

Section 6-ZU-3b Zodiac CH 601 XL Upgrade Package

Bellcrank Channel & Doublers (Fuselage Section)



This Photo Assembly Guide was prepared by Zenith Aircraft Co. to guide builders through the process of installing the Upgrade Package kit to an existing (completed) Zodiac CH 601 XL aircraft. For details and background information on the Upgrade Package kit, See <http://www.zenithair.com/news/ntsb-astm-4-09a.html>

This photo assembly manual is a supplement to the issued Drawings (6-ZU-1 to 6-ZU-4). 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.



Mark a line between the rivet locations approximately 115mm up from the bottom of the Fuselage at the Gear Fitting and 30mm up from the bottom of the Fuselage at the Rear Upright. Layout and even rivet pitch of approximately 20mm.



P/N: 6ZU3-2
Side Doubler

Position the Side Doubler in the Fuselage between the Side Skin and interior parts.



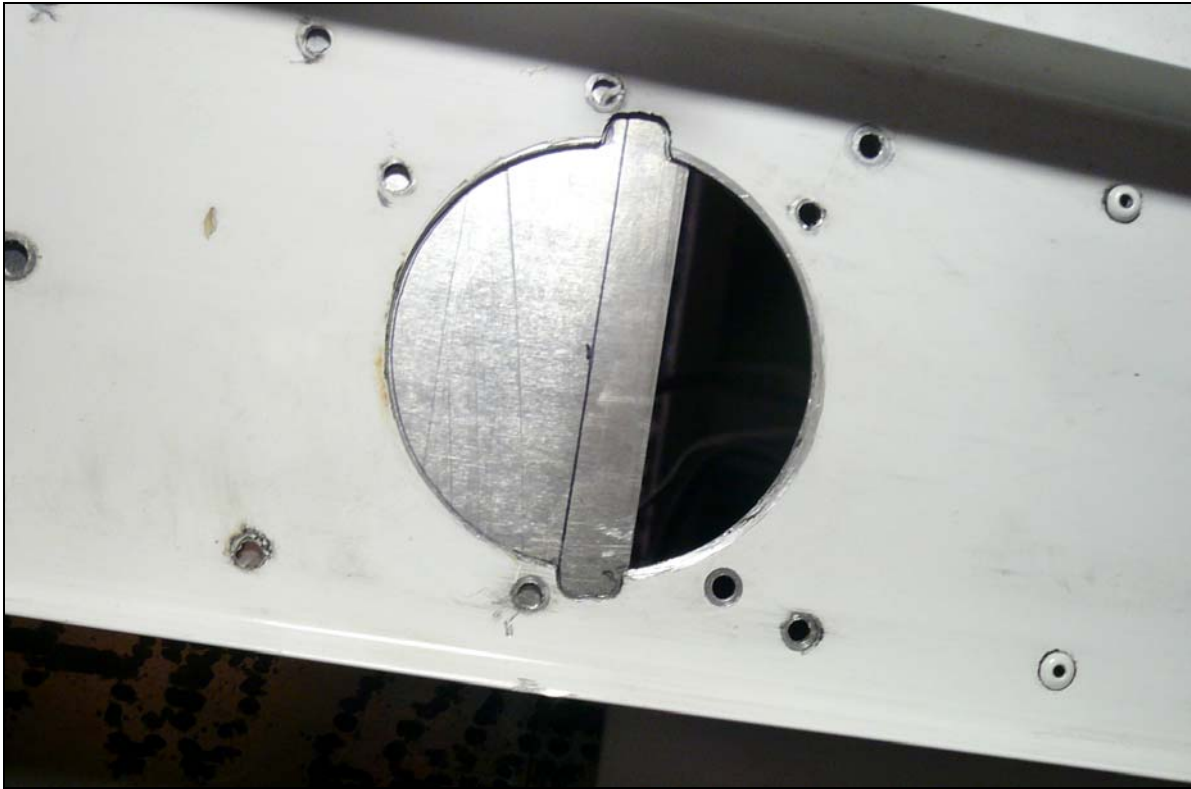
With a #20 drill bit, back drill through the Side Skin into the Side Doubler and Cleco. Use a #12 drill bit to back drill through the Gear Fitting into the Side Doubler.



