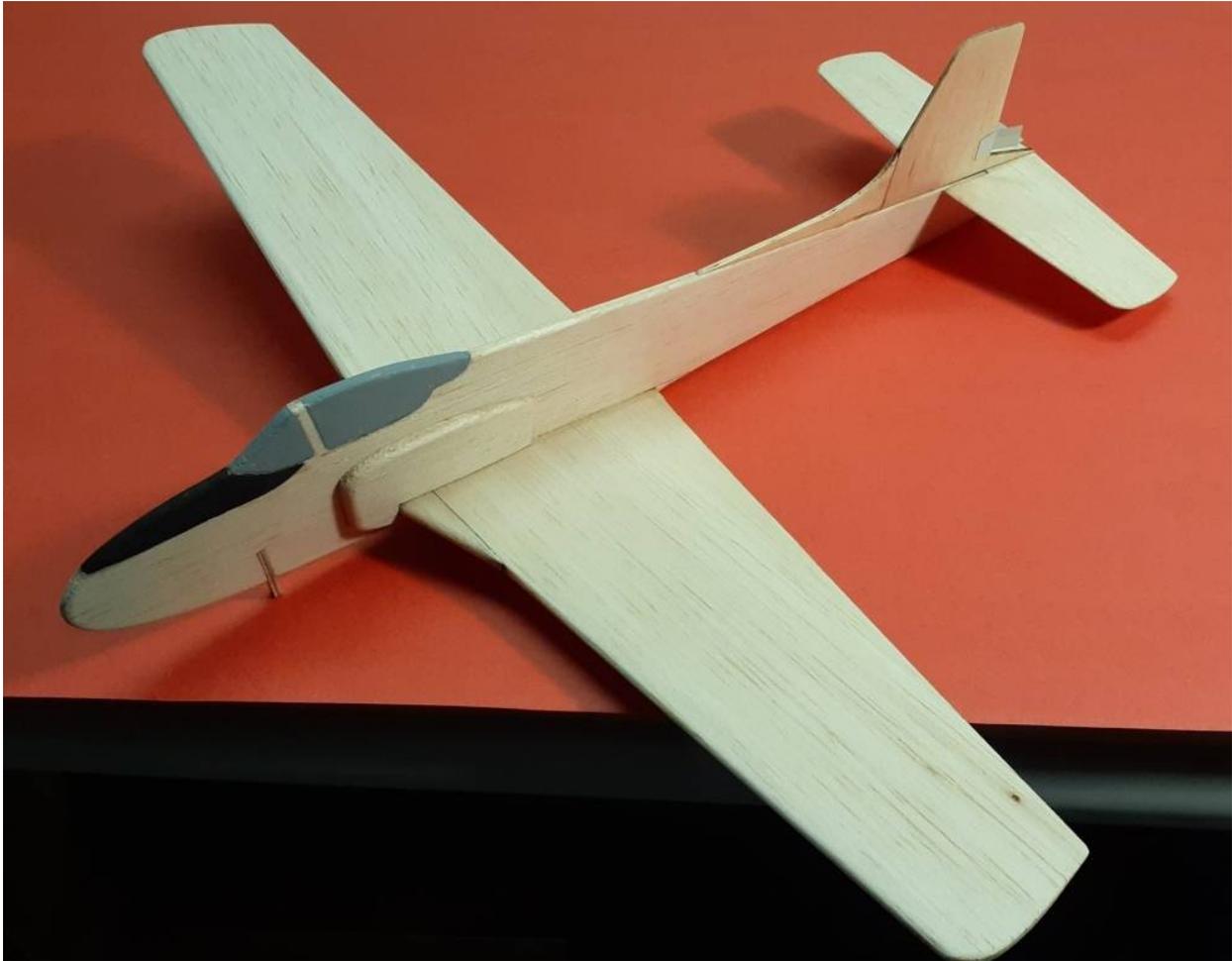


McALLISTER MODELS & DESIGN

"Provost" Catapult Glider



Catapult launched gliders are great fun!

This simple profile scale glider can be hand thrown to fly in your back yard, or go to a larger space and use the included catapult to launch this jet high and fast! Careful adjustments are the way to get the best out of a catapult glider. That will teach you trimming skills, which is a vital part of the fun and enjoyment of flying model aircraft.

Follow the separate instructions for how to assemble the included catapult.

