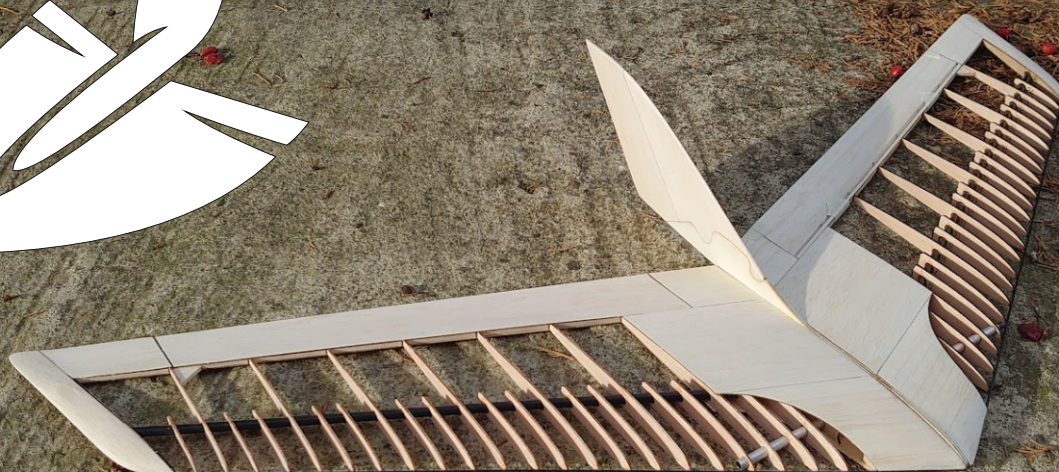


ANGELWING
DESIGNS

SOARS



SUB 250g

Further items are required to complete this model as pictured:

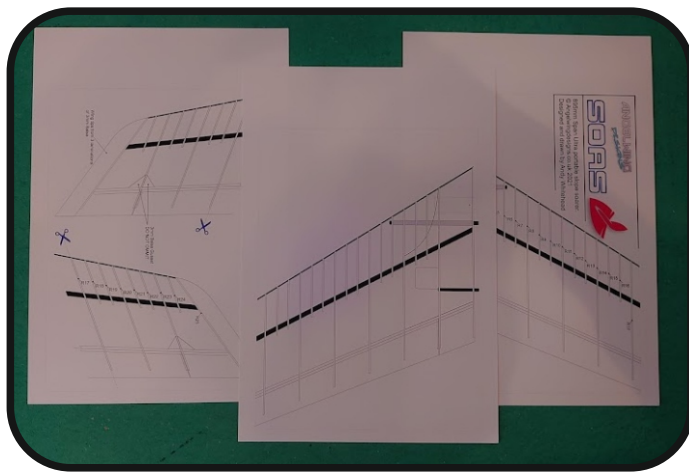
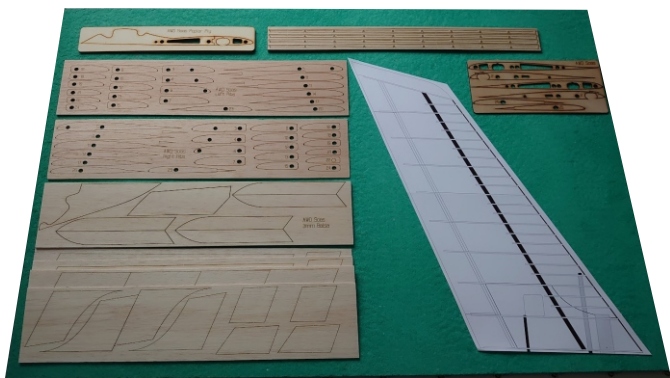
Recommended Equipment

2 off 7.5g to 9.4g Metal Geared Slim servos
1 off 4 Cell AAA RX battery (overlander config 9)
1 off 4-6 channel Micro Rx eg: Spektrum AR6100e
Feather Cover or Similar Lightweight covering (20 - 25 gsm)
Adhesives
Basic Tools

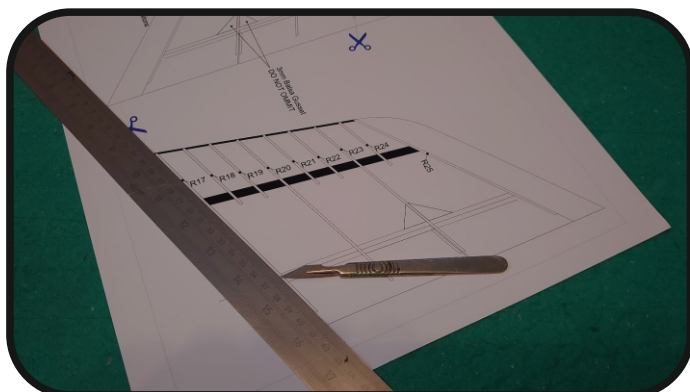
Please note that Model Aircraft are not toys and despite the size and lightweight of the Pug2 DLG it still needs to be operated safely. The builder and pilot of this model aircraft kit accept all liability for its use



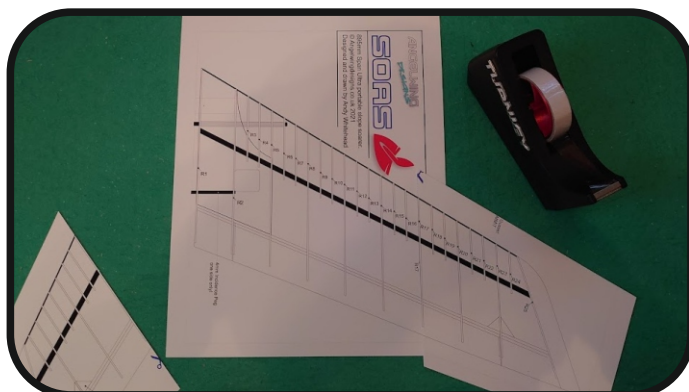
Basic Wood parts and plans



Cut the plans where indicated



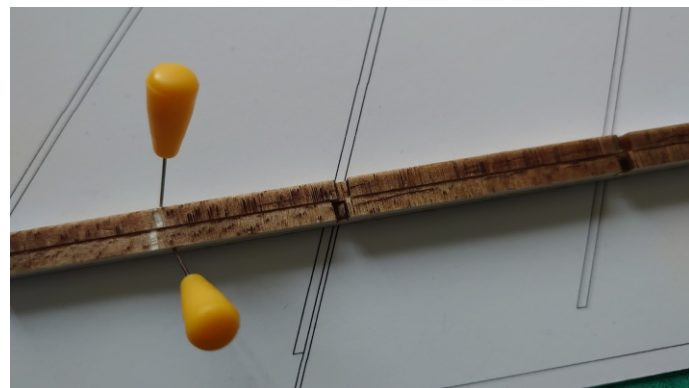
Accurately join the wing plans, cover with polythene sheet or rub with a candle.



