



Handle the skin with care.  
Pick up the skin along the front edge.



### TRAILING EDGE SKIN 65T5-2

Do not hold the skin by  
the trailing edge. Use 2  
hands to carry the skin.

**CAUTION:** The edges of  
the skin may be sharp.



Deburr the edges of the skin.

Pull the tool towards you, do not apply too much pressure or the tool will start to skip.

Using a flat file is also acceptable to deburr the edges of the skin.

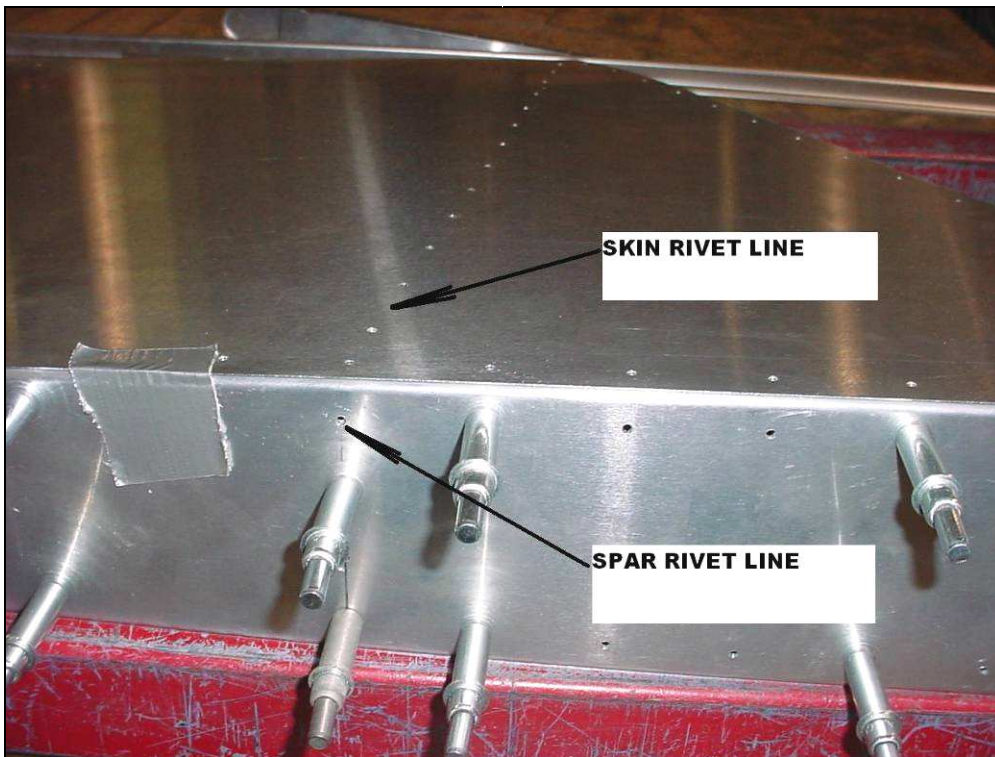


Deburring tool.  
Deburr both sides of the  
sheet at once.



**IMPORTANT:** The spacer is always positioned under the bottom trailing edge of the rudder assembly (between the workbench and the beam).

Square 2"x2" Steel beams (5ft long) or straight wood boards, such as a 2x4, can also be used instead of the steel beams.



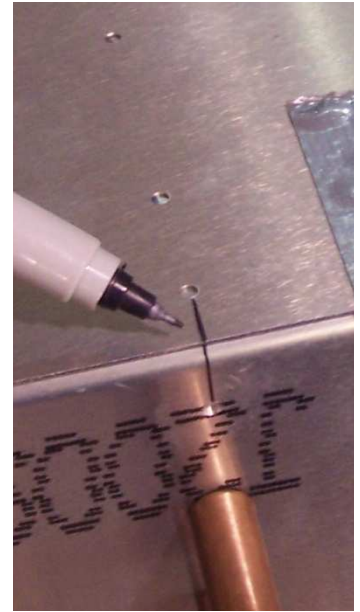
Only one end of the beam is raised with the 3/4" spacer.

**Note:** The purpose of the beams is to support the trailing edge when the spacer block is positioned under the bottom trailing edge and so the rudder doesn't set on the clecos.

