Drill and install joint place W423 - 25/12/2011 - 3h

Category: 2.4. Main Wings
Published: Sunday, 25 December 2011 18:53
Hits: 2357

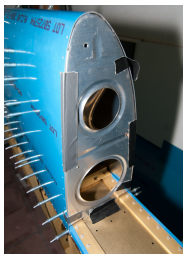
It's Christmas !

We had a family party yesterday evening and had a bit to much of strong beer so only got out of bed around 10am.
In the afternoon, got back to work and put in another 3 hours on the leading edge of the right wing.

A difficult part of the wing assembly was on the agenda: the installation of the leading edge inboard rib (W-408-1) and installation of the tank joint plate (W-423).
The joint plate will ensure a nice joint between the leading edge skin and the fuel tank skin.

It's not that difficult but it is easy to mess up and drill holes in places you don't want them.
Carefull measuring is required here. Once drilled, there is no way back. So I'll say it again... measure measure measure and measure again, then drill one and inspect the result.

I taped the leading edge rib in place. As long as the joint plate is not installed, the rib slides in easily. The plans show that the web must be aligned with the outboard edge of the W701 skin.
Some remarks here: on the top side, the flange is slightly wider then on the bottom side. Also, if installed this way, the holes are more towards the web then to the edge of the flanges and slightly out of center. I decided to go the plan's way and my holes are more located near the web as I wanted the web to fully support the pressures developed by the skin.

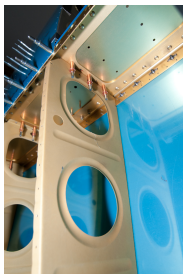


When all was positioned in place, I drilled the bottom spar to rib rivet holes 1/8" with the 12inch #30 drill. The location is too thight to use a regular drill size or angle drill.

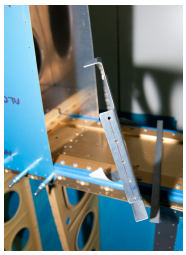
Phoca PDF

Drill and install joint place W423 - 25/12/2011 - 3h

Category: 2.4. Main Wings
Published: Sunday, 25 December 2011 18:53
Hits: 2357



Then removed the rib and deburred the holes on both rib and spar.
On the bottom side of the spar, the location is soo thight that you can't even get the deburring head to swivel in there. It is easier to use turn a larger drill bit like #12 by hand to clean the hole.
This is going to be fun when rivetting in these places upon final assembly.



Then slide the joint plate W423 between the W-408-1 rib and W-701 skin.This spot is real thight. I had prebend the joint plate using the skin to form it without the rib installed.

You also need to draw a line at 1/2" from the side of the joint plate. This will serve as guidance for aligning the prepunched skin holes on the joint plate.
Once pre-bend, the insert is easiers. Put the joint plate in first at +- the good location (seeing the red line at 1/2" on the plate visible through the prepunched holes in the skin.
Then insert the rib from the spar side. You will need to tap the top of the rib to get it in place. I used my hand and a soft rubber mallet for this.

When all is in place, it's time for fine tuning the location. I first measured 22/32" of visible end of the joint plate from the skin and secured it with gorilla tape.
Then worked the rib from the inside to get the same distance to the web of the rib. This ensures that both web and edge of skin are aligned and that the location of the holes in the spar flanges will be ok.

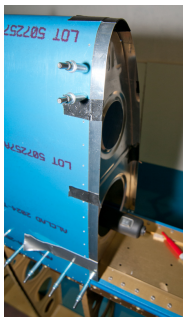
Phoca PDF

Drill and install joint place W423 - 25/12/2011 - 3h

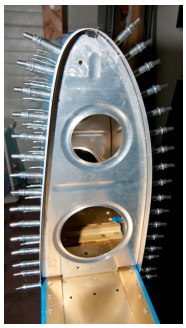
Category: 2.4. Main Wings
Published: Sunday, 25 December 2011 18:53
Hits: 2357

It's hard to measure this inside distance. I used the 12" steel ruler from avery and held the horizontal size along the skin.Then inserted it until the end of the ruler hits the first part of the web.(see picture below).
When inserting the ruler with the flat face on the skin, you will make a measuring mistake as the web bends heavily at the flange. So think twice and measure and remeasure before drilling the first hole.

Then I drilled the first two holes, from top of the rib towards the spar and inserted cleco's as I went.



Continue drilling and measuring on both sides before you drill.
Finally the end result looks like the picture below.



It is very hard to inspect and see what you drilled since the lightning holes in the rib are quite small.
I used an inspection mirror to verify the correct location of the drilled hole on the flange.
Enlarge the picture by clicking on it and you will see in the mirror the location.

Phoca PDF

Drill and install joint place W423 - 25/12/2011 - 3h

Category: 2.4. Main Wings
Published: Sunday, 25 December 2011 18:53
Hits: 2357

Measure from the top against the edge of the leading edge skin: 22/32". On the spot.

Measure from the inside, ruler flat to the skin until touching the web : 22/32". On the spot. Perfect job !

Next is matchdrilling the leading edge on the spar. But tomorrow is another day.

Phoca PDF