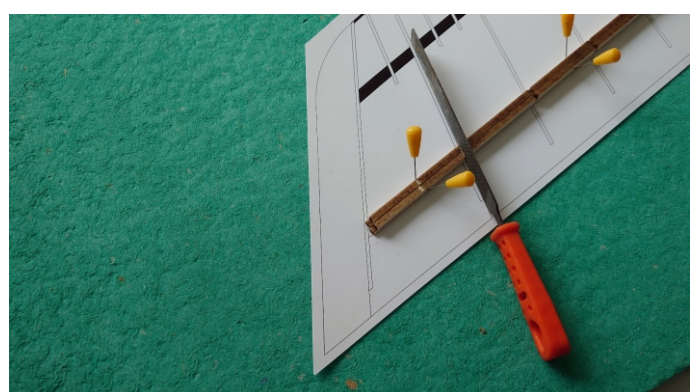
Pin down the rear spar and elevon leading edge, please note these are not glued to each other



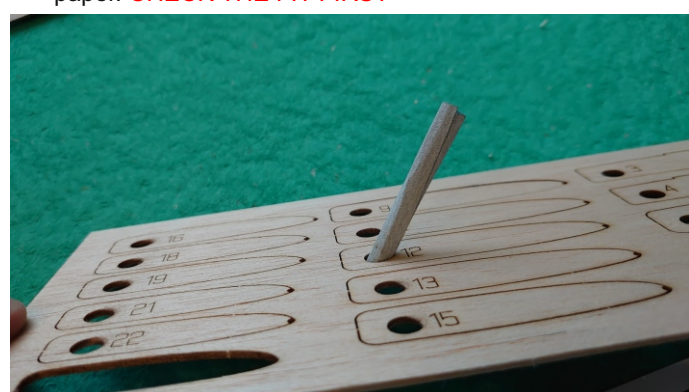
Note the slots in the spars and elevon leading edge will be offset to each other



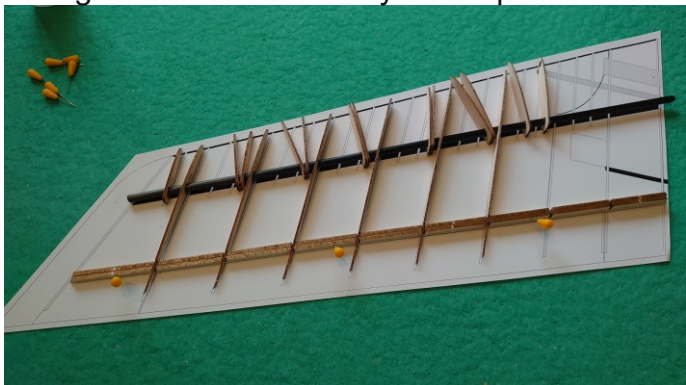
Use a file or the supplied nail file to reshape the slots until they correctly align with the ribs



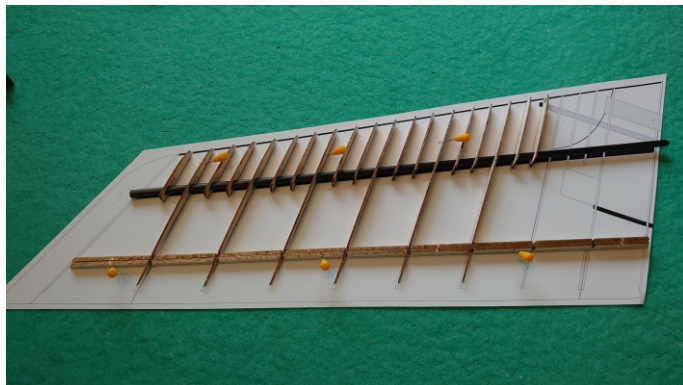
You may find it necessary to adjust the spar holes in the ribs using a round file of rolled up glass paper. **CHECK THE FIT FIRST**



Ribs, half ribs and spar are all assembled without glue, take care as the ribs will be fragile until this assembly is completed



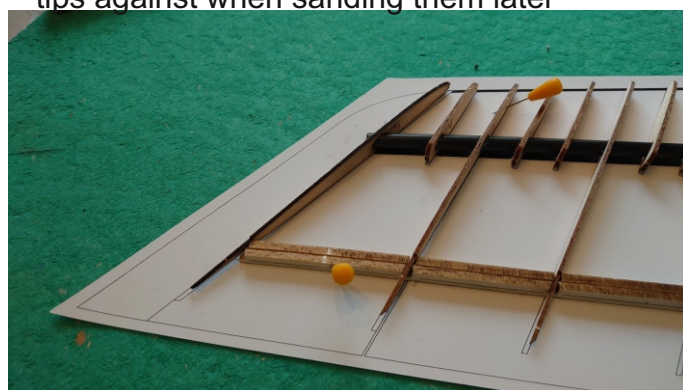
DO NOT GLUE the partial ribs until the carbon rod leading edge has been fitted!



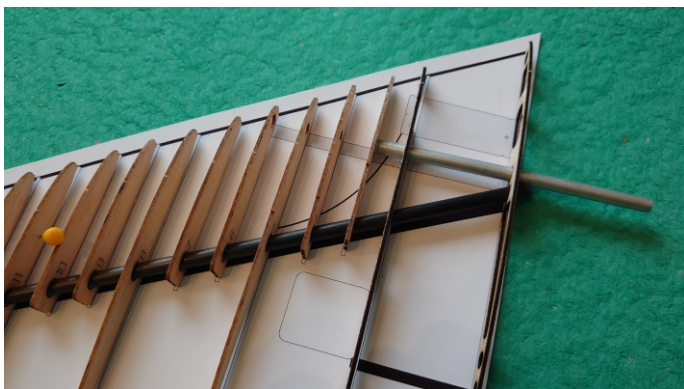
Only glue the full ribs to the spar. The half ribs can then be micro adjusted once the carbon rod leading edge has been fitted.



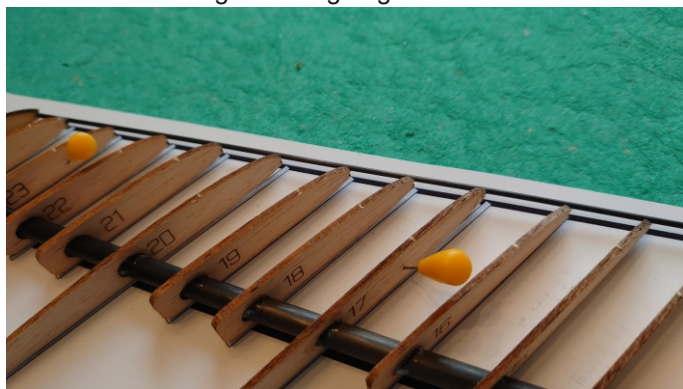
The tip rib is 1.5mm plywood. This is so you have a hard surface to shape the wing tips against when sanding them later



Slide the metal wing joiner tube through R1 and R2 by twisting as you go if it feels tight



Add the carbon rod leading edge. Use this to adjust the position of the part ribs to ensure you have a nice straight leading edge



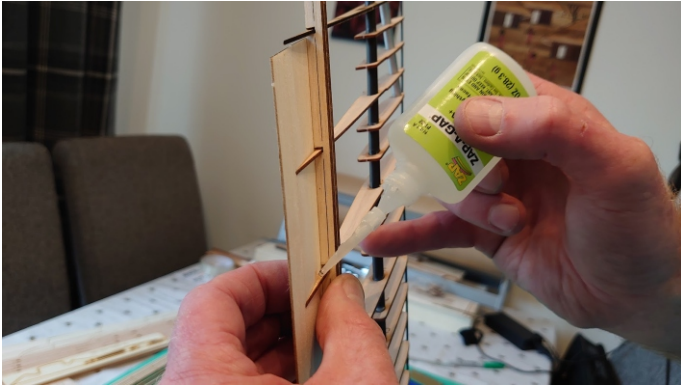
Add the Main elevon Sheeting. Please see the additional picture to the right. The engraved line follows the line created where the rear spar



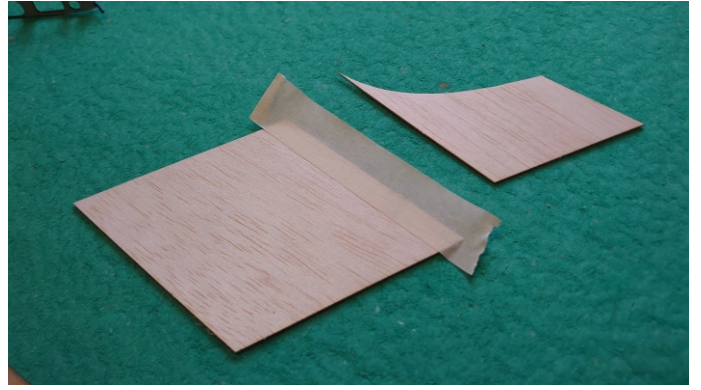
and the elevons leading edge sheets meet!



