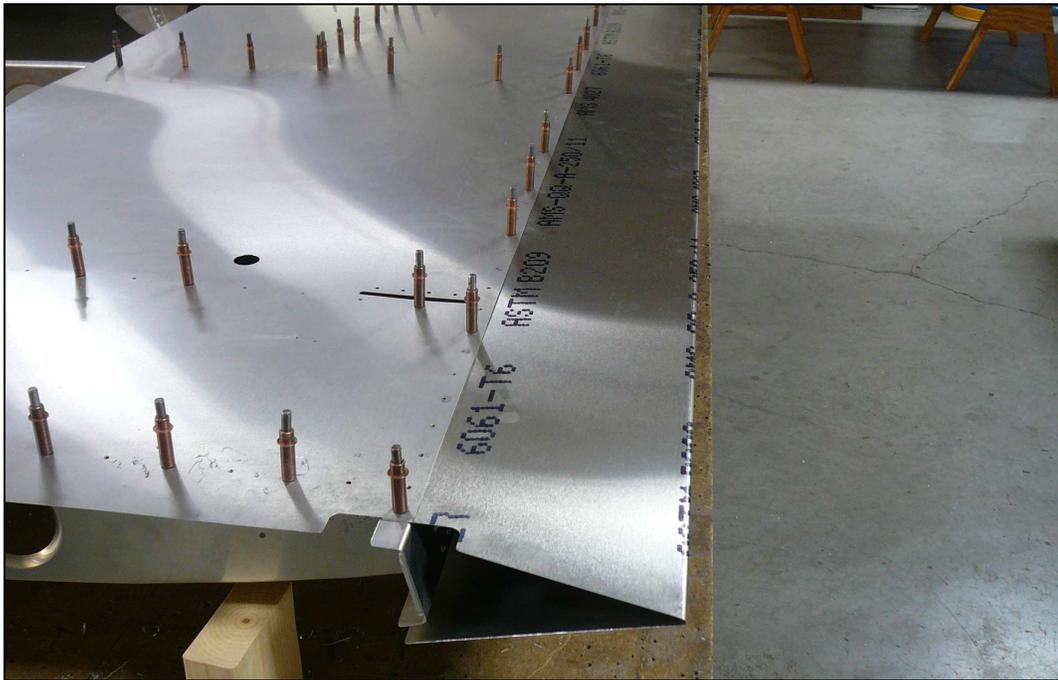


Sometimes a Pick is helpful to line up the holes to Cleco.

P/N: C75W6-1
I/B Bottom Skin

P/N: C75W6-2
O/B Bottom Skin

Cleco the I/B and O/B Bottom Skins to the Rear Ribs with #20 Clecos in every other hole. Note: The extra access panel for the fuel return line. In the O/B skin.



P/N: C75W6-3
I/B Trailing Edge Skin

Slide the Trailing Edge Skins under the Bottom Skins. Cleco the Trailing Edge Skins to the Bottom Skins and Rear Channels.



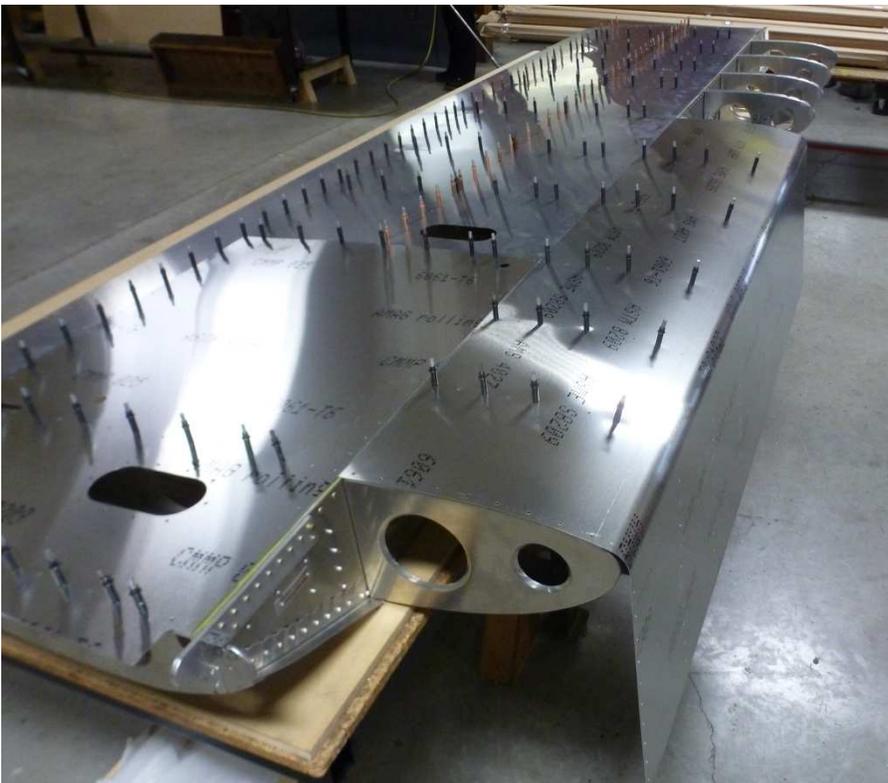
P/N: C75W6-4
O/B Trailing Edge Skin

Slide the Trailing Edge Skins under the Bottom Skins. Cleco the Trailing Edge Skins to the Bottom Skins and Rear Channels. With a #30 drill bit, expand the holes in the Bottom Skins, Trailing Edge Skins, and Rear Channels.