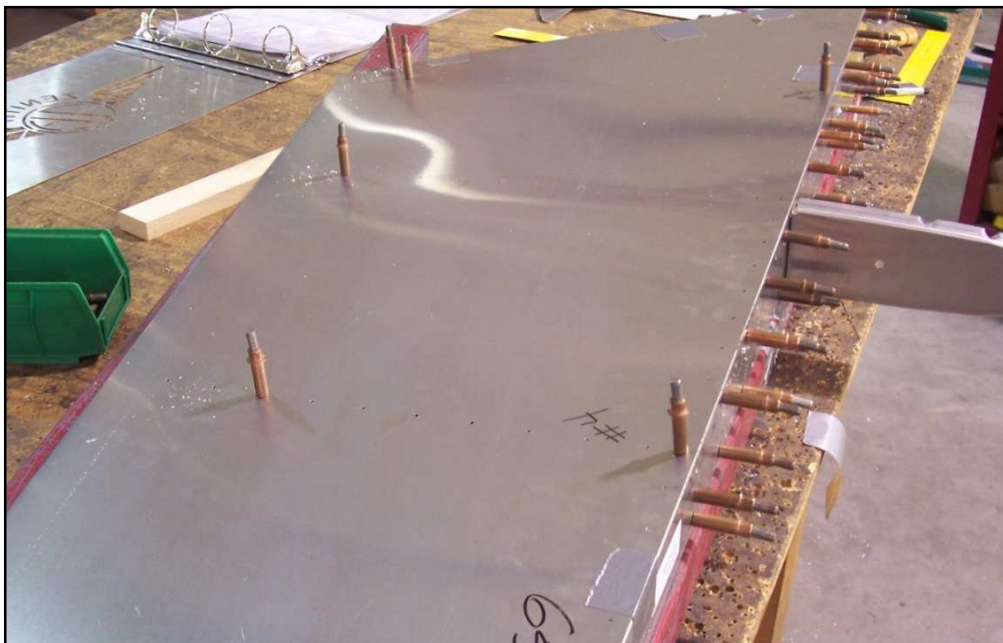
Line up the skin rivet line with the spar rivet line for the ribs. Check the two rivet lines at RR#2 and RR#3.  
Tape the skin to the spar on the top only.



Use a small square to position the rear skin flush with the front of the spar.  
(Rear Rib #1 shown in above photo, this rib will be installed later.)



Line up the rib rivet line in the skin with the rib rivet line in the spar.



Drill and Cleco RR#2, RR#3 and RR#4.  
Start at the trailing edge and proceed forward; Cleco every 3<sup>rd</sup> hole.  
(Above Photo: Ignore the Clecos in the spar line on the skin.)

**Note:** When drilling the hole through the Spar into the Rear Ribs, be careful not to push too hard on the drill. The Rear Rib flange is unsupported and can bend easily.