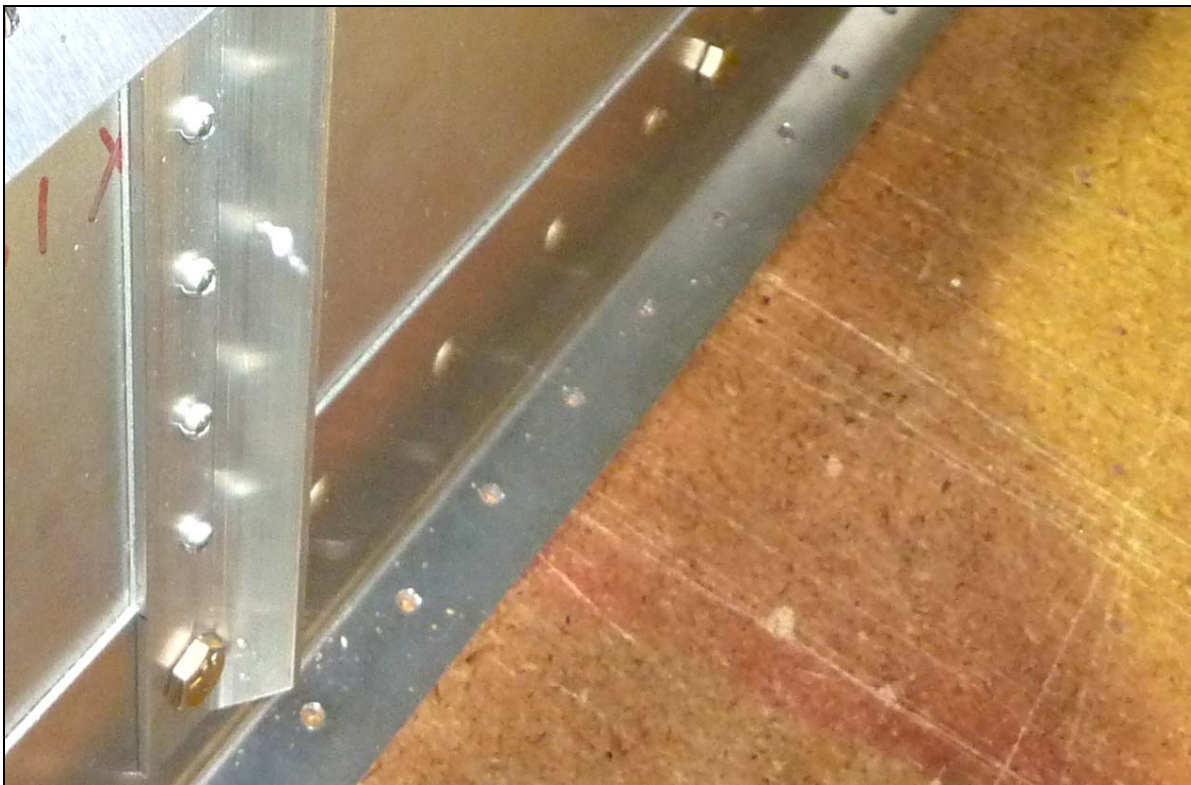
P/N: 6ZU2-9
Bottom Skin
Doubler

(Left Photo: The Gascolator will likely need to be removed to install the Doubler.)

Drill out the rivets in the Lower Front Longerons and Floor Stiffener where the Bottom Skin Doubler is installed. Draw a line on the top of the Bottom Skin Doubler 10mm from the aft edge. Slide the Doubler between the Longerons, Floor Stiffener and Cabin Floor. Position the Bottom Doubler with the line visible through the holes for the rear Center Spar flange. With a #20 drill, back drill through the Cabin Floor into the Doubler and Cleco.



Trace the cutout for the Gascolator on the Doubler. Also mark the edge of the Fuselage on the Doubler to trim off the excess material.



Back drill through the rear bottom flange of the Center Spar into the Rear Bottom Angle.



Check to be sure the existing holes in the bottom front flange of the Center Spar are clear of the radius of the Bottom Front Angle. With a #20 drill bit, back drill through the bottom front flange of the Center Spar into the Front Bottom Angle. Reinstall the Center Spar in the Fuselage. Cleco the rear flange to the Cabin Floor.



Back drill through the Center Spar front flange into the Cabin Floor and Doubler and Cleco. A #40 drill bit was used in the photo above.



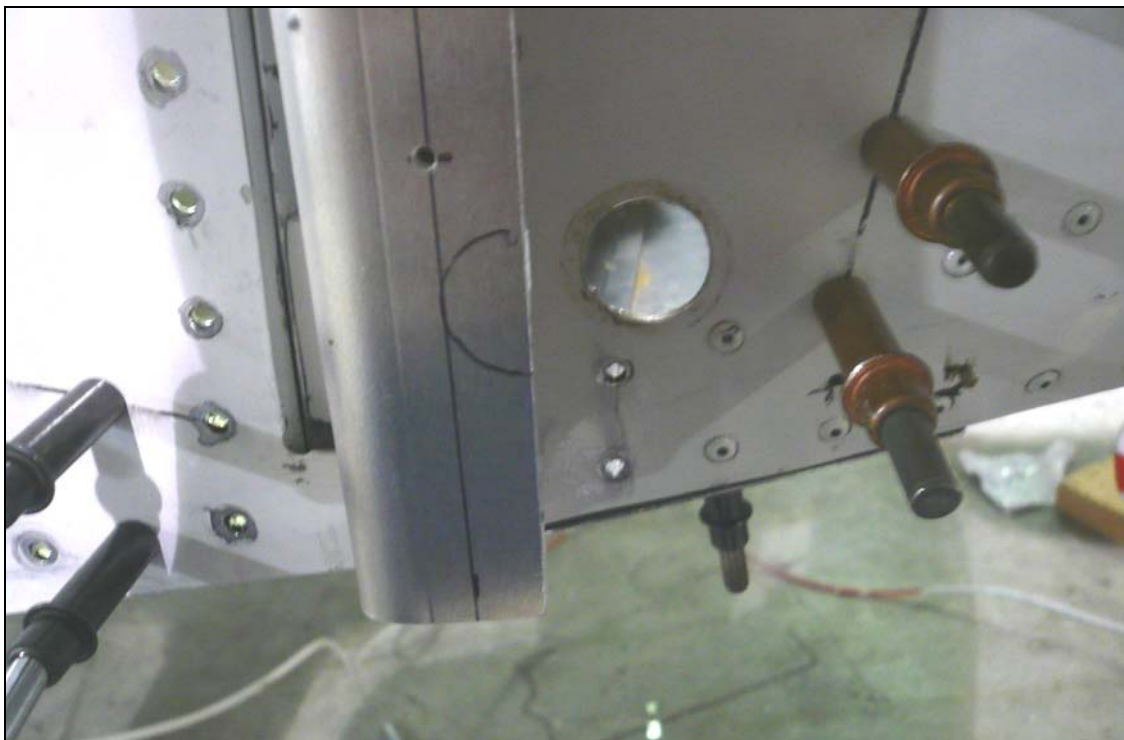
Mark a line 10mm from the front edge of the Doubler. Layout rivet locations between the Lower Front Longerons and the Floor Stiffener at approximately pitch 40mm. With a #40 drill bit, drill through the Doubler into the Cabin Floor and Cleco. Expand the holes with a #20 drill bit. Back drill the remaining holes through the Floor Stiffener and the Lower Front Longerons into the Doubler.



