

Section C75-TA-1 HORIZONTAL STABILIZER



This manual has been prepared for assembly of the Stabilizer using 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: C75T1-5
Rear Spar

P/N: C75T1-7
REAR UPPER SPAR
CAP

P/N: C75T1-8
REAR UPPER SPAR
CAP DOUBLER

P/N: C75T1-9
Rear LOWER Spar Cap

P/N: C75T1-10
Rear Lower Spar Cap
DOUBLER

First step is to Deburr all the parts on the Stabilizer before assembly.

Layout the Rear Spar, Caps and Doublers in the correct location. Mark the Spar top, bottom, and left, right.



P/N: C75T1-7
REAR UPPER SPAR
CAP

Cleco the Rear Upper Spar Cap on each end with 5/32 Cleco on the upper side of the Spar.



**P/N: C75T1-8
Rear Upper Spar Cap
DOUBLER**

Position the shorter Rear Upper Spar Cap Doubler and cleco to the Spar.



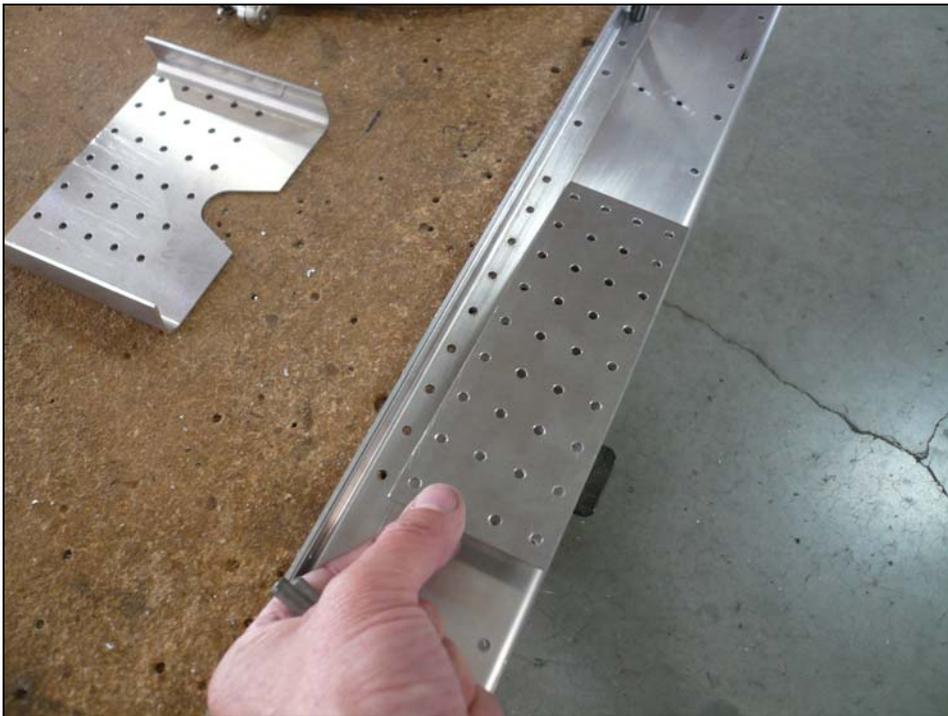
**P/N: C75T1-9
Rear Lower Spar Cap**

Turn the Spar over and cleco the Rear Lower Spar Cap in place on each end.



P/N: C75T1-10
Rear Lower Spar Cap
Doubler

Position the shorter Rear Lower Spar Cap Doublers on top of the Caps.



P/N: C75T2-6
Rear Attachment Skin

Locate the Rear Attachment Shim on the Spar in the center of the Spar.



Cleco the holes on the last row on each side with 5/32 clecos.



