CURTISS XP-40Q

Kit No. CBMD-003

Construction Detail

Part 3 of 3: Covering the model

CB Model Designs

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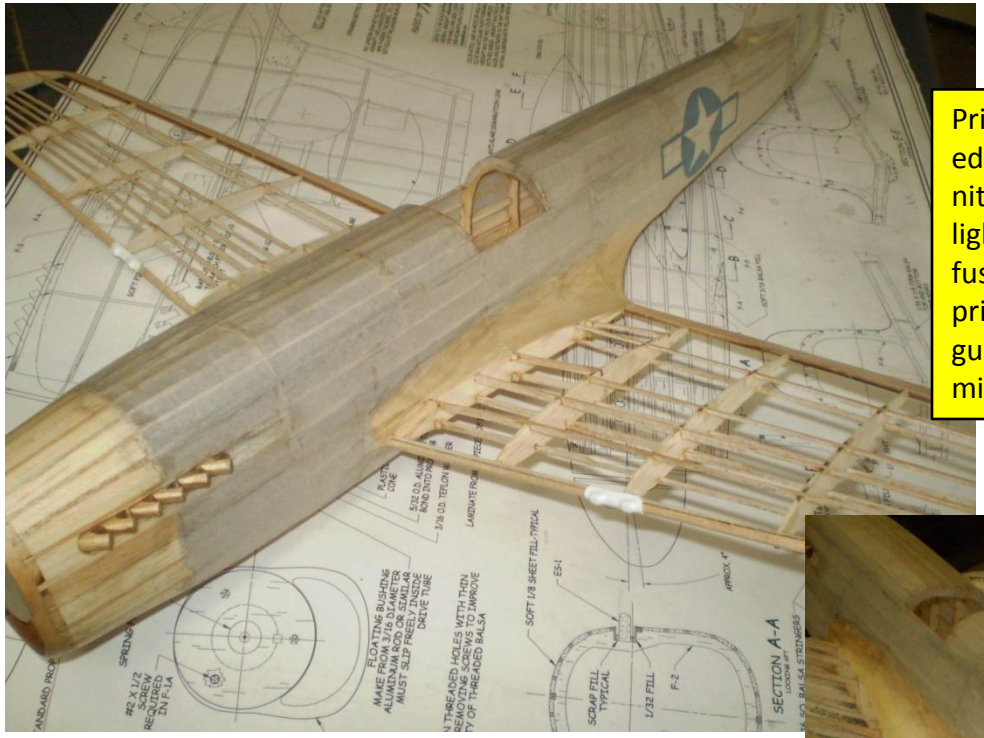
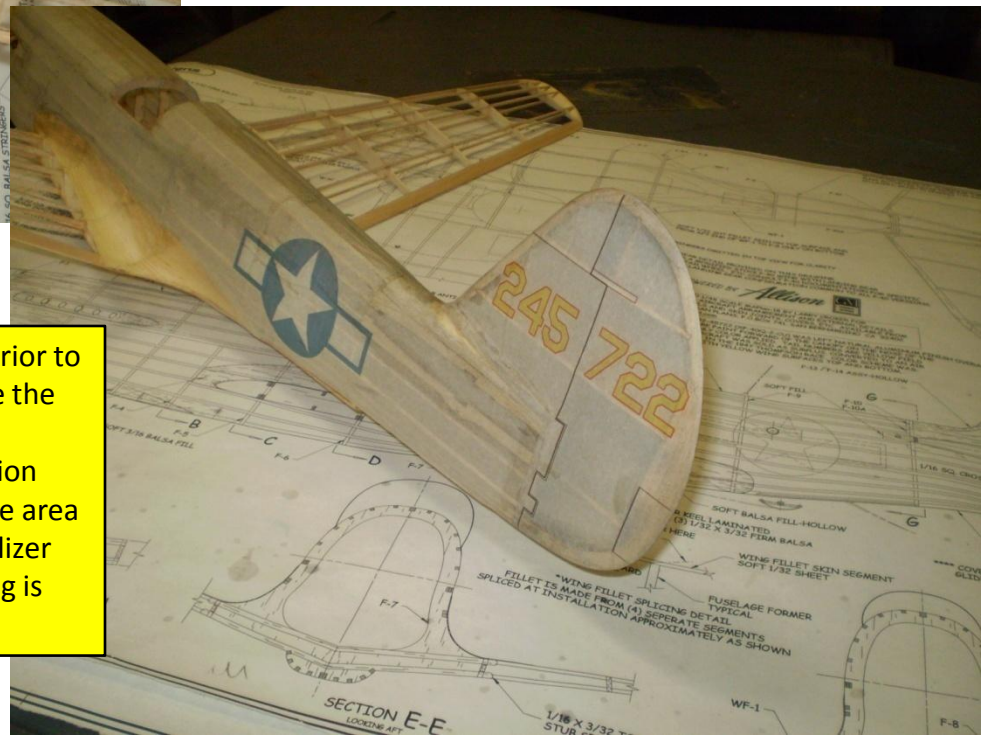
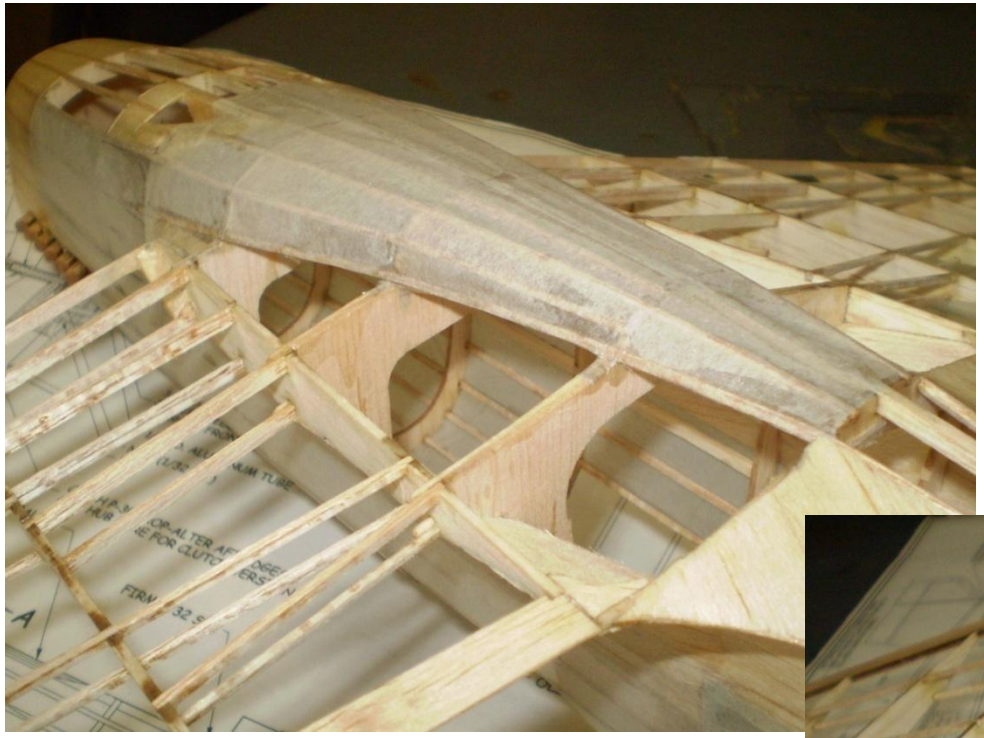
Revision N/C



Prior to covering I coat the stringers and former edges, fillets and sheeted areas with thinned nitrate dope, two coats, sanded in between lightly with 220 grit paper. I start with the fuselage covering first. The insignia shown is printed on the covering tissue. I install the wing gun blisters prior to covering and trim to minimum contact for a neat finish.