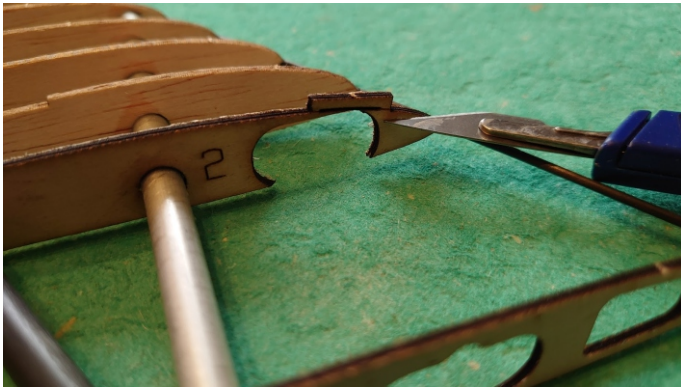
You can glue the elevon sheet into place with the wing off the plan if desired



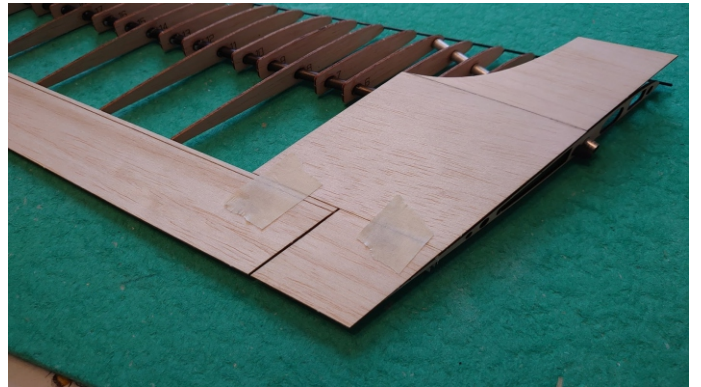
Join the Centre wing sheet. We prefer to use PVA as it sands better



Using a knife or very sharp snips remove the tab that holds R2 together during the build.



Add the top centre sheet and also the tip sheet at the end of the elevon sheet



Ribs for the ends of each elevon are very small



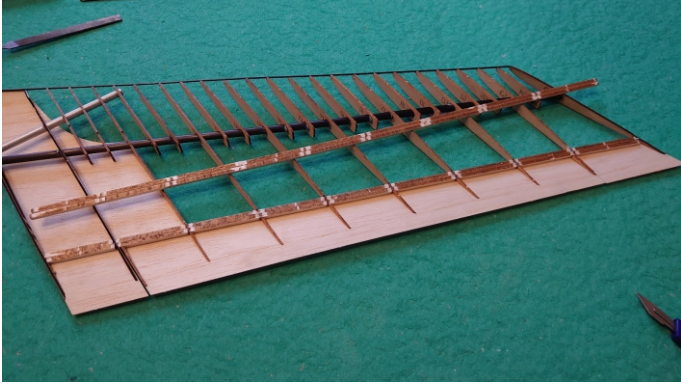
Add the elevon ribs, It's a good idea to add a small epoxy fillet or use CA and baking soda.



The elevons spar and rear spar trim easily using a scalpel or sharp knife



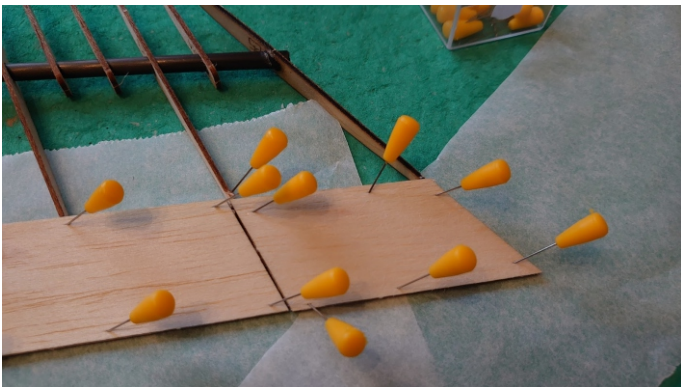
Once the spar is removed carefully sand the spars and Elevation leading edge to match the wing ribs (Use a sanding block!)



With the wing pinned to the board upside down the lower sheet can be added, use PVA for this as CA does not give enough working time



Make sure the tip, root and Elevation trailing edge sheet are bonded to all components.



Give the glue chance to fully cure before removing from the building board



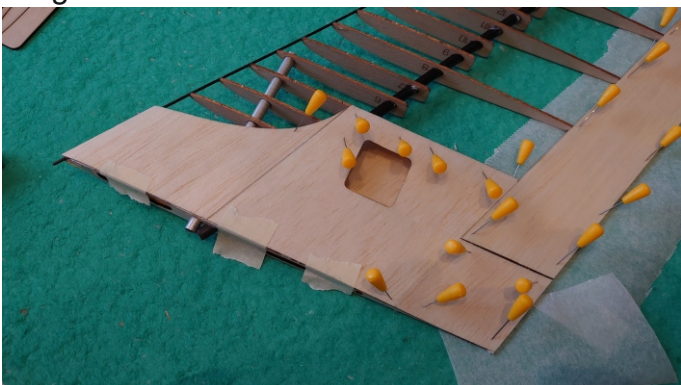
The wing retaining magnets are glued flush with the outside of the centre rib R1



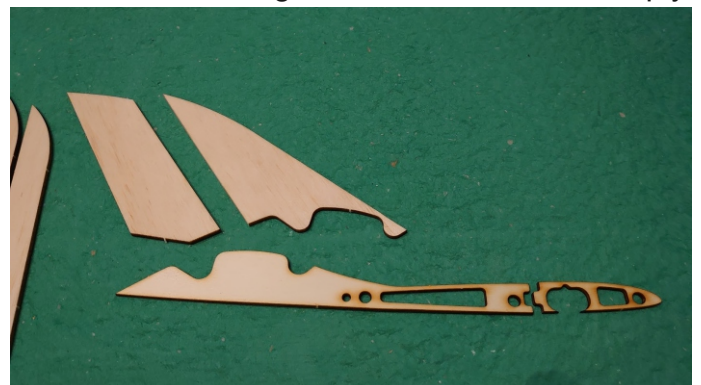
There are 2 1.5mm thick magnets fitted to R1
One at the front, one at the rear



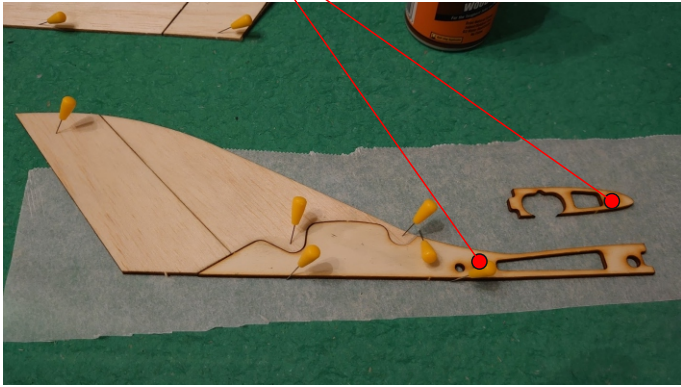
The Lower centre Sheet can now be added and left to dry along with the elevation and trailing edge sheet



