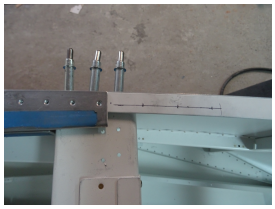
# 07/07/2017 - canopy deck and firewall gussets 1 - 4h30

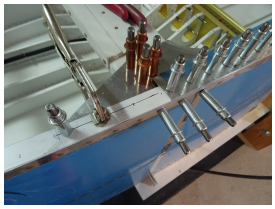
Category: 3.9b. Top Fuselage
Published: Tuesday, 11 July 2017 11:42
Hits: 1770

Continued on the canopy decks and the F-757-S for sliding canopy.
In the previous session, I drilled these to through the forward side through the holes in the F-721B canopy deck.

Next step was to mark the locations as mentioned in Detail A of plan DWG25.
The detail A doesn't mention any dimensions for distances. You will find these on the detail image for cutting F-757-T for tipup canopy.
9/32" are required from the side of the longeron for edge distance and then you measure 1/4" from the aft end of the F--705-F channel.
This requires to remove the F-757-S temporarily.
From that point, measure twice 1" 7/32. I guess the positioning here is not all that critical as long as sufficient edge distance from side and aft end of F-757 is ok.



Clamped back in place and drilled the first hole to #40.



Then continued with the rest at #40 and finally used some new drills I bought from PANAM from #40 to #30.

These special drills are really great The tip is a pilot drill of #40 and the drill enlarges to #30 in a single step. They also have them in larger sizes and there are even reamers with this step principle.
Really cool stuff.

Here the 3 holes are drilled to size.



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Repeated the same on pilot size and then started working on the F-695 forward fuselage gusset.
Earlier this week, I made some measurements on the part to lay out the rivet pattern.

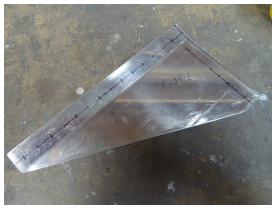
***WARNING: I made a mistake on drilling the gussets... will explain the correct method "according to me" to drill the engine mount brackets and the firewall gussets in a future article.*** (see 14/07/2017 article)

Measured 5/8 lengthwise from the front and then divided the length until end - edge distance by 13. This gave me the length for spacing to get 14 holes.
Well, this was my first mistake of the day... but didn't know that yet

What you should do, is take a bit less spacing on the first 10 rivets as these are the ones that also go through the engine mount bracket and you end up with an edge distance problem on the engine mount bracket end if you measure my way.
So make sure to check edge distance of the 10th hole with end of engine mount before drilling.
Steel is more forgiving on edge distance but better to measure differently if you still have the change.

I also question if the 7/16 distance from the length side is a good idea. You could go wider here ensuring that you still have enough edge distance on the other side (inner side of the longeron). Having less there will give you more spacing on the engine mount bracket. You'll see why in a minute...

In my case I drilled and now my hole in the longeron is defined which gives me no more possibility to correct unless I re-order and repeat all the work on the longerons. Which is a big NONO...





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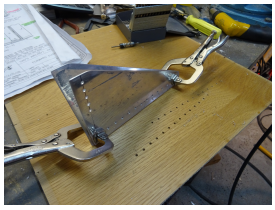
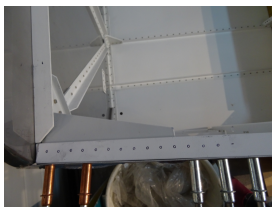
In the picture above, you also see a line on the firewall side. This is the part that I need to grind off in order for the firewall to rest flat horizontally against the firewall.
Then I drilled the holes and copied them on the other gusset.

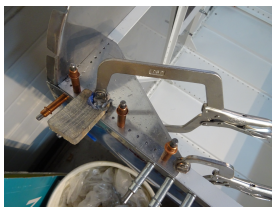


Holes drilled

I clamped and made some markings of the holes with the pen and removed it again.
The edge distance on the inboard side looked great but in all my enthusiasm didn't think about the engine mount brackets.



I also had to make a triangular bend horizontally to ensure the forward end was laying flat on the firewall top angle. Without the bend, the gusset was too high and couldn't touch the firewall angle on the outboard side.
Then clamped the gusset bacj in position and drilled all the holes to #31 and finished them with a #30 reamer. Use lot's of boelube and slow speed as you will be drilling through steel.



Sides finished



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Bottom view... Damn... those holes in the engine mount look really close to the edge...
This is where I realised that I would have needed also to clamp the engine mount bracket top flange and pull it inward against the longeron.

I'll have to inspect that more closely and cold sweat breaks out...

I learned by now that if you feel you messed up, you need to step away and come back with a fresh mind... which is what I did at this point. I'll re-evaluate tomorrow morning.



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