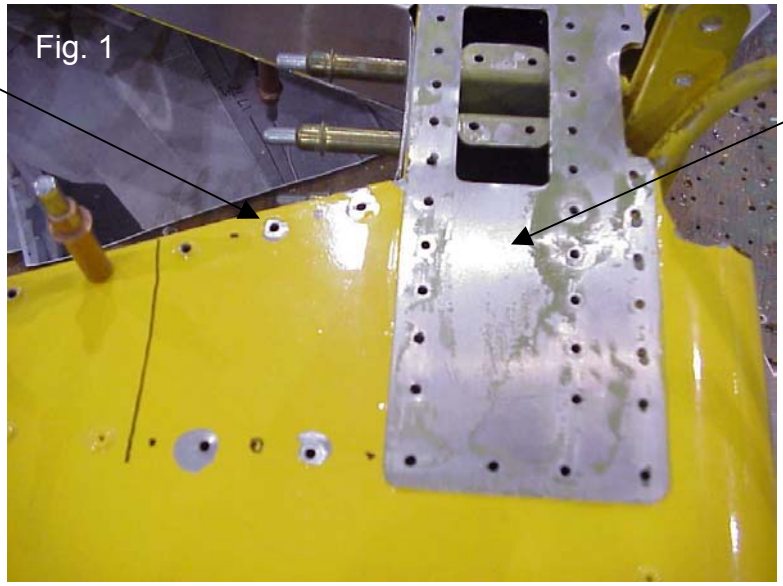
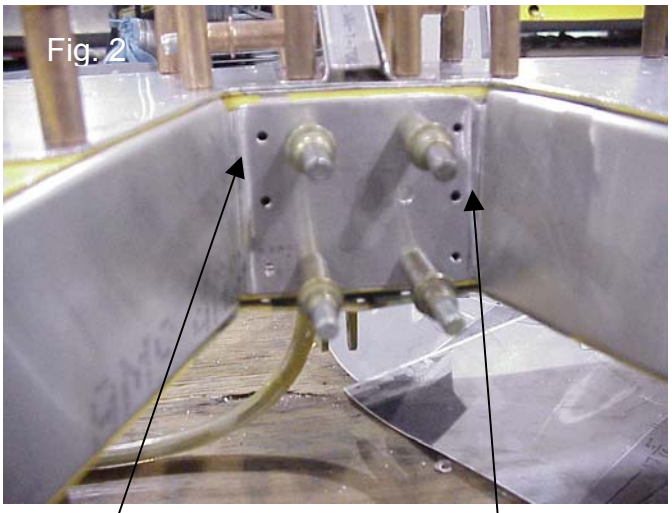
SR3500 modification kit-ELEVATOR
*****Indicates step only required if modifying an existing airframe.***
*1/ Drill out rivets in top and bottom center doubler and remove.
*2/ Drill out rivets holding root ribs to skin and to center stiffener. Remove ribs. Fig. 1.



*3/ Lay the new doubler (EL-451) in position, and note which rivets must be removed in doubler area. Drill out these rivets.
4/ Locate EL-450 ribs. Ensuring they fit snugly into the trailing edge, mark where they will be cut and bent as shown in Fig.2.



