

Micro Runt



ANGELWING
DESIGNS



Micro Lightweight Slope Model 850mm Span

2 Channel RC, Aileron and Elevator

Flying Weight 90g to 130g

Requires 2 x 2.5g Servos (emax 9251 or similar)

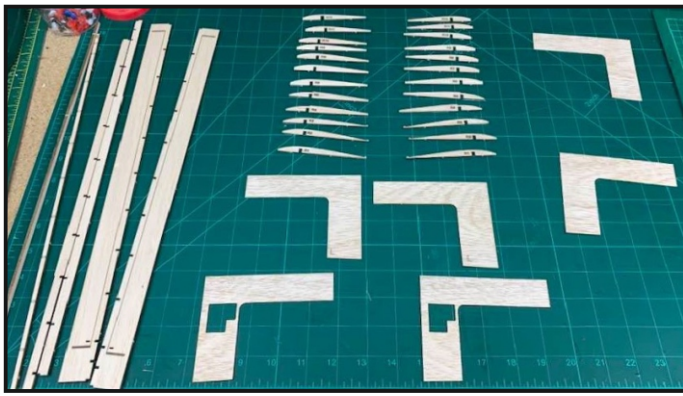
1 x 4g to 9g Servo for elevator

Small 4 / 6ch Micro Receiver and basic TX

Suitable RX Battery

example 4 cell 1/2aaa 230mah

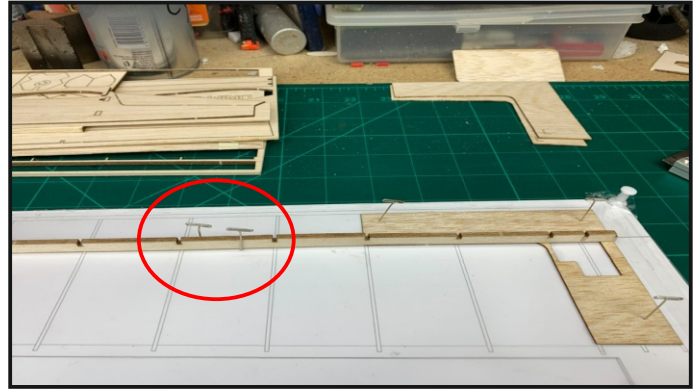
Please note that this is a kit that requires adhesive, covering basic modelling tools and modelling skills etc.



Hopefully you have already made the decision if you wish to build the Micro Runt with a single central aileron servo or to use 2 ultra micro servos (2.5g to 3g). We personally use the 2 servo option as it is not only easier but ultimately lighter and more flexible with radio set up. We supply bottom wing sheeting to allow both options. *Please note we do not supply torque rods in the kit for the single servo option or any build info for doing this.*

Pin the lower centre sheet to the plan. (Remember to protect the plan with a plastic sheet or candle wax to prevent parts sticking to the plan)

The main spar supplied with the kit is Obechi rather than the balsa one shown for even greater strength. You will not be able to easily pin through the obechi spar so the pins should go either side of the spar as pictured to the right. This is purely to hold the spar during the initial build phase of the wing.



Pin down the trailing edge sheet and add the 3 central wing ribs R1, R2 and R3. Please note that R1 should be glued at an Angle for the dihedral. Use the jig provided to obtain this angle. You can use PVA, CA, Balsa Cement for all of the wood to wood joints on the Micro Runt, we use Deluxe Materials superhatic adhesive for most of our builds. *R2 gets cut away for the servo after the top sheeting is added*

Add all remaining ribs, R4 - R12 and the 3mm Balsa leading edge sheeting. You will notice the leading edge has engraved lines to help ensure the wing ribs are glued into exact position. This engraving should face towards the ribs.

Repeat the above steps to build the opposite wing half. Don't forget to build a left and right wing panel. I think at some point we have all built 2 identical panels.



