AVANTI 3m Building Instructions
FIBERGLASS FUSELAGE VERSIOM

You must ensure you have MAAA (or similar for your country) model aviation insurance before flying this model.
Only fly in designated areas and in accordance with all council, government, airport, CASA and any governing body rules.
Ensure the model is built correctly and is checked thoroughly before flight. If you are an inexperienced pilot, ensure you have an instructor or experienced pilot with you at all times.
The manufacturer of this model kit takes no responsibility for your actions.

Building is fun but please remember you are responsible for your own health. Almost all adhesives contain solvents and other volatile substances and must be used with adequate ventilation. Ensure you follow all the instructions on the adhesives and equipment being used.
Be careful with CA (superglue) because it can glue your eyelids and fingers together very quickly.
Working with Balsa and Carbon can cause fine dust which must not be inhaled or swallowed.
Always cut and sand Carbon wet and do not blow carbon dust from the building board, remove it with a vacuum cleaner.
Using tools can cause injury.
Operating a model aircraft can cause accidents so you must have insurance before you fly this model aircraft.
Join a club (and the MAAA) and ensure you are properly trained and have an experienced person helping you.
Alan Mayhew, Marcus Stent and Performance Models take no responsibility for any damages and accidents that arise from the construction and operation of this model aircraft. It is the responsibility of the builder and flyer.

Now, on to the fun bit….

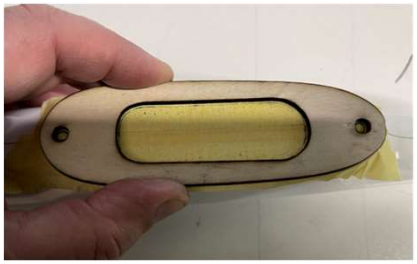
Before Starting

Place Food/Cling Wrap (or similar) over the plan before you start
Use a knife to separate parts form the sheet, do not use your hands.
Trim parts as necessary.

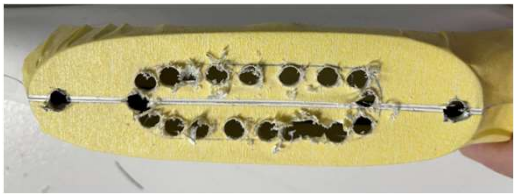
Abbreviations

CA = Super glue
RHS = Right Hand Side
LHS = Left Hand Side
L.E. = Leading edge
T.E. = Trailing edge

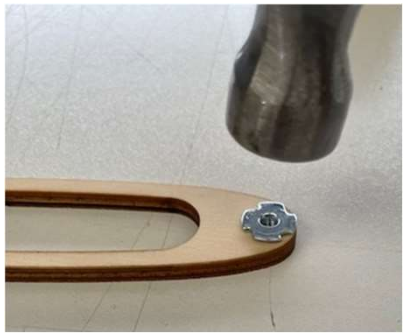
Fiberglass Pod Assembly



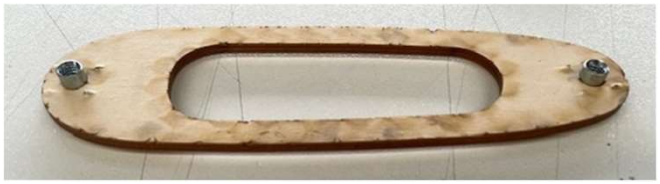
Use the 3mm ply template to mark the holes and opening



Using a 6mm drill bit, drill holes to open the access hatch and hold down bolts



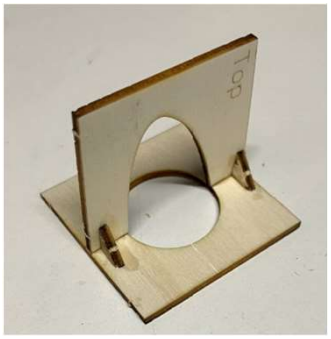
Use 2 x 3mm ply wing plates and bang in the 4mm T nuts. This also aids alignment of the T nuts.



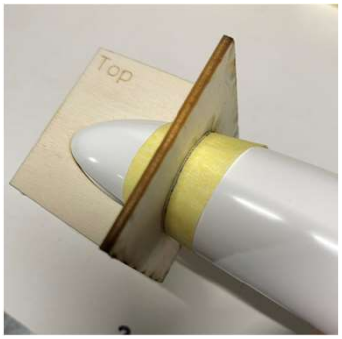
Discard the bottom ply wing plate

Glue in place the 1.5mm ply wing plate

Dry fit the wing to ensure it is quare to the fuselage, then glue the plate into the fuselage. Use tape to hold the plate in place while it dries. Don’t distort the ply wing plate as it dries.



