04/08/2018 - F-6111 ribs - 4h

Category: 3.9b. Top Fuselage
Published: Tuesday, 07 August 2018 13:23
Hits: 1116

Today I decided to start on the F-6111 stiffener ribs. You only get these ribs if you are building a slider like I am.

When you look in the manual, it basically tells you that most of the information has to be found on DWG-41. When you look at DWG-41, you have to search really hard to find any reference of the F-6111 ribs and there's even less information on the plans on how to install these. So I decided to search other builder sites and vans airforce for more details on this and found out that there also isn't much to be found on the web. Found some info from some builders sites but the descriptions on how to avoid messing up was rather high level with only some pictures to support the process. So here's my attempt to make a more detailed description on how to avoid ruining the ribs.

Before I got to the F-6111s, I clecoed the top skins back on and finished couple of gun-set rivets on the canopy decks.

F-6111 is one of those parts that gets often re-ordered because of a screw-up. Mostly due to the fact that people start cutting/trimming the ribs before trying to install.
The manual states: "trim the F-6111 ribs to length". This is often misunderstood and builder start to cut back the length of the rib in order to fit on the skin and overlap the hole in F-705.

Let me be very clear: There is NO reason to shorten the rib ! You won't believe it at first, but the rib pops in perfectly lengthwise without any cutting to be done. So put your snips, bandsaw, nibblers back where you found them and continue reading how to properly install these"µ

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The pictures shown below are on the pilot side.

First, draw a centerline on the outboard side of the F-6111-L rib.

Then I adjusted the flanges of the rib slightly so they are more or less perpendicular to the web.

As there will be some friction of material close to eachother, it is safest to put some masking tape to protect the longeron and the F-705 web.

First thing I did was trim the lower outbound side of the rib so that the rib lays nicely against the longeron and the line is showing through the holes. This defines the angle at which to trim the outboard flange. You could also measure the angle between the pre-drilled holes in the skin relative to the longeron and use that angle to mease the flange of the rib. But it's not all that critical as the lower side of the F-6111 does not touch the longeron. So I did it by eye-balling it.

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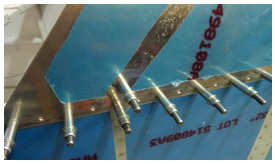
Hold your angle in that final position near the longeron and now look on the other side to see the centerline on the flange through AT LEAST the lower 2 pre-drilled holes in the skin.

Now drill that lower hole and put a cleco.You won't believe it, but this is the most difficult part of the process. Look 5 times before you drill because it defines the final position of your rib permanently



Now go back to the hole above and see if you can still spot that centerline in the center of your predrilled hole. Probably yes. Drill the second one and put another cleco.

Move your way up one at a time and keep checking that the flange butts nicely agains the inside of the skin.

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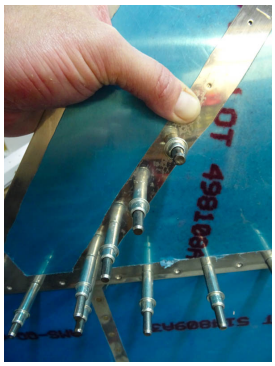
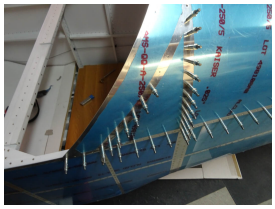


I was able to drill 7 holes before I started getting dificulties seeing the centerline of the flange in the next hole.

When you do get problems, check the diretion the line goes into. If the line moves left of your hole, you may need some fluting before the hole to get the line back to the center.

If the line moves too much to the right, then angle of the flange and web may be too thight and you may need to massage the rib a bit wider to get the line back.



At some point (probably last 3 holes), the line will not come back as the untrimmed end of the rib blocks moving closer to the F705.
Now have a good look at the angle the rib makes towards the F-705 and how deep you need to trim to allow the move. Trim a little at a time, cleco it back and trim a little more.
I took mine appart at least 15 times to get the final trimming done.

Try always after trimming to see your center line int he next hole, as soon as you see it, drill it and put a cleco in and move to the next one.

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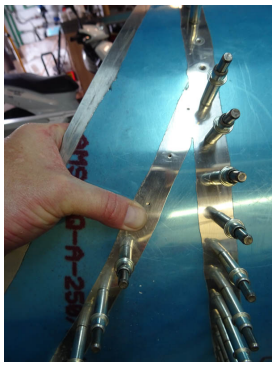
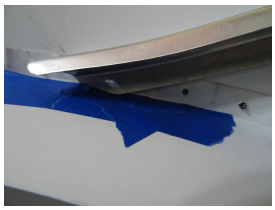


Now trim back even a bit further and keep going until you reach the last hole which is the intersection of rib and F-705 flange.
By now, your trim back will be almost complete and you may have already has to trim back a bit on the inboard flange of the rib. In the end, the goals is that both flanges of the rib are trimmed and that the web of the rib lays almost flat against the F-705 web.



Before cutting the last hole, draw the hole location on the flange while it's installed, remove and check.
On mine, I couldn't get it much more closer than this. The hole in the F-705 flange is not fully in line with the other pre drilled holes so I assume it's quite normal to get this.

I finally drilled it and it was slightly more forward of the centerline, so on the safe side, other direction could have led to edge distance problems.

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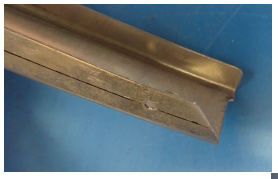
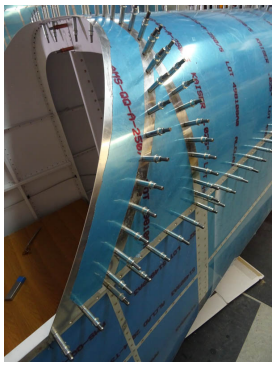
Now that this final hole is in, you can fine tune your trimming on the longeron side and on the top side.

here is how my longeron side looks like upon completion.



this is how the top side should look on completion.

Rib installed outside view



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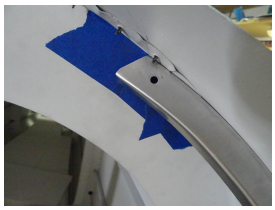
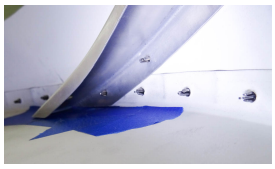
Inside view bottom, as you see, the rib doesn't touch the longeron.

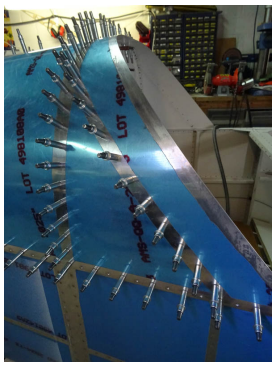
On the top side, the top side of the web of the rib almost touches the web of the F-705 bulkhead.



Here's a shot from the inside.



Did the same on the passenger side and once you know what to do, this ones goes 5 times as fast.



Overall very satisfactory result. here's a shot with both ribs installed.

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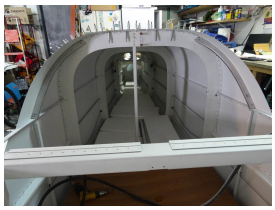

took it appart, deburred all holes. Dimpled the ribs and the skin.

Measure on the top side for edge distance and this is plenty for AND426AD3 rivets.

Good luck !

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