**P/N: C75T2-3
Rear Spar Attachment
Bracket**

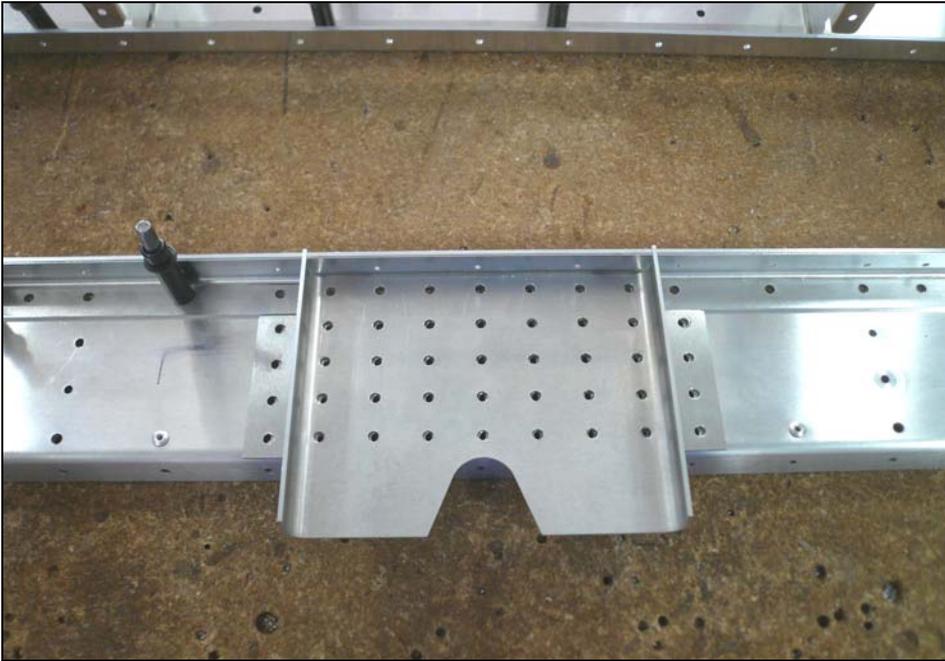
The side flanges on the Rear Spar Attachment Bracket will need to be trimmed to allow room for the Elevator travel movement. First do a rough cut, and then cut on the line using the green and red snips.



Use a hand file to remove the snip marks and even out the sides. A round file is needed to touch up the corners.



Deburr the lower Doublers and rivet the Rear Spar Bottom Doublers. At this time the top Doublers will not be riveted because the piano hinge will have to be position. Make sure not to rivet the holes where the ribs are located and in the center for the Rear Spar Attachment Bracket.



At this time only cleco the Cap Doublers and Rear Spar Attachment Bracket in place.



P/N: C75T1-4 Front Spar

P/N: C75T1-6 Front Spar Cap

Locate the Front Spar and Front Spar Cap. Position one Cap on the top and one on the bottom on the inside of the Spar.



Cleco the Front Spar Cap to the Spar with 5/32 clecos.



Rivet the Front Spar Cap to the Spar with A5 rivets. Do not rivet in the area for rib location and Front Spar Attachment Brackets.



**P/N: C75T1-2
Outboard Center Rib**

**P/N: C75T1-3
Inboard Center Rib**

Cleco the Inboard and Outboard Ribs to the Front Spar. Ribs are supplied with a label on the front flange to indicate the front of the Rib. The Rib orientation is that the Rib flange points outboard from the center. Notice the joggle on each Rib. Position the Rib at the correct location for the Doublers.



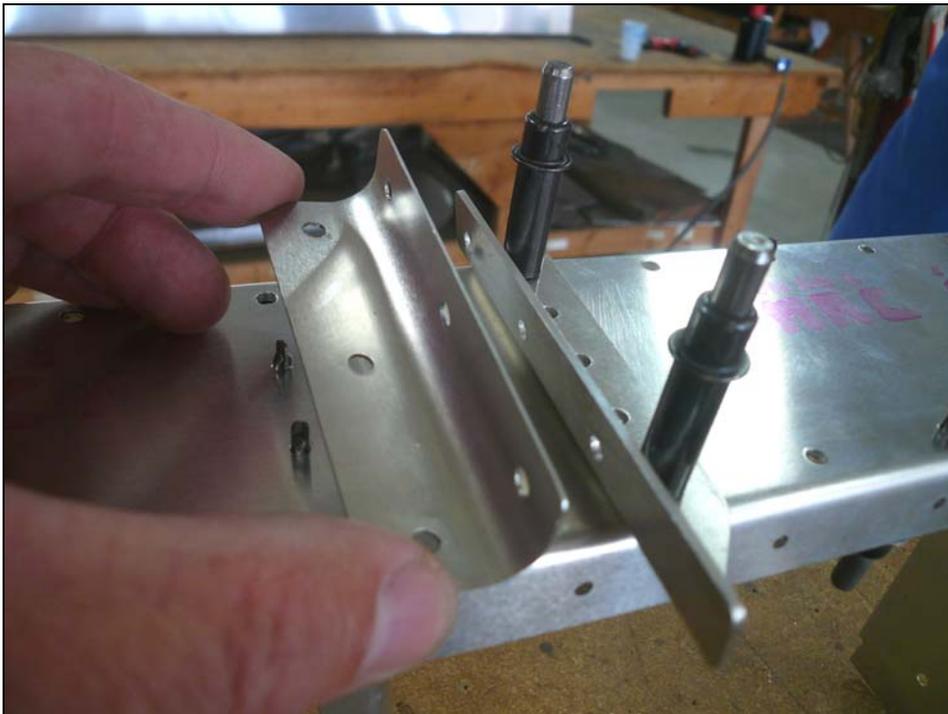
Notice the joggles on the Center Rib with the Spar Doublers.



