

## Custom Flight Door Hinge Installation

### Door Prep:

Make sure the door fits the rebate exactly. If not, take the time, a little heat and some rope if necessary to bend your door until it literally falls into place in the rebate. If the door is too long or wide or both, block it at this time to get it to fit the rebate.

### Hinging the doors:

There is a chance that the factory did not trim the door precisely right so following the dimensions for hinging may not be precise enough for you or me.

Good fitting doors that close precisely without fail and seal well begin with fitting, measuring and hinging precisely.

The orientation of the hinges lines has to be done IAW the book, but as usual with a bit of head scratching and figuring to try to get it right the first time.

I suggest a flexible metal metric or yard stick to mark the line of the rebate depression. See my drawing. I mark where the hinge sets on the rebate. Then mark this on the door top with a square to assure the mark is vertical with the aircraft top. Now you know where the hinge should set.

I set the door in its place and mark the line on the top of the tab.

Transfer the line to the bottom of the tang. Then check with the door instructions. It will be pretty close.

Again use the meter stick to make sure the center lines on the tab are correct.

Temporarily raise the door to the vertical position and begin trimming the tab. It is not uncommon to have a 3/8 or 10mm gap between the hinge tang and the top inboard rebate line.

Make your hinges ( you can countersink the appropriate side but don't do both sides) IAW the book. But do not trust anyone, set the hinge in the rebate and trim to fit. Mark the hinges and the door tang they are to be fitted to.

Note the hinge centerline you drew, sets just about on that rebate line molded in the fuselage top. Yes the hinge thickness has to be planned for, but I have found that simply making the line drawing on the tang where the desired hinge line should be will allow for fill and paint. Lower the door and note the clearance side to side also.

When satisfied I set the hinge on the lines using the straight edge to assure they are straight and super glue (thick) or 5 minute and allow to cure.

Set the door back in place and check again. Note if the door is lower than the fuselage top. You may need to shim the underside of the hinge on the fuselage. Always shim under the hinge not the door. Why, the door tang needs to be as close to the rebate vertical ledge as one can get it... This gives the tang more room to pivot in the rebate hole.

Once certain of your hinge line drill the tang for the NAS 507 1/2 inch #10 (AKA MS 24693-S272) taper head screw through your predrilled hinge. This hole must be 90 degrees to the inside of

the tab. Then using a metal countersink, countersink your hinge as shown if not done already. Insert the screw and note that on the thin side of the tab the head sticks up out of the door. That's OK for now.

I use a .5 inch Permagrit drum to counterbore to assure a flat hole base for the nut. Counter bore the depth of the MS21042 stiff nut plus a thread and align the counterbore with the screw axis...

Bolt it up when all is well. I Redux the nut in after I have finished, to assure I can adjust just in case.

Next make any adjustments to the door and note that your hinges with the door open set on the rebate shelf and the tabs clear the rebate floor.

Open and close the door to check everything.

Construct your spacers as necessary. Predrill them to match the hinge.

Following the book idea to put clay or similar in the hinge to spring it open, use 5 minute or similar to set the hinge for drilling. Again, I use thick super glue as it is less prone to pop off.

Set the door in the rebate and clamp down in place. One clamp per tang and the door clamped in place at the lower corners.

Allow the glue to cure, then go ahead and open the door slowly and carefully. In a perfect world, the door will open and attain a near vertical position.

The door must allow a 36 inch opening for the occupant so make sure you are close to that. Make a stick to hold the door at that height. (Yes I have a door stick I've used for 15 years.)

With the stick holding the perfectly fitting door open, drill a vertical to the hinge rebate face as possible. I use an extended bit to allow clearance. Drill one hole and immediately put in a 525 to hold the hinge should the glue release. Drill one hole on the front and rear tab then drill the other hole.

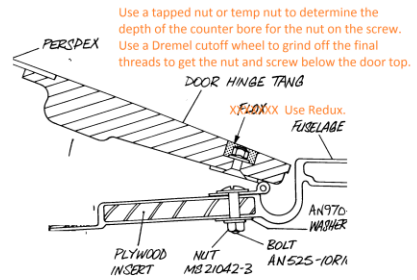
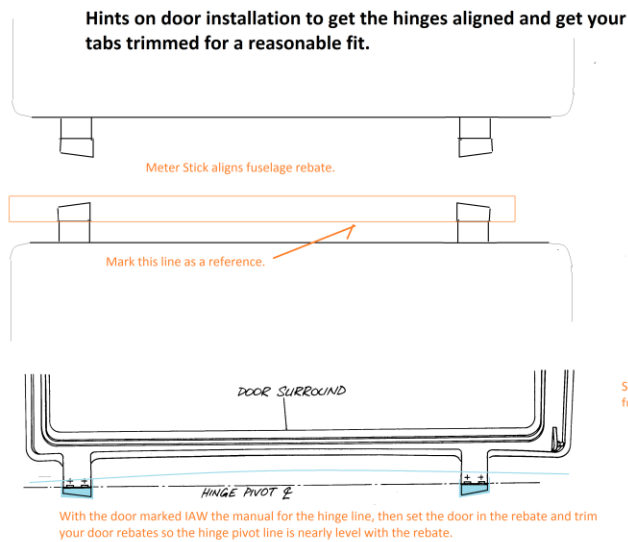
Close the door slowly, and check the middle of the door between the tabs clears the bow in the roof. If it binds, block the center of the door to get clearance.

With the 525s in place, check the door hinge does not bind or that the head of the 525 doesn't hit the other side of the hinge. The angle on the rebate is such that the washer head screw should clear with about 1/16 inch.

Do not put a screw that is too short in the door. Make sure with the 970 washers fit, bend them if necessary and make sure that you have 1 ½ threads showing when tight. I use temp nuts, because the door has to come off to put in the latching mechanism.

The door should now be hinged. Once in a while the tang needs to be trimmed a bit on its back side for more vertical clearance. There is not structure a quarter of an inch beyond the screw holes rebate so go for it..

Now the shoot bolt guides can be drilled for the door shoot bolts and the struts can be installed. See [www.customflightcreations.com](http://www.customflightcreations.com) for how to do an alternate Mod 66 door strut repositioning which is far lighter and very strong.



Square up line on rebate and mark top of fuselage as a guide.