Support under the rear ribs

Check the wing is straight.

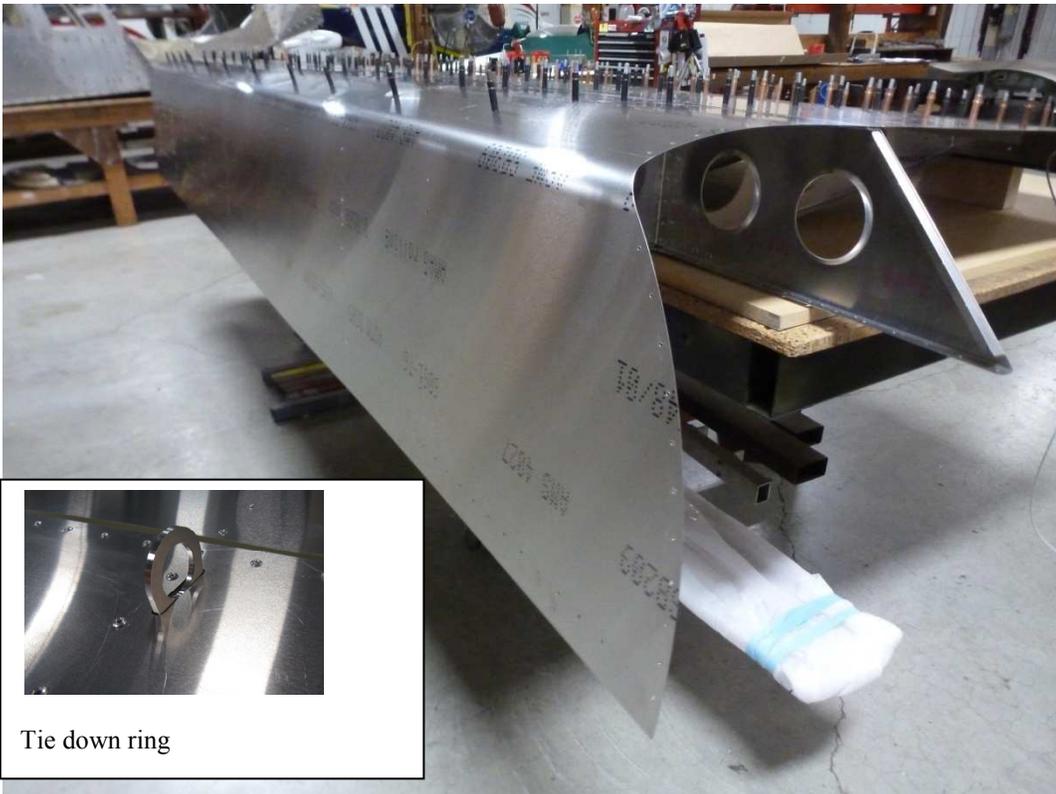


P/N: C75W5-1
I/B Nose Skin

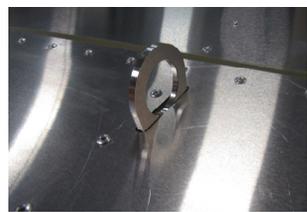
Using #20 Clecos, Cleco the I/B Nose Skin to the Nose Ribs. Let the top portion of the Nose Skin over hang the workbench. With a #30 drill bit, expand the holes in the Spar rivet line. Use a #20 drill bit to expand the holes into the Spar.



P/N: C75W5-6
Wing root nose skin



P/N: 75W5-2
O/B Nose Skin



Tie down ring

Cleco the O/B Nose Skin to the Nose Ribs.



P/N: C75W7-2
Strut Angle

Cleco the Strut Angle to the Ribs at Strn. 2040. Use a #20 drill bit to back drill the additional holes in the Rib.



P/N: C75W7-1
Strut Fitting Doubler

Position the Front Strut Fitting Doubler on the Front Strut Fitting and Angle. Clamp the Doubler to the Angle. Back drill through the Doubler into the Angle with a #30 and Cleco. Expand the holes with a #20 drill bit and cleco.



Rivet the strut fitting doubler to the strut angle.



With the front upper strut fitting bolted in place, the rivets are pulled from the top side of the wing. (After the wing is turned over).



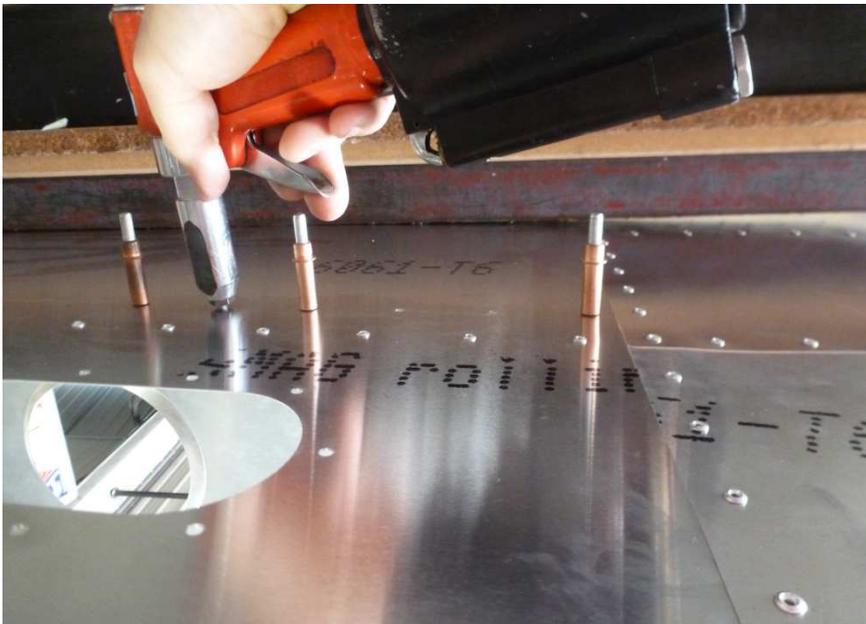
Remove the Skins from the Skeleton, deburr, reassemble.