EL-450 flange trimmed- Bend here

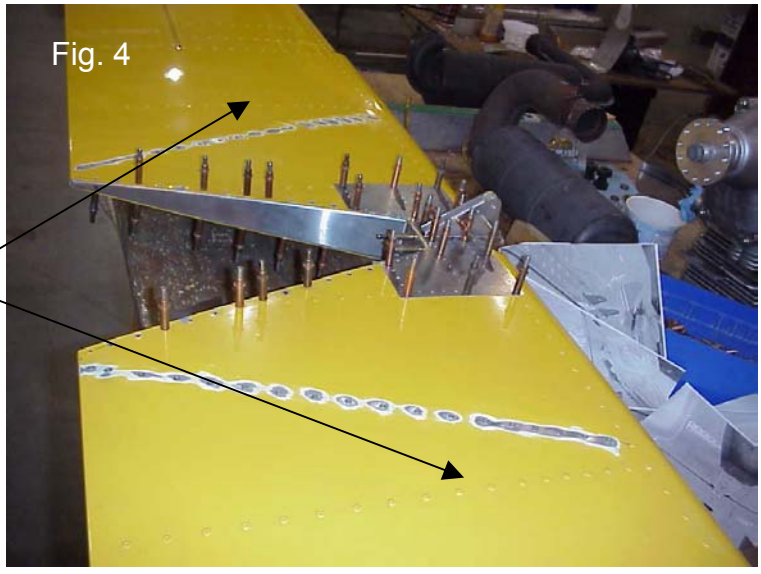
Tab trimmed here, tabs laid on top of each

EL-450 fitted tight into trailing edge.

Drill two 3/16" radius holes at the ends of the bend line you marked on the ribs, cut off the flanges, trim the tab that's left, and bend so it fits neatly across the center stiffener rib. Remove, file smooth and deburr.
5/ Locate two more EL-450's.These have to be fitted diagonally as shown in Fig. 3.

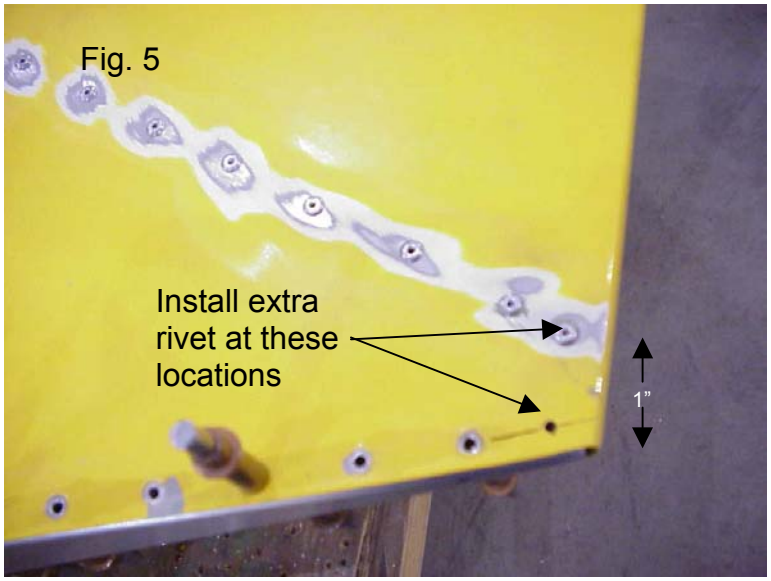
6/ Open up the leading edge at the rib position indicated in Fig.3. Hold apart with wood blocks. Plot out and drill 3 new #40 holes on the main spar to hold the EL-450. These rivets are 1 5/8" inboard of the existing 3 rivets, and the same spacing. Transfer the line you drew on the spar for the three new spar rivet holes up onto the skin.
NOTE: Later skins may have the diagonal rivet line pre-punched.
7/ Using a strait edge, draw lines connecting the rivets holding the existing inboard ribs. Fig. 4.

Draw horizontal lines connecting rivets in these two rib locations to transfer rivet spacing to new ribs

