Rivetting Leading Edges - 01/07/2012 - 6h00

Category: 2.4. Main Wings
Published: Friday, 06 July 2012 18:20
Hits: 1632

It's rivetting time again... Finally.

Rivetting is for me always the end of a construction phase. It's the time when things go permanently together after assembling and disassembling them for a ton of times.
It's very satisfactory work and it gets you a step closer to actually flying the damned thing.

Step one in putting the wing finally together is to rivet the ribs in the outboard leading edge. As you remember from previous posts, the inner leading edges are formed by the fuel tanks and these were completed well over a month ago.

All of the ribs holes except for the two aft ones have to be bucked and shot. The Two aft ones can be squeezed.
You start by squeezing the aft rivets and then shoot your way to the nose. Most of them are really easy to set, except for the ones in the curve of the top leading edge where -for some reason- the forming is a bit more difficult.
You'll have to turn the tungsten bucking bar to it's side surfaces from time to time as the extrusions in the ribs inner lightning holes prevent you from holding it length wise.

The ideal pressure on my 3X gun is definitly set to 34PSI. It gives the best results and allows for single or double thick adjustments for the final forming.

A little refresher course on rivetting: the final size should have 1.5 times the diameter in width and at least 0.5 times the diameter left in height. The little grey gauge that helps you measuring this is used as follows: when measuring, measure the diameter in width. The hole in the gauge should just not make it over the rivet. If you wiggle it over the head it should like 'dance' over the head. If the head doesn't wobble, you squeezed way too hard. The rivet should not be able to pass under the other side of the gauge which measure height. Height takes preference over width. So of the width is not big enough but you are a minimal gauge already, leave it at that. You should of course consider taking the next size longer rivet in this case.
Another good tip to measure width in non-visible places is to push you finger with hard pressure on the shop head and then look at the imprint in your finger and compare it to the size of the gauge.

The next picture shows bucking in the nose of the leading edge. As your can see, the lightning holes allow you in most places to hold the bucking bar firm with two hands.

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Another nice shot. Bucking in the bottom and Jacques shooting in the top.

As the weather was great, we decided to do the rivetting outisde on the terrace.
In case they didn't yet, all my neighbours know now that I'm building a plane. :)
Let's say 'they didn't see it, they heared it...'

Near the end, we went really fast at a tempo of one full rib every half hour and no drill outs.

All inner ribs rivetted, next is the right wing leading edge.

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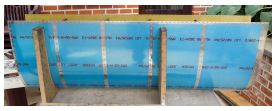
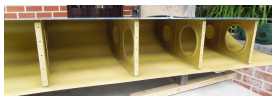




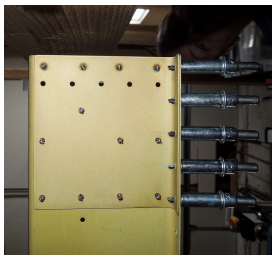
Some hours later also the right wing was completed.

I planned to do the outer ribs by myself on sunday using the squeezer but soon came to the conclusion that it wouldn't be possible as the flanges of the outer ribs are pointing inwards into the leading edge on this assembly. (deuuheeuuuuu...)µ

As I was out of work, I decided to catch up again on some remaining work.

In the beginning of the wing work when preparing the rear spar, I made a bit of a mess with the W-707-F reinforcement plates on the outboard side of the rear spar. I countersunk those and enlarged a hole and decided to redo them by dimpling instead of countersinking. All the drilling was already done but because of the need of priming the parts, I decided to keep them until I had a bigger batch to prime. In last priming session, they finally made it to the final construction stage.

First some matching of the part. This time I dimpled the 4 holes that you see in the picture in the top. Also still had to dimple squeeze the hole in the bent top flange.



Most important, no spacing between reinforcement plate and flange, and flange and rib.

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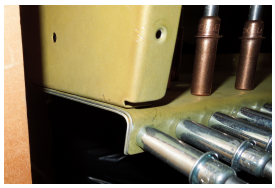
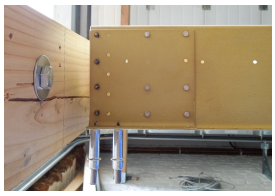


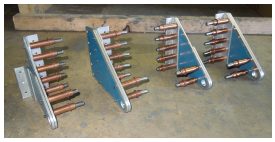
Then sqeezed the 6 rivets that can be attached. The other rivets will be longer and will hold other assemblies such as the ailleron brackets.

Bottom view of the squeezed rivets on W-707F



I still had some time left and started deburring and sanding all components for the aileron brackets. File, deburr with the scotchbrite wheel and 500 grit sandpaper.

As I was curious to see how they would look like, I assembled them temporarily. In the next priming session, they will receive a coat of primer.



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