If you have any questions please contact us at
mcallistermodels@gmail.com

Building Instructions

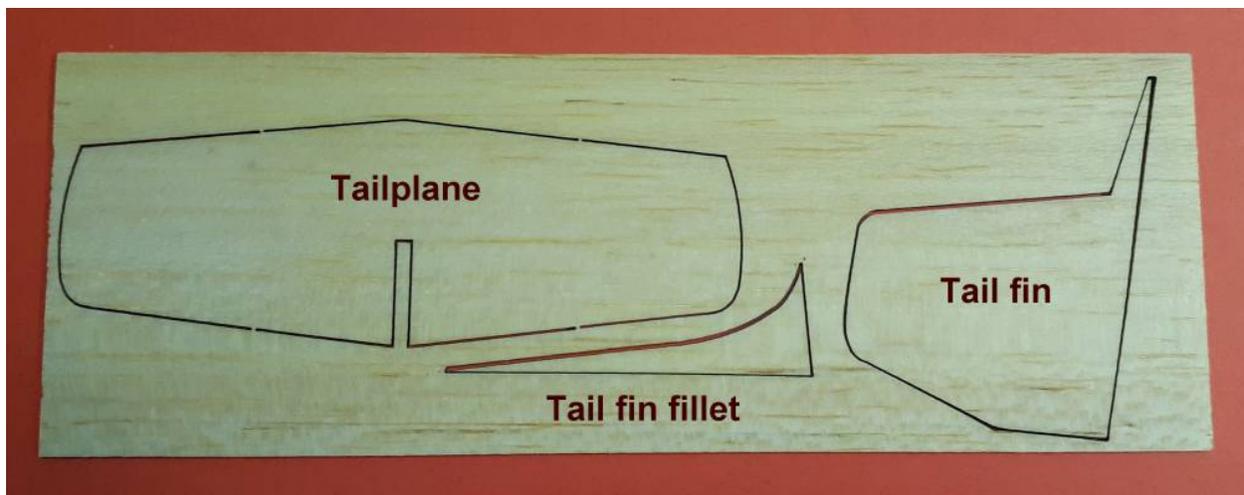
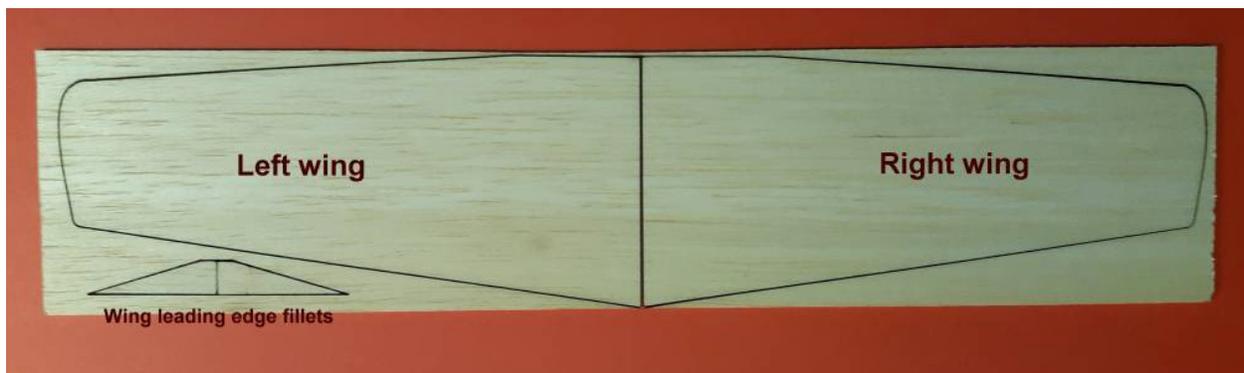
BEFORE YOU BEGIN

This model glider can be built using superglue, a waterproof wood glue like Titebond II, or balsa cement. Some parts will require sanding to fit. A useful tool is a two-sided nail file, or you can glue medium and fine sandpaper to each side of a straight stick.

A sharp craft knife can be used to remove the laser cut parts from the sheets. Adult supervision is highly recommended when using sharp tools and superglue.