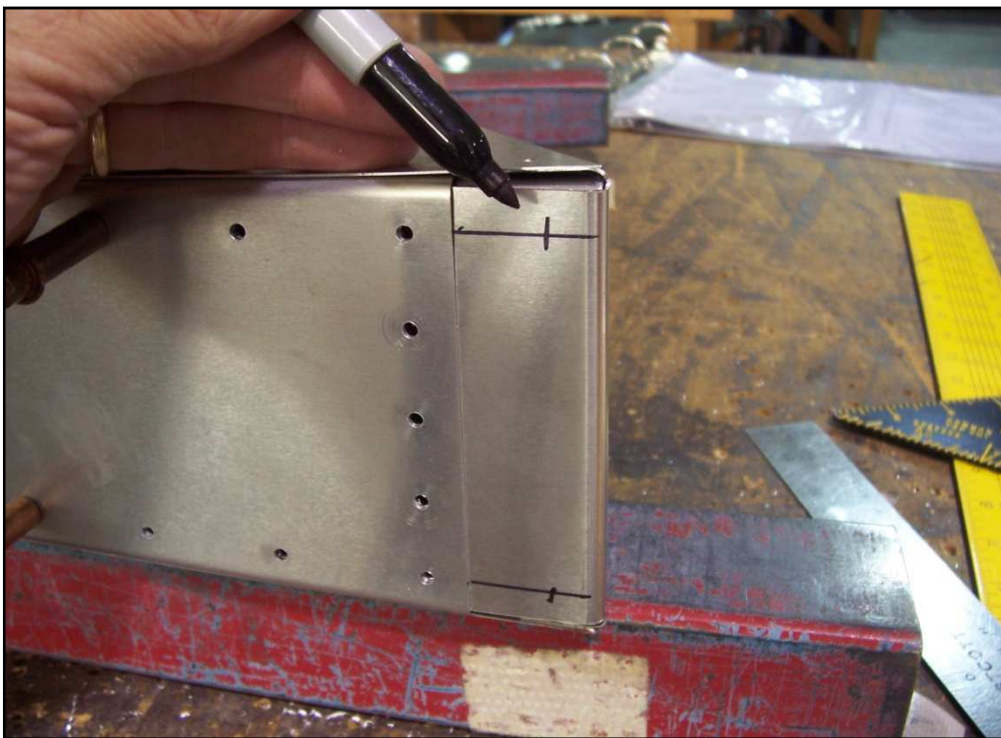


Lift up on the spar, reach in to move the ribs.  
Adjust the position of the ribs until the flange rivet line is visible through the pre-drilled holes in the skin.



Rear rib #1 should be pushed into the rear skin till the rear skin edge is at the start of the radius in rear rib #1. Tape rear rib #1 to the rear skin to prevent the rib from shifting.

Position Rear Rib #1 between the spar and doublers. Drill and Cleco rear rib #1 to the spar.



Drill and Cleco rear rib #1 to the rear skin.

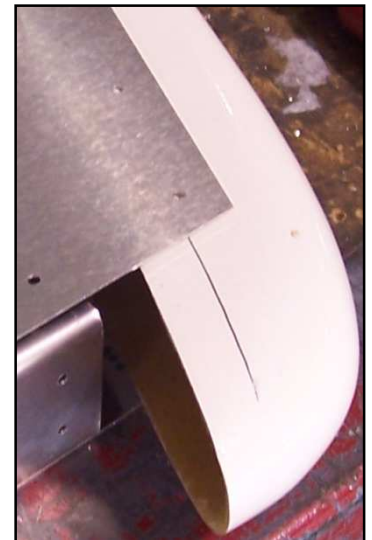
Mark a line 9mm from the edges of rear rib #1 and a rivet 30mm down from the last rivet line in the spar on rear rib #1. Drill and Cleco rear rib #1 to the doublers.



Lay a large carpenter square across the top end of the steel beams.

Or a yard stick (or any other material that is not too thick with some rigidity).

Mark a line 10mm from the bottom edge of the tip rib, 65T4-2.



**Note:** The tip rib does not overlap the spar.

Position the tip rib on the trailing edge skin so the line is visible through the predrilled holes. Push the tip rib back so that the tip rib is against the radius of the trailing edge. Drill and Cleco the tip rib to the rear skin.



Turn the rudder over. Reposition the  $\frac{3}{4}$ " spacer block under the bottom aft corner (between the workbench and the beam).

Drill and Cleco the last hole in each rib. Drill the remaining holes, Cleco every 3<sup>rd</sup> hole.



**Rudder Tip Rib  
Reinforcement  
65T4-10**

Remove the Tip Rib and slide the Rudder Tip Rib Reinforcement in the Tip Rib. The flanges of the Reinforcement should point up.