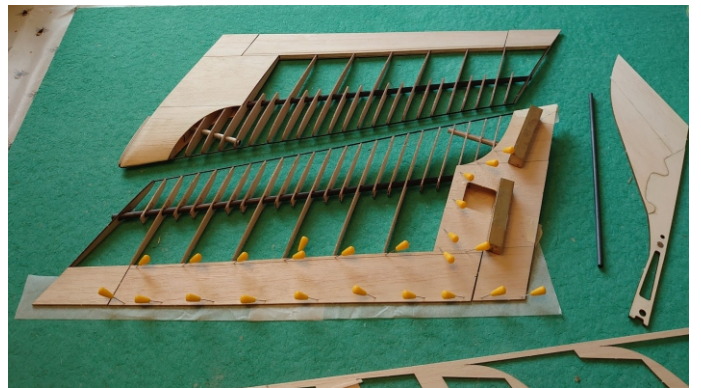
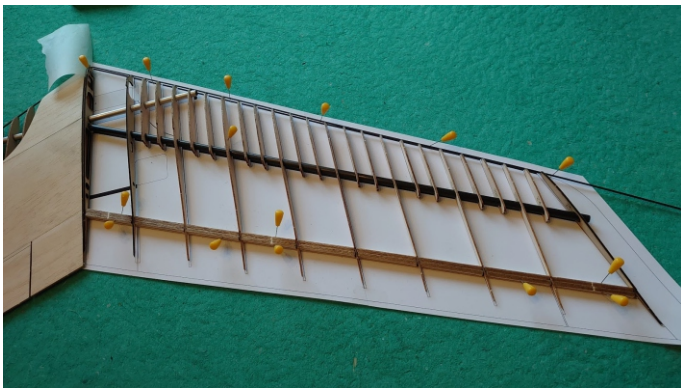
The centre rib and fin are made up of the 2 balsa fin parts and the plywood centre rib
2 x 6mmx3mm magnets are bonded into the ply



Magnet positions

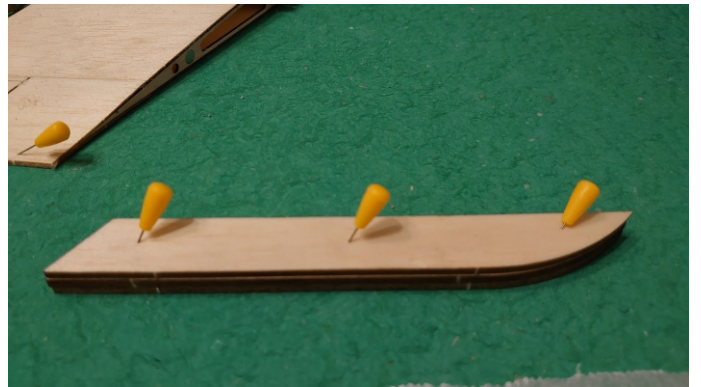


To ensure good alignment we built the opposite wing half against the completed half wing using the wing joiner to ensure perfect alignment.



The front part of the centre is glued to one of the wing halves. It doesn't matter which side is used.

Laminate the wing tips using PVA

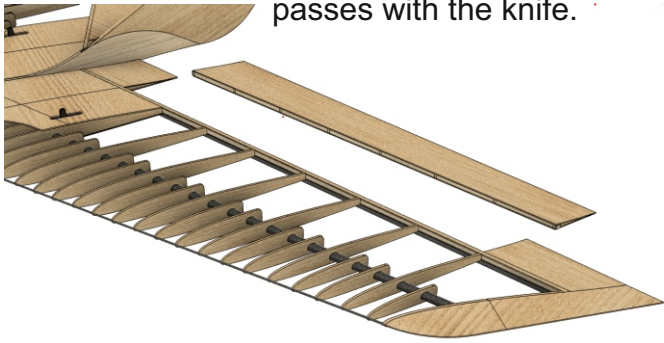


Use PVA or a very small amount of epoxy to attach the wing tips, we used tape as trying to push pins into the birch plywood isn't easy at all.

You can now sand the airframe to shape. The fin only needs to be rounded on the leading edge and minimal shaping to the rear



Remove each elevon using a sharp knife to cut along the engraved line in the sheet, and the main ribs. Take your time and do this in multiple passes with the knife.

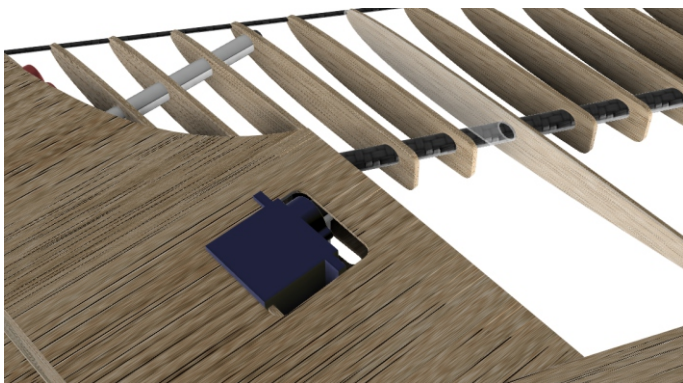


The wing section is based on PW1211, The design notes for this section suggest a bottom hinged elevon, Sand a angle on the elevon.

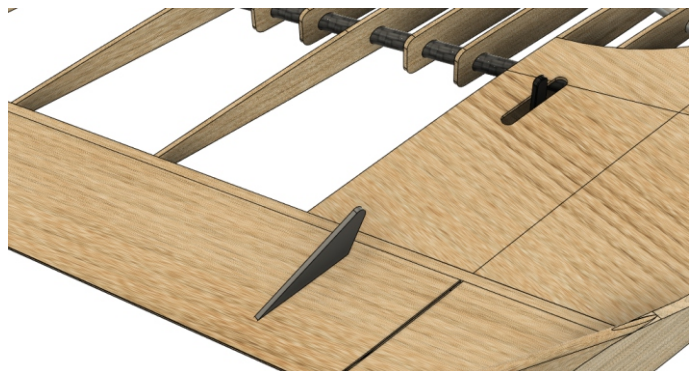


The elevons are hinged using the covering material or alternatively with UV proof tape after covering

The servos are fitted from the underside of the wing and bonded to the top skin.



You will need to cut through the top skins for both the servo horn and elevon horn



N.B. The elevon horns are made from pretty much unbreakable nylon sheet. Nylon isn't easy to glue so you must roughen the surface of the control horn for the adhesive to get a strong bond. We recommend either a foaming adhesive such as gorilla glue or epoxy and a thickening agent. If you don't have a suitable agent such as micro balloons you can mix the epoxy with baking soda to a soft butter like consistency. Scrape the epoxy into the hole for the horn and press the horn fully home. During curing rotate the wing every minute so the adhesive doesn't puddle one side

For final radio installation we strongly suggest you head over to Nick Chitty Aviation on YouTube. Nick provides some superb build videos and covers a number of topics that are sometimes difficult to do so in a few words and pictures only.