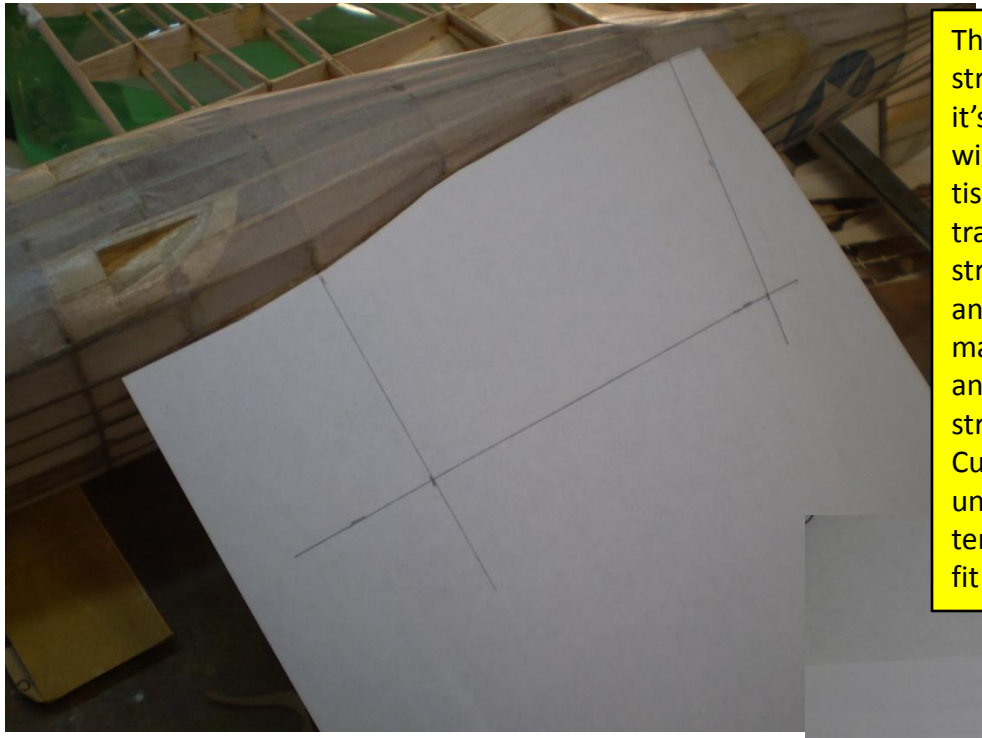


I install the fin and blend the fairing area prior to covering. If rudder trim is required I utilize the built in tab. Usually this is very minimal depending on how neutral the fin installation was. After covering the fin and aft fuselage area you need to cutout the tissue for the stabilizer slot. This gets finished after flight trimming is completed.



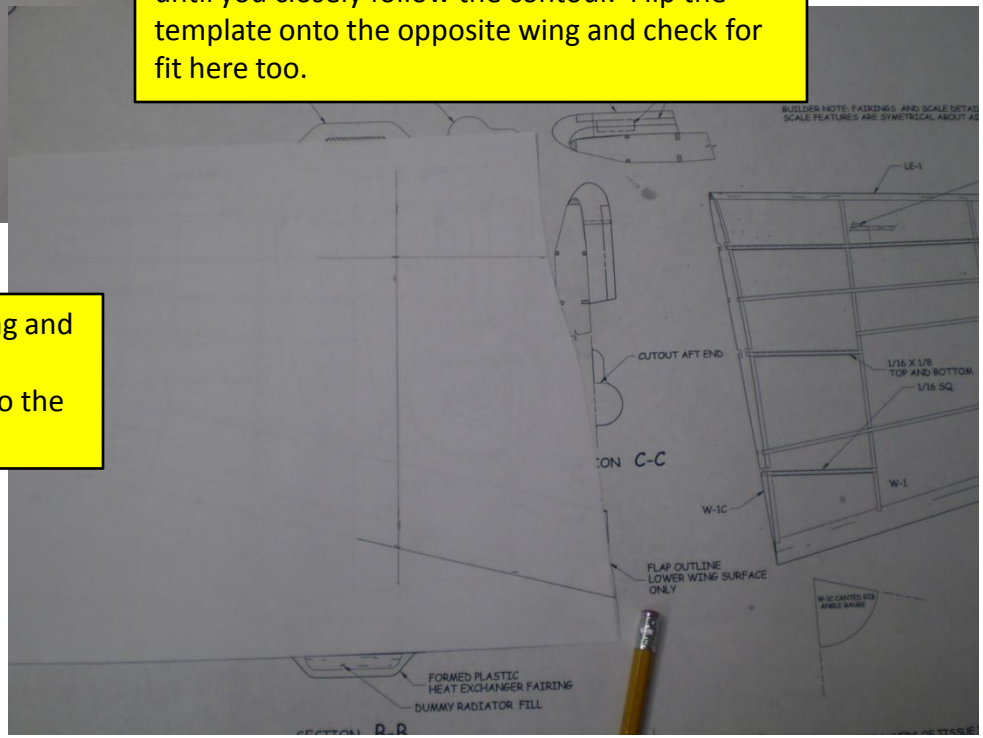
I cover the ventral area before the wings