P/N: 6ZU2-6
Front Wing Upright



Set the top of the old Upright on the replacement Upright flush at the top. Trace the bottom of the old Upright on the replacement Upright. Use a Band saw or Hacksaw to trim the replacement Upright on the line. File any rough edges smooth.



Position the Upright in the Fuselage against the Center Spar and Side Skin. If the Upright extends over the hole for the Fuel Line, trace the edge on the Upright. Remove the Upright and draw a center line on the flange. **DO NOT** trim the Upright if the hole interferes, a new hole will need to be made in the Side Skin for the Fuel Line.



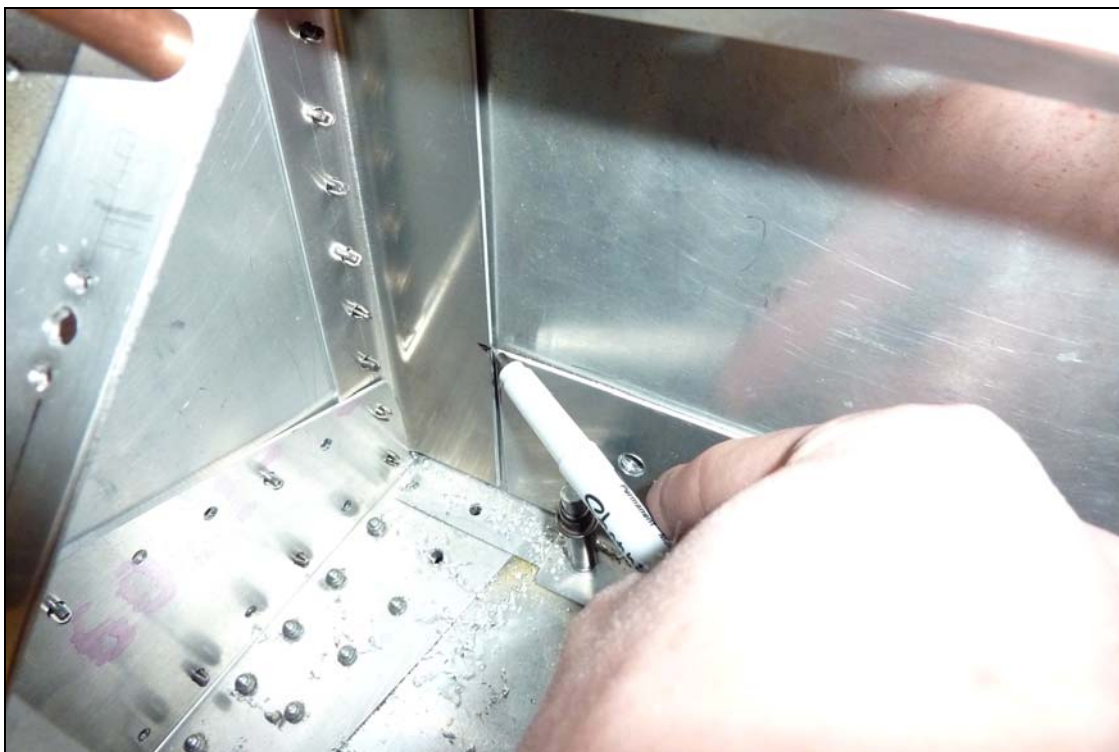
Mark a rivet location 10mm from the top end and 10mm from the edge of the hole for the Fuel Line. Layout an evenly spaced rivet line approximately pitched 20mm between. With a #40 drill bit, drill the Upright rivet locations.



Slide the extra Web Spacer between the upper Center Spar Caps. Clamp the Upright to the Center Spar and Rear Upright. With a #40 drill bit, back drill through the Upright into the Side Skin and Cleco. Use a #20 drill bit to expand the holes. (The photo above has the Z Channel already installed, this is done later.)



Check the thickness of the Rear Upright. If the Rear Upright is made of 0.040" it needs to be replaced with one made of 0.063" as shown in the photo above.



Mark the top and bottom of the Doublers on the Uprights then remove the Uprights from the Fuselage.



Use a square to extend the Doubler marks on the Uprights. Mark a rivet location 10mm from the Doublers. Then evenly space three additional rivets in between. With a #40 drill bit, drill the rivet holes in the Uprights.



Reinstall the Uprights in the Fuselage. Back drill through the Uprights into the Center Spar Web and Cleco. Use a #20 drill bit to expand the holes and Cleco.