Note: It is a good idea to check that the Spar is still vertical before reassembling the Skins and riveting. Even after the holes are drilled there is enough play in the Clecos to introduce twist if the Spar isn't vertical.



Block under the rear ribs to keep the spar vertical.



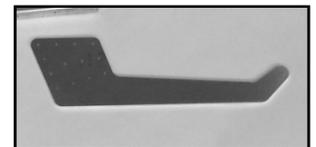
Rivet the bottom side of the wing to the spar and ribs. Also rivet the strut angle.



Flip the Wing over and set it on several beams. 2"x2" steel beams are used in the photo above but any rectangular or square beam 2" tall will work to lift the wing above the workbench. It is a good idea to place a piece of plywood under the Rear Channels on the beams to prevent the Wing from rocking.

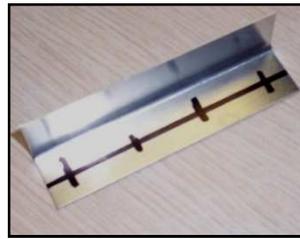
Note: It is best to have someone help when flipping the wing over to prevent damage.

Check: Once the wing has been flipped and set on the beams, check that there isn't any twist in the Wing. With a small level check that the Spar is vertical in several places along the Spar. If required, place shims between the beams and the workbench to remove any twist.



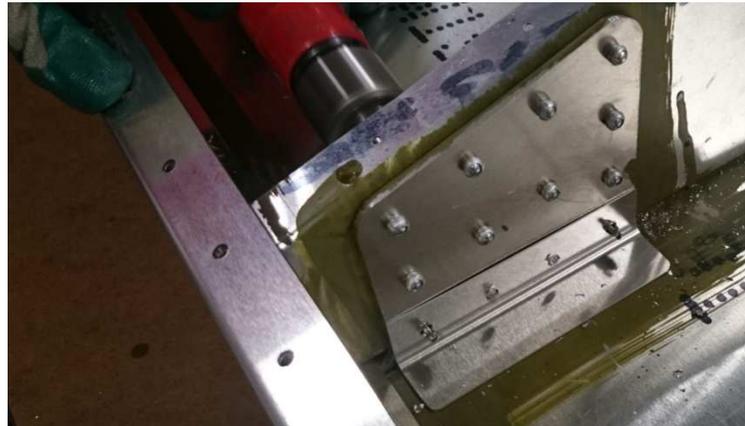
P/N: C75W3-3
Flaperon Arm

Cleco the Flaperon Arms to the Rear Ribs at Stns. 280, 1640, 2040, and 3400.

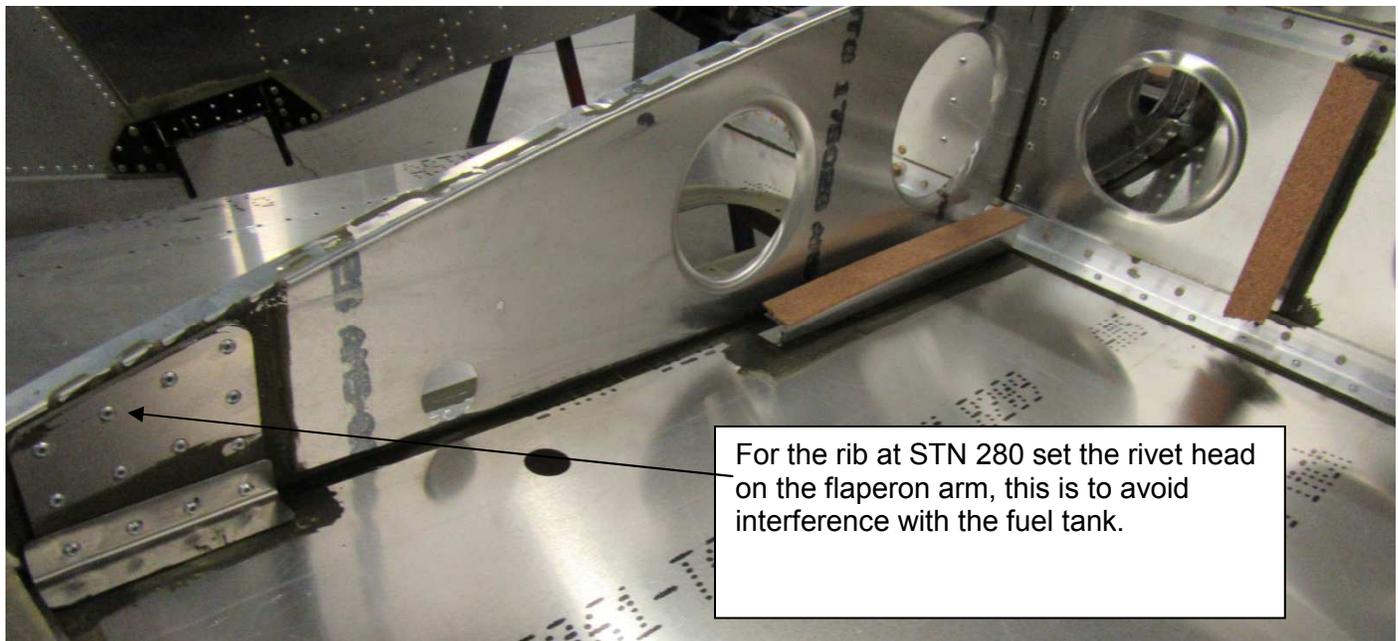


P/N: L
L angle

Cut 4 pieces of L angle 87mm long each.

