Misc Tank work - 14/02/2012 - 12h

Category: 2.5. Fuel Tanks
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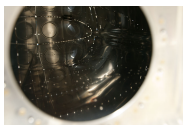
A big number on the time counter spread over 3 days for a lot small tasks that are time consuming but not really visible.

Long story short, here is the list of small tasks that were done

- Dimpled the W423 joint plate, + make holes for the nutplates
- Deburr edges off tank skin and baffle plate.
- Finish countersinking of the fuel tank skin
- re-drimpled the tank stiffeners with special fuel tank dimple dies.
- scuffed the stiffeners with sandpaper.
- countersunk the Z_brackets nutplate attach holes on the spar side.

I took this picture through the fuel tank access door to give a look on the inside of the tank without the inner ribs being installed. Actually quite a big volume and a lot of little holes to fill with proseal.



I worked also on opening the skin to spar attach holes for the 8R8 screw. These need to be drilled to #19 and then dimpled.

I worried a lot about the precision when using a #19 drill in the prepunched hole. You cannot just put the skin on the spar and start matchdrilling because the spar attach holes have already been countersunk and have nutplates installed.

So you need to do this drilling off the spar.

How to ensure that you don't mess up the holes then.

I tried first with a template in thicker aluminum but soon it seemed to be too much work, too unprecise and the holes vary in distance over the line. So not usable as method.

The better way to do this is first by enlarging the hole using the unibit step drill. This ensures that the center of the hole will not shift, your drill won't 'hack' into the material and create funny looking shape holes and you can bring it very close to the #19 size.

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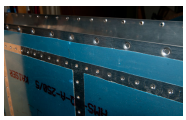
Then use the #19 drill to bring it to final size... this is then a simple in-out operation that is not so critical.

Once all are drilled, the plans say "DEBURR CAREFULLY !"
The reason for this is that with this size hole and this size dimple die, it is very critical that there are no mini cracks in the holes you drilled. If there are, pushing the hole open to #8 size dimple will create a big crack in the dimple. You don't want this so deburr with care !

The dimpled holes look like the picture below. The plans say to wack these with the C-Frame but I decided not to take that risk and to use the pneumatic squeezer as the squeeze is more gently then the hard wack with the hammer.



Then drilled the hole for the Fuel vent line. The fuel vent line uses the 4D elbow. I held the fuel neck on the skin next to the rib to have an idea of the height of the fuel vent at the fuel tank location. Then drew a line on the rib at that height.
From there, I made an approximation to locate the horizontal position more or less like on the drawing. This is less critical as the fuel vent line will be bent accordingly.

Then started messing with fine tuning the attach angle. I found out that my original angle was not sitting deep enough in the rib. Did some modifications and got a better fit.

This will anyway be a little back as the manufactured heads on the rib will intervene with the angle. It will move a little back anyway.

Then started worrying how precise this position must be. there are nowhere real precise dimensions on the rib for the angle. Then wondered how this connection is actually achieved.

Found a good description on Mike Bullock's site. : see the article here

Seems like the plate that connects is bend a little accordingly so

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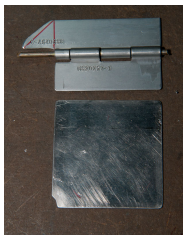
it's not critical to the millimeter. I think the fit is quite good now.

Then made some planning on where to put the rivets.The only thing to take care of here is that the nut of the flop tube fitting does still have enough place to turn. Many people make this mistake so take care.

Then made the fuel trap door.
This little valve will be placed on the bottom fuel inlet of the 2nd inboard tank rib. The idea here is to trap the fuel in the forward compartment while doing manoeuvres and to avoid that fuel sloshes back to the outboard area of the tank.
I started by cutting a piece of 1.75" square material.
Then cut a piece of the piano hinge for the flaps. The 6 foot delivered for the flap is way too long for the flaps (you only need 56") so you can safely take a small part from there.



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