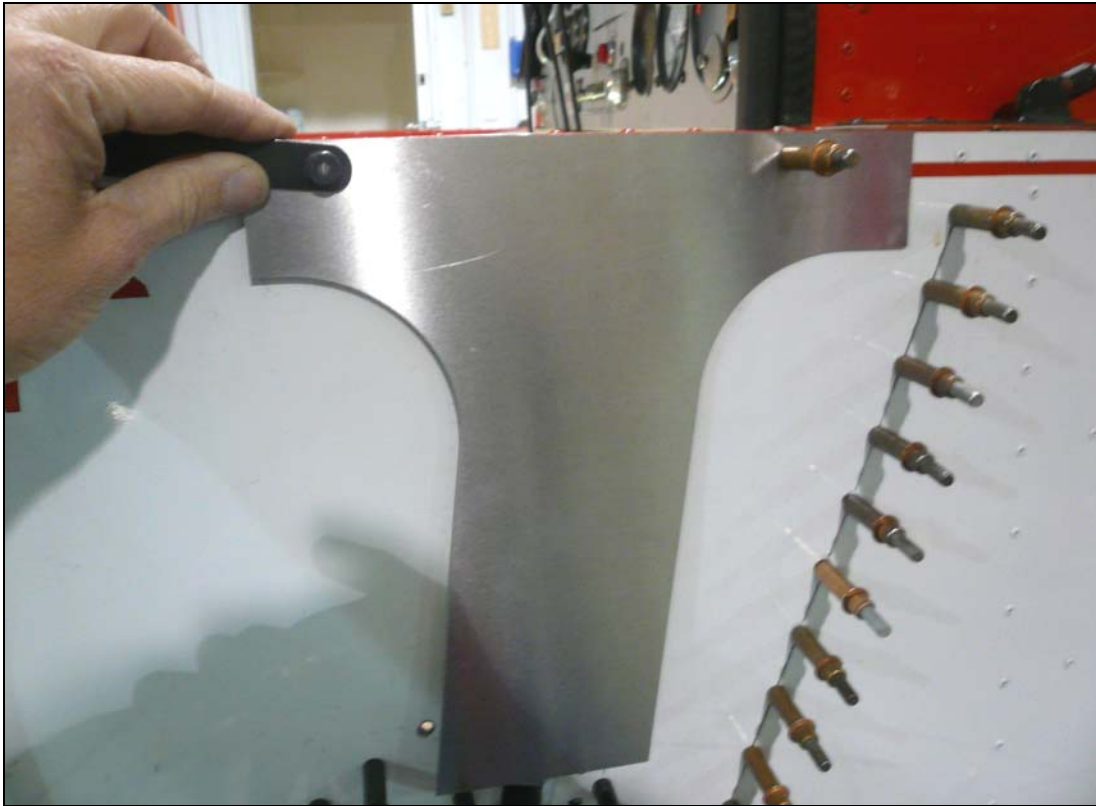


P/N: 6ZU3-5
Upright Doubler

Drill out the rivets in the Side Skin and Upper Front Longeron where the Upright Doubler will be installed. Clamp the Upright Doubler flush with the top of the Side Skin so the Rear Upright rivet line is 10mm from the aft edge of the Doubler.



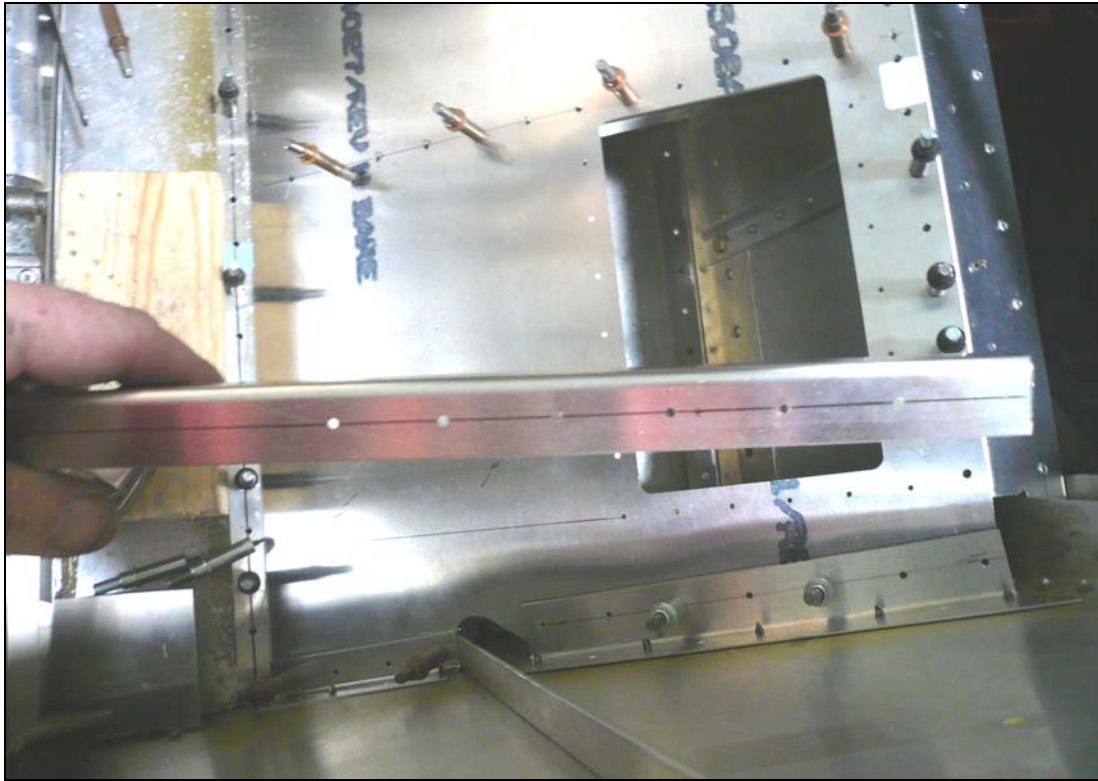
Check the edge distance on the holes through the Uprights into the Doubler to be certain there is sufficient edge distance. With a #20 drill bit, back drill through the Uprights into the Doubler and Cleco.