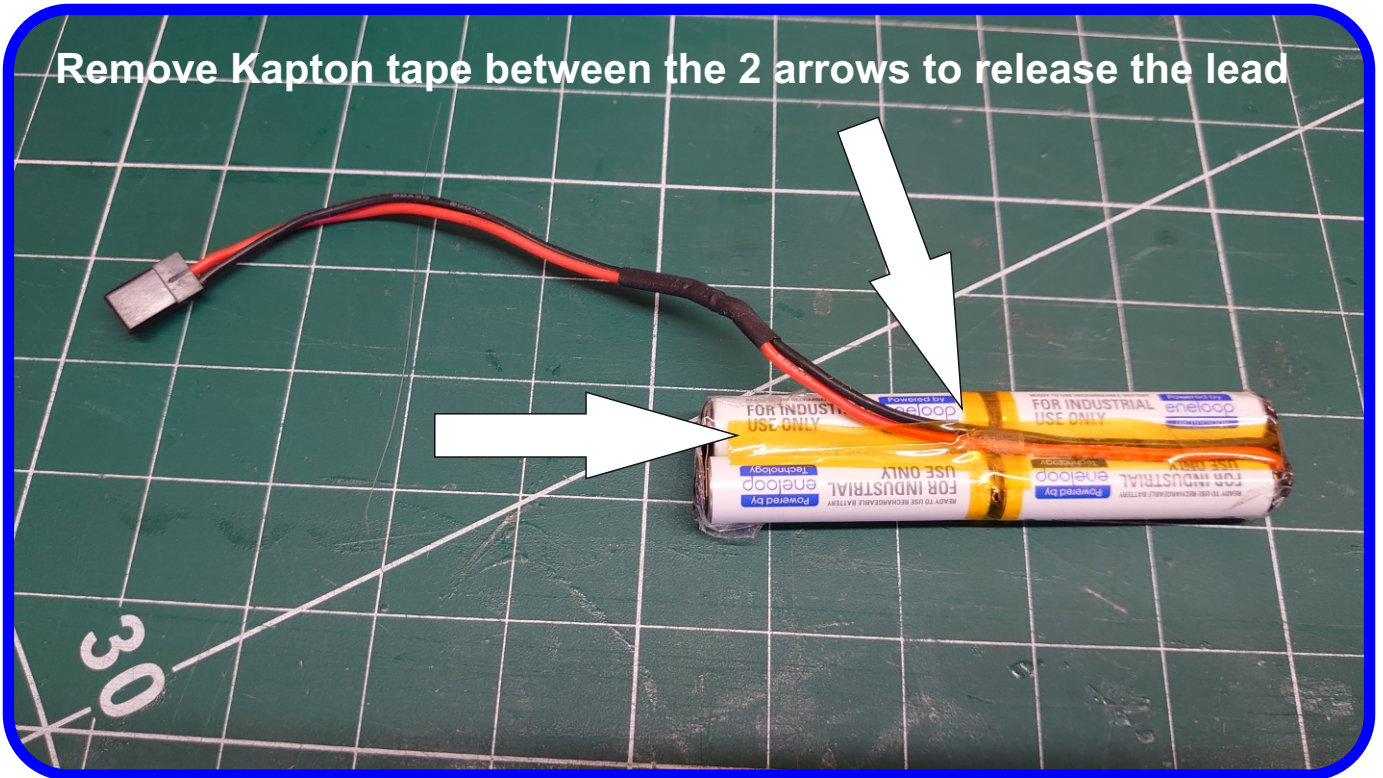
Battery Modification.

The soas is designed around a 4 cell AAA Receiver battery.

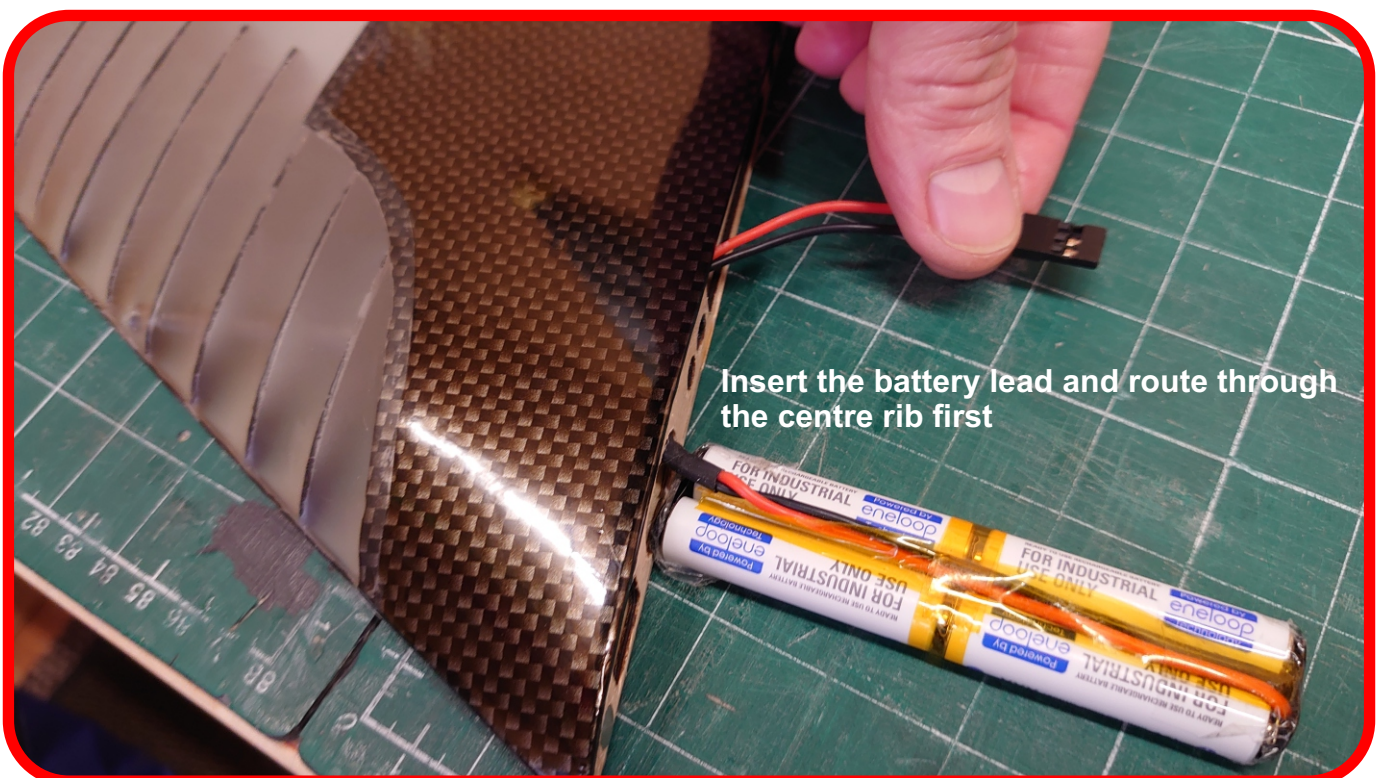
We purchased ours from Overlander Batteries, Config 9.