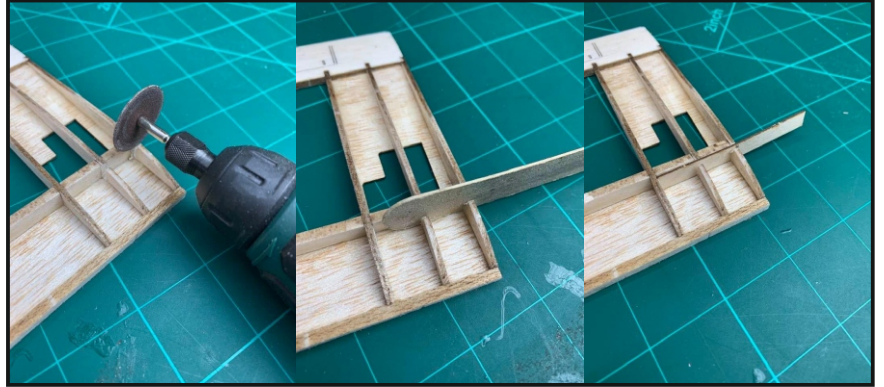
Each Wing tip is made from 3 laminations of 3mm Balsa. We used PVA and small clamps to hold the laminations while the glue sets.





Sand the wing tips and trailing edge to shape. The actual section applied to the wing tips really does not matter and is one of personal taste. An approximate shape is shown on the plan. The Trailing edge of the wing should be sanded so the rear is approximately 1mm thick. Again as example is shown of the wing plan.

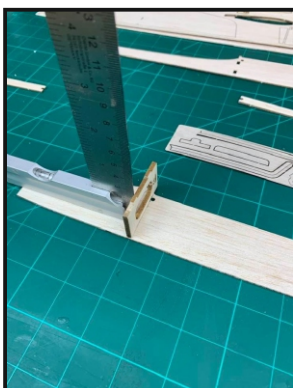
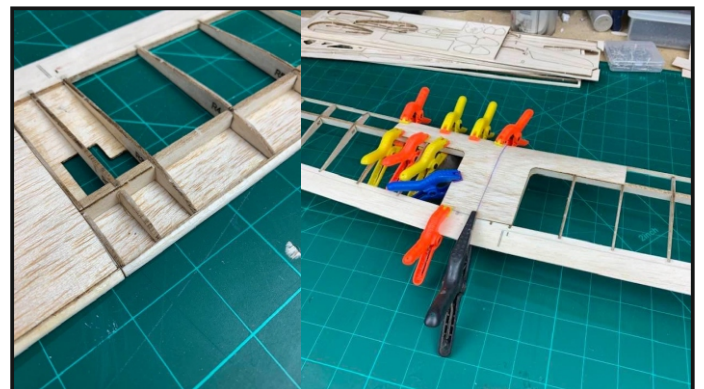
Cut a slot in front of the main wing spar through R1 and R2, You can use a Dremel type tool with a cut off wheel or a small saw such as a razor saw, or junior hacksaw. If the slot is a little too tight for the Dihedral brace to fit a nail file is ideal to gently open up the slot. Remember its important to have a good fit against the spar, which should be free of any adhesive or remnants of the ribs. If you do have any gaps then use epoxy to glue the brace into position.



Add the top centre sheeting to the wing panel that now has the dihedral brace. Small clamps or clothes pegs are ideal rather than pinning through the thin balsa sheet.

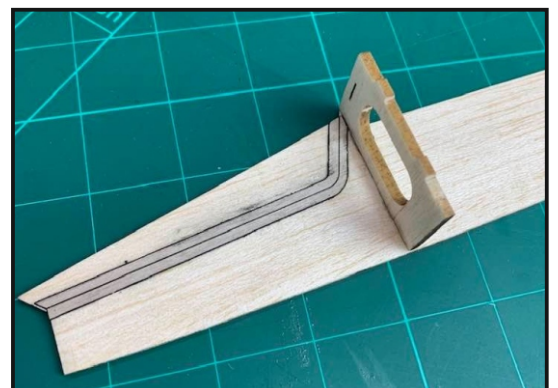
Again cut through R1 and R2 as per the opposite wing panel. You can now join the wing panels ensuring you have the correct dihedral angle of 30mm measured under one wing tip as shown on the wing plan.