Make up the nose cutting template

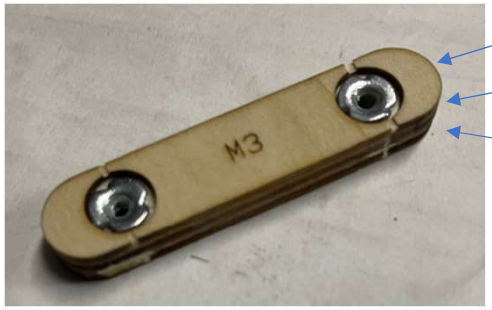


Mark the cutting location and cut off the nose.
I use a fine (32T) hacksaw blade

You can use 2 x F1 formers for extra strength if desired.
Drill F1 to match your motor.
Check your spinner fits nicely and adjust if necessary.
Trial fit everything.
Glue F1 into the fuselage with epoxy.

Tailplane Mount Assembly

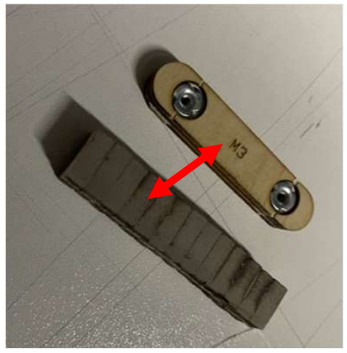
Make the elevator mount



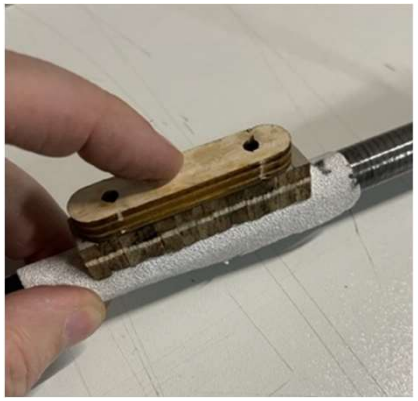
Bottom view

Glue together the curved pieces

Sand the bottom flush



Glue onto M3



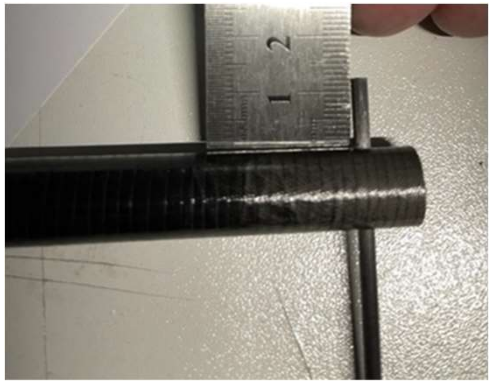
Once dry, lightly sand the mount with sandpaper on the boom

Lightly sand the boom

Fibreglass Fuselage Boom Assembly

For the fibreglass fuselage, the **boom length is 860mm**.
Measure 860mm from the front of the boom and cut it to length, discarding the rear portion.

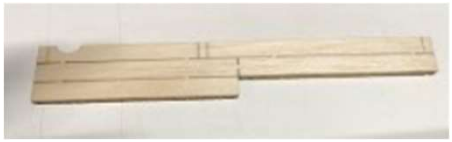
Drill a 3mm hole, 9mm from the end of the boom



Glue in the 3mm carbon fin support

Lightly sand the top and bottom of boom where the fin sits.

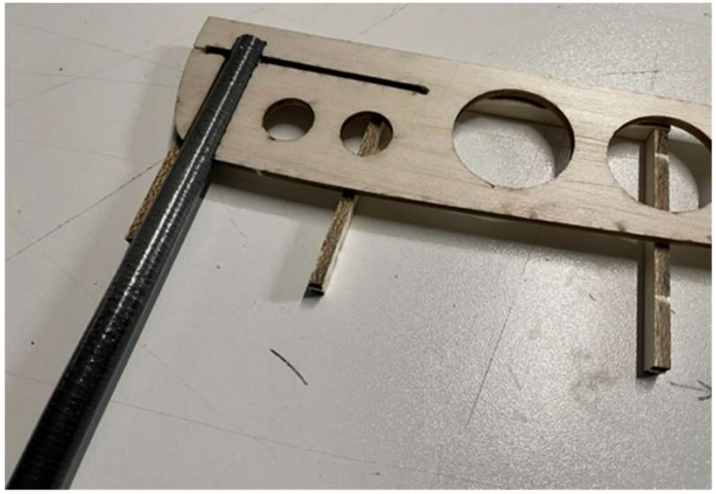
Because of the tapered boom, this jig aligns the fin accurately.