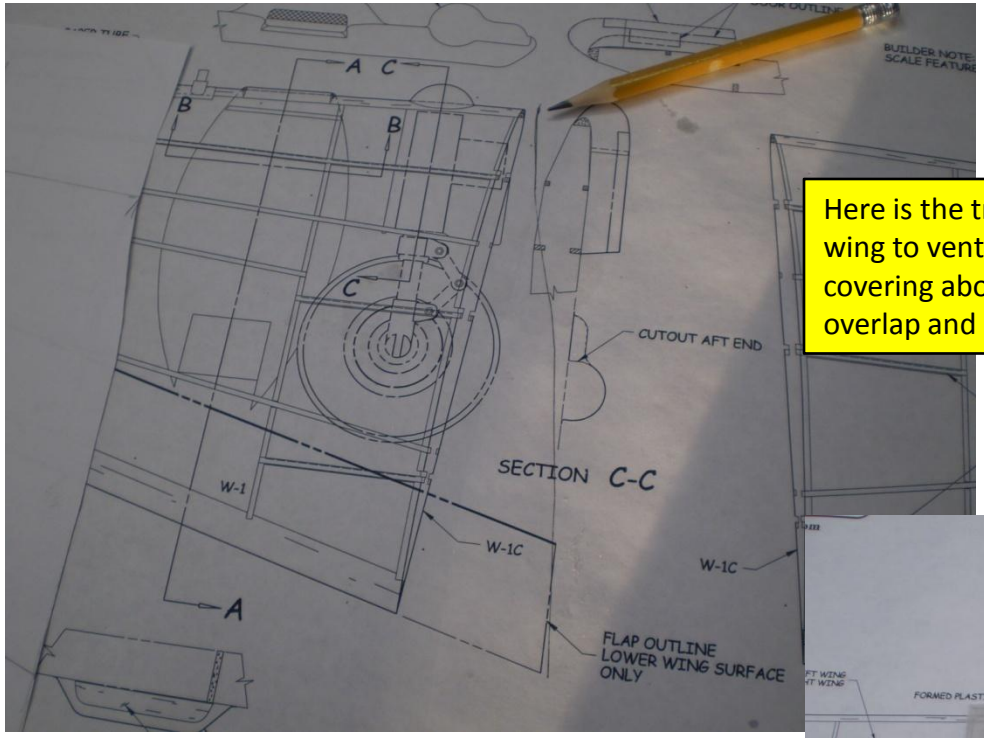
Not shown on the drawing-I add a little filler in this area to provide more edge on the upper side of W-1C for attaching tissue. It's soft 3/16 balsa-I taper it to flush at the bottom edge of W-1C and then hollow it with a ball shaped rotary file in a Dremel tool. Whatever method you choose-provide a bit more area to bond the wing tissue to W-1C on the top edge-life will be easier!



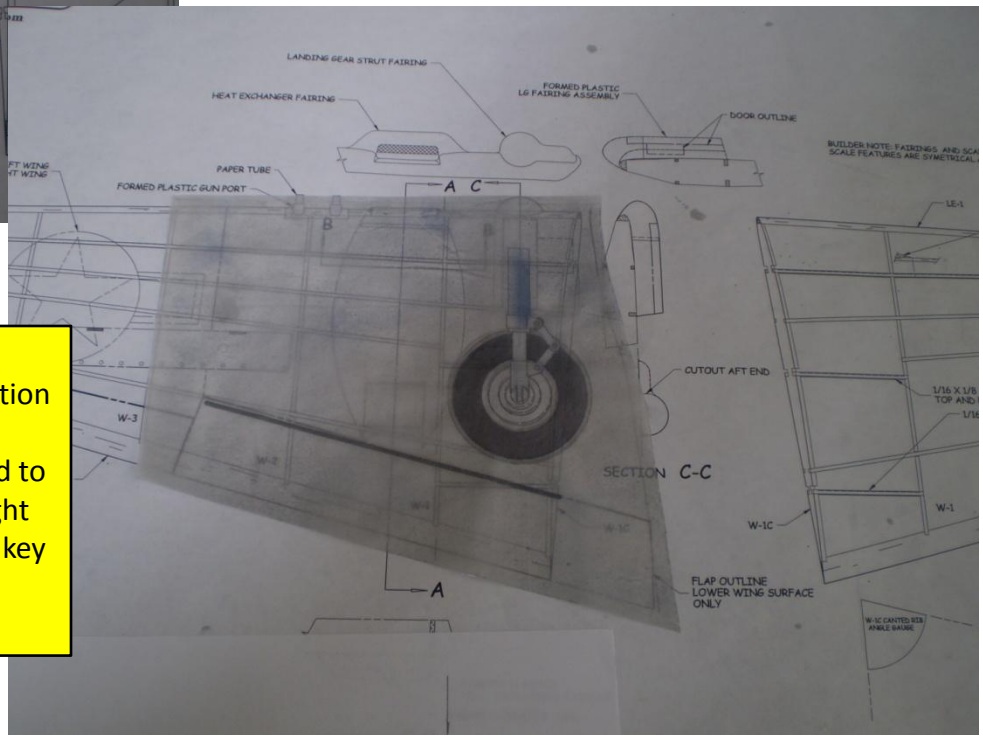
The tissue joint between the wing and ventral stringers seems hard-but with care and patience it's really not that hard. If this was a one piece wing you would be eventually faced with a tissue repair in this area anyway . Use a piece of translucent paper you can see shadows of the structure through and trace where W-1, the T.E. and main spar are from the drawing. Use these markings to position on the bottom of the wing and develop a trace of the curve in the ventral stringer intersection. It's easier than it sounds. Cut to profile and check the fit-adjust as needed until you closely follow the contour. Flip the template onto the opposite wing and check for fit here too.

Position your template on the wing drawing and trace the profile of the ventral stringer intersection onto the wing plan , aligning to the same reference features you started with.





Here is the trace line for the intersection of the wing to ventral joint. You want to cut the tissue covering about 1/8" bigger than this for a bit of overlap and ease of installation.

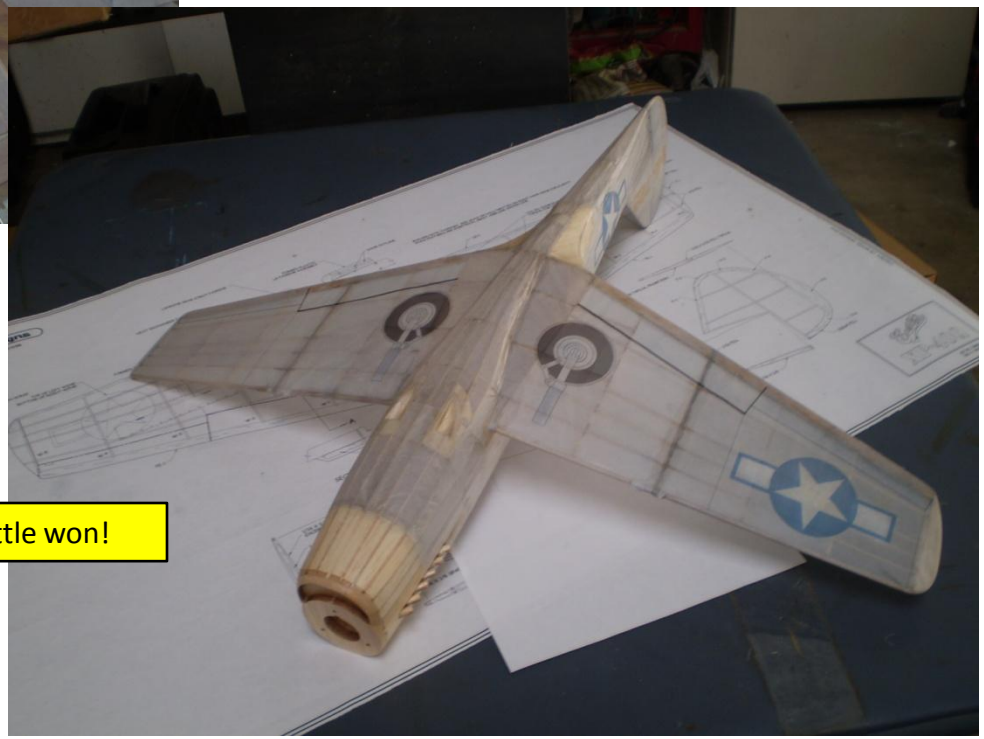


A piece of tissue covering rough trimmed for installation. Note the excess on the intersection of the ventral stringer edge. The retracted wheel is pre-printed on the tissue and aligned to the plan for establishing trim. Make some light pencil marks for W-1 and maybe a few other key reference points to align the tissue on the model.