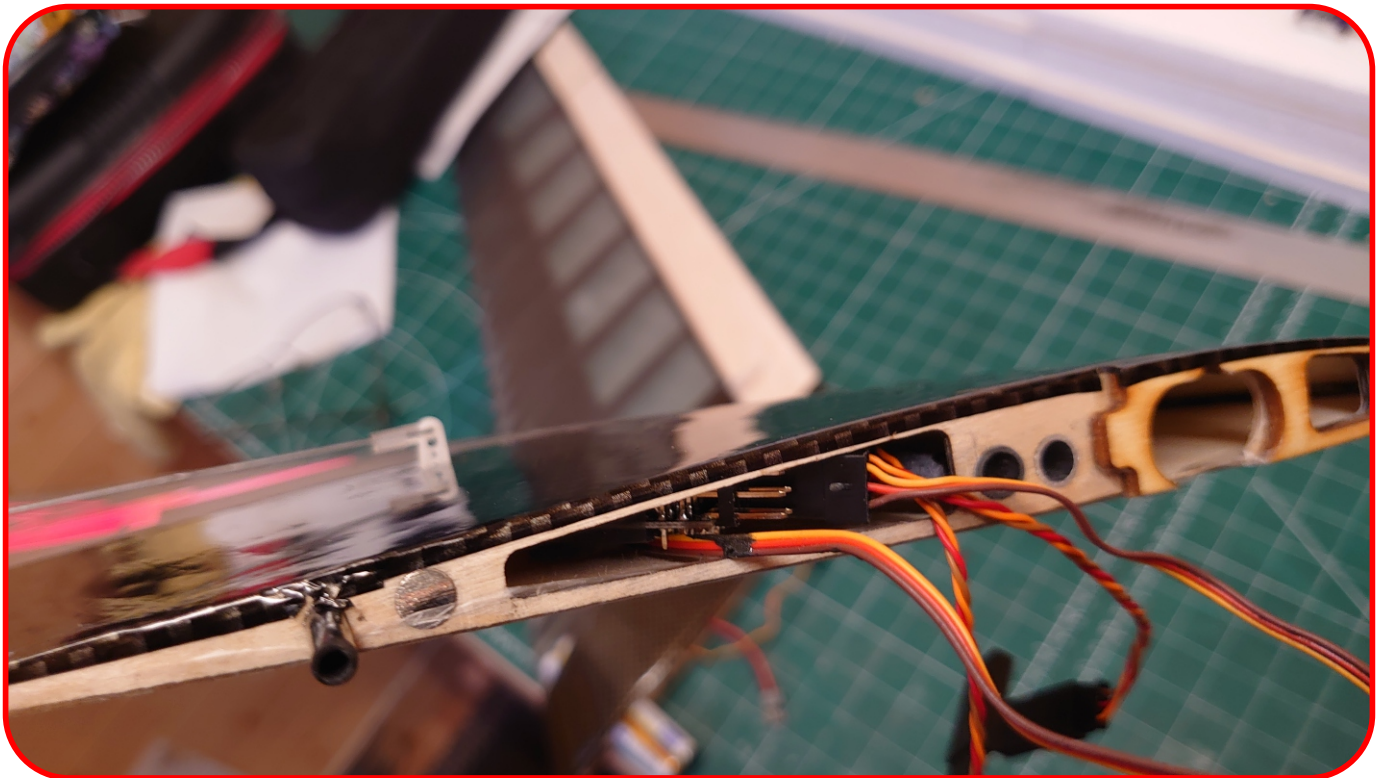
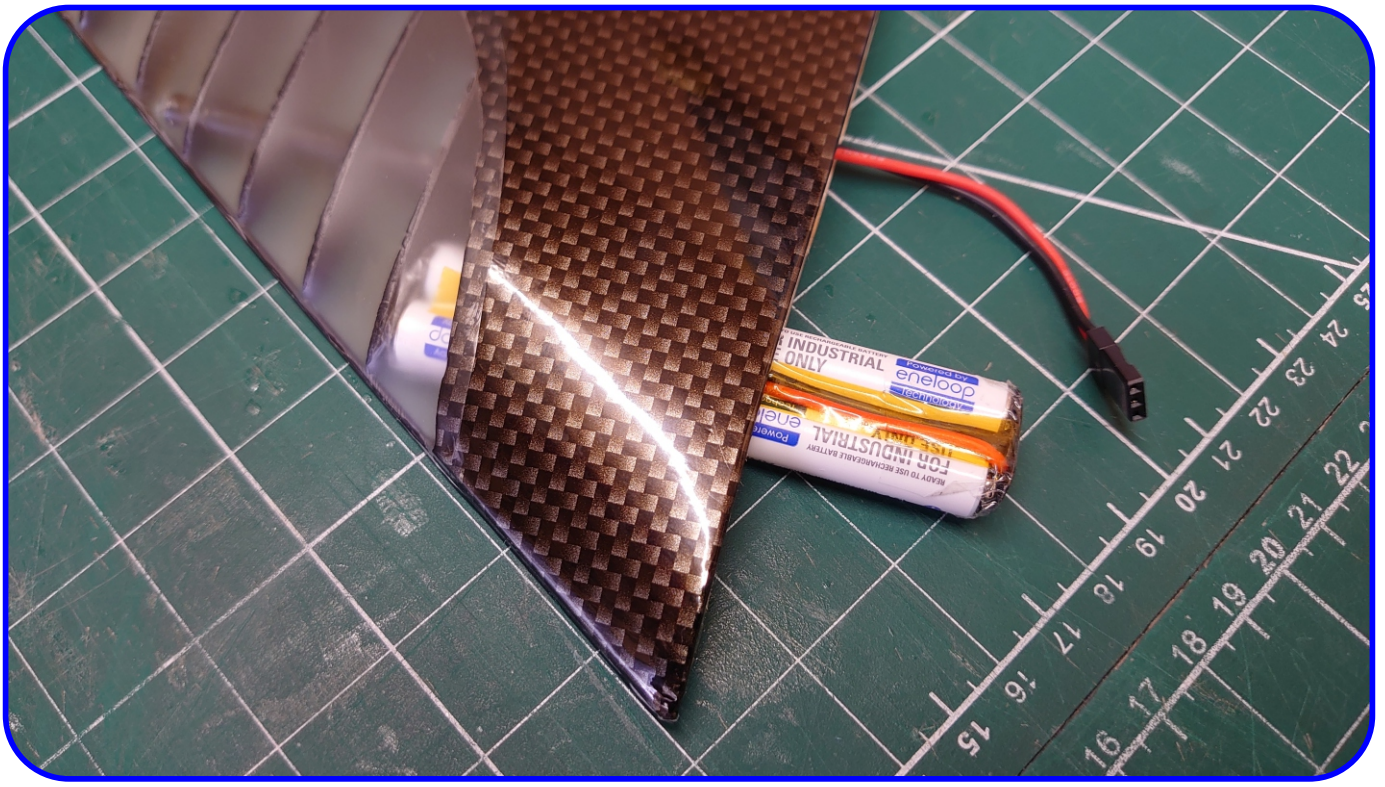
It needs small modifications to fit without grinding or sanding the ribs. Remove the outer heatshrink film and then release the lead so it exits in the centre of the battery pack as shown below.

