HS702 work 31/12/2010 - 4h

Category: 1.1 Horizontal Stabilo
Published: Friday, 31 December 2010 16:13
Hits: 2927

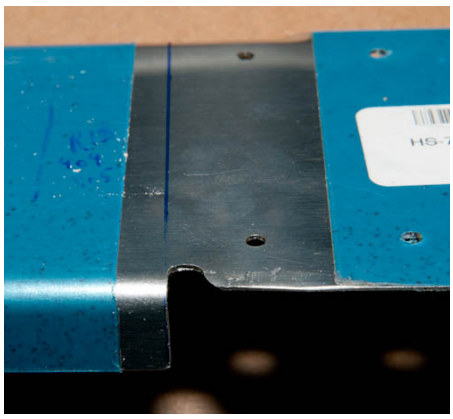
Last day of the year, last contribution of 2010. Wish you all a happy party tonight and a wonderfull 2011 with lots of quality flight time.

The goal of today was to cut the relief notches out of HS702. HS702 is a spar with a tab that needs to be bend at 6° to fit with the reinforcement spars HS710 and HS71.
To relief stress on the bend area, the plans call out for a cut back of some aluminum in an 1/4" diameter circular angle. Special care has to be taken as you have to take out a part of the flange that comes too long as it is normally also used for an RV8.

The 6° angle is actually the piece that gives the stabilo it's trapezoid shape.

You start doing this by drawing the bend line at 5" 3/16 from the spar tab. Then drill a 1/8" hole at 1/8" from the bend line in the flange. This pilot hole will be enlarged to form the relief notch.

You take away the other material with a small round file. The plans call out for drilling with a unitbit to 1/4" but I found this to risky and preferred the manual work. They turned out quite nice in the end.



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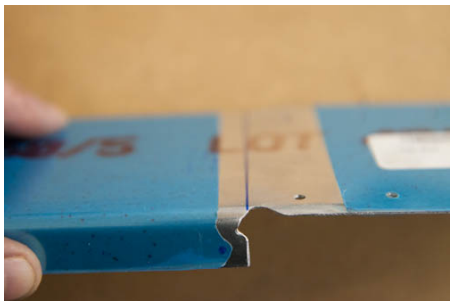
Both sides finished.

I found this a tough part.

Before I continue, let me explain what "minimal edge distance" means. Minimal edge distance is the minimal distance from the centerpoint of a drilled hole (where a rivet will come) and the nearest edge of material. This distance must always be at least 2 times the diameter of the rivet size being used. If rivets are placed to close to the edge of the sheet, the sheet is apt to crack or pull away from the rivets.And we don't want that too happen in thin air...

When I started working on the second piece, I found an unpleasant surprise underneath the blue plastic. The snip I made yesterday late went too far. I cut to the rightposition on the bend line but the aluminum overstretched beyong the end of the cut leaving a small crack beyond the bend line. Auch... I fixed this by drilling a #40 drill on the end of the crack line and then curving the aluminum into the notch. Fortunatly, I still respect all the minimum edge distances on all holes so it should not be a problem as this cut out is on the flange and not in the structural part of the spar. The bend line is still the complete original shape of the piece. To make sure, I have contacted Vans support to get confirmation.



Update on 4/1/2011 response by Vans technical support frm joeb@vansaircraft.com

The relief notch in your HS-702 is a bit larger than normal, but usable. I would simply take the sharper corners out and make it more of a smooth continuous curve. This is done essentially to prevent stress rises and cracks from developing.

Good news...

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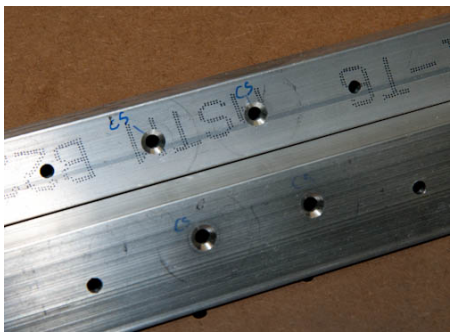
After making all the notches, it was time to bend the tabs of the spar also to 6°. I did this by using some wood blocks on the bend line and a second piece to allow a equal push. This then operates a bit like a bending brake. The material is really thin so be carefull on the strength of the push. We want to avoid having to bend back and forward too many times.

I assembled and clecoed the pieces together and here is the front spar of the horizontal stabilo.

Last work of the day was to dimple and countersink the 2 middle holes of the HS710 HS714 and the spar tabs.

This is because there will be 426 flush rivets in there as it will later lay flush against the fuselage on final assembly.



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