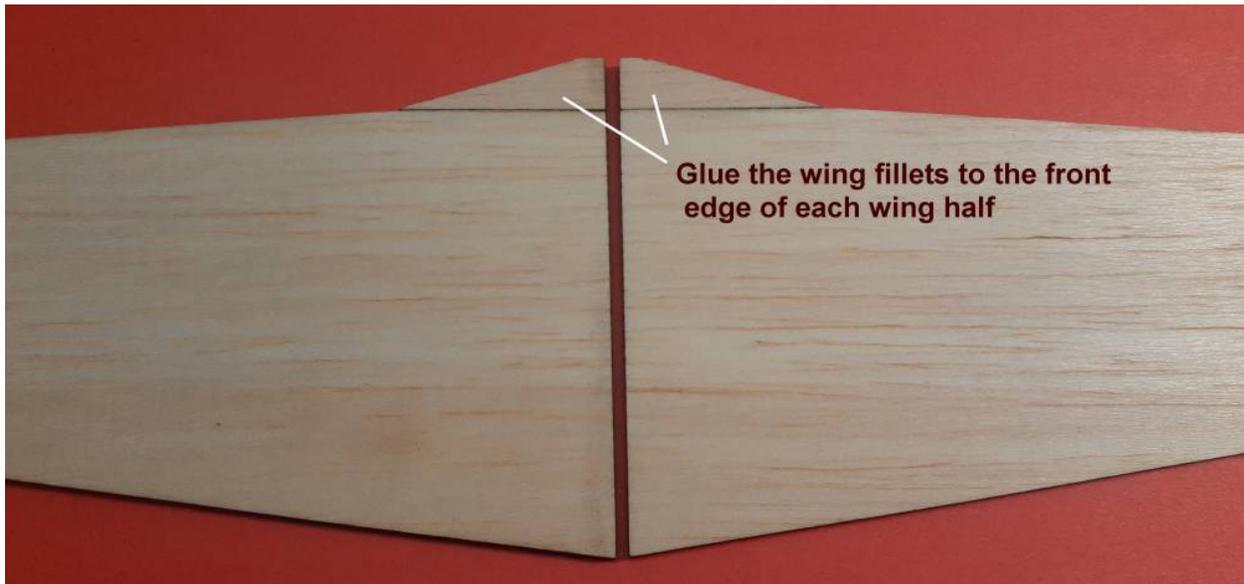
PREPARATION

Remove the parts from the laser cut sheets. Sand the small tabs off so that the edges are smooth.

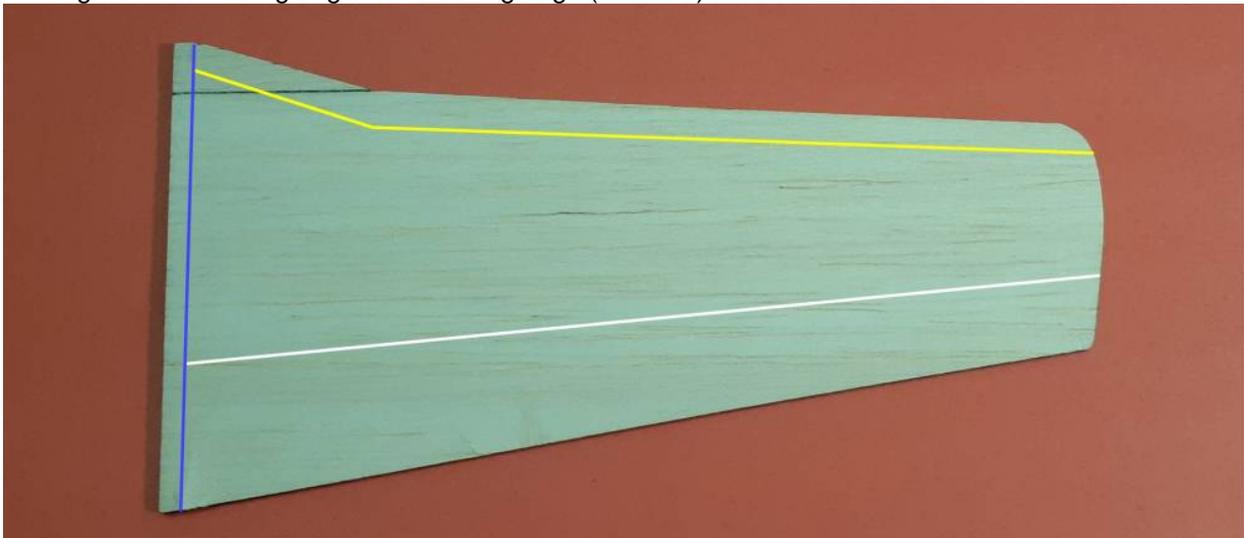


CONSTRUCTION

Glue the two wing leading edge fillets to the flat area on the front of each wing half.