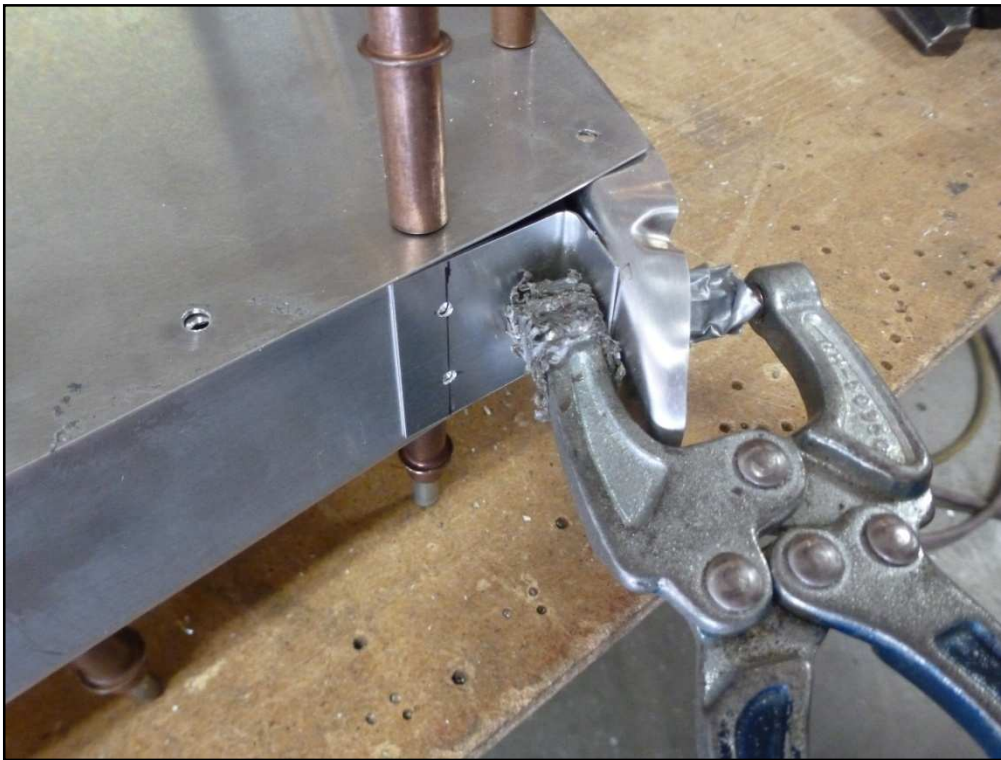


Push the Reinforcement forward until it is against the front of the Tip and is flush at the bottom. Clamp the Reinforcement, back drill through the Tip in the Reinforcement and cleco.



**Bent Strip  
65T4-11**

Draw a line 10mm from the bottom and each edge of the Bent Strip. Predrill holes at the intersections with a #40 drill bit.

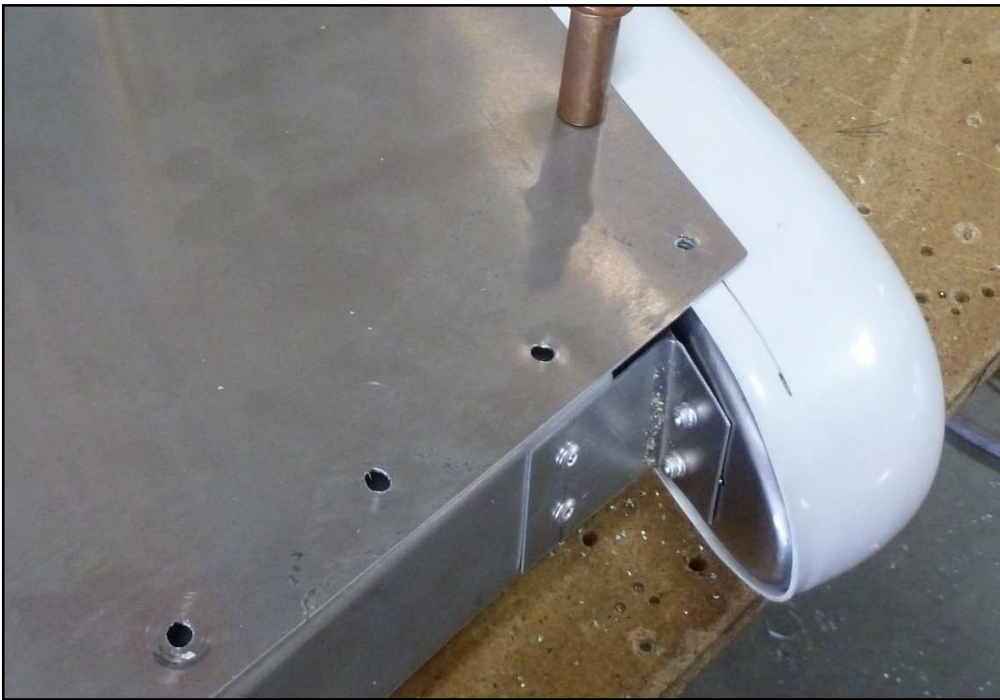


Cleco the Reinforcement to the Trailing Edge Skin. Position the Bent Strip against the Spar and the Reinforcement and clamp them together. Back drill with a #30 drill bit through the Bent Strip into the Spar and cleco.