Install the tissue by adhering to just the edge of W-1C, the bottom edge of the ventral stringer and the edge of the fillet only. Lightly drape the tissue and carefully position it to your reference marks from the plan. I take my small 6" scale and carefully tuck the edge common to the ventral stinger against this area to adhere. Provided you don't over handle the tissue this area tends to lay down nice and flat-the pre-trim makes in nest nicely-you can see the slight overlap onto the ventral tissue. Let this initial tack area dry before attaching the rest of the tissue.

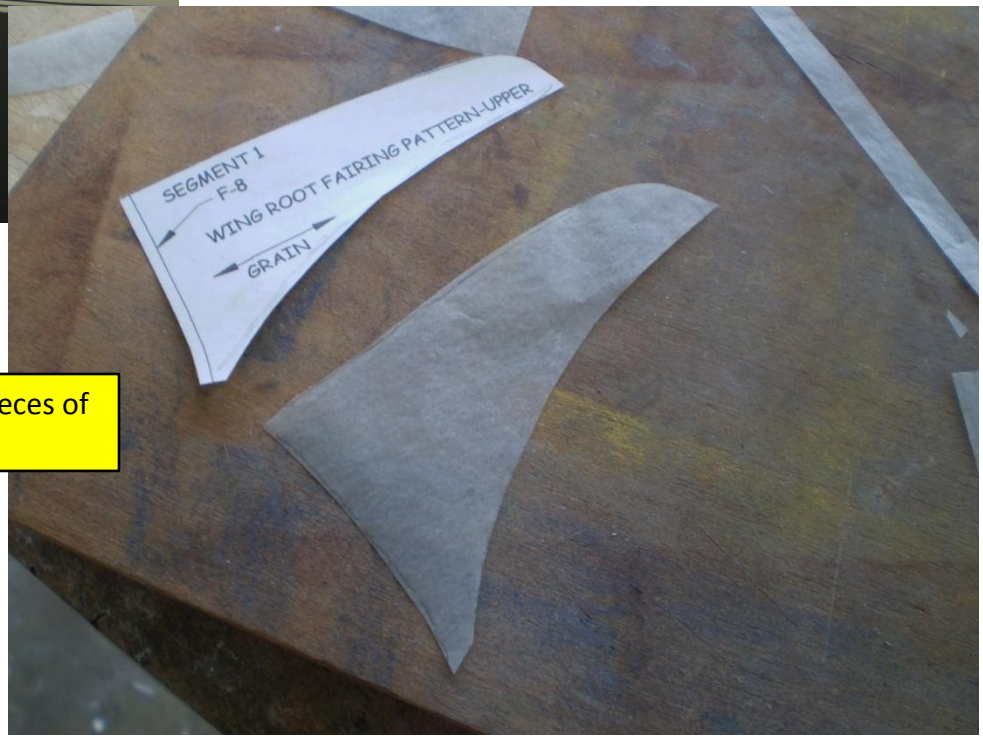
Now attach the rest of the tissue panel to the wing and let dry. I use fairly thick nitrate dope to attach tissue-I'm old school and it works. After set, trim and dope down overlaps on the L.E. and T.E., etc. Apply thinner and dope to seal the edge common to the ventral stringer to keep this from coming off during the shrink step.

Finish covering the wing bottom surface. Repeat the process for the opposite wing.



Half the battle won!

Start the upper wing covering process by covering between the fillet edge and rib W-1. I do this to make life easier-you can trim the whole upper wing covering panel to install in one shot.

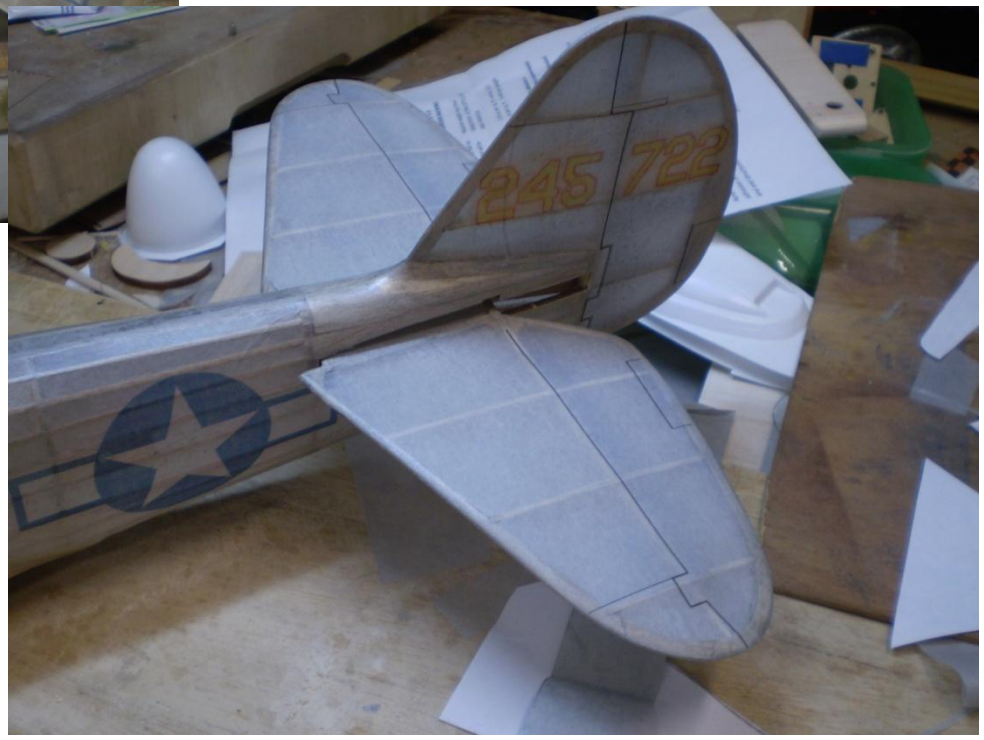


Use your wing fillet patterns to cut the pieces of tissue used to cover this area.

Install the fillet tissue-try to butt edges carefully for a consistent looking covering.