Next, sand the wings to an aerofoil shape. Make a light pencil line $1/4$ " (6mm) away from the wing center running from the leading edge to the trailing edge (blue line). This marks the area to leave flat.



Avoiding the area you just marked, take your sanding stick and sand the top front edge of the wing in a curve down to the bottom edge. Start this about $1/4$ " to $3/8$ " back from the front edge (yellow line). Then round the bottom corner of the front edge just to take the corner off it. Do this along the whole length of one wing panel.

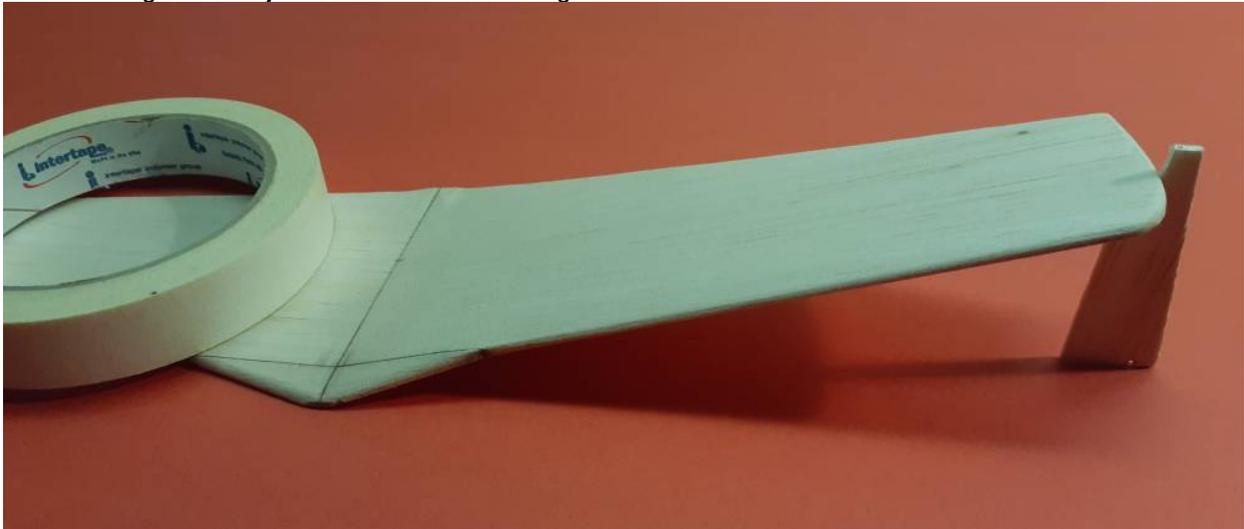
Next sand the top rear edge from a line which runs from 1 " (25mm) from the trailing edge at the wing root, to $1/2$ " (12.5mm) from the trailing edge at the wing tip (white line). Sand this area fairly flat until the trailing edge is a little less than $1/16$ " (1.5mm) thick. Then sand the angle at the white line to make a smooth surface.

Below is a typical wing tip shape viewed from the end. Aim for this sort of shape.