Fin alignment jig

Glue the jig together as shown

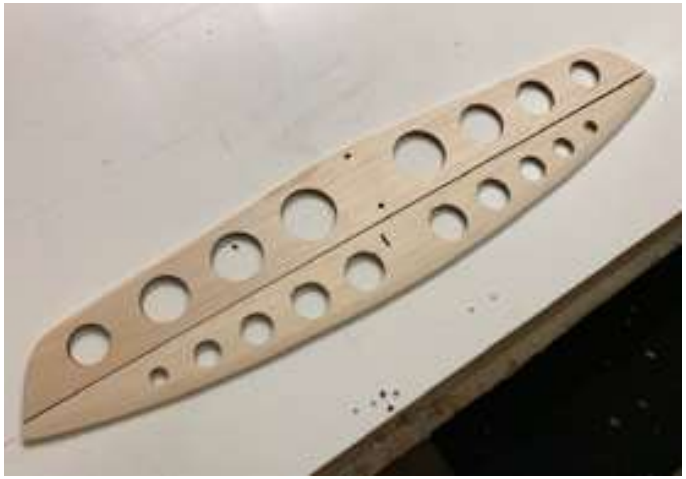
Sit the front end of the boom on the bench and the rear end of the boom in the jig. This holds the centre line of the boom parallel with the bench. Tape the boom to the table so the 3mm carbon fin support rod is approx. parallel.



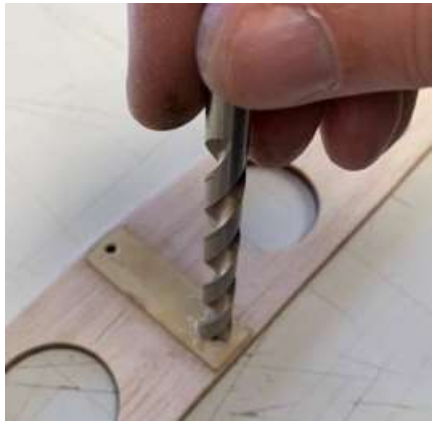
Fit the Fin on the boom. The jig holds the fin accurately while it is glued in place. I use medium CA.

Tail Assembly

Sand the LE and TE of the elevator and stabilizer round, not sharp.



Bevel the hinge position of the fin and rudder.

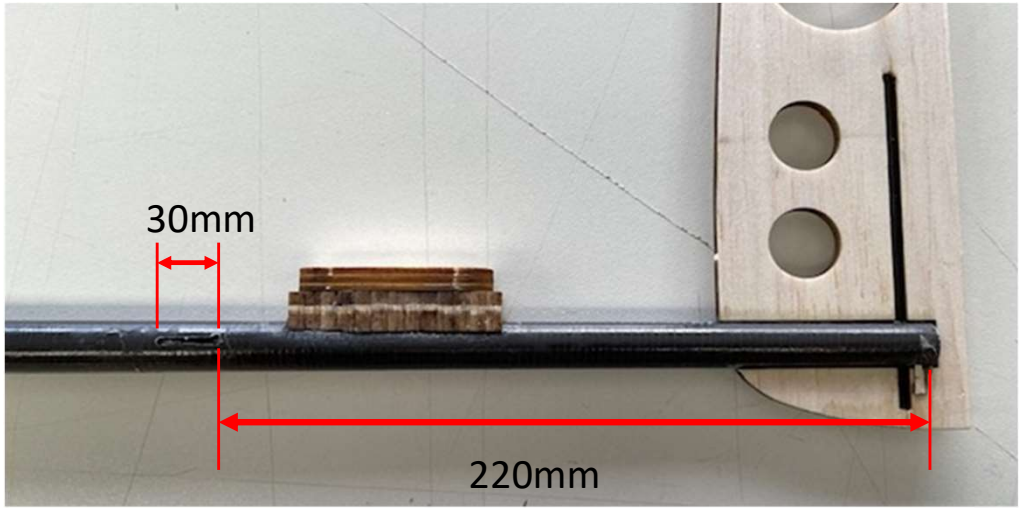


Add the 1.5mm ply reinforcement plate.