The tissue covering complete and shrunken with denatured alcohol. Use of water on pre-printed tissue will cause the ink to run. Too much alcohol will too, so be careful if you use this method of making markings! The olive drab is domestic OD tissue from EZ Built Models. I installed over the pre-shrunk base (no dope yet) with four basic pieces made from one large pattern. Two on each side, split down the center keel and at F-2. I dope the model with 50% thinned nitrate dope-one coat only to minimize warpage.

The bottom of the covered model-apply dope finish before adding panel lines, flap and aileron lines, etc. as well as plastic parts for the heat exchanger and wheel strut fairings.



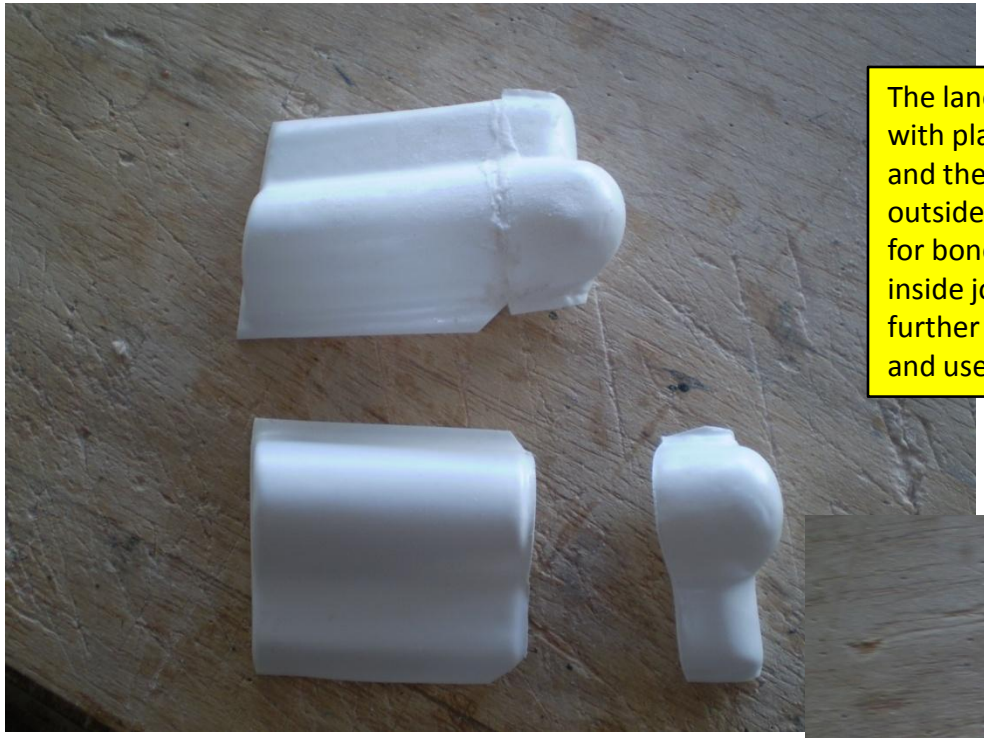
Showing the stabilizer installed for reference. Not shown are the shims used to wedge the assembly in place and adjust incidence for glide trim.

Setting up the shims for incidence adjustment. Note the tissue doubler installed on the top and bottom of the stab near the shim wedge. The shim on the stab is bonded to the tissue covering with cellulose cement. The ends have been trimmed to match the sides of the fuselage at the slot location. The adjustable shims are shown in the background. Make these from soft balsa for ease of clean-up trim after trimming is completed and prior to covering the gap area.

The stab is installed for flight by using a bit of cellulose glue at the front edge slot the stab fits into. The upper and lower shims are then place over the wedges attached to the stab, and held in place by the slot in the fuselage which is there to trap them in location. I highly suggest two sets of movable shims be made in case you lose one or two during flight tests!

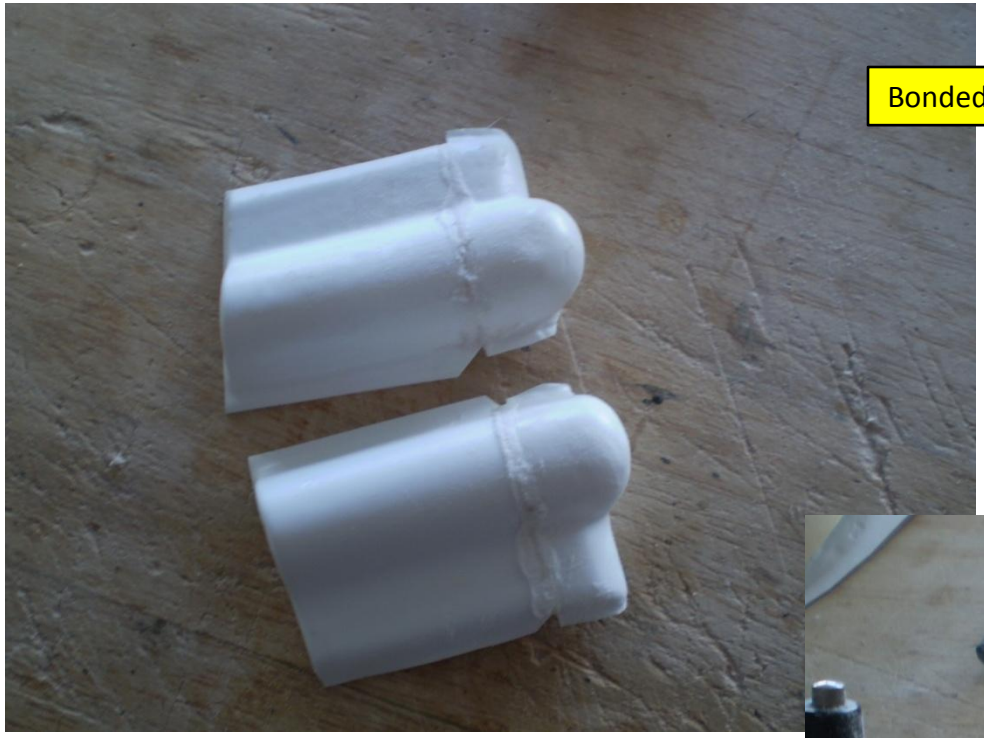
Movable shim installed in the bottom slot against fixed shim on stab

The upper movable shim installed. Position the upper and lower shims until the stab is centralized in the slot and are fairly snug. Don't cram them in or you will deflect the structure and break something-very light pressure to hold them in place. These eventually get bonded lightly in place and trimmed off once you are satisfied with the glide and power trim you have achieved.