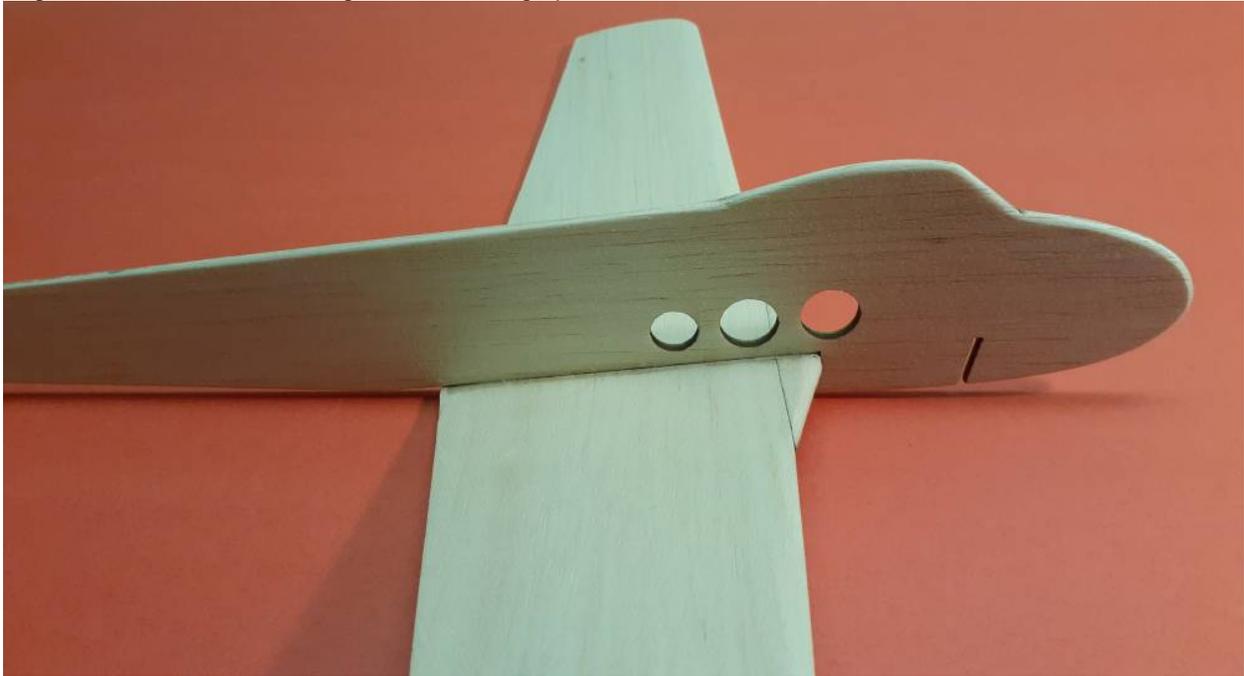
Repeat the process for the other wing. Make sure that you are making both a RIGHT wing and a LEFT wing panel.

Join the two wing panels. First the center of each wing needs to be angled. Prop the wing tip up 1" (25mm) with the center of the wing just over the edge of a board. Use the sanding stick held vertical to make an angle for the joint. Do this on both wings.



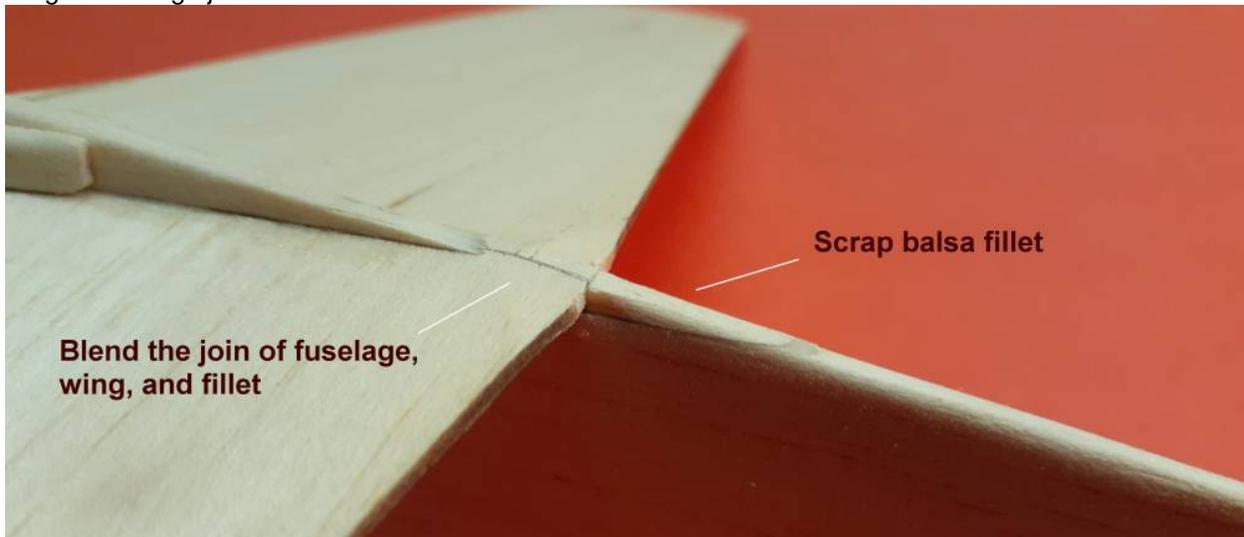
Next put one wing flat on your board. Hold it down as in the photo. Prop the other wing tip up 2" (50mm). Once you are satisfied with the alignment, apply glue and leave to dry. A handy tip is to stick a strip of packaging tape to your board and make the glue joint over that.

