

# Top Dawg

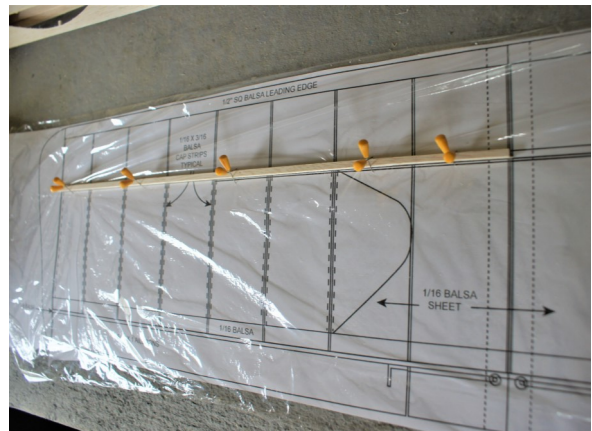
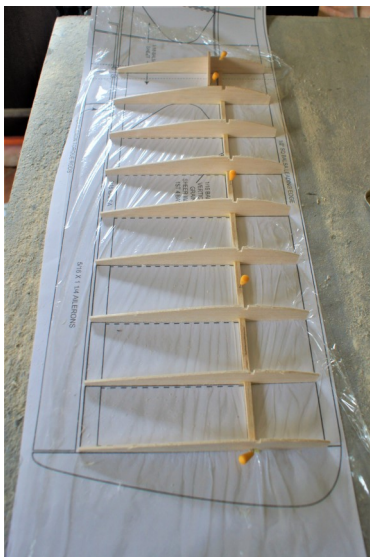


Please note that there are many ways to build this plane, There is not a definitive method. This is just an example of how I built mine.

## The Wing

**Note:** The wing is the exact length of the wood, so for the spars and sheeting, these must be cut exactly in half to avoid wasting a lot of wood.

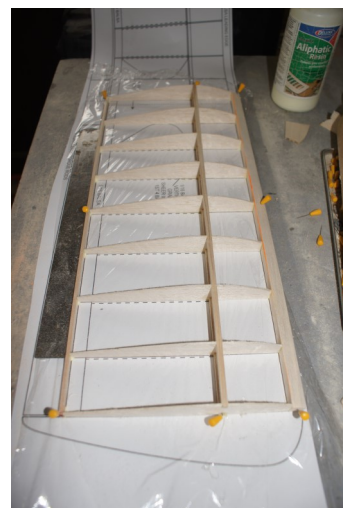
1: Lay out the plan and cover with cling film.  
Pin down lower spar.



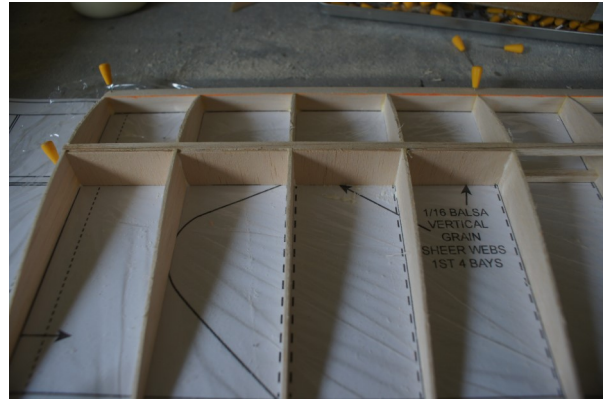
2: Glue in all ribs, and use the template to ensure correct angle of centre rib.



3: Roughly sand leading edge to shape. (It is easier to do this now than when fitted.) Then glue in leading and trailing edge, and top spar.



4: Fit webbing on the back of the spars, make sure that the wood grain is vertical.



5: Final sand the leading edge to shape and fit the front and rear sheeting. Then fit centre sheeting and cap strips.

6: Remove from board and turn over and fit all underside sheeting and cap strips. Then sand profile to leading edge.

7: Repeat 1 to 6 for the other wing panel.

8: Glue sheets for the wing tips together and roughly sand to shape.

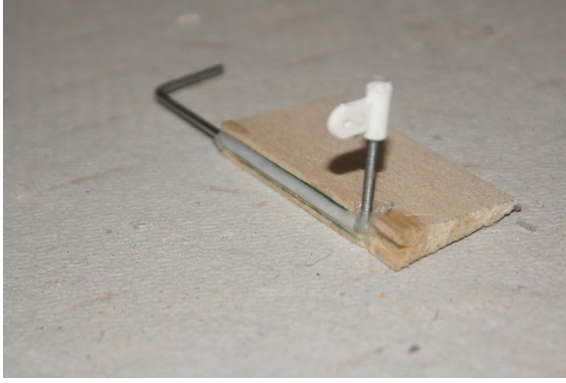


9: Stick tips to ends of wing and final sand to shape.