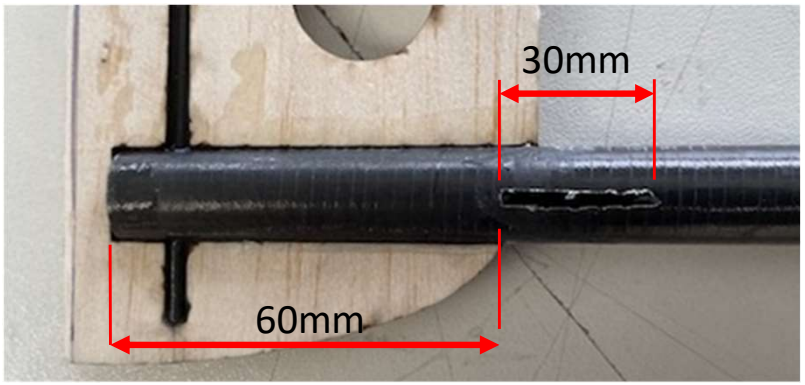
Covering before assembly to the fuselage is recommended.

Hinge using strips of covering film, hinge tape or your favorite method, just ensure it is solid, secure and durable.

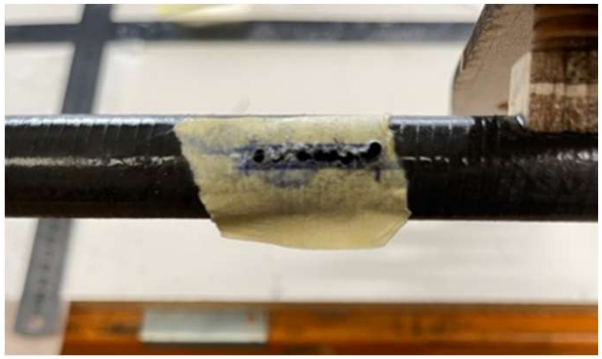
Left hand side of boom

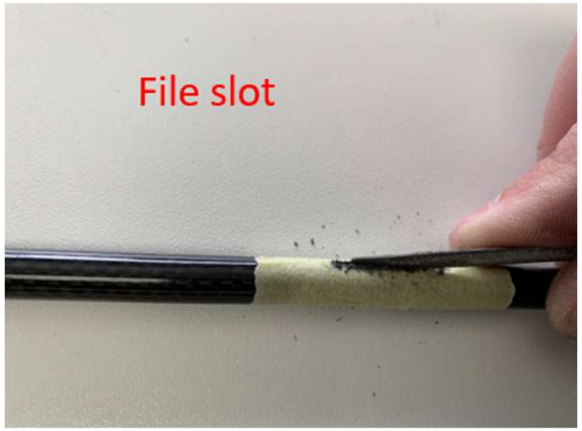


Right hand side of boom



Mark the pushrod openings.