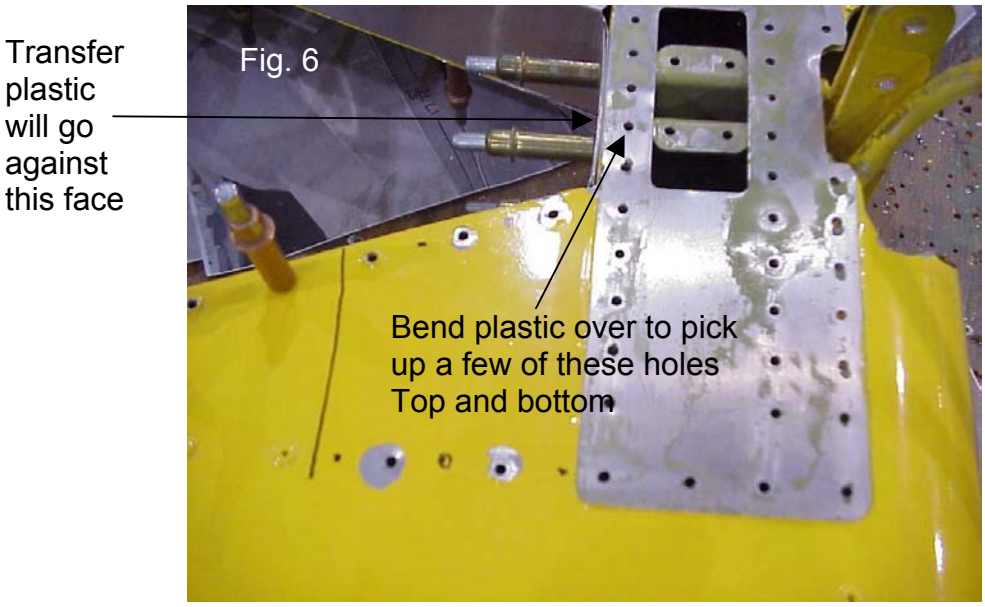


Where the line you transferred from the spar to the skin bisects the most forward of your rivet spacing lines will be the position of the first rivet hole for the EL-450's. Drill #40.
8/ Measure out 1" from the root end of the trailing edge and mark. Draw a line from this mark to the #40 hole you drilled in step #7. This will be the rivet line for the EL-450. Where this line bisects the final (aft) rivet spacing line, drill #40.

9/ Bend the spar flange on the EL-450 so it fits to the spar , draw a line down the center of the top and bottom flanges (these will point to the root) and cleco in place to the spar. (the spar flange already has three #40 holes).
10/ When you can see the centerline through the two #40 holes you drilled, drill into rib and cleco. Drill #40 at each rivet location.
11/ At each of the of the original #40 holes you drilled, using a long #40 bit, drill vertically down through the lower flange and through the skin. Joining these two holes on the lower skin will give you the rivet line for the lower flange of EL-450.



12/ Drill holes out to #30, remove ribs, deburr, and rivet in place with RV-1410 rivets, installing extra rivets as shown in Fig. 5.
13/ Using a piece of transfer plastic trimmed to fit into the center gap, against the stiffener rib (EL-304), secure it top and bottom to a few of the doubler holes, and transfer the four #11 holes and 6 #30 holes into the plastic. Remove plastic. Fig. 6.



14/ Ensure trailing edge is strait, and insert the trimmed EL-450 root ribs into place, leaving them slightly proud of the skin. When you are happy with the position, drill through the existing #30 holes into ribs and cleco.

15/ Re-install plastic over center tabs of ribs, and transfer holes into tabs. Cleco. Fig. 7.