Use a Hole Finder to drill the holes into the Upper Front Longerons and Cleco. Use a #20 drill bit to expand the holes. (The photo above doesn't have the Uprights drilled yet as was done in the previous step.)

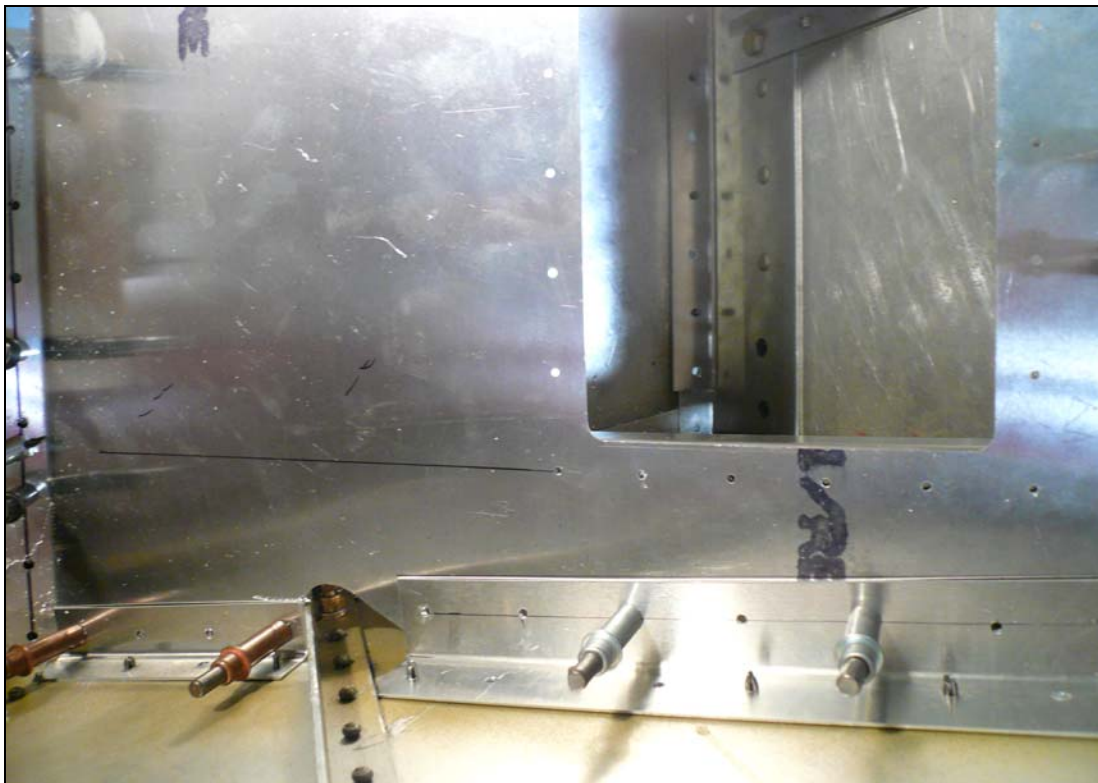


Layout a rivet line below the rivet line into the Upper Front Longeron. Place three rivets before the Rear Upright, one between the Uprights, and three in front of the Front Upright. Layout an additional rivet 10mm from the radius half way between the Upright rivet line and the previously laid out line. Use a #40 drill bit to drill the holes and then expand them with a #20 drill bit.