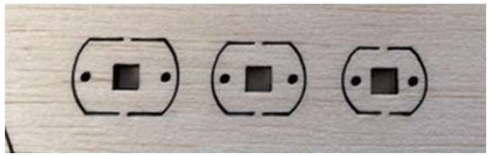


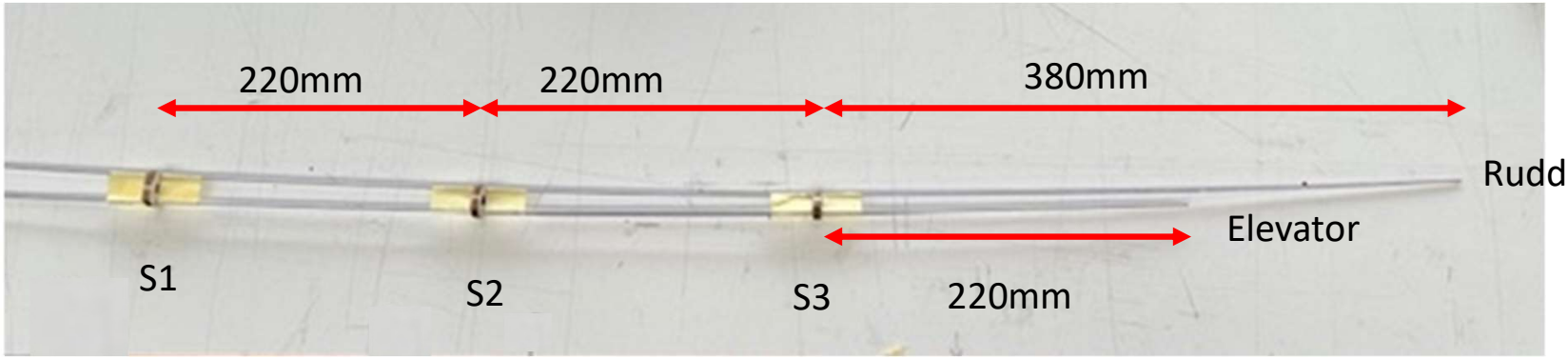


Drill with a 2.5mm drill bit and open with a file

Fibreglass Fuselage Pushrods

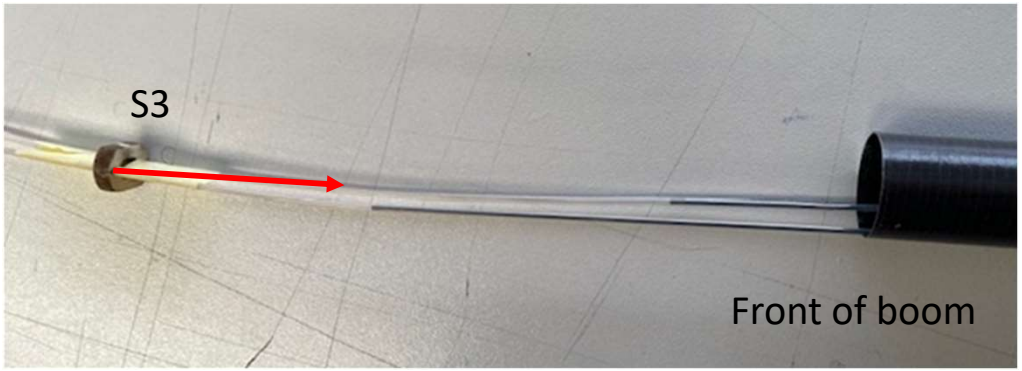
Make up the pushrods using the housing supports S1, S2 and S3





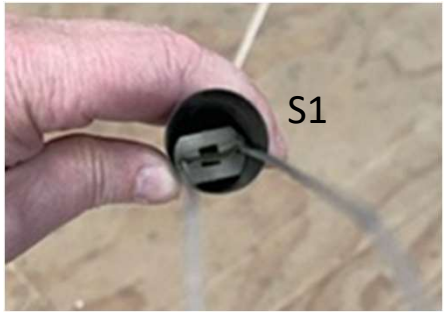
With the 1.5mm carbon rod inside the pushrod housing, make up the assembly as show.
Use tape to hold S1, S2 and S3 in place and then glue onto the pushrod housings.

Remove the 1.5mm carbon rods from their housings and slide the carbon rods into the fuselage from the rear, through the elevator and rudder slots in the boom.
Feed the pushrod housing assembly in from the front end of the boom, ensuring you are matching the correct rudder and elevator 1.5mm carbon pushrods .
Slide the assembly down the carbon rods.
Glue S1 in the boom, 50mm from the front of the boom.
There must be no slop in the pushrods.



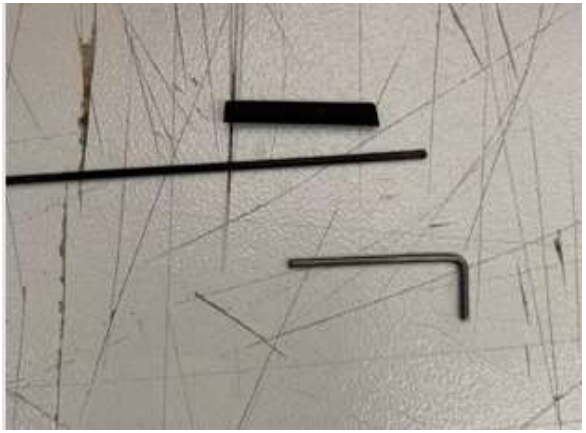
Step 1 - slide the 1.5mm carbon rods in **from the rear** end, through the elevator and rudder slots.

Step 2, slide the pushrod housings onto the 1.5mm carbon rods **from the front** end. Slide down the boom into place.



Glue S1 50mm from the front of the boom. S2 and S3 do not need to be glued.

Assemble the pushrod wire at one end of the pushrod. Do this for both pushrods.