Measure the distance between the front of the Reinforcement to the front edge of the Bent Strip. Add 9mm to the measured distance and mark a line from the front edge of the Reinforcement at this dimension. Mark two rivet locations 10mm from the edge. Drill and cleco the marked rivet locations with a #30 drill bit.





Deburr the holes in the Bent Strip and Reinforcement. Rivet the Bent Strip to the Spar and Reinforcement. Reinstall the Tip Rib with clecos.

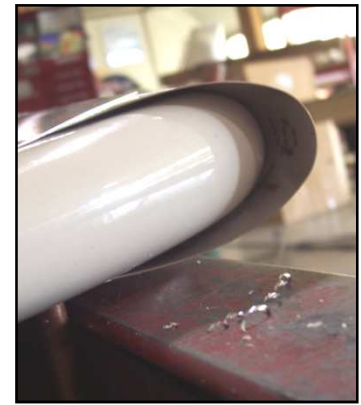


Slide the Nose Skin in between the Spar and the Rear Skin. Start at the bottom; squeeze the left and right ends to slide them between the rear skin and the spar. When positioning skin, **DO NOT** squeeze from the leading edge of the skin, this will cause denting in the radius.



Keep a hand on top to keep the skin from jumping out.

**LEADING EDGE SKIN  
65T5-1**



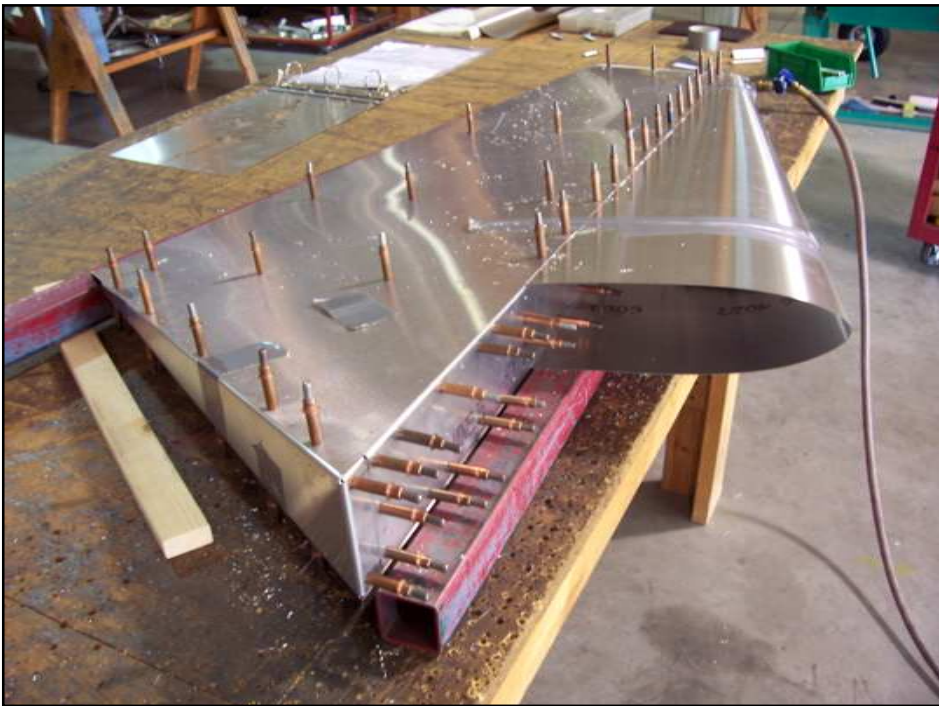
Push down on the nose skin to close the gap between the leading edge of the nose rib and the skin.

Line up the aft top corner of the nose skin even with the top of the rear skin. Pull the ends of a long piece of duct tape (10"+) over the center of the nose skin to the sides of the rear skin.



Tape the nose skin to the rear skin tight against the nose rib.

Use a small square to position the nose rib 90 degrees to the spar.



Spacer under aft bottom corner.