Add the remaining top centre sheet after joining. You can now final sand the wing. We suggest that the ailerons are NOT removed at this stage and are only cut from the wing when you are ready to cover. This helps keep the components warp free right up to the point of covering.



No plan is required to build the fuselage. The main fuselage formers key into the each fuselage side to ensure a quick and accurate build. Start with Former F2 making sure it is square to the fuselage side.

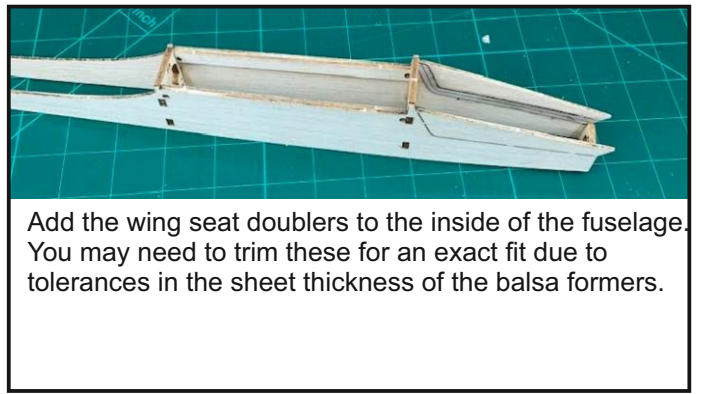
Now add the 0.4mm ply canopy frame. The frame must only be glued to the fuselage side and not the canopy that will be cut away later. If you are not comfortable doing this the 0.4mm ply frame can be added after the removal of the canopy later in the build.



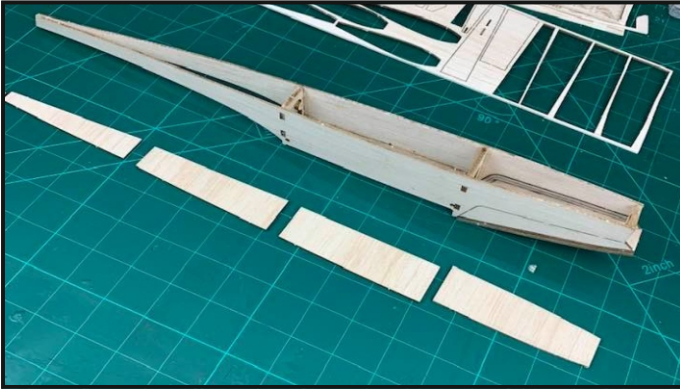


Add F3 again making sure it is square to the fuselage side.

You can now join the two sides adding F1 as you pull the nose together. The fuselage may not look straight at this stage. The top and bottom sheeting is cut to size and determines the final shape of the fuselage