10: The two wing halves can now be stuck together. Prop one end up by 2" and butt join together, ensuring that the front edge is straight.







11: Bend the torque rods to the size shown on the plan. Cut a bit of trailing edge stock to size on plan and groove out along the centre.

Apply grease or Vaseline to the metal part of the rod to avoid sticking in place and glue the plastic tube to the wood section.

Offer up to back of wing, remember the bottom of the wing should remain flat with this part added. You will need to cut a slight groove in centre of wing for tube. When you have the correct fit glue in place with epoxy making sure you still have movement on the torque rods.



12: The next part is to add the fibreglass bandage across the wing joint.

This can be left for later as you will need to mix a small amount of fibreglass for the elevator and rudder, and it is easier to do all of this in one hit.

The glass cloth I used was  $17\text{g/m}^2$ , only because this was what I had in the shed.

I also added some small squares of cloth at the front and rear edges just to strengthen where the bands sit.



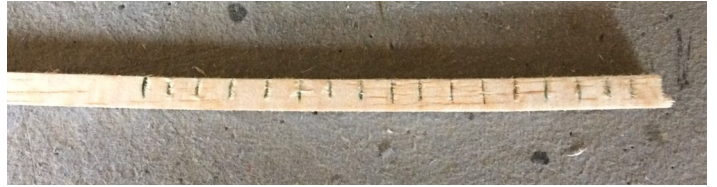
13: Cut ailerons to size and draw a line down the middle of the front edge and shape as shown in picture.

Now put wing to one side until fuselage has been made.

The ailerons were later, after covering, fitted using cyno hinges

## The Fuselage

14: The lower 1/4sq stringer needs to be tapered at the rear. Also, if the wood will not bend enough at the front, (depends how hard the wood is), you can cut down into the wood at regular distances, about 2/3 of the depth, this will allow the wood to bend, and it can be hardened again later by applying cyano to the cuts.



15: Now stick the two parts of each side together and when dry, mark out positions of uprights and stringers. Then glue these pieces in place, adding the wing dowel reinforcements. Note also additional 1/4sq (shown in black) added between dowel reinforcements to strengthen wing seat.

This is a good time to cut out the holes for the control exits at the rear and drill through the holes for the band doweling.

Remember to make a left and right hand side.

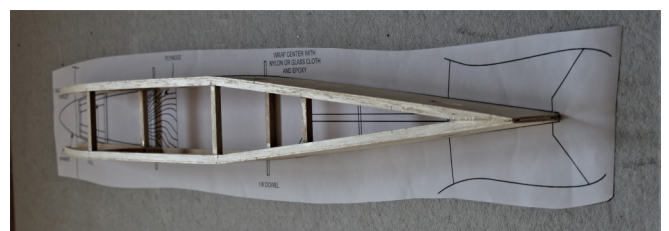


16: Again, cover plan with cling film and with the sides upside down on the plan, join together with pieces of 1/4sq at front of wing seat where the hole is in the dowel sheet. Ensuring that the sides are square.



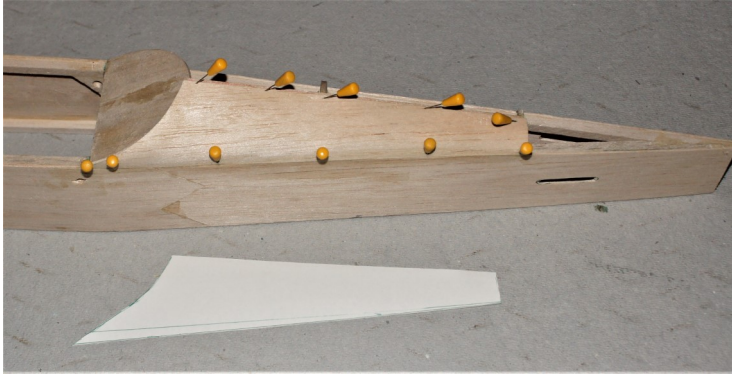
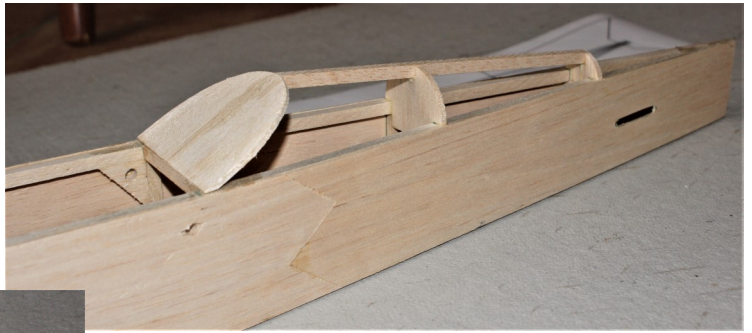
17: Additional 1/4sq parts were fitted across the fuselage, top and bottom where the uprights are, as the back was pulled in to the shape on the plan. This gives a good strong box on which to build the rest.