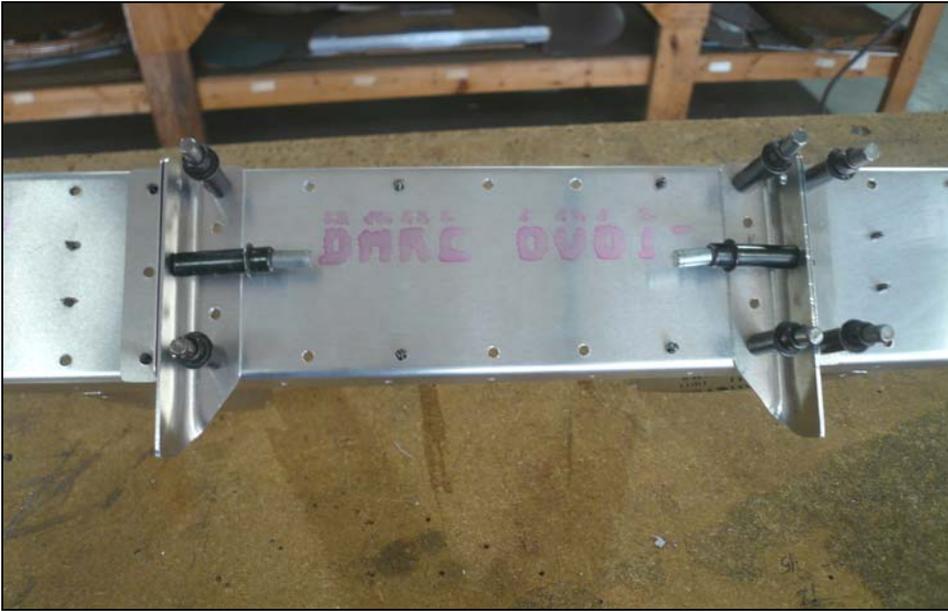
**P/N: C75T2-1
Front Spar
Attachment Bracket**

**P/N: C75T2-2
Front Spar
Attachment Doubler**

Layout the Front Spar Attachment Bracket and Front Spar Attachment Doublers on the front side of the Spar. The Front Spar Attachment Brackets are positioned 105mm from the center using the 5 predrilled holes in the Spar.



First cleco the Front Spar Attachment Bracket and then cleco the Attachment Doublers using 5/32 cleco.



Front Spar Attachment and Attachment Doublers clecoed to the Front Spar.



Rivet the Brackets and Doublers to the Front Spar using A5 rivets. Using a hand riveter is very helpful in this location.



Cleco the Ribs and Rear Spar together. When riveting the Ribs make sure that the flange on the Ribs pull down. Notice the joggle on the Rib.