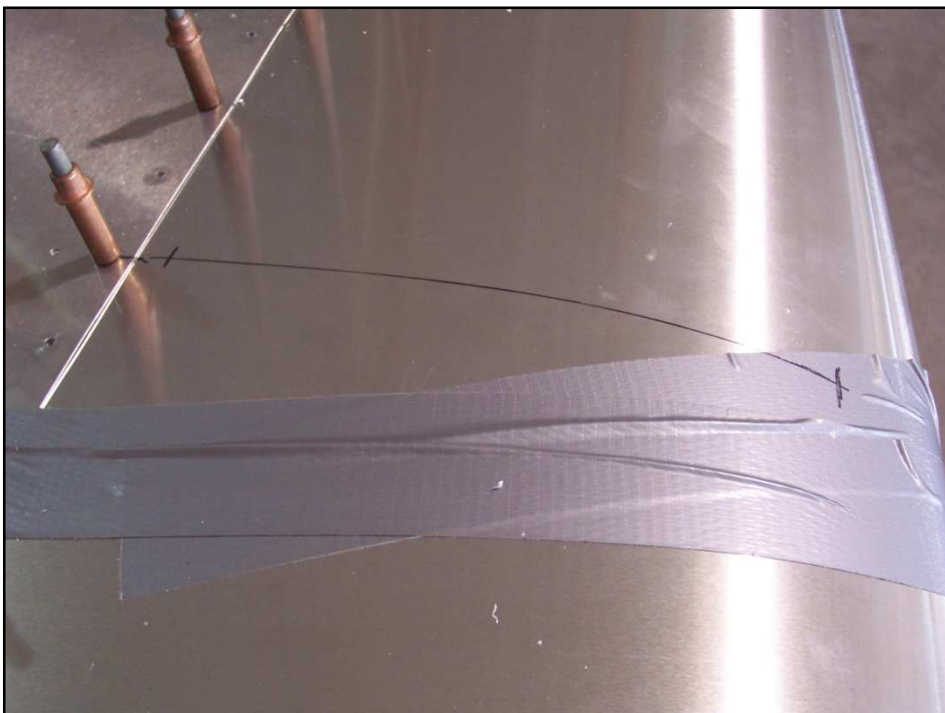
Before drilling make sure the Rudder is correctly positioned on the boards or beams with the spacer under the bottom trailing edge.



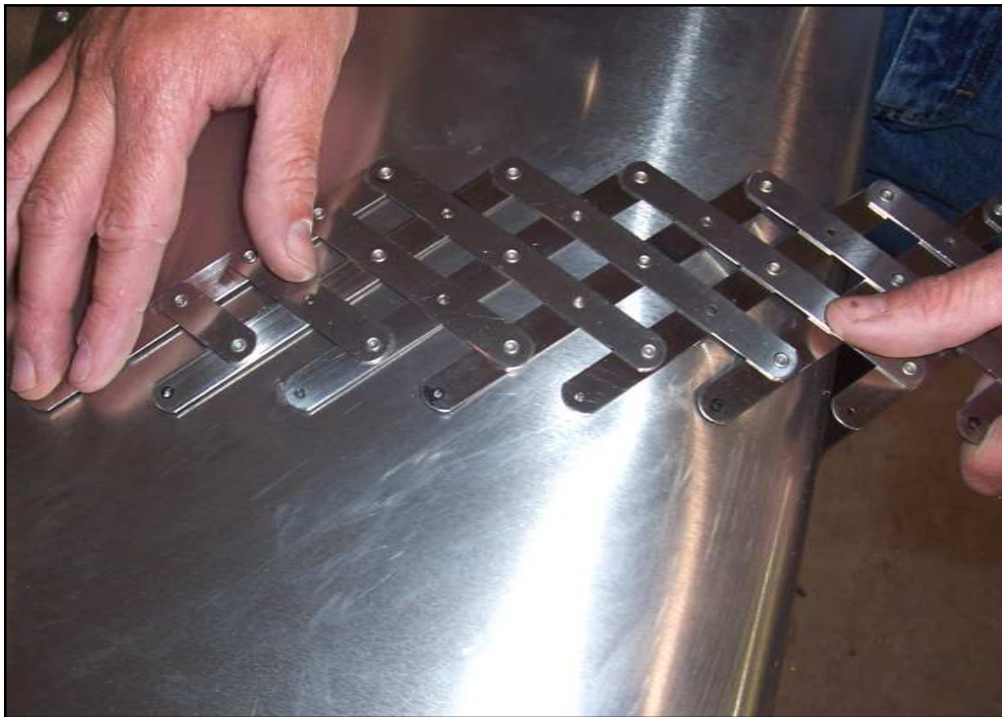
Start drilling from the center, working towards each end. Cleco every other hole. Drill both sides.