Note: The top cross piece at F4 should be moved by 5mm to the rear to allow F4 to be fitted later.

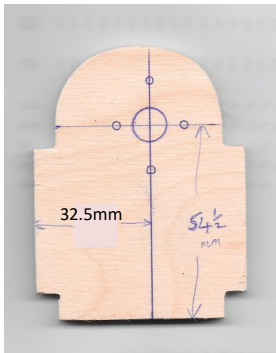




18: Remove from plan and add formers F3, F4 and F5, also add 1/4sq top spine.

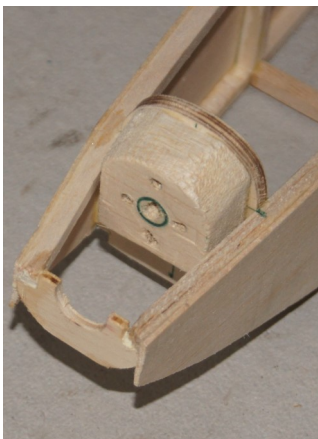


19: Make a card template to fit around one side of these formers, cut 1/16 sheet to size of card and glue in place. Repeat for the other side.



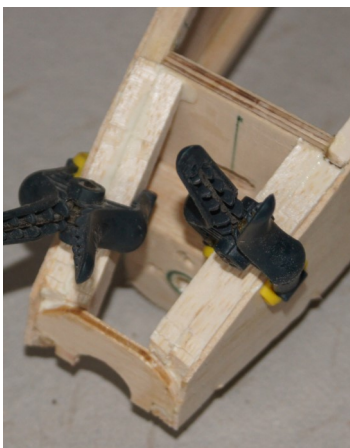
20: Drill holes in bulkhead for the motor, as shown, this was attached by bolts through the bulkhead directly into the motor. These holes are offset as shown, as I found that 2 degrees of right thrust was required. I used a wood spacer to pack between the motor and bulkhead to avoid changing the size and shape of the bulkhead.

Also drill holes for cooling and the motor wires.



21: Now pull in the nose and glue in the bulkhead and the lower part of the front ply plate, remembering the 2 degrees right thrust. If the sides are difficult to pull in, cuts can be made in the 1/4sq stringers as before. When sides are right, drip some cyno on cuts to reinforce. Additional bits of 1/4sq were added vertically behind the bulkhead, just as a bit of strengthening.

Note: Ignore the holes in bulkhead in this pic as this was taken before I discovered that side thrust was required.

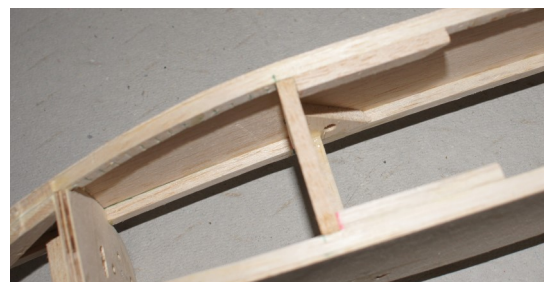


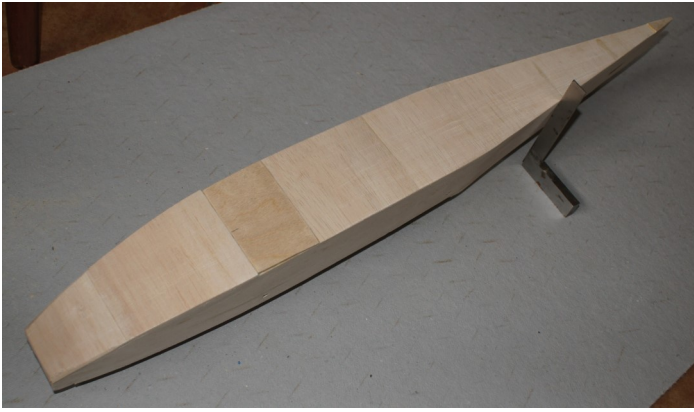
22: Fit some scraps of wood to the bottom of the nose to allow for shaping.