Bend the 1mm wire into a L shape 20mm long x 6mm long.
Sleeve the carbon tube and wire with heatshrink tubing and heat until the grip on the wire is just enough to hold it in place.
Check the fitment on the control horn and add a drop of thin CA at each end of the tubing. Then shrink the tubing fully until tight.

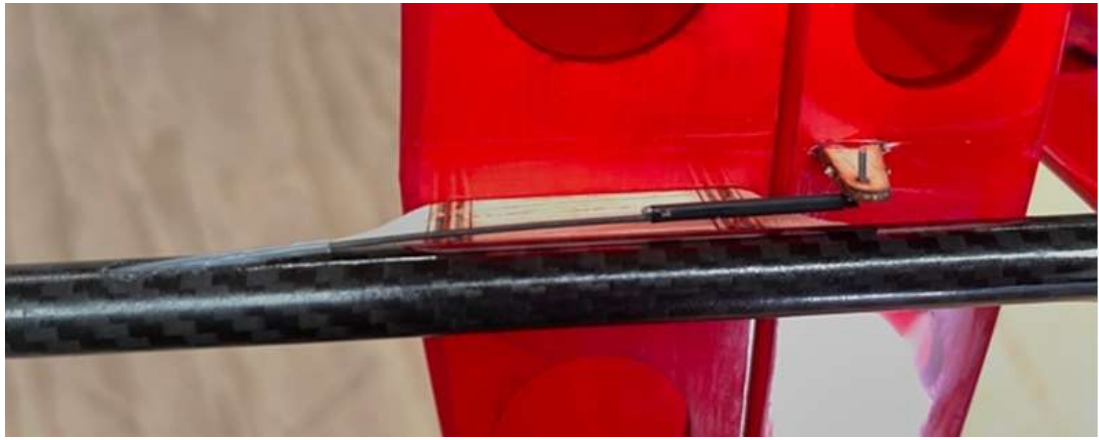
Apply the same principle to get the correct pushrod length at the servo end.

Assembled pushrod wire

Pushrod installation

Ensure gradual flexing of the carbon pushrods as they exit the boom to ensure free movement.

Extend the slots if required for free movement.
No keepers are required on the control horns if a slight flex is used to hold the pushrod in place. Use medium CA only, NOT thin CA to glue the pushrod housing to the boom.



Place a keeper over the control horns if the flex is not sufficient.

Finishing the Fuselage

Once the tailplane and boom have been completed, lightly sand the pod and boom and glue the boom to the pod ensuring everything is square to the wing.
Install the servos and repeat the pushrod connection for the front end of the fuselage. Ensure the pushrod housings are glued to the sides of the fuselage, both at the canopy opening and inside the wing access hole. Glue scrap pieces of balsa to the pushrods for extra support.
There must be no slop in the pushrods.

Glue the pushrod housings to the inside of the pod

Ensure there is enough opening behind the servos to fit the battery.

Alternatively, the servos can be positioned under the wing, giving more room for the battery under the canopy.

Typical servo installation. This allows the battery to fit past the servos. Adjust its position to get the correct C.G.

The starting C.G. is 90mm from root leading edge.

Starting Setup

Elevator throw is +/- 12mm.
Aileron throw is 20mm up and 15mm down.
Aileron to rudder mix is +/- 15mm rudder at full aileron deflection.
Rudder throw is +/- 30mm.
Brakes at 90 degrees with some up elevator mix of approx. 6mm. Tune in flight.
Tune all these settings to your own personal liking.

I like to run 30% exponential on rudder, elevator and ailerons to give a slightly smoother response in the middle of the stick.
Check all your control movements are in the correct direction before flying.

Balance the model at 90mm from the L.E. of the wing at the root. This is a good all-round C.G. For light conditions you can try a C.G. of 100mm.
For very windy conditions I like to move the C.G. forward 5mm, but please experiment and find your own ideal settings.
Some minor amount of elevator retrimming is required as the C.G. moves forward.
The further forward the c.g. the better the natural penetration of the glider, but the worse the float performance.

Ballast can be added in the centre spar for windier conditions. Remove a tip panel, add/remove ballast and re assemble.
Use a combination of 10mm diam. Galvanized Steel and Aluminum rods. Locate the steel rods over the middle of the wing.
The Aluminum rods are just spacers so other materials like balsa can be used.

I hope you enjoy flying your Avanti. For any feedback or questions please email Marcus at performance@mailzone.com.