Slide the wing into the slot in the fuselage. Check that the wing join is directly down the center line of the fuselage. Look from the front of the fuselage; the wings should be positioned so that they are at the same angle each side of the fuselage. To check this you can set the fuselage vertical to the board using a right angle. Then measure the height of each wing tip above the board.



When satisfied with the alignment, run thin superglue along each side of the joint to glue the wing in place.

Use a scrap of balsa to fill the gap at the back of the wing underneath. Sand to blend the shape of the wing-to-fuselage join.



Take the two engine nacelles and sand toward the rear edges so that they taper to about 1/16" (1.5mm) thick. Be sure to make both a left hand and a right hand nacelle. Round off all of the outside edges.



Slide each engine nacelle onto the wing against the fuselage to check the fit. If needed, sand the inside of the slot to get a close fit. Glue in place.



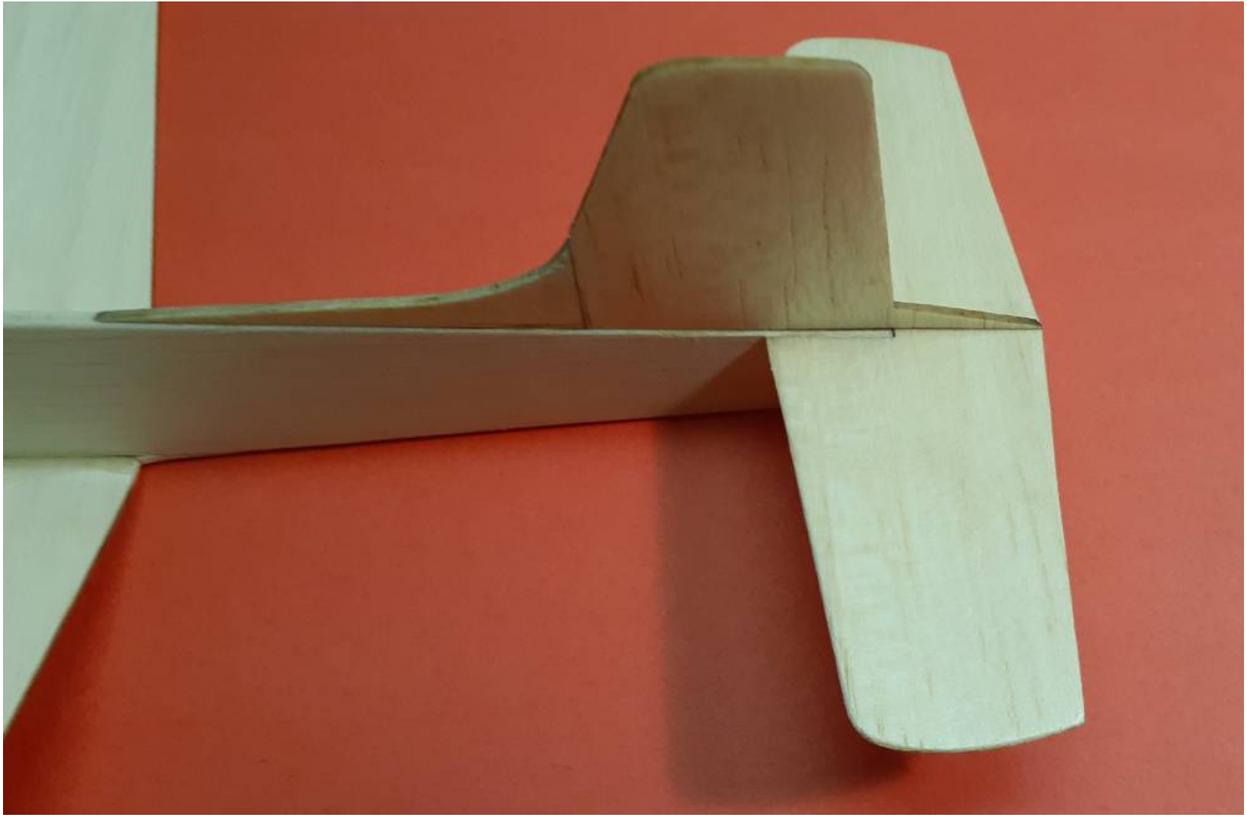
Join the tail fin and the tail fin fillet. Do this flat on a board to make sure that it is flat.