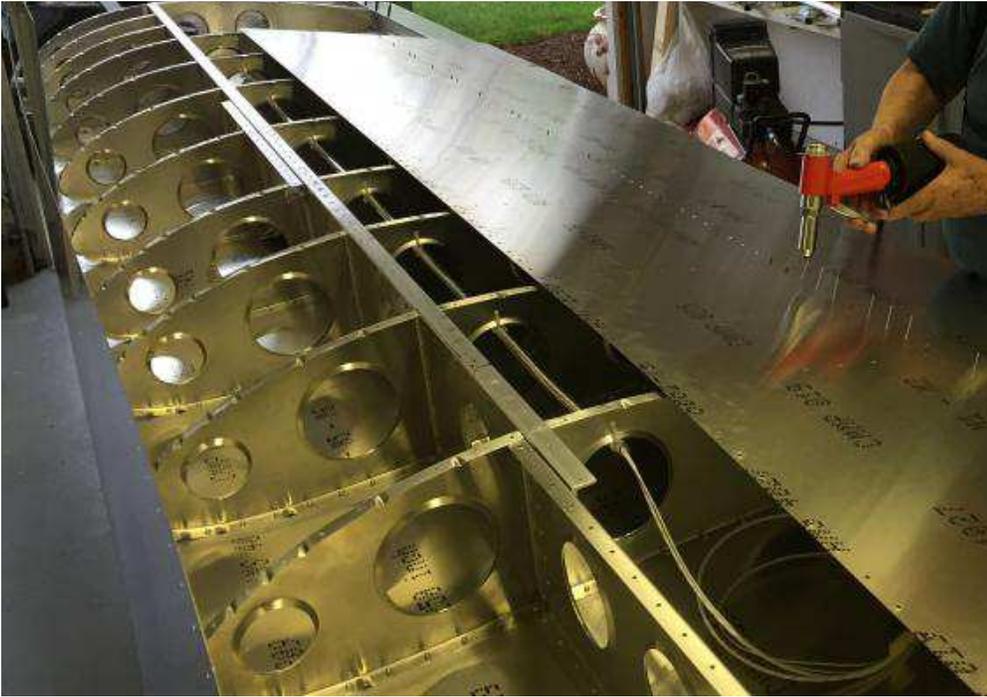


Position the L angle against the Bottom Skin and the Flaperon Arm. Back drill through the Flaperon Arm into the L angle and cleco. Then back drill the holes in the Bottom Skin into the L Angle. Expand the holes with a #30 drill bit. Remove the Flaperon Arm and L angle from the Rear Rib, deburr the holes.



For the rib at STN 280 set the rivet head on the flaperon arm, this is to avoid interference with the fuel tank.

Rivet the Flaperon Arm and L angle to the Rear Rib with A5



P/N: C75W5-4
O/B Top Skin

Rivet the L angles between the ribs
Cleco the O/B Top Skin to the Rear Ribs.



P/N: C75W5-3
I/B Top Skin

Cleco the I/B Top Skin to the Rear Ribs.

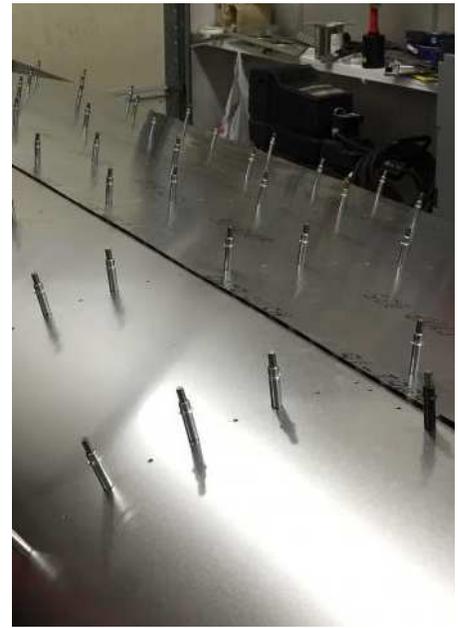


Set the Trailing Edge Skin height at 80mm from the hole in the Flaperon Arm to the center of the radius of the Trail Edge Skins.

Check: Check the distance at each Flaperon Arm to prevent the Trailing Edge from being installed with twist.



