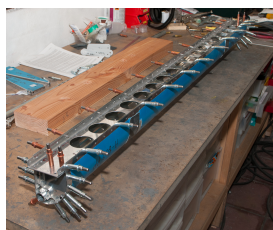


Only little matchdrilling work was remaining from the last session.

As a matter of fact only two holes.

For these, you need to disassemble the aileron and remove the aft skin and recleco the nose skin to the nose ribs and the counterbalance pipe.

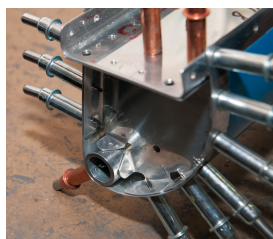
The hole exercise serves to make two holes through the nose rib in the counterbalance pipe.



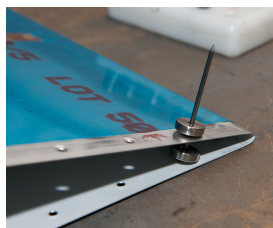
At first, the explanation in the manual seems little complicated but it is really simple.

What you do is remove one of the copper clecoes that hold the nose rib to the spar (the missing one in the picture).

Then use a 6" drill or longer to insert from the rear side through the spar and drill the little nose tab that touches the counterbalance pipe. Only one hole is needed. The other tab has no rivet in it.



Next, I dimpled the holes in the skin. As usual, there are some difficult ones just like the ones near the trailing edge bend. You can do this easily with the pop rivet dimples.



Then I edge rolled the skin of the nose rib up and down side to obtain a perfect match with the trailing edge skin. The nose rib overlaps the

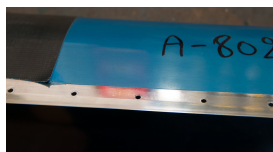
trailing edge skin.

You need to edge roll before making the dimples. Once the dimples are made, the rolls on the plier jaws can't slide over the metal as they are too wide. I tend to forget that often so I made a big note for it.

It was the first time that I used my new cleaveland plier-roler tool. This one is much better then the rolling tool with the little white rolls from avery.

It takes some exercise on how much pressure is needed on the jaws but you can get real nice result with this. The pressure should be set really low.

A very light bend is more then enough. Just make sure you hold the pliers thight so that they don't slip off (ask me how I know this ???) Got a little bend bobble on one of the nose skins but it came out pretty ok in the end after rivetting.



this is all you need as bend. at the trailing side of the nose skin.



Another difficulty was to dimple the trailing end of the outer ribs

I remembered from the elevators that I made this female dimple side in a fat steel bar. This fitted ok and whacked the rib with the extention from the c-frame and the male die on it. It doesn't make a perfect dimple, but it's more then ok to make the rivet sit flush with the skin.



Then, I had to countersink the counterbalance pipe for #30 CS4-4 pop rivets.

I installed the countersink cage in the bench drill and installed my aluminum jig on the bench drill table to support the pipe. This also worked really well.



Also the skin that where the countersinking will touch needs to be dimpled. This is a bit tricky for various reasons. First, you can not do it using the c-frame, you can also not do it with the pop dimpler because the female die on the inside will deform the skin.

The best method to do this is to cleco the countersunk counterbalance pipe on the skin and support the pipe by a block of wood. Then remove a cleco and use the countersink in the pipe as female die and whack the male die with a mallet, in the skin.



Here is the result from the top side.

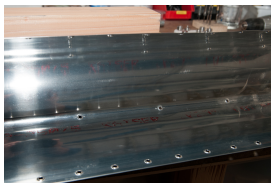


The pop rivet fits nicely in. The skin will deform slightly upon setting the rivet in the countersink so that the pop rivet will sit perfectly flush. At least, that's what they say. I haven't tried it

yet.

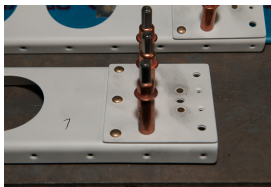


Here is a look on the skin from the inside. As you see, the dimples don't look as perfect as with the c-frame, but it will work.



On the next saturday, I managed to prime the remaining parts, so I was ready to start rivetting it all together.

First you rivet the reinforcement plate on the spar and also the nutplate on the inboard side.



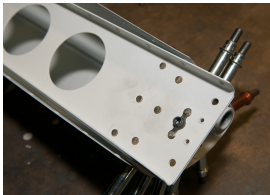
bottom view



Then pop rivet the nose rib to the countersink pipe. You need to bend the tab a little to enable you to set the pop rivet. Various techniques are possible such as slightly bending the rivet stem and using the grinded off nose of the manual pop rivet puller.



Then rivet the nose rib to the aileron spar web. This can be done with the pneumatic squeezer again.



Then comes the best part (cynical) . Or should I say, the most difficult part of rivetting the aileron.

You need to rivet the top sides of both the skin together along the top side of the spar. Fortunately, co-builder Hugo had some time to help me out with this.

We found that the best technique would be to clamp the top (flat) side to the workbench, just overhanging where the top rivets will be shot and clamping the hole assembly to the workbench. (as illustrated in the picture below)

Shooting from the bottom and bucking from the top. Use some transparent tape to hold the rivet in place when you reach for the gun.

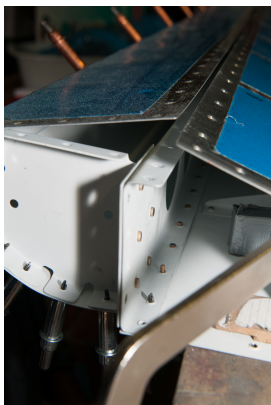
The bucking of the rivet is the fun part. Notice the very tight area between the two skins in the picture. You need to somehow get your hand in there and buck the rivets. Prepare for some red lines and metal marks on your arm. I found that inserting the hole lower arm section or my right arm made it easier. Try not to stretch the material too far open again, the repeated movement hardens and weakens the aluminum.

It really looks harder as it is. Only the rivets where the stiffeners meet the spar are a bit more difficult.



This is how it looks from the inside. The third rivet had still to be set in this picture. The fifth one was a bad one that we drilled back out and replaced.

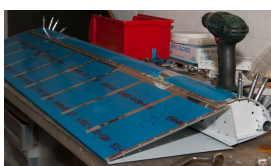
Don't rivet the last one on either side, This is where the ribs will be inserted.



After the hole row was done (in about 2 hours), Hugo took a close and critical inspection at the work of the buckler (being me :))



And here is how it looks like when turned around. I'm pleased with the outcome of the skin joint.



aileron assembly - 14/10/2012

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It will all be downhill from here for this elevator...

But... oh no, there is another one, we'll do that arm hurting exercise once more on the left elevator in the next session.