

Category: 3.9b. Top Fuselage

Published: Wednesday, 19 July 2017 08:30

Hits: 2062

In the previous articles I mentioned that my engine mount brackets had insufficient edge distance lengthwise.

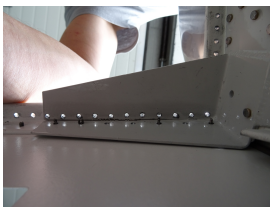
I have been doing some research lately on articles and found that edge distance is more forgiving on steel parts then on aluminum parts. Since I couldn't really measure the exact amount, I decided to take of one of the engine mount which I thought was in the worst shape in order to get a good measurement on it.

I was able to drill out all rivets without doing any damage to the material underneath and all holes remained nice and snug after removing the rivets.

Fortunately I did drill them out because the results were bad... very bad.. So I decided to remove also the other side engine mount.

Part of the reason for this mess up is that the upper leg of the engine mount bracket was not clamped against the inside of the longeron.

The distance on the horizontal face of the longeron is in principle ok because I measure that according to the plans.



This is the looks of the right side bracket. The edge distance is not sufficient but still reasonable here. From the edge of the bracket to the side of the hole I have 0.107" where it should read minimal 0.1875"

You see also that the last hole on the bracket is useless as it's drilled lengthwise near the end of the bracket. There is no way I can fix that as the hole is already drilled in the longeron and there is insufficient space between the 2 last rivets to put one in between. I guess that last hole will not be critical if all the rest has good edge distance.

Category: 3.9b. Top Fuselage

Published: Wednesday, 19 July 2017 08:30

Hits: 2062



Here is the left side. This side is even more dramatic. Have a look at the bottom (rear) of the bracket). I'm so happy I took these off and checked.

Only 0.049" from the edge to the edge of the hole. That's definitely not enough.



Will order new brackets soon and in the meanwhile I'm going to experiment a bit with some aluminum bar the same gauge and test how far I can get with edge distance with proper clamping. Hopefully that will be ok because I don't feel like replacing longerons.

Here is what I think - after all this - is the correct procedure for drilling the engine mounts.

1. Do not rivet the upper engine mount brackets to the firewall yet when the manual tells you to do so. Keep them clecoed so that you can remove it later on to check your brackets after drilling.

2. Do NOT drill the side legs of the engine mount bracket to the fuselage side skin F-770 when the manual tells you to do so. Leave it open for now.

There is plenty of space on the vertical leg so edge distance after drilling here is no problem to do this later and it will give you more flexibility on positioning later. If you do decide to drill now, make sure the upper leg is clamped really tight to the inside of the longeron angle.

3. When you drill the gussets pilot holes length wise: do not evenly space the distance between rivets using length between first last hole. Do not followed the pattern on the plans. Instead, make a smaller spacing between the first 11 holes because those are where the engine mount comes underneath. Layout and check with the engine mount that you have sufficient edge distance at the end. Then divide the remaining distance for the other holes. The spacing will be slightly larger there. That's what you want.

3. Since you didn't rivet the engine mount yet, remove it from the structure and first drill the firewall gusset plate to the longeron and upper firewall angle. (just the aluminum parts) User pilot drills and enlarge for precision. Align the gusset length wise first. make sure you have the minimal edge distance on the inner side of the longeron. This will give you more edge distance on the engine mount as you move inward. Check this first with test fitting and drawing holes on the longeron. Then drill .

4. Now cleco the engine mount bracket to the firewall with all cleco's.

5. Remove the firewall gussets and tightly clamp the engine mount bracket top leg to the inside of the longeron. Check underneath that the vertical leg of the mount sits underneath the top one so that it's fully clamped to the inside corner of the longeron. Then drill through the longeron holes through the steel of the engine mount.

6. Remove and check edge distance.

7. recleco the engine mount top and front and drill the holes on the vertical leg (side) through the F770 fuselage side skin. Peel back

14/07/2017 - Drill out engine mount brackets - 3h30

Category: 3.9b. Top Fuselage

Published: Wednesday, 19 July 2017 08:30

Hits: 2062

side skin and dimple.