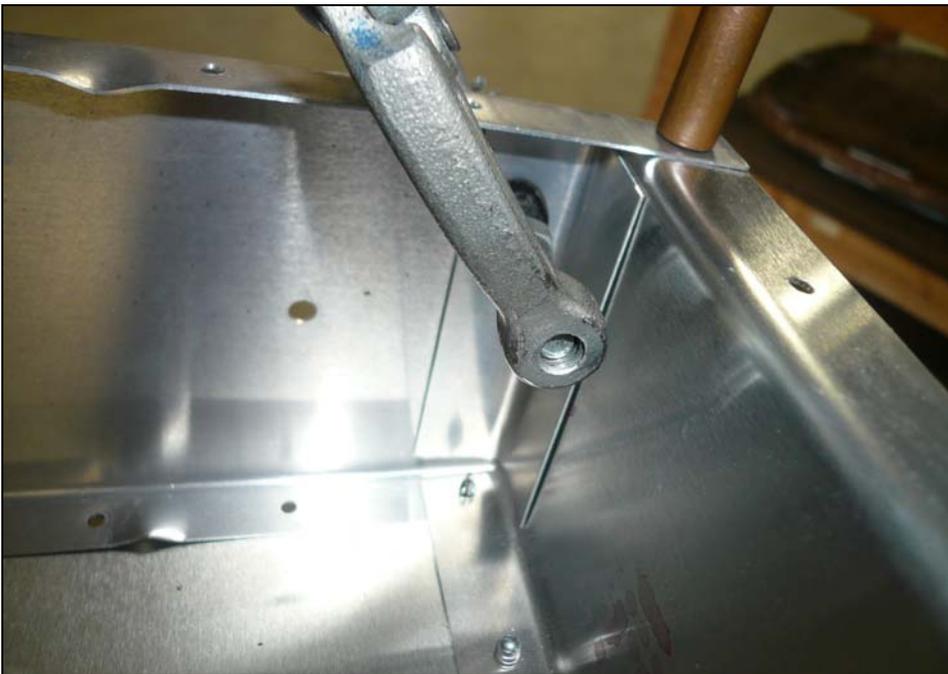


Once the Ribs and Front and Rear Spars are riveted together. Position the skeleton upside down on the work bench and secure the back Spar using plywood scrap. Level the Front and Rear Spar.



**P/N: C75T2-4
Stabilizer Skin**

Position the Stabilizer Skin on the skeleton. Cleco the Skin and rivet the Skin starting from the center using A4 rivets. Double check to make sure the Stabilizer is level before riveting.



**P/N: C75T1-1
Stabilizer End Rib**

Cleco the Stabilizer End Rib on each end of the Stabilizer on the bottom Skin and the Front and Rear Spar flange. Cut a piece of "L" angle 75mm long. Clamp the "L" angle to the End Rib and drill thru the predrilled holes on the Stabilizer End Rib and Rear Spar.

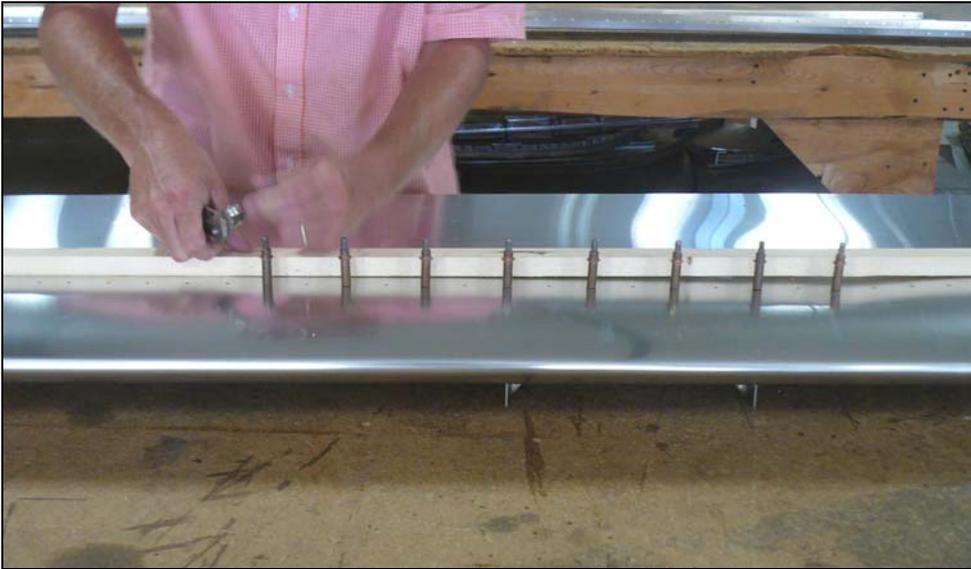


**P/N: C75T1-1
Stabilizer End Rib**

Do the same on the Front Spar to the Stabilizer End Rib. The "L" angle will have to be trimmed to clear the Rib flange on each side. Rivet two A4 on the Spar to the "L" angle and two A4 to Rib and "L" angle.