Remove Kapton tape between the 2 arrows to release the lead



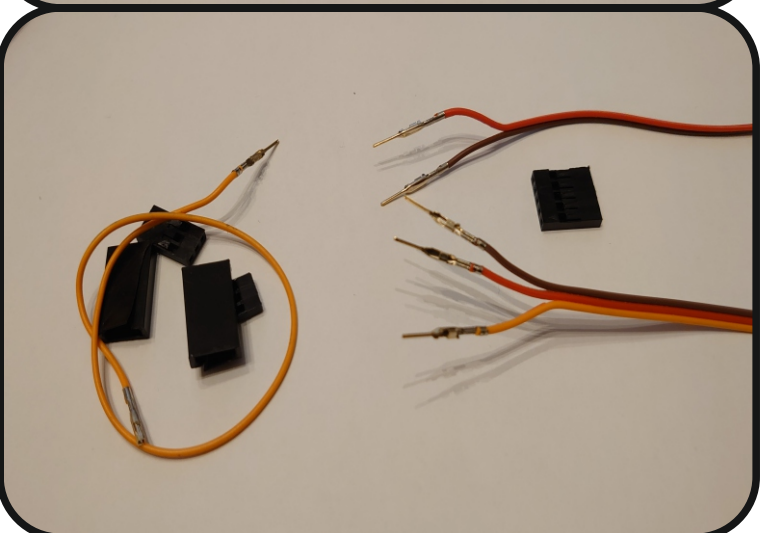
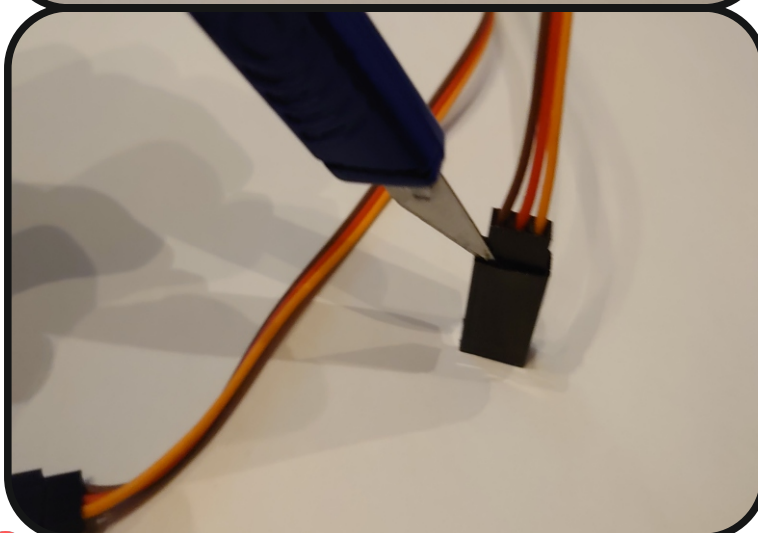
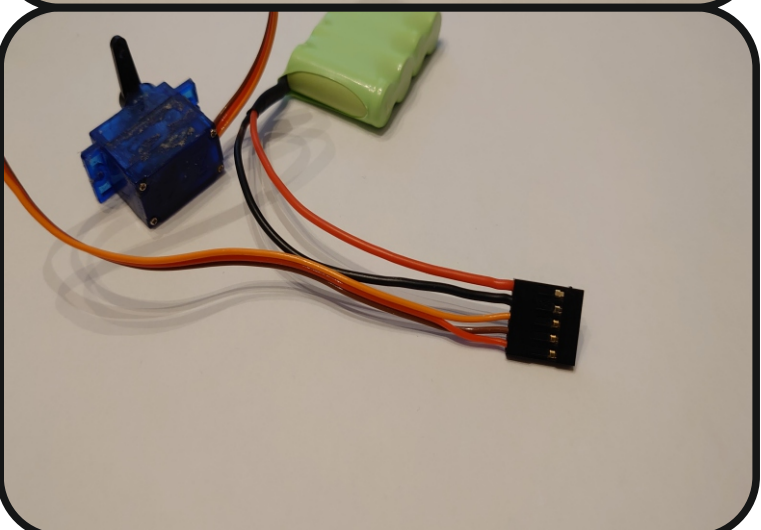
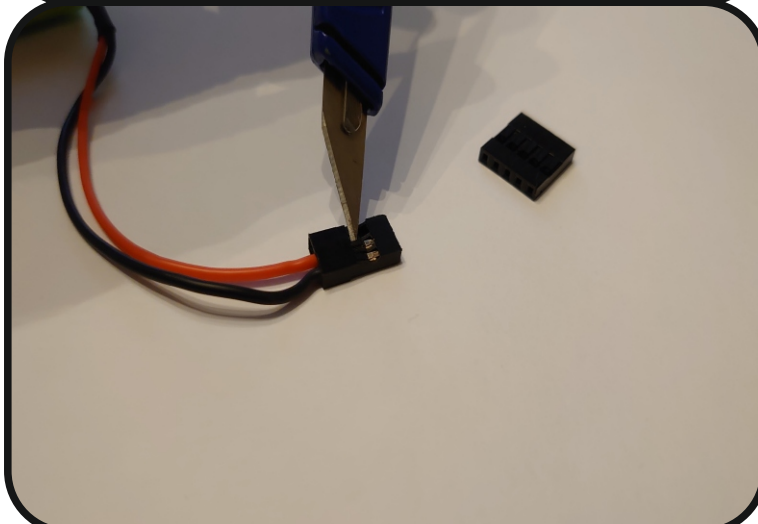
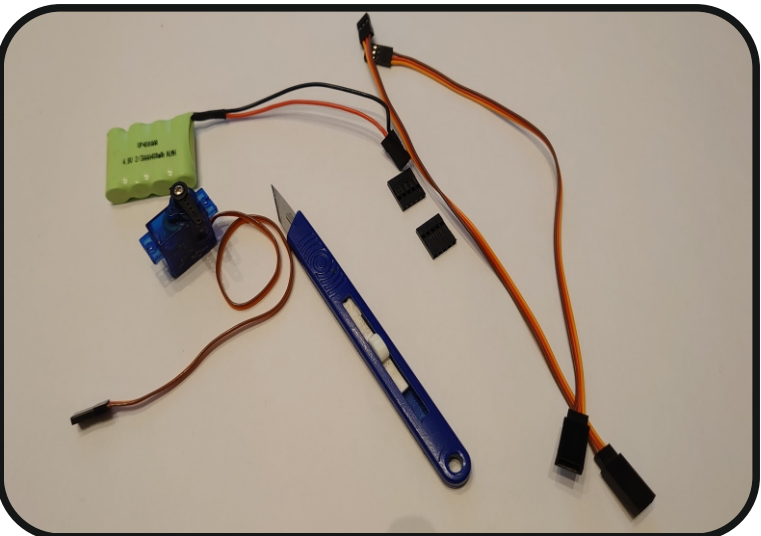
Insert the battery lead and route through the centre rib first

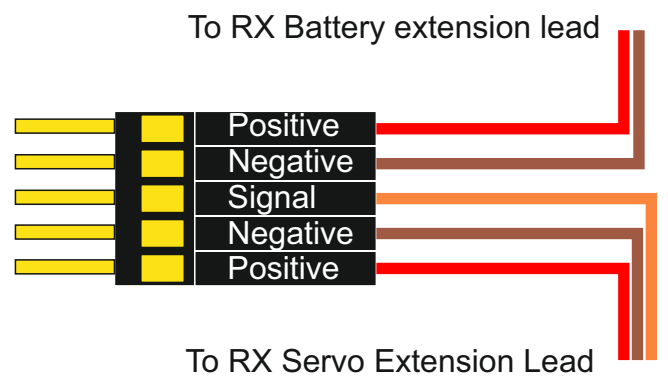
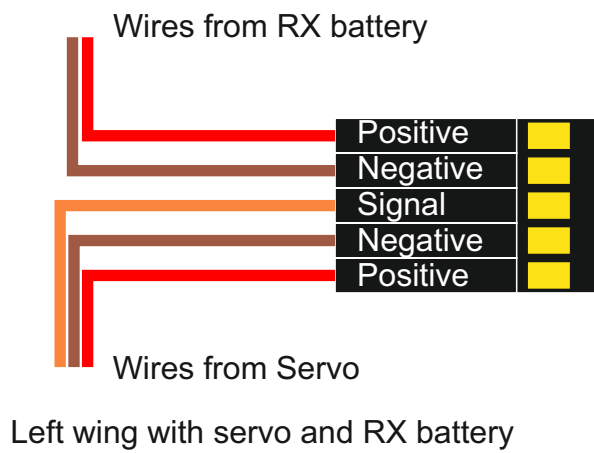
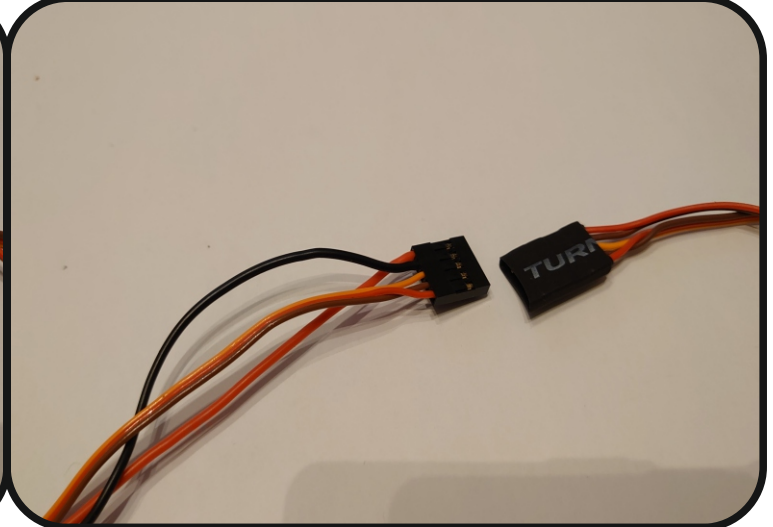
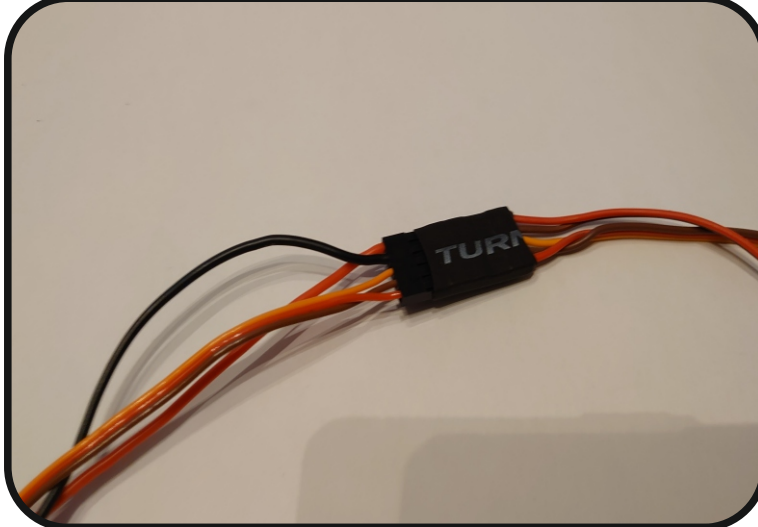
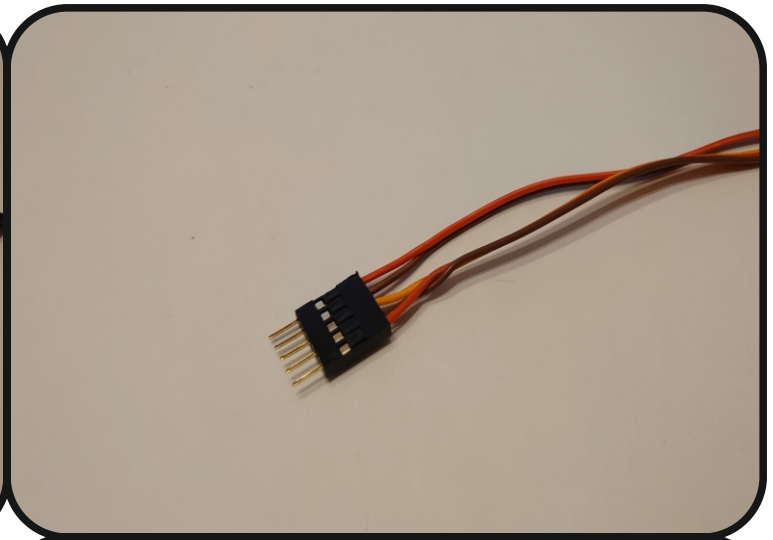
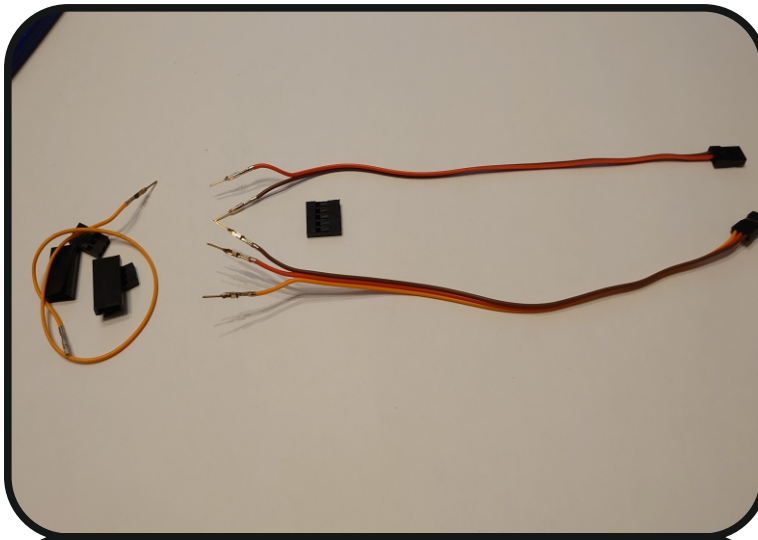