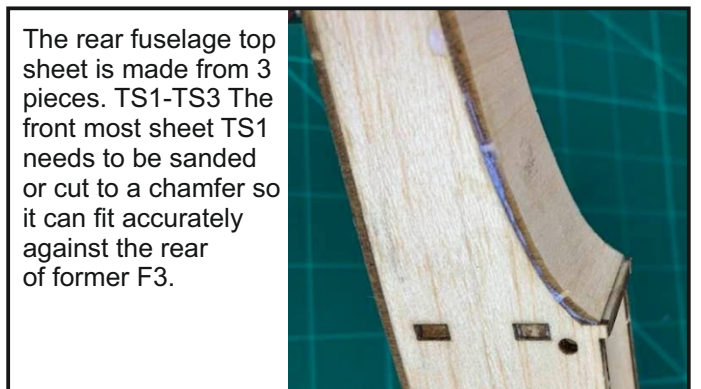
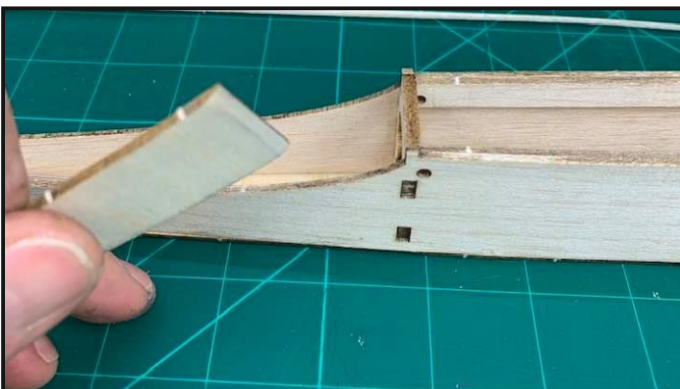
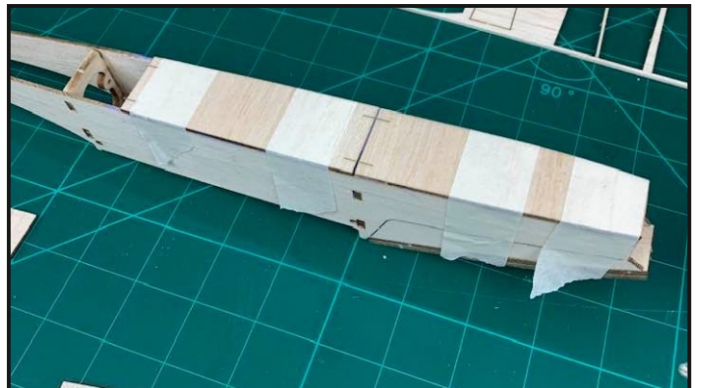
Add the wing seat doublers to the inside of the fuselage. You may need to trim these for an exact fit due to tolerances in the sheet thickness of the balsa formers.



Locate the lower sheet components LS1 - LS5

The rear of the fuselage should be pulled together using masking tape and a scrap of 1mm Balsa before fitting the lower sheeting. This gap is to take the fin post, which is why the fuselage isn't glued at the rear.

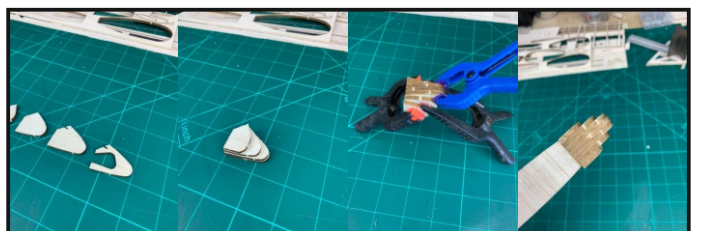
You can pre join all of the lower sheet before fitting, or starting at the nose glue each sheet into place. We use masking tape to hold the sheet down. This also allows some manipulation for the fuselage sides as you work so you can ensure you have an accurate, straight fuselage. Don't forget to glue the sheets together as you go.



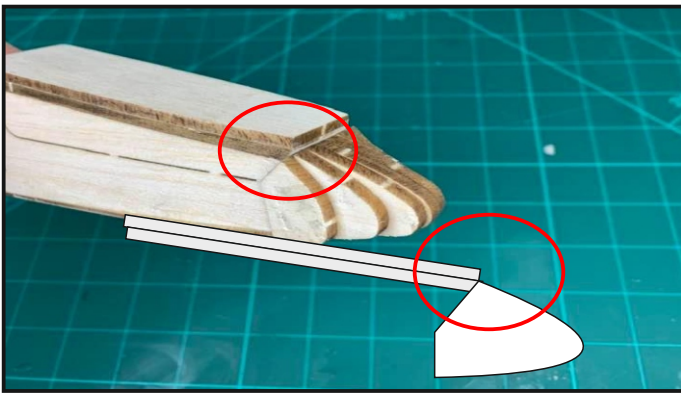
The rear fuselage top sheet is made from 3 pieces. TS1-TS3 The front most sheet TS1 needs to be sanded or cut to a chamfer so it can fit accurately against the rear of former F3.



To save the skills required of building a ship in a bottle now is the time to put the PTFE elevator tube into place. This slides through the rear slot is TS2 and through one of the holes in F3. The tube must not be glued at this stage as it may need to be moved once the fin is built.