Use a furring strip (1x2 board) to bring the Skin down on the skeleton. Using ratchet straps will also help in holding the Skin down.



Start to cleco from the center and work out left and right. It will take a few holes to cleco before the Spar and Skin will line up.

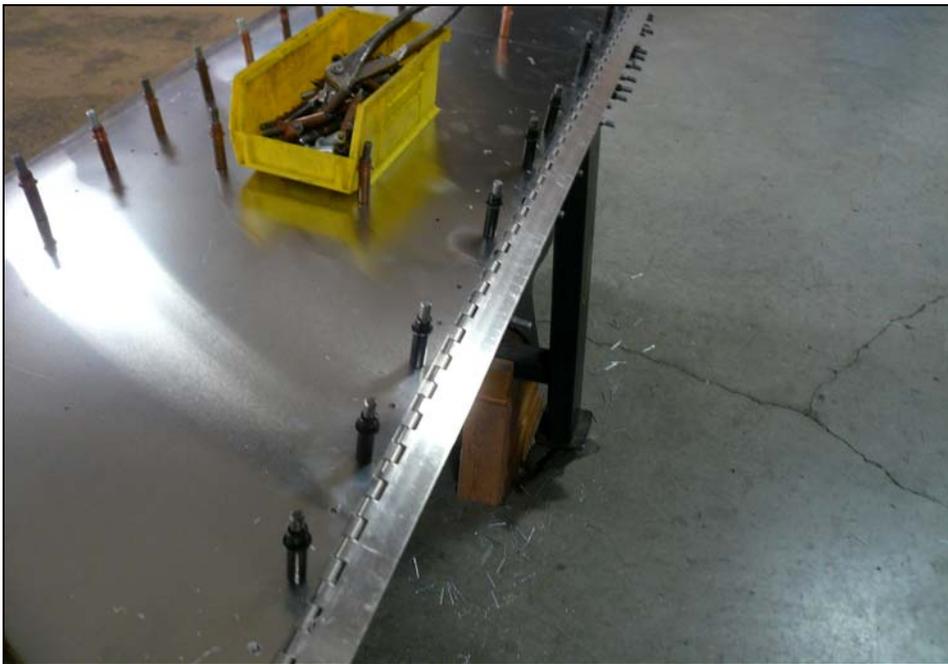


Cleco the rest of the top of the Stabilizer Skin and the Stabilizer End Rib.



**P/N: C75T2-5
Elevator Piano Hinge**

Position the Elevator Piano Hinge under the top skin. Mark the center on the Stabilizer Skin and the center on the Piano Hinge. Slide the Hinge in and match the center line together. The Hinge spine points down and the aft edge of the Hinge flange with the aft edge of the Skin.



First drill with number 30 and then final size to number 20. Cleco every other hole with 5/32 cleco. Remove the Hinge and Rear Spar and deburr the Doublers, Spar, and Hinge. Rivet the Spar, Ribs and Doublers, but wait to rivet the Elevator Piano Hinge.



**P/N: C75T2-7
Stabilizer End Caps**

**P/N: C75T1-11
Tip End Rib**

Stabilizer End Caps and Tip End Rib



Trim Stabilizer End Caps and remove the excess material using snips and utility knife.



**P/N: C75T1-11
Tip End Rib**

Cleco the Tip End Rib to the End Rib on the Stabilizer. Flange faces outboard.



Rivet the Tip Rib using A4 rivets.



Position the Stabilizer End Cap on each end. Drill and cleco with 1/8 cleco.



Draw a 10mm rivet line on the Stabilizer End Caps to the aft end. Layout the rivets on the line using pitch 40mm.



Before drilling check that Rib is square to the Spar. Drill and cleco Cap to the Rib with number 30 drill.



Wait to rivet the Tips on until after the Stabilizer is mounted on the Fuselage. The Tips will be removed and a level mounted on the End Rib to level the Stabilizer.