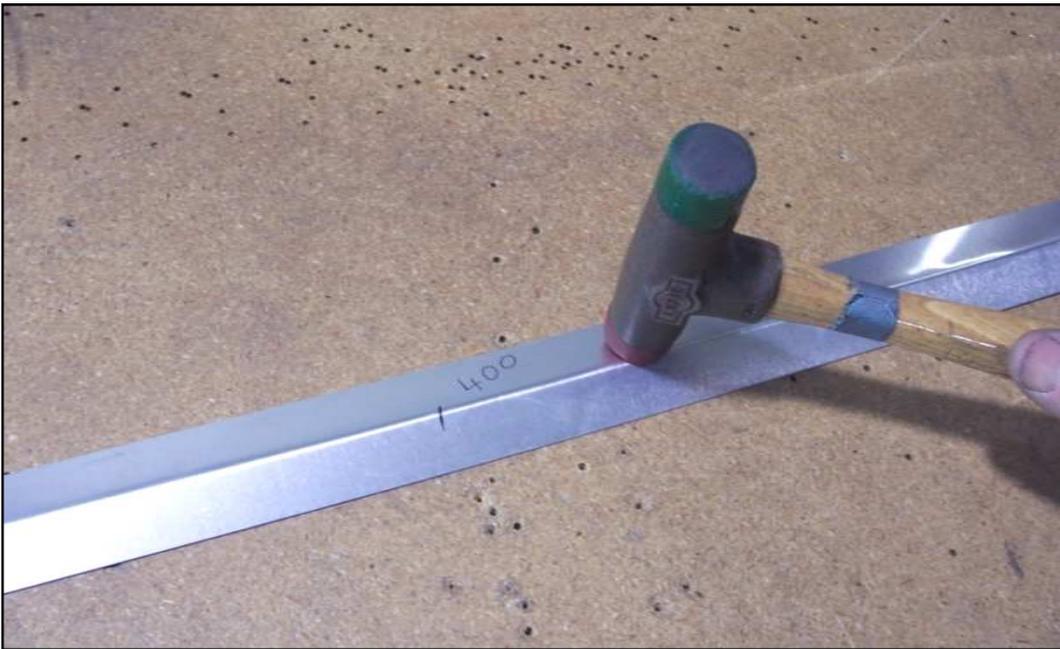
Back drill through the Top Skins in the Trailing Edge Skins and Rear Channels with a #40 drill bit when the Trailing Edge is set at the correct distance. With a #30 drill, expand the holes. Use a #20 drill bit to expand the holes on the inboard end of the wing: from the root to the rear channel splice, See drawing C75-WA-1 and C75-WA-2 for details.



Using ratchet straps and a 1" x 2" board pull the Nose Skin around the Nose Ribs. The Nose Skin should slide under the Top Skins to be drilled. The Nose Skins will be riveted on top of the Top Skins after deburring. Be sure to place a piece of plywood under the ratchet on the strap or the metal ratchet will dent the Top Skins.