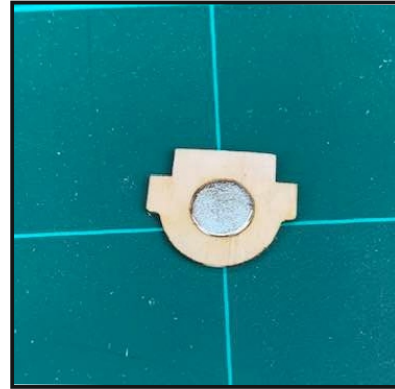


The nose block is laminated from 7 pieces of 3mm balsa sheet. The centre core is hollow to allow a small amount of lead shot to be added if needed



The canopy sheeting is made from 2 layers of 3mm Balsa. The lower sheet needs to be sanded / cut to match the angle of the nose blocks, equally the rear needs to be shaped to match the canopy line

The fuselage can now be sanded to shape. A small radius can be sanded onto the lower and rear fuselage sheet. The canopy can have a much more rounded look. The Canopy can now be cut away from the fuselage



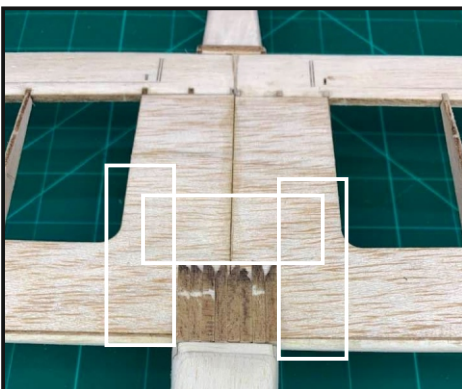
Glue one of the 2 magnets supplied into the 0.8mm plywood retainer. Either medium CA or epoxy adhesive works best.



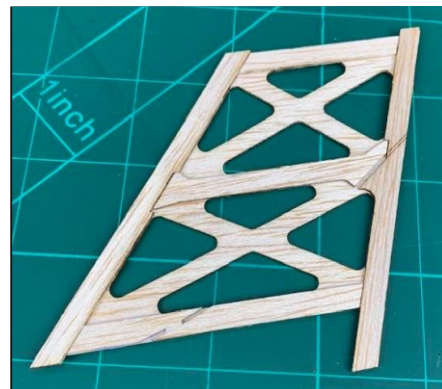
Glue the front magnetic catch into the nose block. The precut slots in the nose block determine the angle for the catch.

The Plywood rear tongue is glued flush with the rear of the canopy.

The 2nd magnet gets glued to the inside of the canopy.



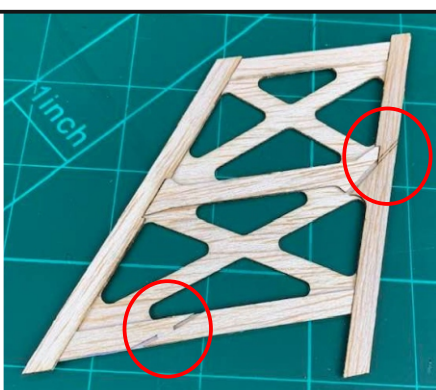
The wing is faired into the fuselage with the 3mm balsa parts. We suggest masking around the edge of the fairing with tape when sanding to protect the wing sheeting.

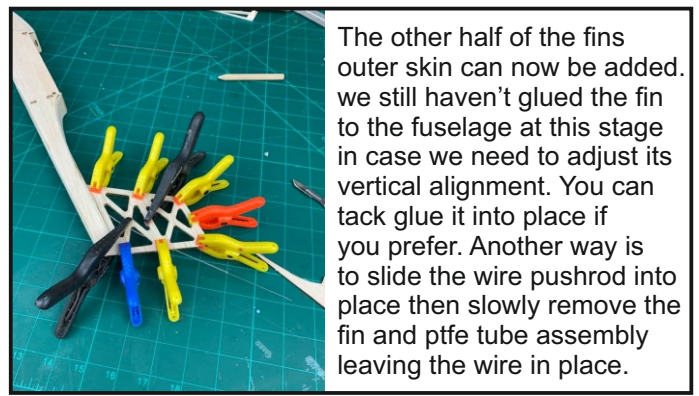


The fin is a hollow cored structure. Start by glueing the 1mm balsa core components onto one of the outer sheets. The outer sheet negates the need for a paper plan to build the fin.