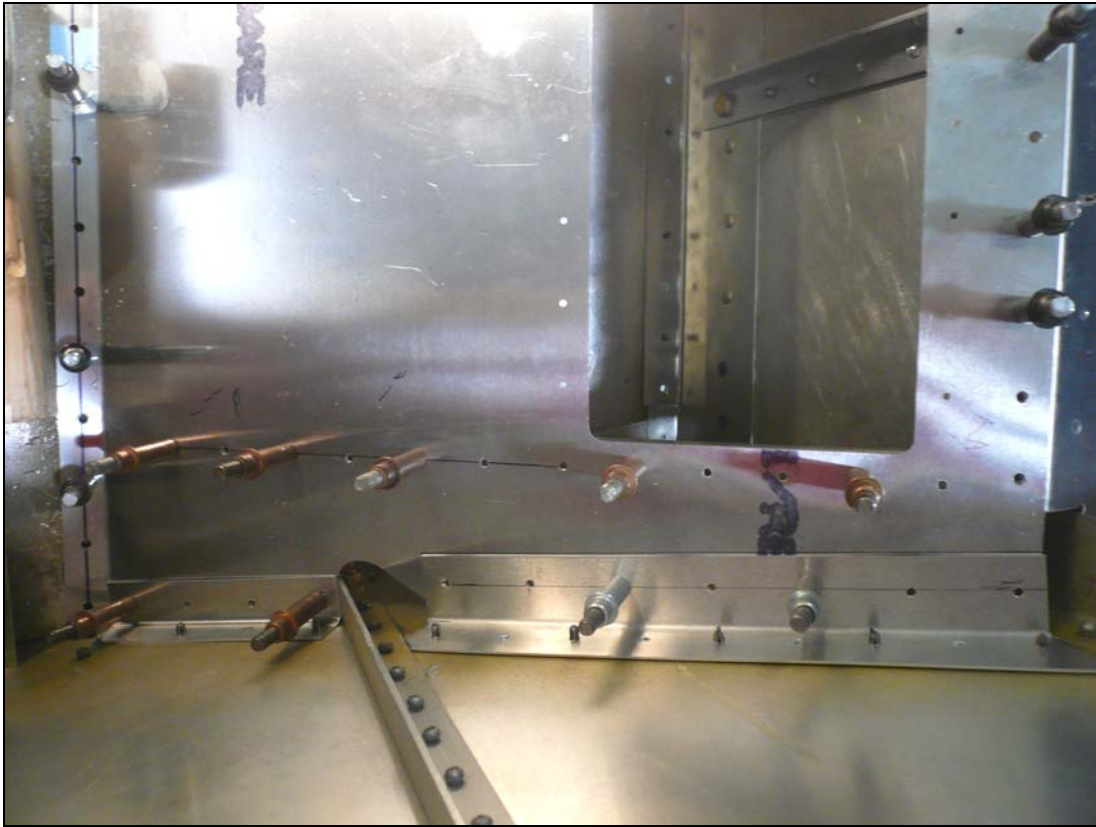


P/N: 6ZU3-4
Seat Angles

Cut a Seat Angle to fit under the Front Seat Panel. Draw a center line on one Flange of the Seat Angle. (Ignore the holes in the Seat Angle in the photo above.)



Drill out the rivets attaching the L Angles around the spar bolt access. Extend the rivet line to the bottom of the Seat Front Panel.



Mark the end of the Seat Angle on the Front Seat Panel. Measure 10mm from the end of the Seat Angle and mark the first rivet location. Layout an even rivet pitch approximately 30mm apart between the end rivet and the existing holes. Position the Seat Angle under the Front Seat Panel so the center line is visible through the holes. With a #30 drill bit, back drill through the Front Seat Panel into the Seat Angle and Cleco.



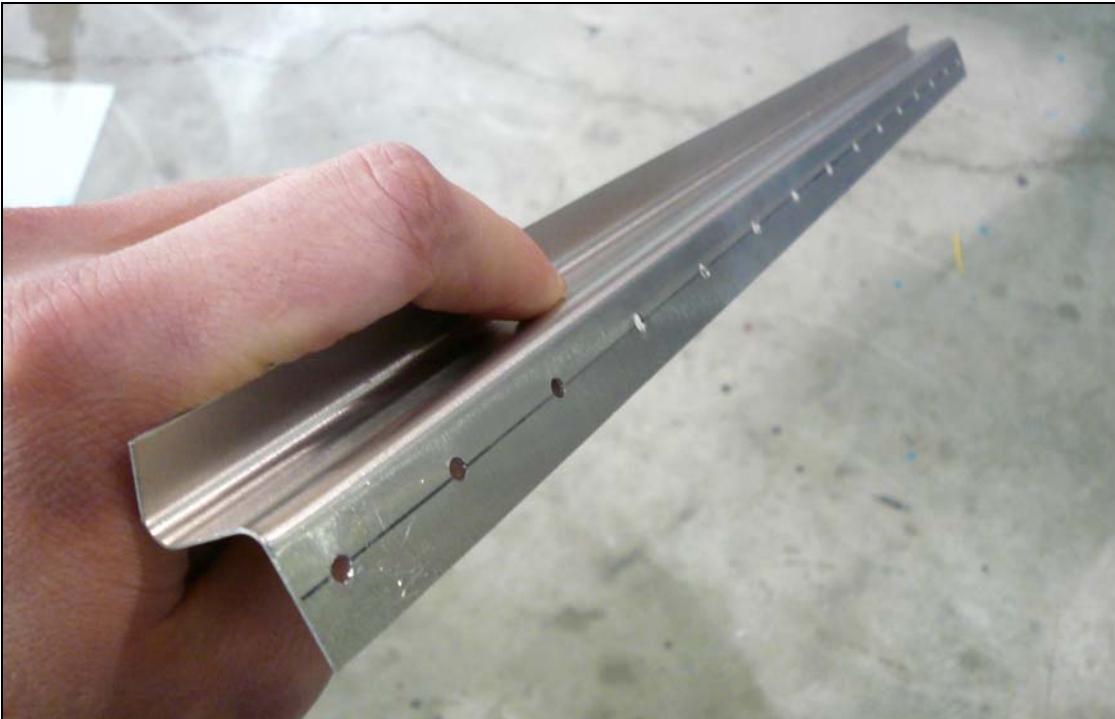
Remove the L Angles attaching the Arm Rest Side to the Front Seat Panel. Use the L Angles as templates to cut replacements from Seat Angles.