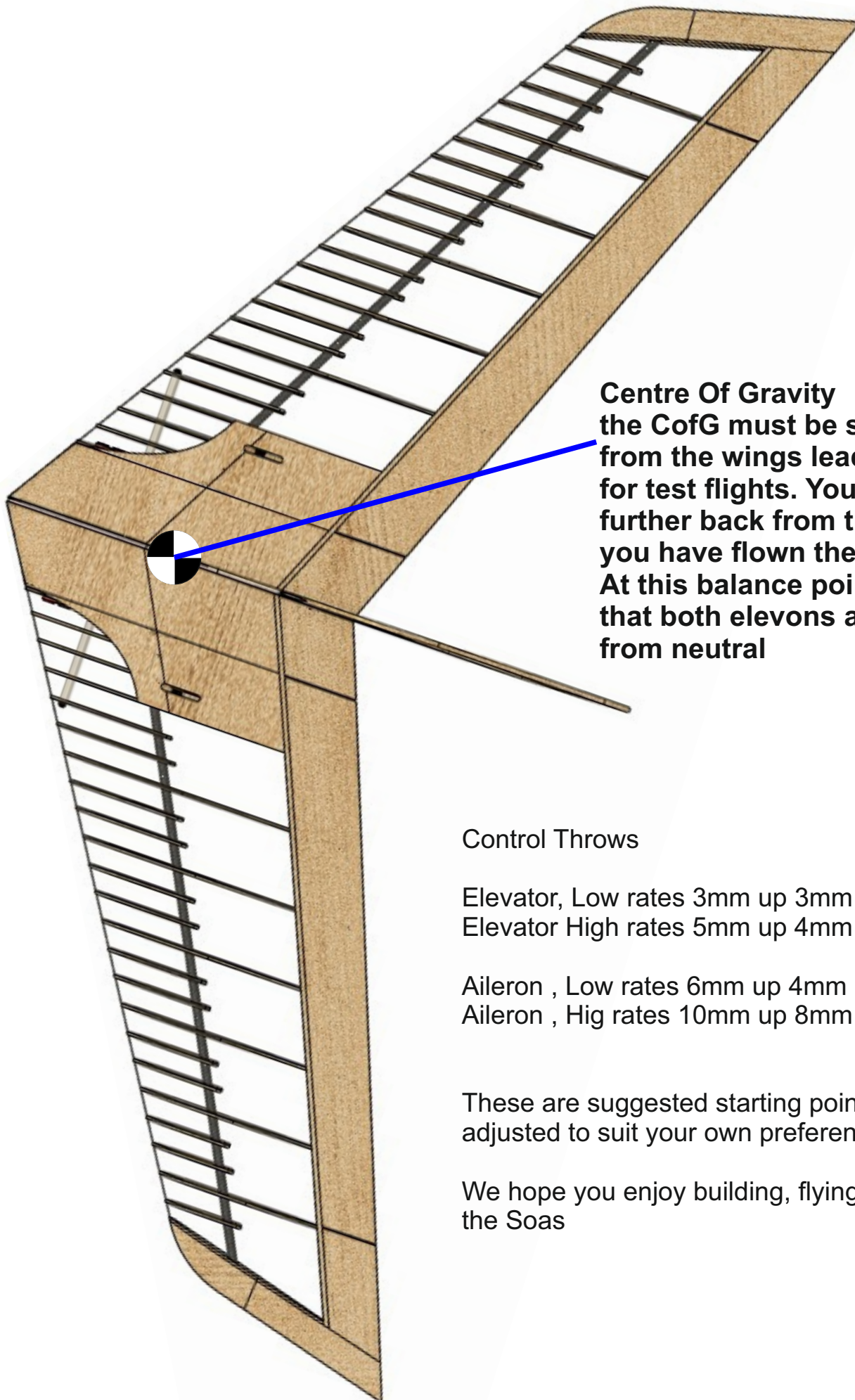


Only an end pin RX can be used!

The 5 pin Wing Connector
the following images show how
make up the 5 pin connector
for the wing. One wing half
holds the receiver battery, and
servo. The other side of the
connector utilises 2 extension
leads, on for servo, one for
power.







Centre Of Gravity
the CofG must be set to 152mm from the wings leading edge for test flights. You can go further back from this point once you have flown the model. At this balance point we suggest that both elevons are raised 3mm from neutral

Control Throws

Elevator, Low rates 3mm up 3mm Down 20% Expo
Elevator High rates 5mm up 4mm Down 33% Expo

Aileron , Low rates 6mm up 4mm Down 20% Expo
Aileron , Hig rates 10mm up 8mm down 40% Expo

These are suggested starting points and should be adjusted to suit your own preference

We hope you enjoy building, flying and owning the Soas

