

Modified Strut & FLG Fairings for CH 801

NOTE: My first 801 with the scratch built covers got totaled so I don't have any pictures except of one surviving round leading edge prototype.

If you have already bought the strut cover kit and don't want to make new strut fairings, skip over the fabrication part that follows and just go to the section on closure.

If you are fabrication your own from scratch proceed:

- 1) Go to Lowes or Home Depot (or someone who does vinyl siding) and buy 16 feet of 2 foot wide pre-primed aluminum strip used to fabricate fascia and wrap treated wood. Or you can do what I did and buy a whole coil of it and have plenty left over to make spares and use for other non structural applications. It is strong, workable and simply won't corrode.



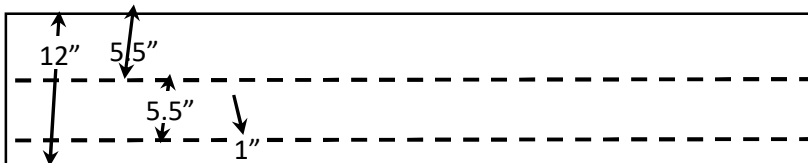
Amerimax Home Products

24 in. x 50 ft. Bright White Trim Coil

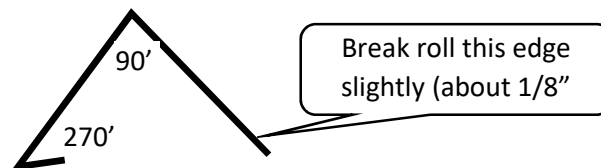
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\$65.93 /each

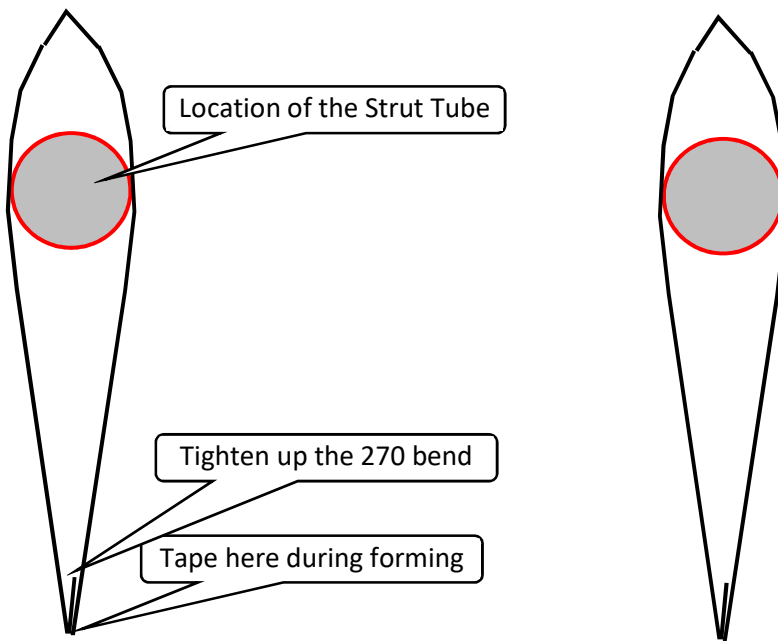
- 2) Wherever you source it, have it slit into 4 foot long X 12" wide pieces. You will need 8 of them for the wing struts if you don't screw any up. I made a few extra to experiment with.
- 3) My original design had a rounded leading edge, which I had to make a wood and pipe die to form the front edge. It was too much work, too easy to screw up and of dubious benefit, so I went with the sharper leading edge.
- 4) Layout each 12" x 48" piece for fold lines as follows: (sorry, I couldn't get the freaking arrows to go straight)



- 5) Then find a 4' long sheet metal brake or cobble your own up out of angle iron. Bend each piece so it looks like this on end. The break on the one edge is so that it lays flat (like the edge of an inspection cover).