Layout the rivet line for the Nose Rib. The Nose Rib will be in line with Rear Rib #3. Using a square to position the rivet center line will work very well.



Mark a line 22mm from the spar rivet line on the nose skin and a line at 230mm from the spar rivet line for the first and last rivet in the nose rib.



**Check:** Be sure the rivets won't interfere with the crimps in the nose rib

Adjustable Rivet Spacer  
**P/N:** 12-00184

Layout 6 rivet on the nose skin for the nose rib.



Drill the hole in the nose skin for the first rivet into the nose rib then work forward. Cleco every other hole.



Use a ruler or other flexible straight edge to mark the nose skin excess to be trimmed off. Set the straight edge against the top of the rear skin. Mark a line parallel to the rear skin.



65T5-1 Leading Edge Skin

Un-cleco the Leading Edge Skin.

The distance from the edge of the skin to the center of the holes may be more than 10mm (as shown above). The distance may also be uneven at the top and bottom (the skin is supplied slightly oversized to ensure proper edge distance).

Layout a 10mm line from the center of the rivet.



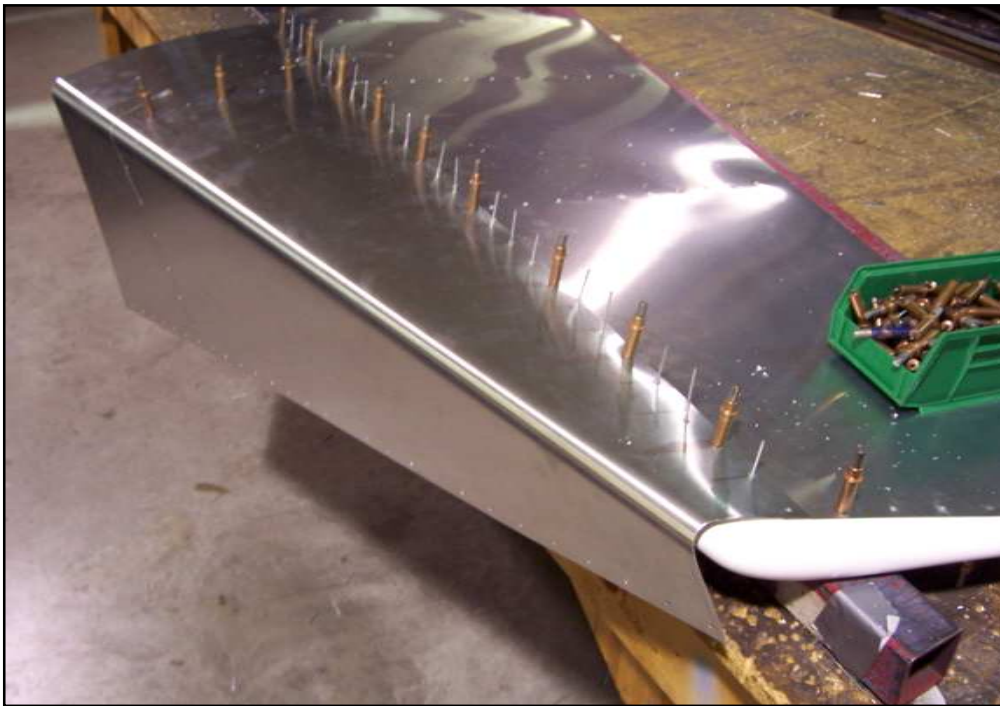
Leading Edge Skin  
65T5-1

Trim off the excess material from the Nose Skin. Finish by filing to straight smooth line.



Nose skin after trimming  
the top.

Cut the top of the Nose Skin 65T5-1 flush with the Tip Rib. First snip a couple of "rough cuts" to make it easier to work around the leading edge.



**OVERLAP:** Cleco the nose skin 65T5-1 overlapping on the outside of the rear skin 65T5-2.

Don't rivet the lower section below the Nose Skin on the Spar, just cleco. This will be done later when fitting the Spar Fairing (65T5-4 Fairing).

Cleco both sides of the rear skin to the ribs. Cleco one side of the Nose Skin, then Cleco the other side of the Nose Skin to the spar. Rivet the skins to the spar.

Rivet the assembly with A4 rivets.



Line up the trailing edge in the middle of the spar at the top, then check the bottom.



There is no twist in the rudder when the trailing edge splits the tapered spar down the middle.