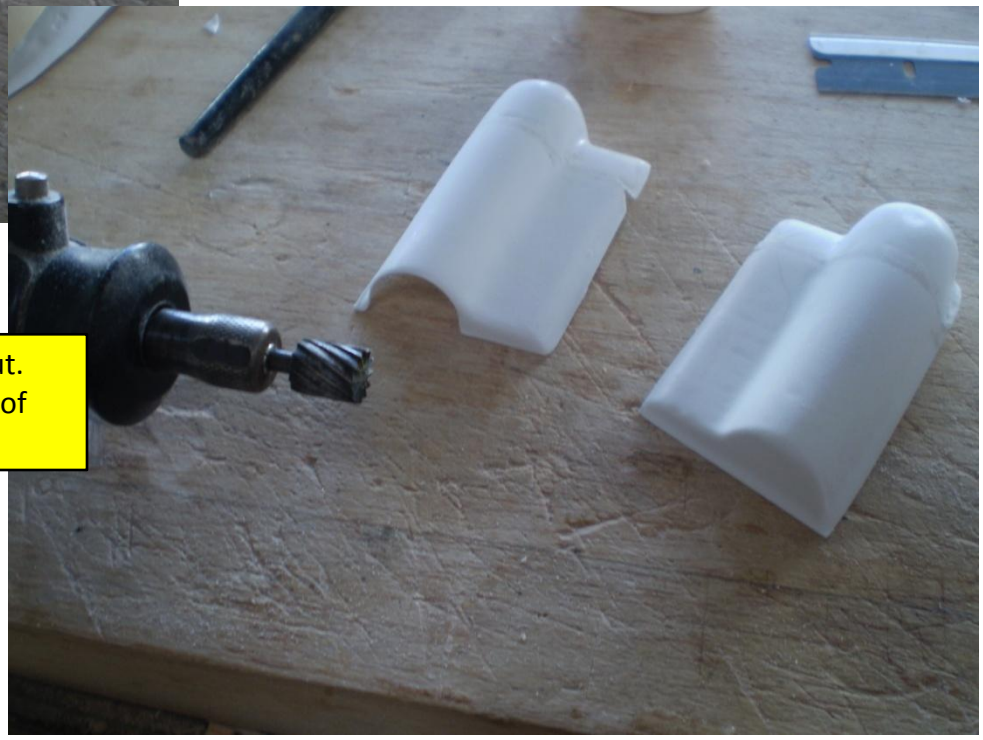


The landing gear strut fairing assembly is joined with plastic CA or cellulose glue. Trim carefully and then use a small masking tape strip on the outside surface to hold the two pieces together for bonding. I use a small strip of tissue on the inside joint that is saturated with thin CA to further reinforce this area. Remove the tape and use some light filler to smooth up the joint.

One assembled with filler added and the other showing the masking tape assembly to hold the pieces flush to each other.



Bonded, filled and ready to sand lightly to fair.



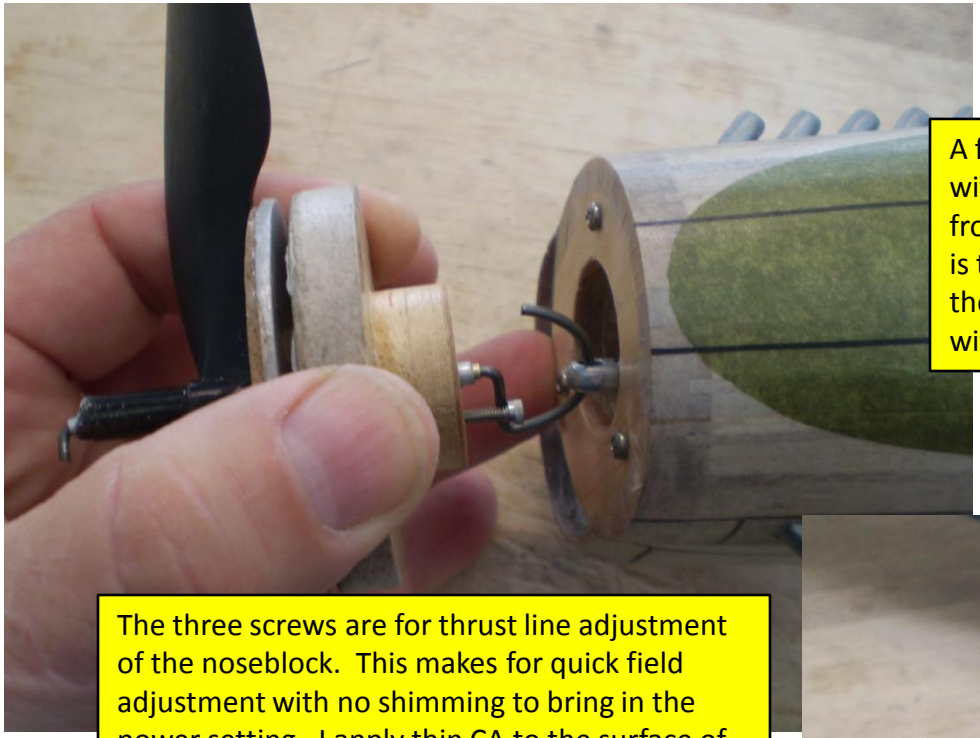
I cut out the aft end that covers the L/G strut. It's optional-it just looks cool and save a bit of weight.

Fairings installed-I covered with tissue prior to gluing to the covering with dots of cellulose glue

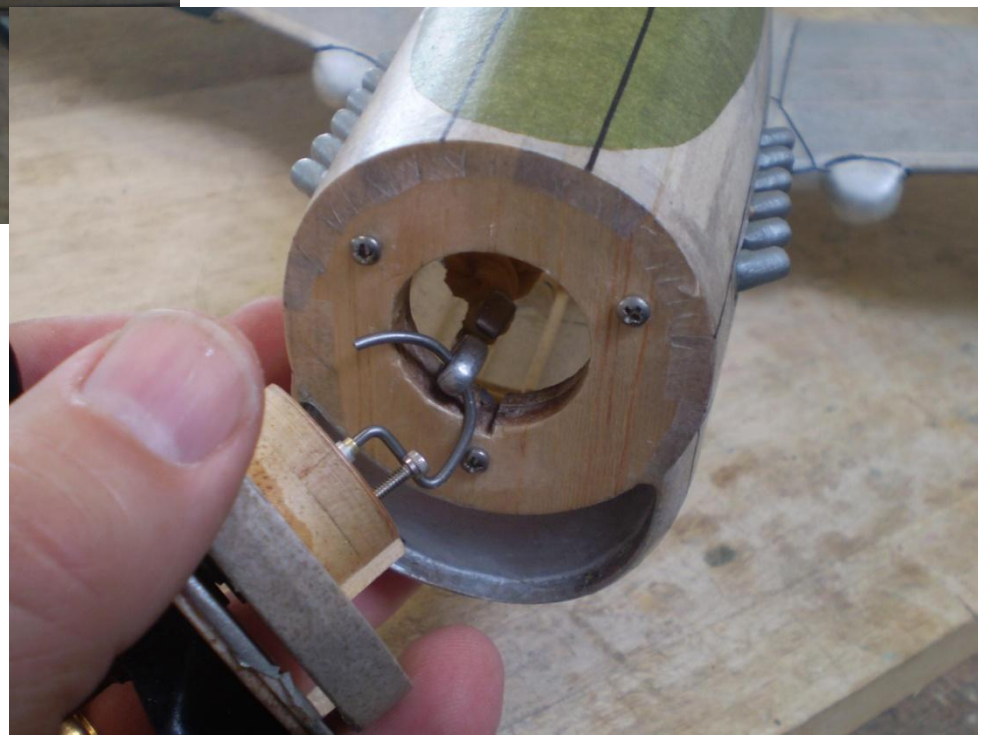
After the glue has dried-use strips along the joint between the fairings and wing surface to blend the edges a bit more seamlessly. I hope you can do a better job with the line work than me-this was done with a Sharpie pen after applying dope to the tissue. Exceptions on the better line work for the wing is due to having pre-printed tissue-just have not figured a way to do this for compound contoured areas…

