

Category: 2.4. Main Wings

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In preparation of priming ribs and rear spar parts, I finished scuffing up the last parts.

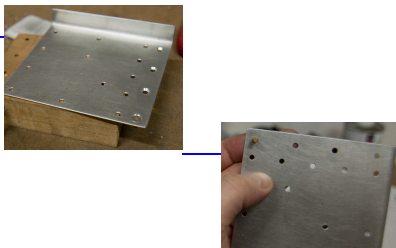
I also realised I still had to countersink the W707-F reinforcement plate that comes on the outboard side of the spar. These hold flush rivets because the aileron support will sit on top of these.

I started with a lot of courage to countersink all the 8 holes for a #30 hole. The one near the bent flange needs to be done by hand as the countersink cage will not fit.

No problem... did that before. Just be slow and patient.

On the last hole with the cage, for some reason, the bit went too deep grrrrrrrrr....

This causes an enlarged hole of course.



Pretty annoying. In the second picture, I'm holding the AD4 rivet in and you clearly see the enlargement.

This was bad feeling... but it got worse. I decided to do some searching on the forums in the evening and stumbled upon [this entry on the forums](#).

In short... many people are not machine countersinking this plate but are dimpling the rib, the rear spar and the reinforcement plate.

In the wing kit manual in the section of the rear spar work, it clearly states that you should machine countersink it...

Notes:
Check the W-707G reinforcement fork and the W-707D rear spar doubler plate to the W-707A spar channel and drill the rivet holes to full size. Note: this part bends during punching and can be straightened easily by hand.
Deburr, prime and dimple the rear spar components for riveting. **Note that some of the holes in the W-707F are machine countersink for flush rivets (DOWEL TIPS, DOWEL).**
Once the reinforcement fork is riveted to the spar, it is difficult to dimple some of the holes in the upper flange of the spar. On the ribbed top flange, for the length of the W-707G, drill the holes for the main wing skin to final size (Ø40) and dimple them before attaching W-707G.

But if you take the vans manual section 5. There is a sentence in the countersinking section that says: no countersinking for 1/8 if less

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then .050.

SE COUNTERSINKING AND DIMPLING

Flush riveting requires that a flat or "buttoned" set be used and that the skin around the rivet hole be countersink either by drilling or machining. Machine countersinking actually removes fibrils. This is done with a die countersink tool and a drill motor. Machine countersinking can only be used in areas where the skin thickness is sufficient. **Caution:** Check the machine countersink depth frequently. Depths vary depending on part shape, hand pressure and tool sharpness. Be sure to remove any vinyl coating before dimpling the parts.

For ALC rivets, .002 is the maximum allowable skin thickness. **Don't do this:  or the original thickness.** Metal thicker than this is difficult to dimple, so it is common practice to machine countersink for ALC rivets. Notice in example 1 where the skin thickness is insufficient. The countersink tool for the rivet head enlarges the original rivet hole and no longer supports the shaft of the rivet. Only a portion of the rivet head is now contacting the skin.

The reinforcement plate is .040.

This is a contradiction. Who's right ?

If I would have to start now, I would dimple, but it is clearly too late now

I sent a question to Vans support to find out about this and to see if it is better to replace them and dimple.

To be continued...