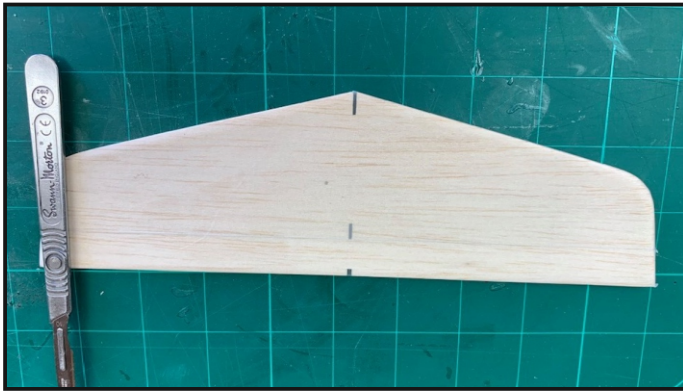
Note the leading and trailing edges should overhang!

Trim away the balsa where indicated for the PTFE elevator pushrod tube.

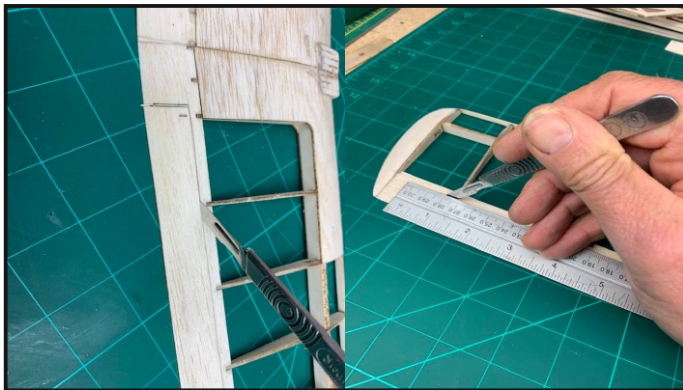
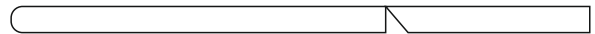




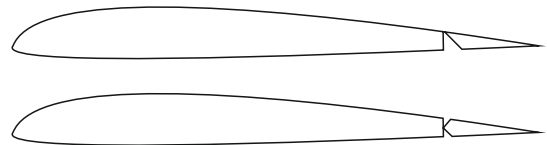
The other half of the fins outer skin can now be added. we still haven't glued the fin to the fuselage at this stage in case we need to adjust its vertical alignment. You can tack glue it into place if you prefer. Another way is to slide the wire pushrod into place then slowly remove the fin and ptfе tube assembly leaving the wire in place.



The tailplane only needs a small radius sanding on the leading edge and tips. You can sand the trailing edge a little if you wish but at only 1.5mm thick there isn't much need. Cut the elevator away and add a chamfer to allow top hinging.



The ailerons can now be cut free from the wing. You have the option of top hinging or centre hinging. Shape the Leading edge of the aileron to suit. We strongly recommend top hinging as it is very important to have a sealed hinge line.



As the micro runt is a small lightweight model we only recommend covering the wings and horizontal stab / tailplane in lightweight covering films. Feather cover or Oraflight being ideal. Standard covering films are not recommended. However standard covering films can be used without any problems at all on the fuselage.

Balance the completed model in a slightly nose down attitude on the main spar. You can push the C of G further backwards by up to 10mm if you want a more responsive feel, but this will make the model harder to fly in blustery conditions.

Control throws
 Ailerons 13mm up - 9mm down
 Elevator 10mm up and down

Optional 20% expo on elevator, ailerons do not need expo unless preferred by novice pilots