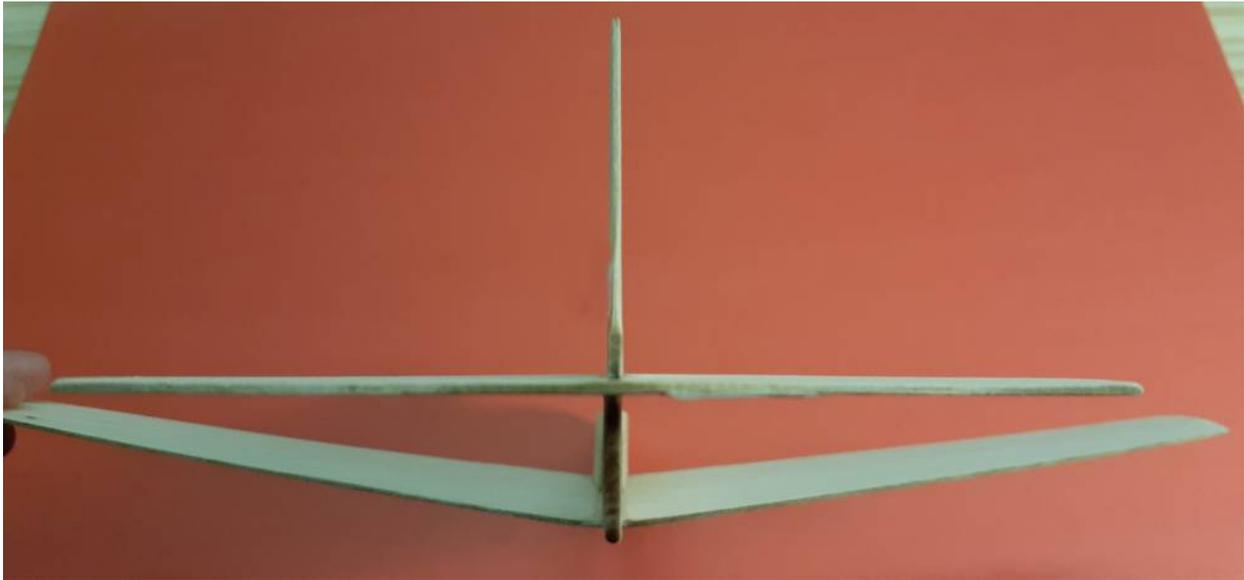


Slide the tailplane onto the rear of the fuselage. The slot goes toward the front so that the tailplane goes all the way forward. The top edge of the tailplane will align with the top edge of the fuselage. Glue the tailplane in place so that it is at 90 degrees to the fuselage side.



Check that the tail fin will fit closely on top of the fuselage and tailplane. Sand if required. Then glue the tail fin to the top of the fuselage and tailplane. Make sure that it is vertical and exactly in line with the fuselage and tailplane center line.