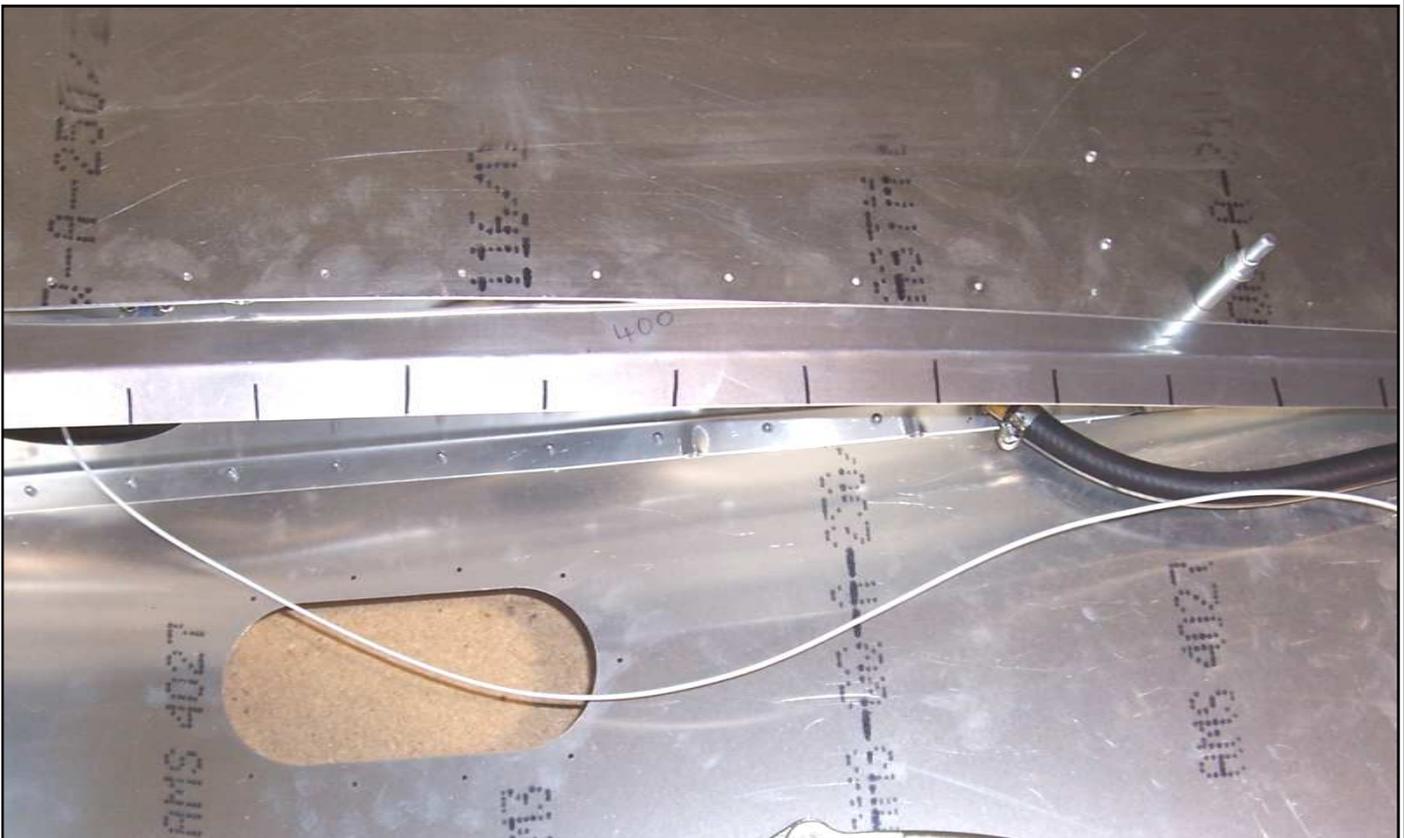


With the I/B Nose Skin strapped tight to the Nose Ribs, back drill, with a #40 drill bit, the holes into the Nose Ribs and Spar. Cleco every hole in the Nose Ribs and every other hole in the Spar.



P/N: C75W6-5
Wing Root Angle

Place a mark at 400mm from the rear end. With a plastic hammer flatten the angle from 0 degrees at the aft end to 30 degrees at the 400mm mark.



Lay the Wing Root Angle on the Wing. Place a mark between the rivet locations.



Put crimps on the marks in the flange of the Wing Root Angle to match the curvature of the Ribs.



Crimp the L angle to match the angle of the Wing Root Angle and the Root Nose Rib. Be sure the Crimps are between rivets locations.

Check: An easy check to see if the angle is correct is to set a ruler on the Root Nose Rib and the L angle.

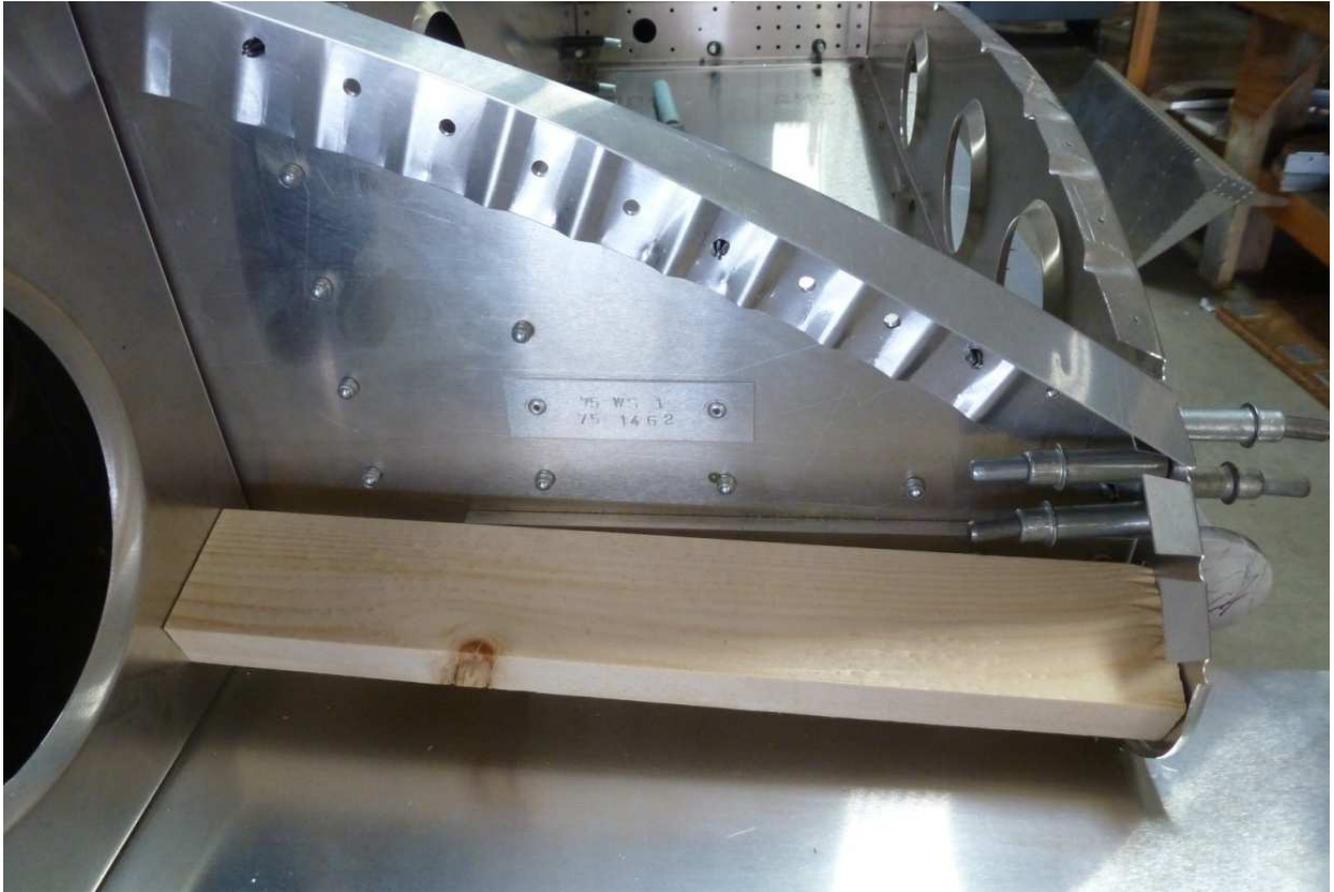


P/N: C75W6-5
Wing Root Angle

Crimp the angle between the rivets.