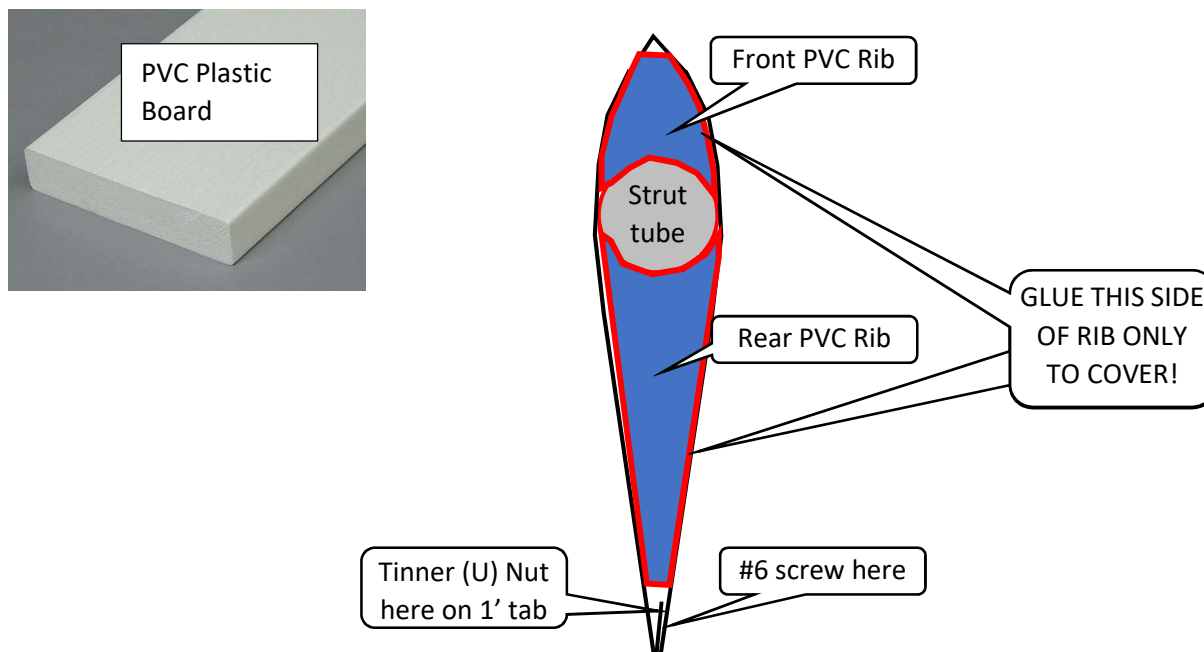


- 6) Get a 4 foot piece of 1- 1/8" tubing (~same diameter as the lift struts). It can be plastic, metal or even wood dowel. I had a piece of old junk TV antenna tower tubing like you can get at any Home Depot or Lowes. You are going to use this to wrap the bent aluminum around to form the airfoil. It is easy to work with hand pressure. The easy way to do it is to tape the two back edges together and work it with your hands. It will look sort of like this:



- 7) Next make the internal spacer ribs out of some of the 1" nominal expanded PVC plastic trim board you can get at Lowes or Home Depot. Great stuff: Light, non corrosive, glues easily, easy to fabricate with a saber or jig saw but cut with a slow coarse blade to prevent the stuff from melting back together from blade friction. You make a leading edge and trailing edge rib, just like the ribs on an 801 wing. Use the final shape of the folded sheet metal on end to rough trace a master rib set. Sand them to final shape (belt sander works great) so that they are a nice snug slip fit inside the strut cover. It helps to make the quick and easy if you cut the final shape into a piece of 1/8 plate, drill the center mark for the strut hole, and 2 small screw holes so that you can screw the template to the plastic board. Makes cutting a snap.

You will need 3 sets of ribs for each of the 8 cover segments. One at each end and one at mid span. I made my ribs in one piece then with a little hold down jig made out of the waste board from a rib and used a hole saw to cut them in to 2 pieces creating the curve to fit the strut tube. With a little up front work you can knock these out in an hour or 2 once you start cutting.



- 8) For Closure you have 2 options. I have done it both ways:

- a. With screws and tinner's nuts (U shaped slip on nuts) spaced about 5" apart and short broad flat head, blunt tip #6 sheet metal screws. When the above shape is bent the ribs temporarily in place, and the trailing edge squared up and taped, Mark and drill the locating holes for the #6 screws.