Here is how my motor looks after the power trim session using the clutch arrangement. The stop screw is set to allow the motor to be about this slack, and the spring won't disengage until the tension runs down to about here. I know this is hard to describe-but the tighter the motor tension the more likely the spring compression is too high and the motor prop shaft tang will pre-release early in the flight.

Here is the flight tested prop assembly-you can see the alum tube with the Teflon washer behind-this rides on top of the spring and works well to maintain smooth transition from engagement to free-wheel. I leave the spinner cone off until I am sure the model will fly consistently under power and glide and not stall into the ground, crushing the spinner.



A few views of the noseblock under engagement with the motor. I use the small Crocket hook from FAI model supply for the most part, which is the metallic bit that is attaching the motor to the prop shaft hook in case you are unfamiliar with this technique.



The three screws are for thrust line adjustment of the noseblock. This makes for quick field adjustment with no shimming to bring in the power setting. I apply thin CA to the surface of the noseblock where the screw heads contact to locally harden and keep indentations in the balsa from changing the thrust angle. Once the model has been fine tuned for maximum power the laser cut balsa nose shim can be glued to the front of the fuselage and faired in to the contour of the nose. Then block sand the front of the shim until you contact the three screw heads- this results in a fully seated noseblock with minimal gap on the thrust plane established by the three screw heads. Seal and finish the thrust shim to match the fuselage and noseblock.

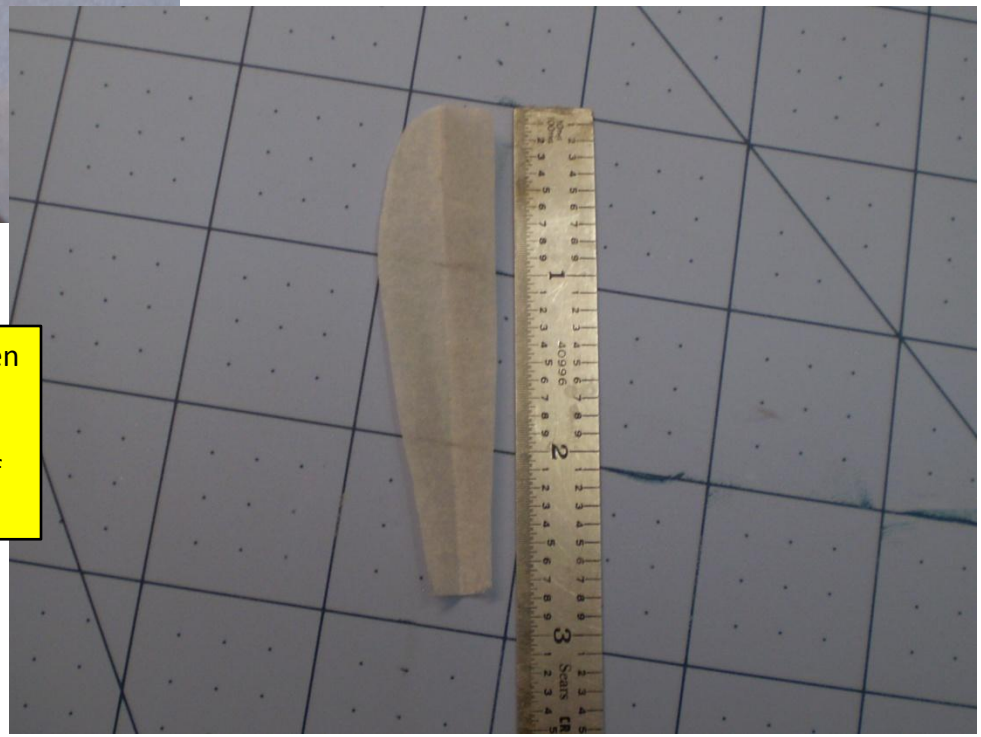
Use cellulose cement in the step between the back edge of the spinner cone and spinner backplate. I use scrap balsa as spacers behind to allow a squeeze on the spinner cone and noseblock without making things wobble around the prop shaft.

My simple clamping method to restrain the spinner cone against the backplate while the glue dries. The bands are not tightly tensioned- just enough pressure to keep the cone from migrating away from the backplate.

After trim flights are completed you can clean up the stabilizer adjustment gap and trim off the movable shim. I adhere with some cellulose glue into the stab slot based on where the shim is being held from the flight testing location-don't remove them to glue back in! Don't make this a permanent bond either-you may need to adjust again at some point and it should be fairly easy to remove them without damaging the rest of the model.

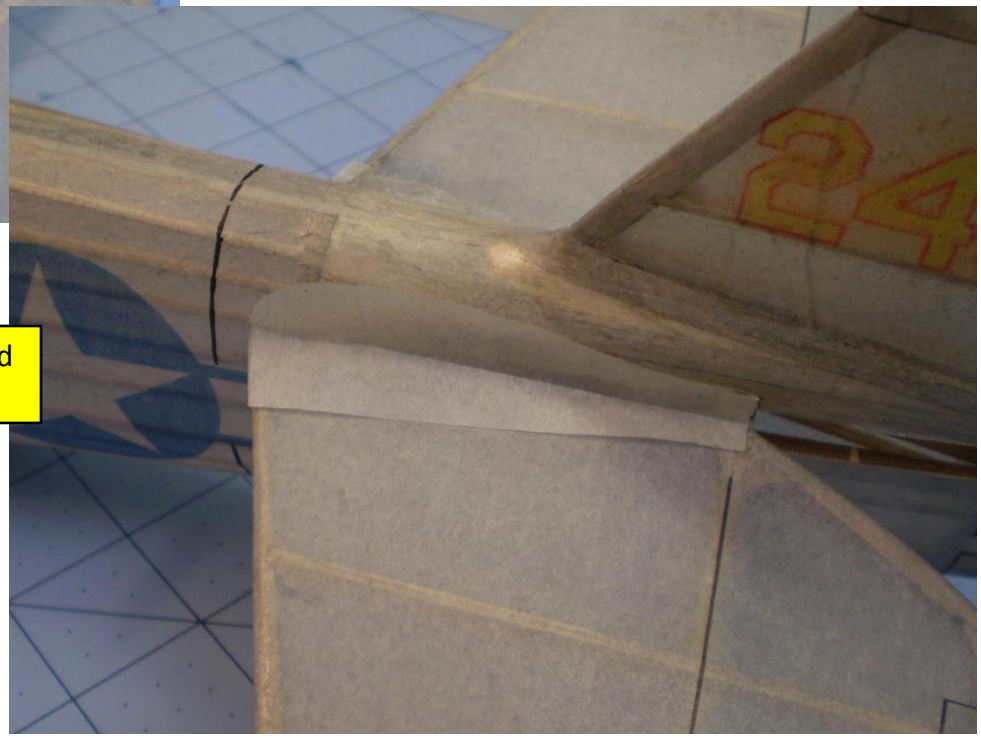
The trimmed shim-this is why soft balsa is used for the movable shim!