Slide the Wing Root Angle under the Nose Skin and I/B Top Skin. Back drill with a #30 drill bit through the Nose Skin and I/B Top Skin into the Wing Root Angle.



Cut a board to act as a support for the root nose rib.



P/N: C75W5-5
Wing Root Top Skin

Cleco the root skin.



P/N: C75W5-6
Wing Root Nose Skin

Wrap the nose skin.

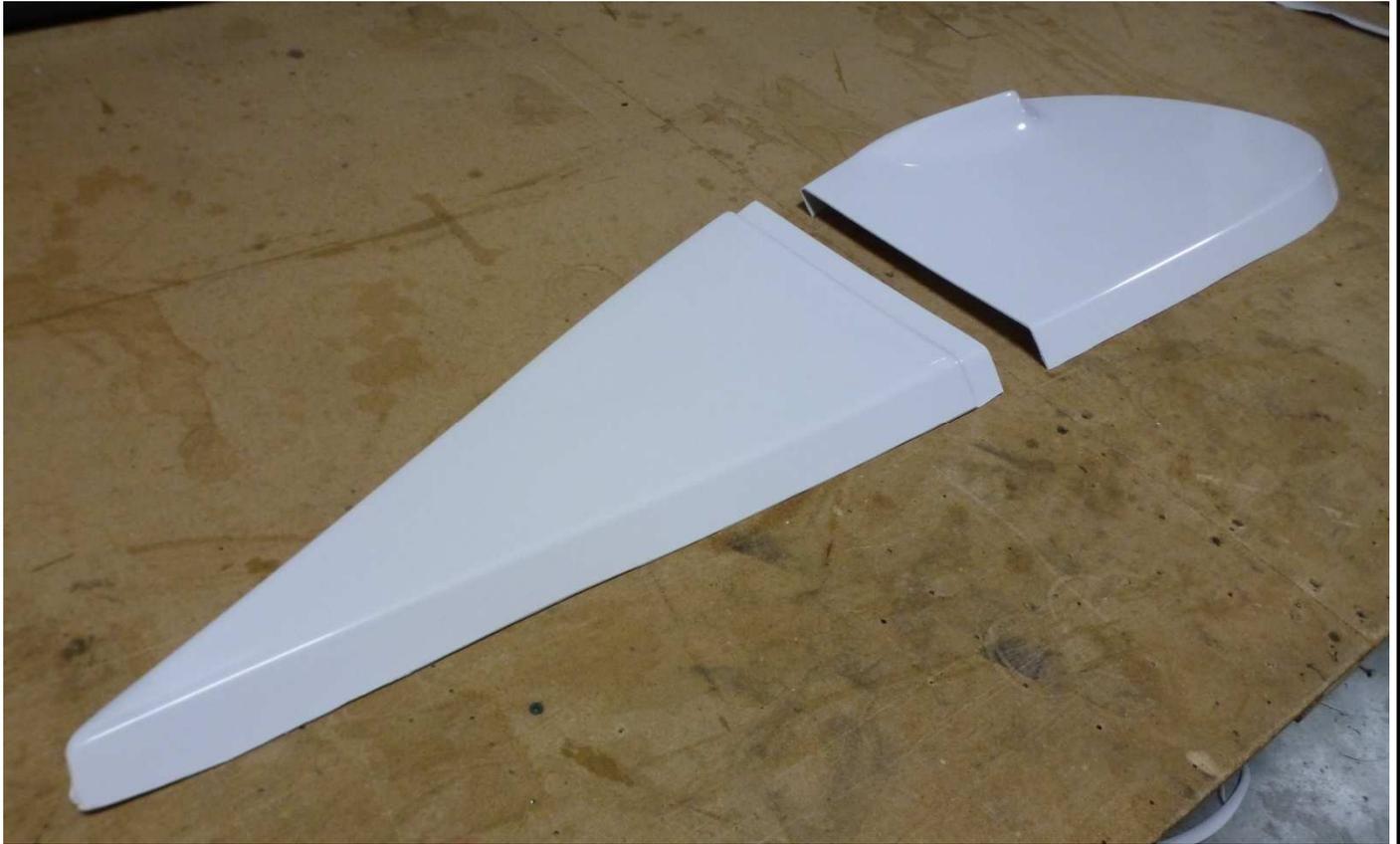
Wait to rivet the Root Top Skin until after the Wings are installed on the Fuselage. Also wait to rivet the Top Skins and Trailing Edge Skins until after the Fuel System and wiring has been installed in the Wings.