23: Fit 1/4sq doublers to support the undercarriage plate.

**Note: These are not where shown on the plan.**

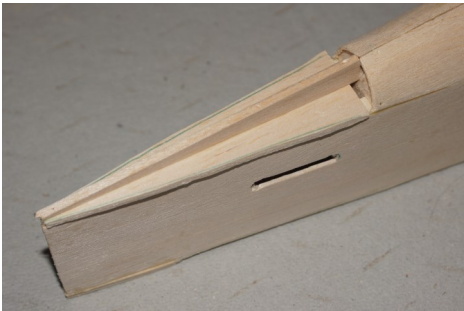
Now fit undercarriage plate, this is 1/2" longer than shown on the plan to allow room for the clamps, so fit 1/4" further forward.



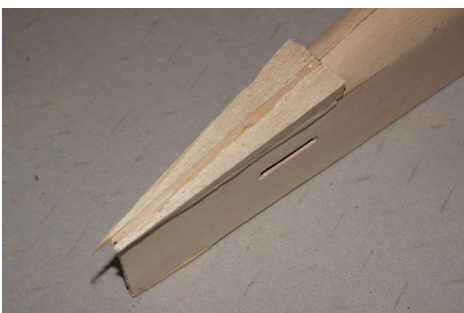


24: Sheet the underside of fuselage with 1/16" sheet, with the grain across the width of the fuselage. Also fit ply tailwheel mount.

25: Fit the motor and spinner in place, and using these as a guide, the lower part of the nose can be sanded to shape. I wrap the motor in cling film for this, to avoid getting any grit or dirt in it.



26: The next job is to make the infill between the horizontal and vertical stabilisers. To do this, I made a t-piece from the stabiliser sheet offcuts and tack glued lightly in place on the fuselage.



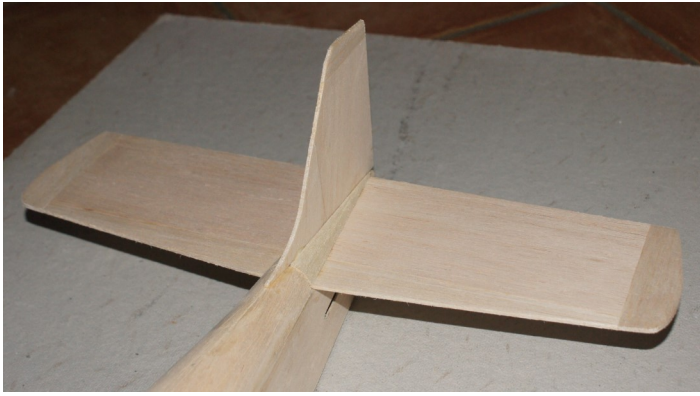
Then, again, tack glue some scraps for the infill, this is now easy to sand to shape. When done, remove from fuselage and take out the t-piece, leaving two perfect shaped infills.



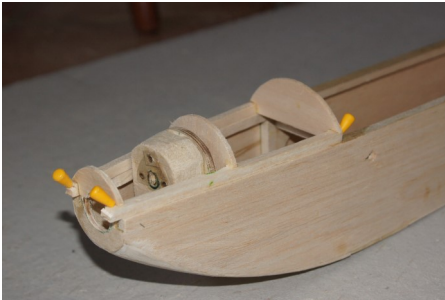
27: Glue together the parts for the stabilisers, when dry these can be glued in place on the fuselage, checking that they are at right angles to each other and that the horizontal stab is inline with the wing seat. The easiest way to check this is to test fit the wing and eye up from behind. If there is any discrepancy this should be sorted now by shimming under one or the other.



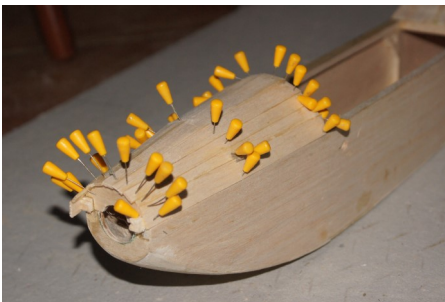




28: The infills can now be glued in place.