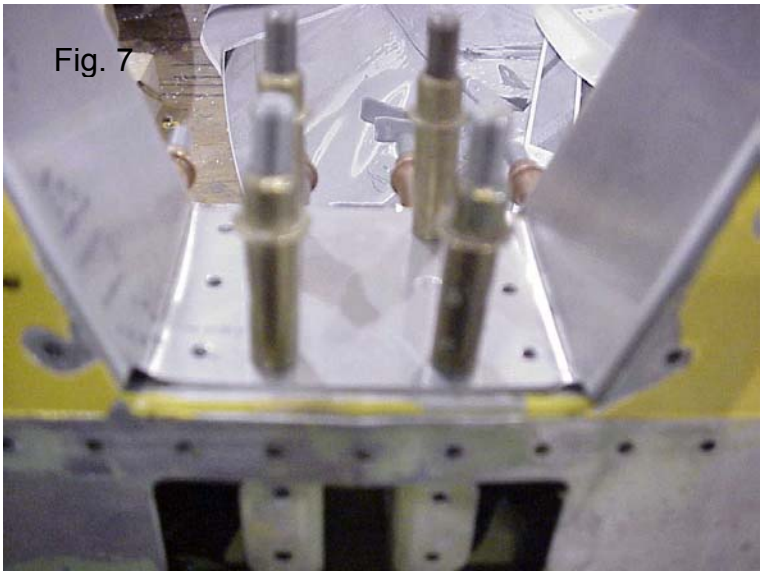


Fig. 7

16/ Cleco new doubler EL-451 into place. Drill out holes in doubler to #21. Drill out a #11 hole 1" below the ¼" hole that takes the cable bolt in both horns. Locate horn gusset blanks EL-454. From each or these you will make up two gussets. Cut, and position against horn. Fig. 8.

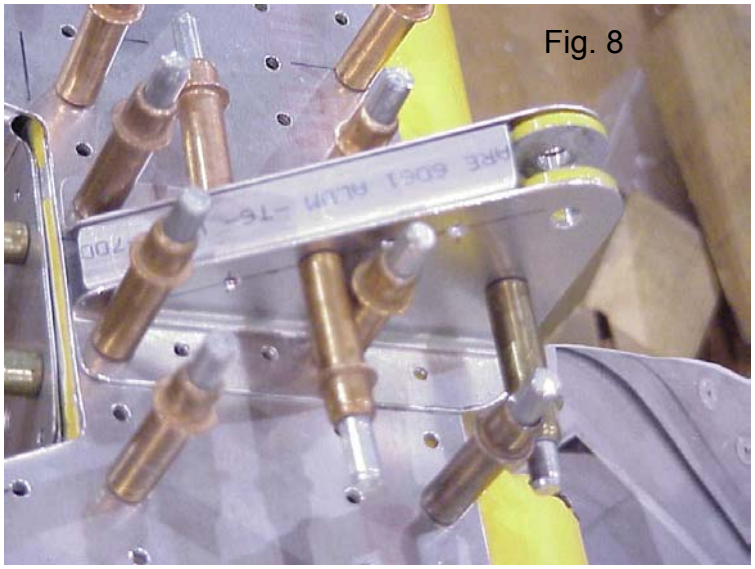


Fig. 8

17/ Carefully mark the position of the gussets onto the doubler by tracing round the flange. Make sure doubler is tight up against horn. Remove doubler, and ensuring gusset is clamped in position, back drill through holes in doubler into the flange of the gusset. Cleco assembly back to elevator. You need to make up two gussets top and bottom. Trim as in Fig.8.

18/ Back drill ¼" cable bolt hole and #11 hole below.

19/ Cut a piece of tubing EL-453 to length, cutting appropriate angles at either end. Slide into position. Fig. 8. Drill five equally spaced #21 holes through doubler into tube. Cleco.

20/ Locate strap EL-452 material. Trim to shape, as in Fig.9. Slide this UNDER the tabs of the EL-450's, and back drill the holes. Add two more #11 holes between the existing ones.
21/ Slide the strap out, cleco into place on top of the tabs, and mark for the bend lines.
22/ Bend the strap to fit, cleco back into place.
23/ Drill four equally spaced #11 holes through the strap into the tube. Fig. 9.
24/ Take assembly apart, deburr, and rivet together:
EL-450's to skin with RV-1410; EL-450 center tabs and strap EL-452 with 6 X RV-1410's and six RV-1613's; center doublers EL-451 with RV-1512's.
The #11 holes in the horns take an AN3-10A bolt and AN365-1032 fibernut, with AN960-10 washers used to space out between the horns.
Horn gussets to tube and center gusset with RV-1512's; strap EL-452 to tube with RV-1613's.
Repeat above steps for the other side of the elevator.