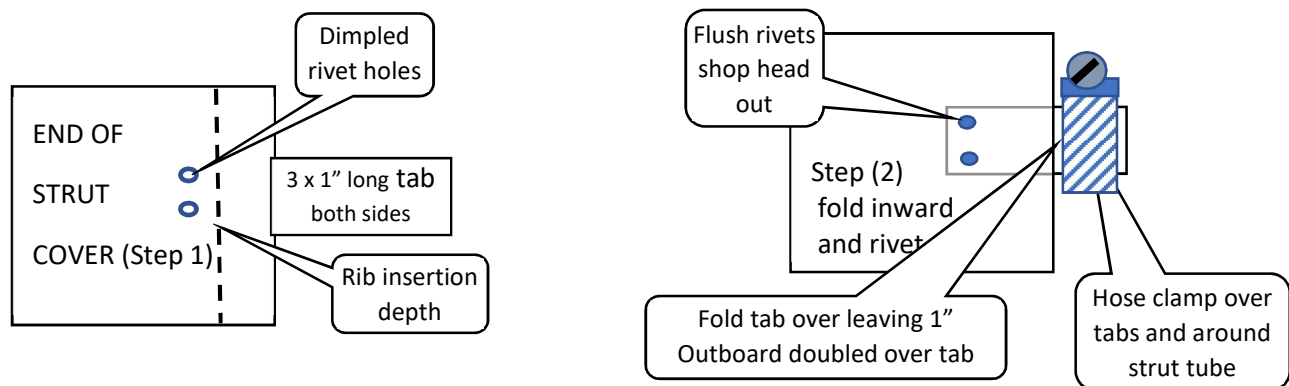


- b. With continuous light weight piano hinge (like an RV cowl). Attached is a picture. When you fabricate using this method, skip the 1" tab with 270° bend and don't roll the other edge. Keep both edges flat.

Of the 2 ways, I prefer the hinge because it is super secure, strong, less steps to make it, easy to remove, and not so sharp to bang your head on. Also it can be slightly less expensive depending on what you are paying for screws and (U) nutplates vs hinge and standard rivets. One 1/8 lb bag of countersunk 1/8" 3/16" long rivets costs about \$4 and is enough to do 2 full sets with lots left over.

You can apply this hinge and rib method to your existing factory kit strut covers to make them less easily damaged and easy to remove. I don't like the idea of having loosely fitting aluminum fretting against my lift strut with no non-destructive way to inspect for corrosion damage. With the blunt round nose covers you only need the back rib.

- 9) To allow the covers to be perfectly aligned with the relative wind and in order to prevent the covers from moving, the ends have a tab on them that allows them to be locked to the strut tube with a hose clamp. To do this cut back the excess material on each end of the covers so that cut back area is final length, and leaving a pair of 3" tabs on each end. Fold and rivet the tabs as shown.



- 10) Before Mounting the covers, glue the ribs in place at the middle and end of each cover using GOOP automotive glue. (Works better than anything else, tough, flexible, and resists solvents). GLUE ONE SIDE OF EACH RIB ONLY! You have to be able to spread the cover open to install it. Tape them in place after applying the glue, then clamp them around the piece of tubing you used for assembly by installing screws or hinge pins as the case may be.
- 11) When all the glue is dry, Wrap some fuel cell tape around the strut where each rib contacts the ribs and under the surface where the hose clamp goes on to protect it from abrasion and ensure a tight fit. Spread each cover over its respective tube (there are 4 different lengths of them) bring the rear edges together and install the screws or hinge pins. You will have a nice tight fit but the covers remain able to be twisted for position.
- 12) Align the chords of the covers carefully with the relative wind. A streamer on the jury strut will help to identify the correct angle. Install the hose clamps and test fly to ensure least drag install angle and no heavy wing. (They are great trim tabs if you have a slightly heavy wing.)

- 13) After they are aligned and dogged down, make and install the strut cover to wing fairings, cover to fuselage attach bracket fairings, and fairings that cover the juncture at the jury strut. I mocked mine up out of heavy craft paper until I got them how I liked them then fabricated them out of the same material that I made the covers out of. Attach leave a screw out or leave out the last rivet in the hinges on each end of the cover so that you have a connecting point for the end and juncture fairing screws to anchor to.
- 14) For the front landing gear strut cover, just make a larger sized, stubby version of the same cover as used on the lift strut. You need only have a tab on the top end. They will be cut out of sheet of metal about 16' wide and about a foot long. Make sure that the top of the tabs and clamp fall right below the strut stop ring. The bottom end is secured after test flight by a 8-32 screw through the tangent point of the cover and drilled and taped into the bottom of the FLG strut tube.