29: The front hatch is next. So pin the 1/4sq stringers in place on the fuselage, and fit the formers, H1, H2 and the front ply plate. When dry, the 1/16 sheet can be cut into strips and the hatch planked.

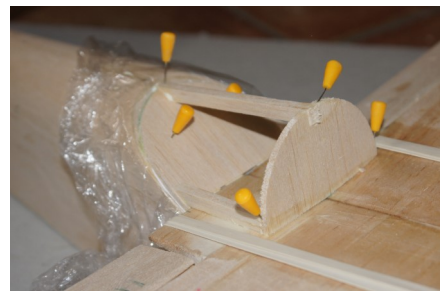


**Note: If you have any thicker sheet available, it would be a good idea to use this, as the 1/16 gets a bit thin when sanded down.**

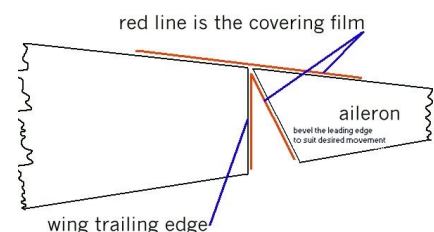
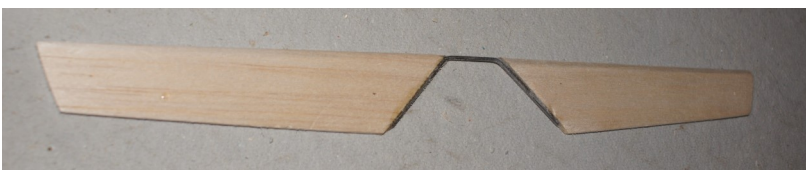
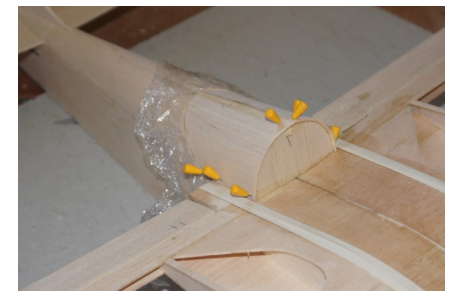
With the wing in place, use more trusty cling film to protect it, and stick some scraps of wood to the rear



of the hatch and sand to shape. To get a good fit to the wing, I used a thin layer of P38 car body filler to get the right profile.

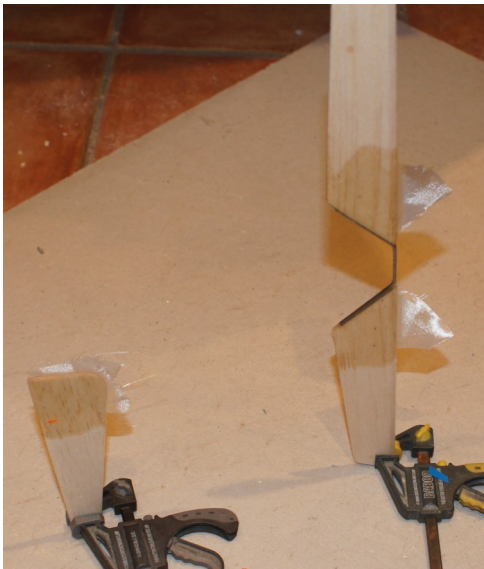


30: Now, with yet more cling film in front of F3 on the fuselage, fit the other F3 and adjust to size as necessary. Fit F2, the 1/4sq top spine and some additional 1/4sq on the wing deck, this is needed to have something to glue the sheeting to. Then, as for the rear decking, make a card template and then cut and add 1/16 sheeting.



31: I used the covering for hinges on the elevator and rudder. If you are going to do this the front edges should be chamfered as shown in the diagram. The wire joiner should be bent to shape and stuck to the elevator halves with epoxy. Make sure that the leading edge is straight, then offer up to horizontal stab and sand ends to shape if required.





32: The wire joiner should now be covered with glass cloth, I also added some over the lower part of the rudder and on the elevator to reinforce where the horns will fit. If you left the wing as suggested, don't forget to glass cloth this area as well.

33: There are lots of choices for covering materials, so this is your choice.

34: My model balanced on the wing spar, without the addition of any weight, with the servos and radio as shown, and the battery up against the bulkhead. Due to wood weights etc. all models will be different, so experiment with radio installation position before finalising.

35: These are the control throws that I have on my model, and would probably be a good starting point.

	Low		High	
	Up	Down	Up	Down
Aileron	5	5	8	8
Elevator	5	5	10	10
Rudder	20 Right	20 Left		