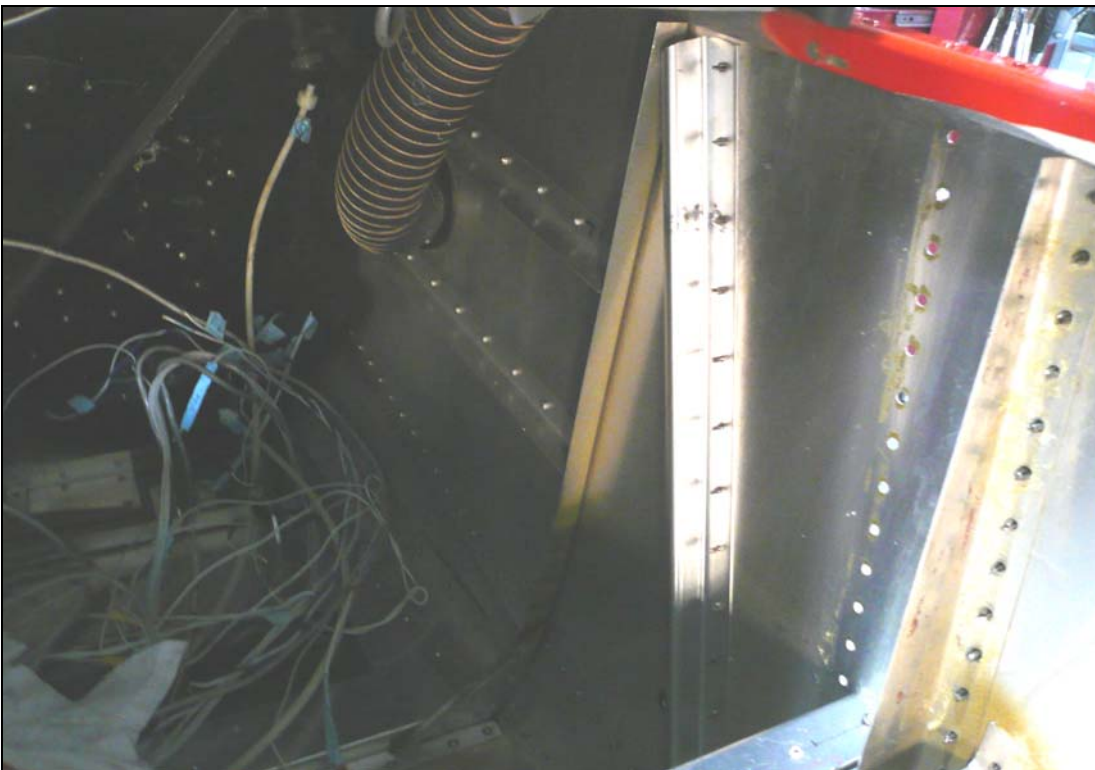
Use a hole finder to drill the replacement Angles. Use a #20 drill bit to drill the holes and Cleco.



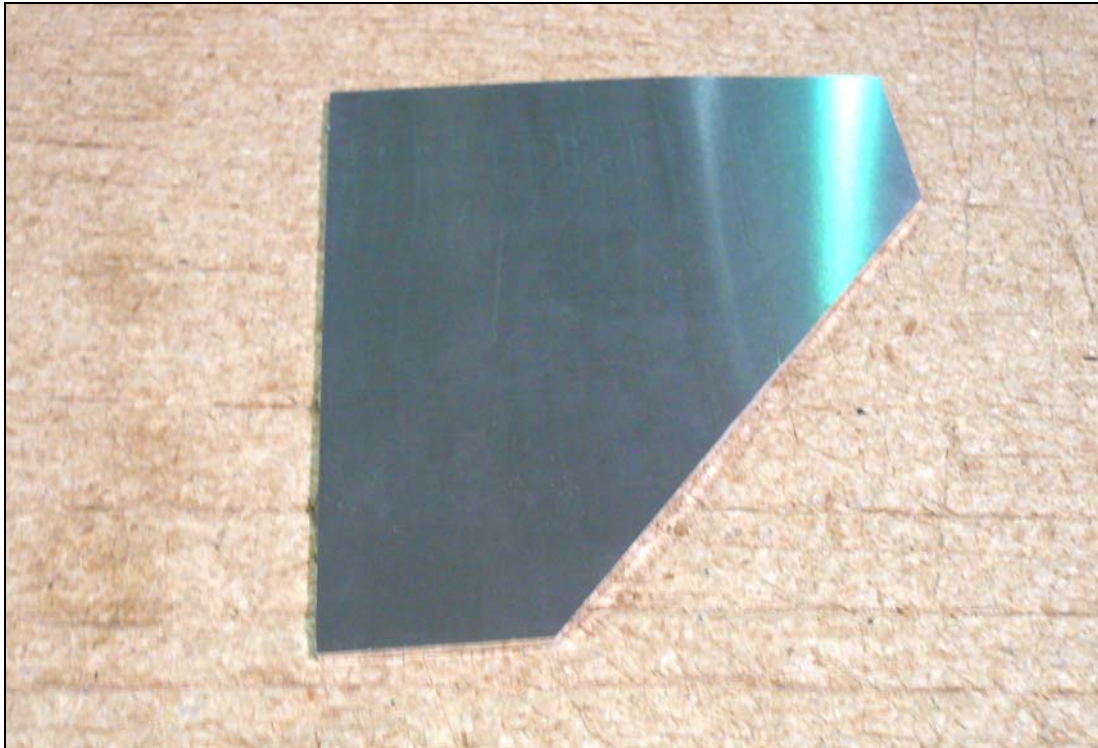
Use a #20 drill bit to back drill through the Front Seat Panel into the Center Spar and Cleco.