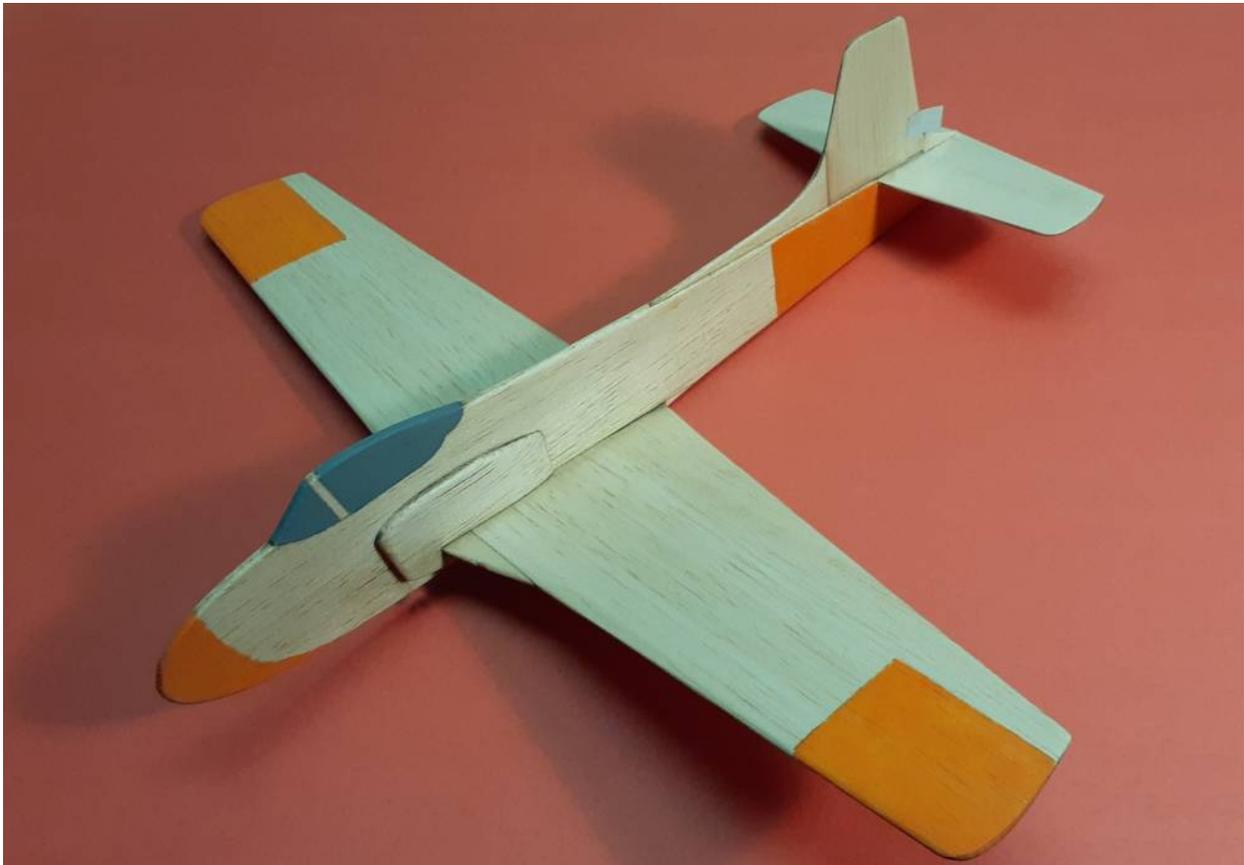
Glue the plywood catapult peg into the slot in the fuselage.



FINISHING

Using fine sandpaper smooth all of the surfaces. You can fly the model as it is without further finishing but avoid wet conditions. One thin coat of Zinsser Shellac will harden the balsa wood and provide a degree of water resistance. Sand very lightly after coating.

Details like the cockpit and markings can be painted on using craft acrylic. Use the paint without thinning and apply it thinly. This is a fun and effective way to add color to your model.



Test Flights

The glider will need some nose weight to balance properly in flight. A good starting point is to Scotch tape a dime to the nose. The initial balance point should be $1\frac{9}{16}$ " (40mm) back from where the wing fillet meets the fuselage. Choose a calm day outside for your test flights.



Throw the glider with the wings level and the nose slightly down. Try to throw it just fast enough for it to glide away from you steadily. If the model dives downwards, move the dime a little further back. If the model climbs and then dives (stalling), move the coin further forward. If needed, add more weight using modelling clay. Aim for a slow glide with a nice smooth flight.

For throw launching you can try tilting the model to the right (if you are right handed) and give it a hard throw pointing upwards at about 20 degrees. Keep adjusting your throw and nose weight until you get some nice glides.

Catapult Flights

Warning: Never point a catapult model at, or near, anyone when launching. The glider will be going fast from the launch so be very careful!

Catapult launched gliders are tricky to fly but great fun, too. For the first catapult launches use just one of the 1/8" rubber loops. Hold the catapult in your left hand (do the same if left handed). Hook the rubber loop onto the glider. Pull the glider back, tilt it about 40 degrees to the right and point upwards about 30 degrees. Holding the catapult still, let go of the glider.

The jet will arch up and to the right, hopefully the wings will level and it will glide down. Watch which way it turns. After several tries add a very small amount of modelling clay to the left wing tip. This is to try to make the glider go into a gentle left turn as it slows down after the launch.

Another trimming tool to try is to cut a small rectangle (1/2" x 1/4") of thin card. Crease it slightly in the middle and glue it to the bottom of the rudder on the left side. This is a rudder trim tab and is used to help make the glider go into a left turn at the top of a stronger catapult launch.

To get the best out of any catapult glider we can recommend searching "catapult launch gliders" on YouTube. Have fun!