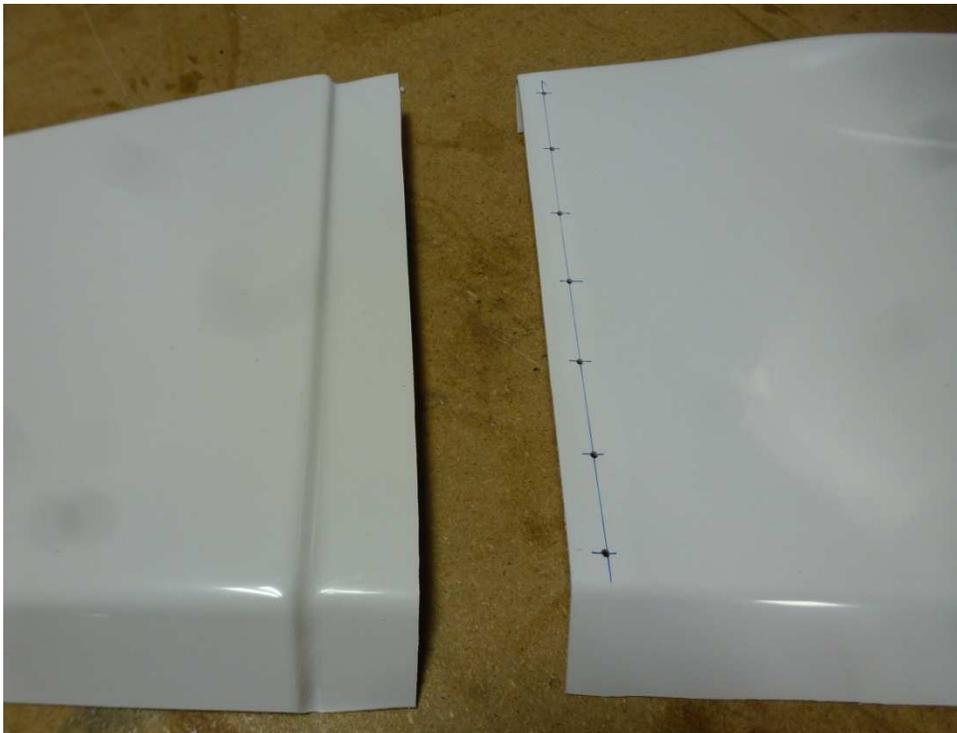
P/N: C75W6-8
Nose Wing Tip

P/N: C75W6-9
Rear Wing Tip

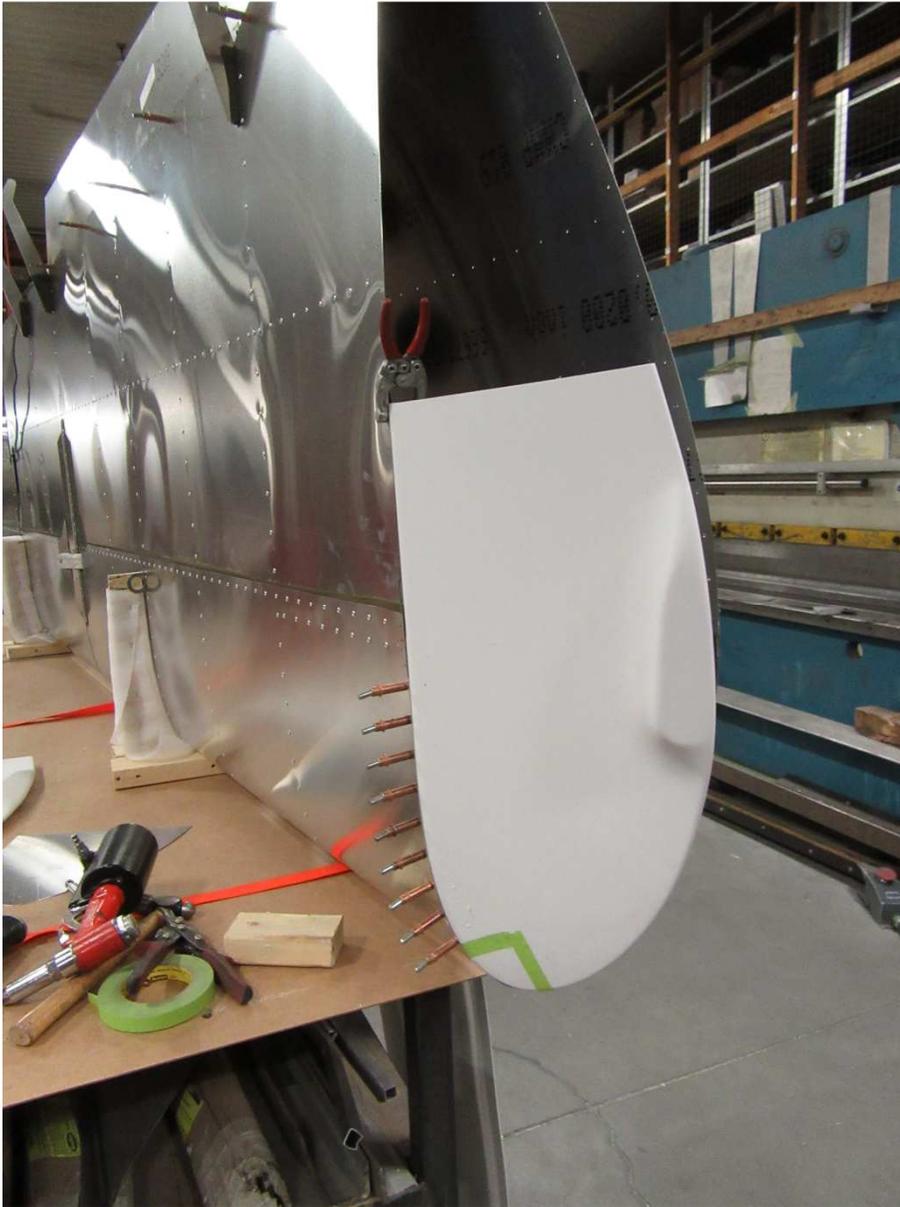




Cut the access material around the flange.



Pre-drill the holes in the Nose wing tip only.



Fit the Nose wing tip inside the leading edge and clamp in place.
When the part fits nicely, drill and cleco.

Install the rear wing tip and cleco.



A small gap at the trailing edge is normal.

Rivet the front and rear tips.