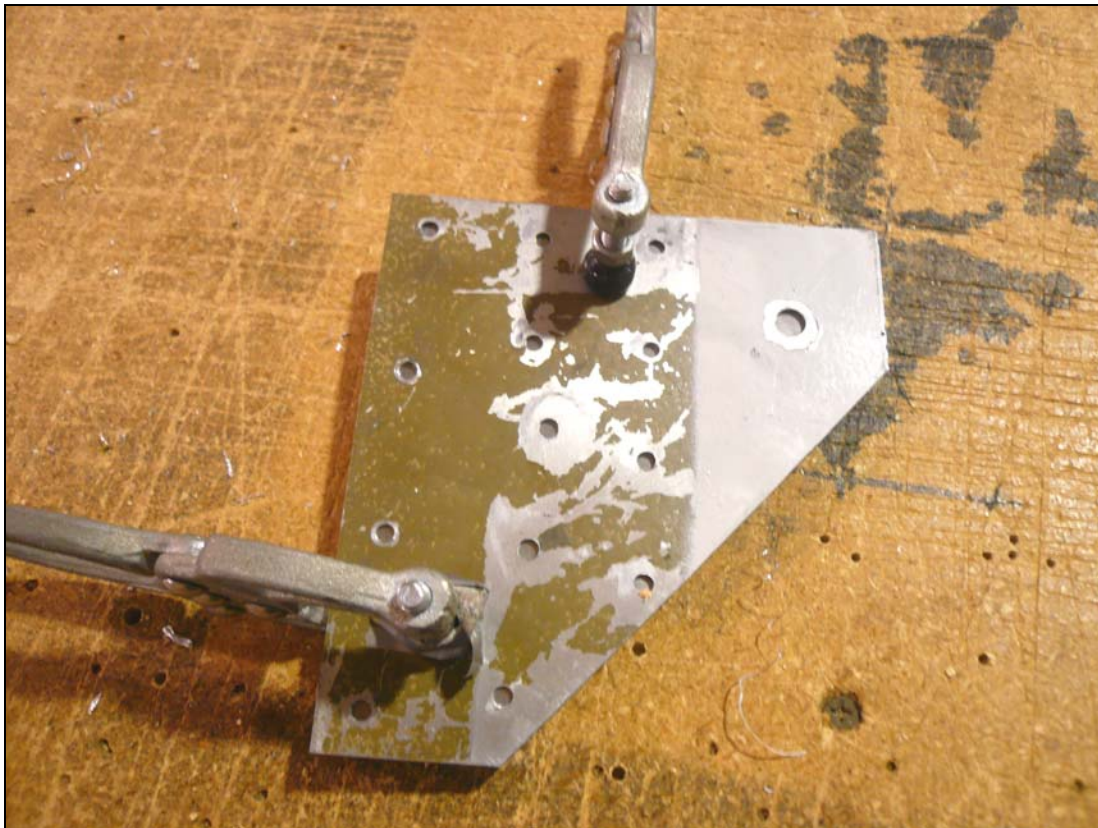
Cut a Z Channel 455mm long. Draw a center line on the flange of the Z Channel and mark a rivet location 10mm from each end. Evenly space rivet location approximately 30mm apart between the first and last rivet location. Use a #30 drill bit to drill the holes in the Z Channel.



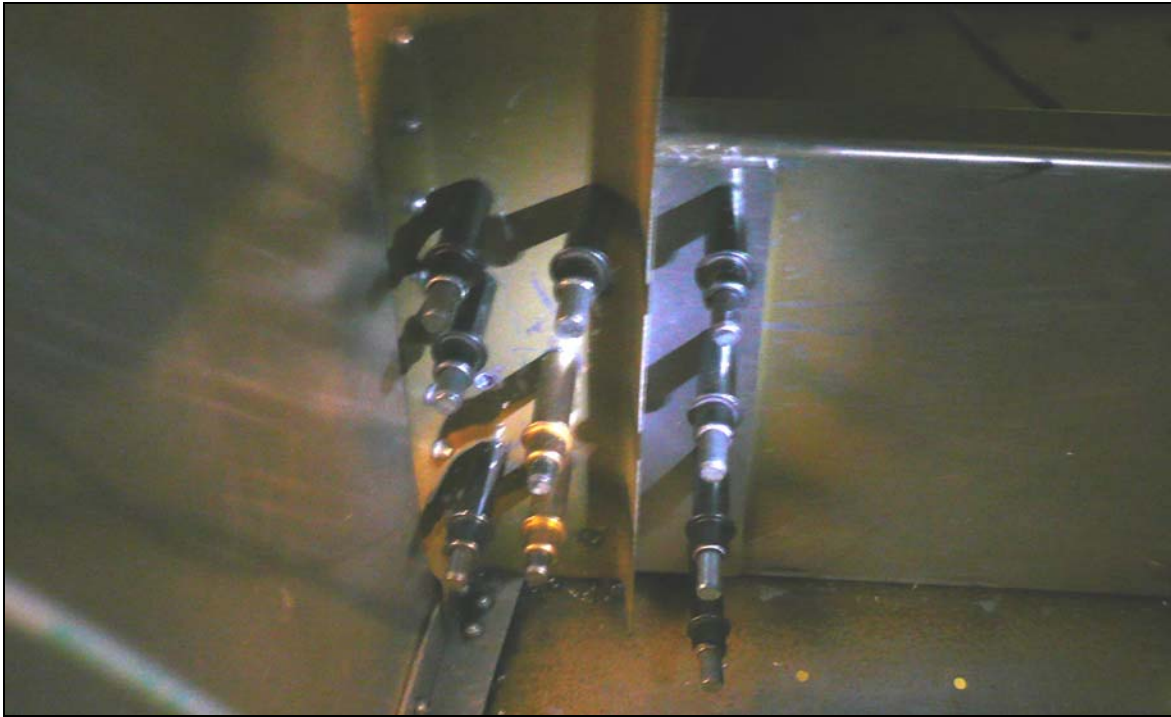
Position the Z Channel in the Fuselage and Cleco the bottom hole to a hole in the Side Skin near the Upright. Set the top of the Z Channel at the vertical L Angle. Back drill through the Z Channel into the Side Skin and Cleco.



P/N: 6ZU3-3
Attach Plate



Remove the old Attach Plate from the Fuselage. Clamp the replacement Attach Plate to the old Attach Plate. Use a #20 drill bit to back drill through the rivet holes into the replacement Attach Plate and Cleco as the holes are drilled. Use a #12 drill bit to back drill the two AN3 bolt holes. Back drill the AN5 bolt hole with a 5/16" drill bit.



Slide the replacement Attach Plate into position in the Fuselage. Cleco the Attach plate to the Upright Channels and the Rear Frame Channel.