Aft fuselage matchdrilling - 14/09/2013

Category: 3.7. Tail Assembly
Published: Monday, 23 September 2013 08:55
Hits: 1993

I was matchdrilling the aft fuselage and got to the point of drilling the left side skin to the J-stiffeners.

From time to time... one gets a little excited while working on the airplane. And it often leads to misery...

During the build process, every builder gets through a moment where he drills a hole in a location where he actually didn't want it.

I really thought you have to be a complete nutcase and very negligent to achieve that but look at what happened to me today...

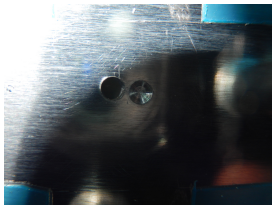
tada... a missdrilled hole...

Actually, I realised halfway through that I was not in the right location and pulled the drill back.

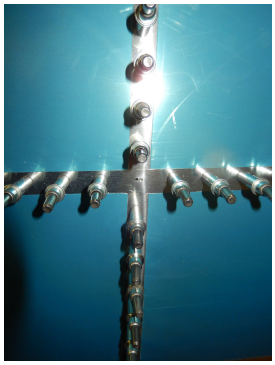
It went just barely through the skin and not in the J-stiffener.

This is how my phantom hole looks like.

It's just next to the real pre punched hole and right at the intersection of fuselage skin, J-stiffener and F707 bulkhead.



Nevertheless, I drilled the real hole to full size and left it as is.



I think the holes are too close to eachother to drill through the misdrilled hole and dimple and rivet both. The dimple just wouldn't work as they are too close.

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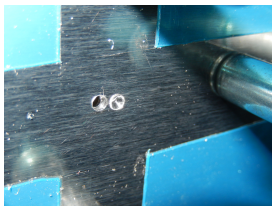


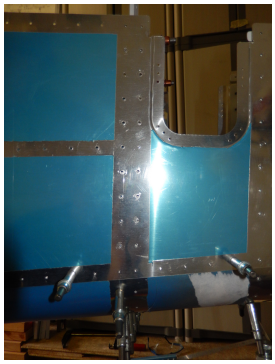
I decided to call the mothership and ask them for advice how to deal with this.

Next, I continued matchdrilling all bulkheads and skins except for the F706 and top row at the longeron as the manual asks for.

The final part is the rear end of the aft fuselage. This part is a real pain in the butt.

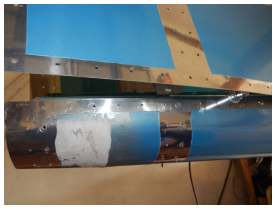
The holes don't align at all. Especially the double pre-punched line at F711 to skin is really bad.

The problem comes as a combined missfit of the F779 tail cone skin, the side skins and the F711 and F711 bulkheads.



First , I tried to drill one hole only in the tail cone skin and the j-stiffener. This at least allowed me to run a cleco through that aft skin.

I drilled that with an angle drill as shown below.



It was better but still, the tension on the clecoes was pretty bad and the holes still didn't line up well. You can clearly see the mistmatch on the horizontal row between bottom skin and side skin in the picture

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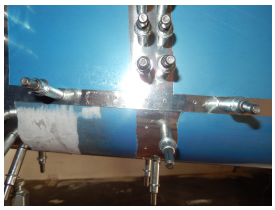
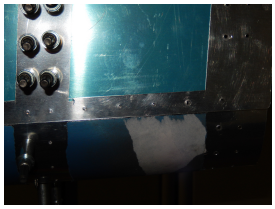
below



Finally I took the whole thing appart again and start massaging the F779 tail cone skin hoping on a better fit.



The match looked better after reforming the tailcone skin

I decided to drill the J-stiffener first completely to the tail cone skin. That way, I can cleco the hole row together once the side skin comes on.

And Yes, finally, it came together better. But... it's still with a lot of pressure on the clecoes.

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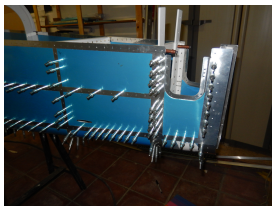
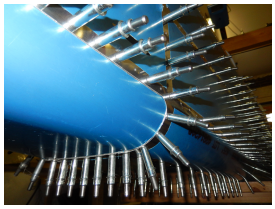
I decided to drill this as is now as I don't see how I can make this any better.

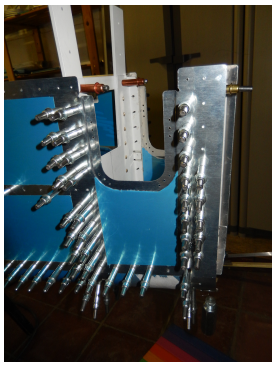


The bottom skin fits really nicely in between the F778 aft bottom skin and the F773 side skins.



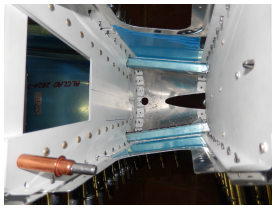
Then I matchdrilled the last row of rivets on the F712 bulkhead.

It would have been so much easier if Vans would have done the same on the F711 and leave the back side of the bulkhead flanges undrilled.



Then enlarged the tooling hole just behind F711. This hole is used to give access to a nut that holds the tail mount spring. It has to be just big enough to put a wrench socket through. I enlarged the existing hole with the needle step drill and then with my bigger step drill. It takes out part of the rear tab on the F711. That is normal.

A view on the inside where the tail mount comes.



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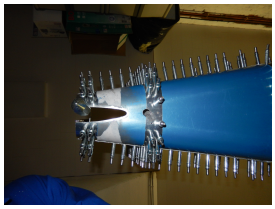
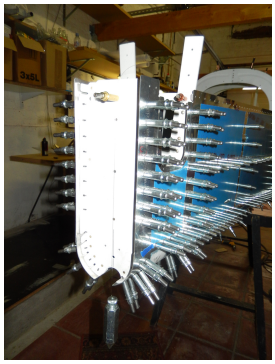
View from the bottom



A view from the back... you can also see my plumb bob here that I used to align the aft fuselage.



Finished matchdrilling.

Next step... deburring all those holes, dimpling, deburring sides of the skins,...

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