

Every hole you drill in your RV will be an important one, BUT. If there is one hole where you can really really not screw up, it's the hole for the AN5 bolt that attaches the rear spar of the wing to the attach fork on the fuselage.

At the same time, this will be the most exciting moment in your build so far as you see the plane assembled with the wings on. Vans says that this process of mating the wings can be done one wing at a time. I would strongly advise against that. Maybe a professional builder could do that, but we amateurs need every reference we can get. Find a good space to mate both wings at the same time.

So many things are defined by this single hole that it makes you dizzy when you just think about it.

The hole defines:

- the sweep of the wings (forward backward)
- the inclination of the wings (angle of attack)
- the triangulation of the wings (equal distance from center point on tail section)

On top of that, you need proper edge distance on all parts once the hole is drilled. The tabs are really small and there is not much room for play.

If there is one thing you don't want on these things, it's insufficient edge distance. The bolt will tear out under the tremendous stresses on the rear spar of the wing. Multiple accidents have happened already due to drilling mistakes in this part. You will loose your wing if the bolt breaks out ! The sinusoidal effect of the vibrations will tear your wing of it that bolt is gone.

All this to say that you need a fresh mind, patience and brainpower when you take this next step in the build process. Don't take it lightly, it's not one of those thing you do in an afternoon.

First, make sure the whole fuselage is level in all directions. Measure on all possible locations. Starting from a non level fuselage is asking for a disaster to happen.

The measurements are not all that difficult. You hang plumb bobs on the inner and outer top skin of the wing and do this on both wings. Pull a string underneath the plumb bobs. If the wings have no sweep, the plumb bobs will be exactly over the string.

Category: 2.9. Wing mating

Published: Saturday, 22 August 2020 16:40

Hits: 879

---

To make sure you have no left or right sweep, you measure from a common rivet at the end of the wing (I took one on the main spar) and measure up to a point in the center of the tailsection of the fuselage.

I used the center notch on the top of the F709 bulkhead).

Triangulate. If the distance reads the same from the left wing to the tail as from the right wing to the tail, the wings are straight.

Now the wings are in the right positions, you can set the angle of incidence. For this, you make a small tool with a piece of angle that lays on the main spar and has a little offset on the end of 3 inch which stands on the rear spar.

You then lift or lower the wing and make sure you angle reads level. You can see the drawing for that home-made-tool in the right hand top corner of DWG38.

Needless to say this reading is only correct if the top longeron of your fuselage is also level. If your readings are correct, your wing will have a 1 degree tilt up incidence on the chord of the wing. You can measure that using the tool to align the ailerons and placing a level on that. The level will read +1degree.

I only found that out later but it's usefull as a cross check.

I measured the whole day, scratched my hair multiple times and left it at that.

Here is a picture of the place where the hole will be drilled for those unfamiliar with the RV-7. The hole will go through the white square and through the rear spar (green)