Here is the other side of the upper shim trimmed flush to the fuselage using the double edge blade.



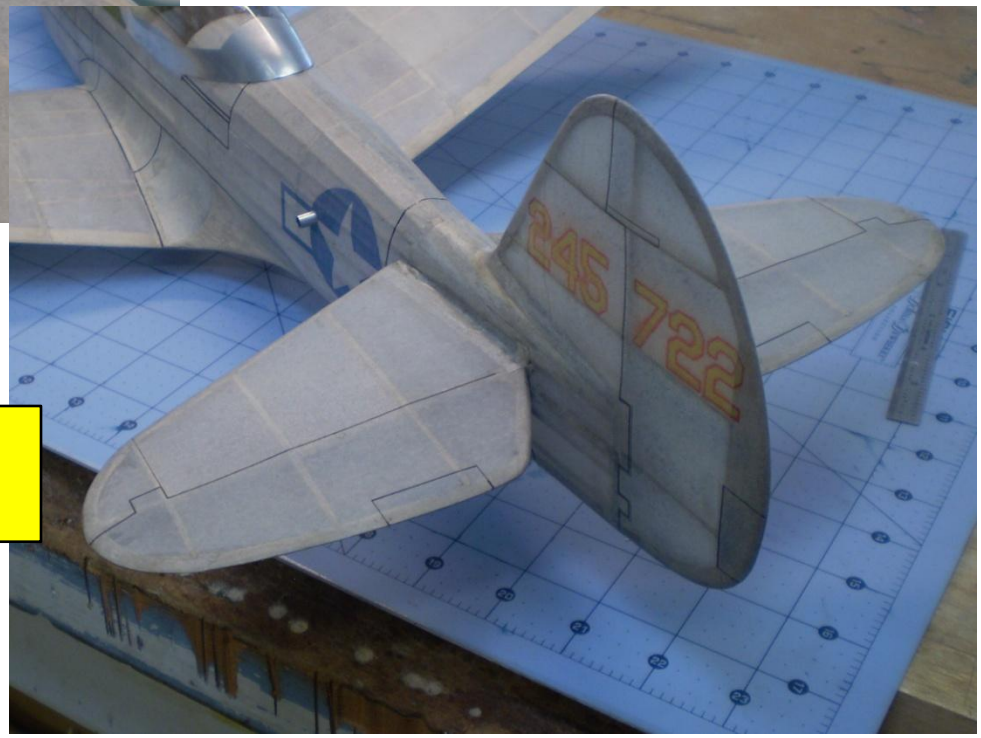
Here is a tissue fairing to cover the gap between the stabilizer and fuselage. I made this look sorta like a fairing by radiusing the upper edge. Crease the tissue to fit neatly into the corner of the gap and stab surface.

Fairing tissue with dope applied

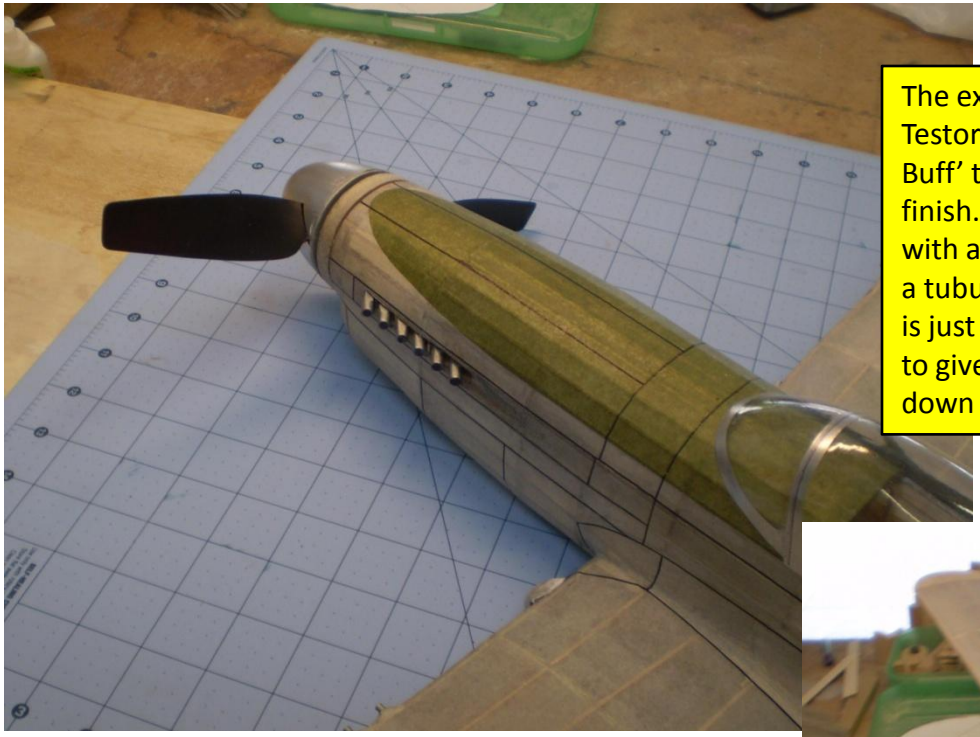


Position of fairing tissue-gab behind stab is filled last.

The opening behind the stabilizer is covered with a small piece of tissue to complete this area. The tissue does a great job of securing the stabilizer to the fuselage-no need to do anything beyond this.



Finished tissue covered tail area-you can add line work to represent the stab to fin fairing edges, etc.



The exhaust manifold is painted silver-I use a Testors product called Stainless Steel 'Rub-n-Buff' to create a weathered and realistic looking finish. The ends of the manifold were darkened with a black Sharpie pen to create the illusion of a tubular structure. Smudging for exhaust stain is just pencil dust applied with a dry paintbrush to give it a soft blend and washed out effect down the sides of the fuselage.

The basic finished model-keep it in a storage box to preserve the finish and minimize warping. Most of all-enjoy the fruits of your labor and appreciate the slender beauty this model offers in flight!