

Basic airboat build guide



Important!

The sizes shown here are for an airboat built around a small brushless motor, before commencing construction make sure to mockup the position of your motor with the propeller attached to ensure sufficient clearance in both height from the base plate and distance from the rudder fins. This may mean increasing the length of the base plate or positioning the motor support slightly further forward.

Design by Edwin Sudds 2023

As there is no control over the final assembly or material used for final assembly, no liability shall be assumed nor accepted for any damage resulting from the use by the user of the final user-assembled product. By the act of using the user-assembled product, the user accepts all resulting liability.

Tools:

- Hobby knife
- Metal ruler
- Drill and drill bits
- Hacksaw
- Screwdrivers
- Pliers

Materials list:

- Hull: approx. 30cm x 45cm – 5cm thick closed cell polyethylene foam (source - ebay), could also use expanded polystyrene but it will not be as robust.
- Propeller: Standard 2 blade 6x4 or similar, with suitable prop adapter (adapter likely to come with brushless motor as standard).
- 4mm Correx sheet around A4 (2 off) or A3 (1 off) size - ebay or amazon.
- 1m length of extruded PVC 90-degree angle approx. 25mm x 25mm size (aluminum angle can be used if available) - from DIY store.
- Waterproof double sided foam tape, approx. 15-20mm wide.
- 200mm of stiff wire c. 1.5mm to 2mm to link servo to rudders.
- 100mm 25mm x 1.5mm aluminum strip for motor mount – from DIY store.
- Velcro battery strap or similar, to secure the battery.
- Gorilla tape or similar.

Electronics:

- Motor: 2826 or similar size brushless outrunner around 1,900kv (available at overlander.co.uk), or standard Speed 400 or 540 size brushed.
- Waterproof speed controller: Appropriate to motor but 30 amp minimum for recommended motor sizes, with forward and reverse. Car type ESC's work well as they are air cooled and often waterproof. Brushless example; Hobbywing Quicrun WP 16BL30, brushed example Hobbywing Quicrun 1060. You may need to change the battery connector or buy an adapter to suit your battery.
- Battery: Standard RC car sized packs, 2S lipo or 6cell Nimh.
- Steering servo mini or standard size, waterproof recommended.
- Two channel transmitter and receiver.

Tips:

To ensure the double-sided tape sticks well make sure to wipe the surfaces with methylated spirits beforehand to remove any grease or contaminants.

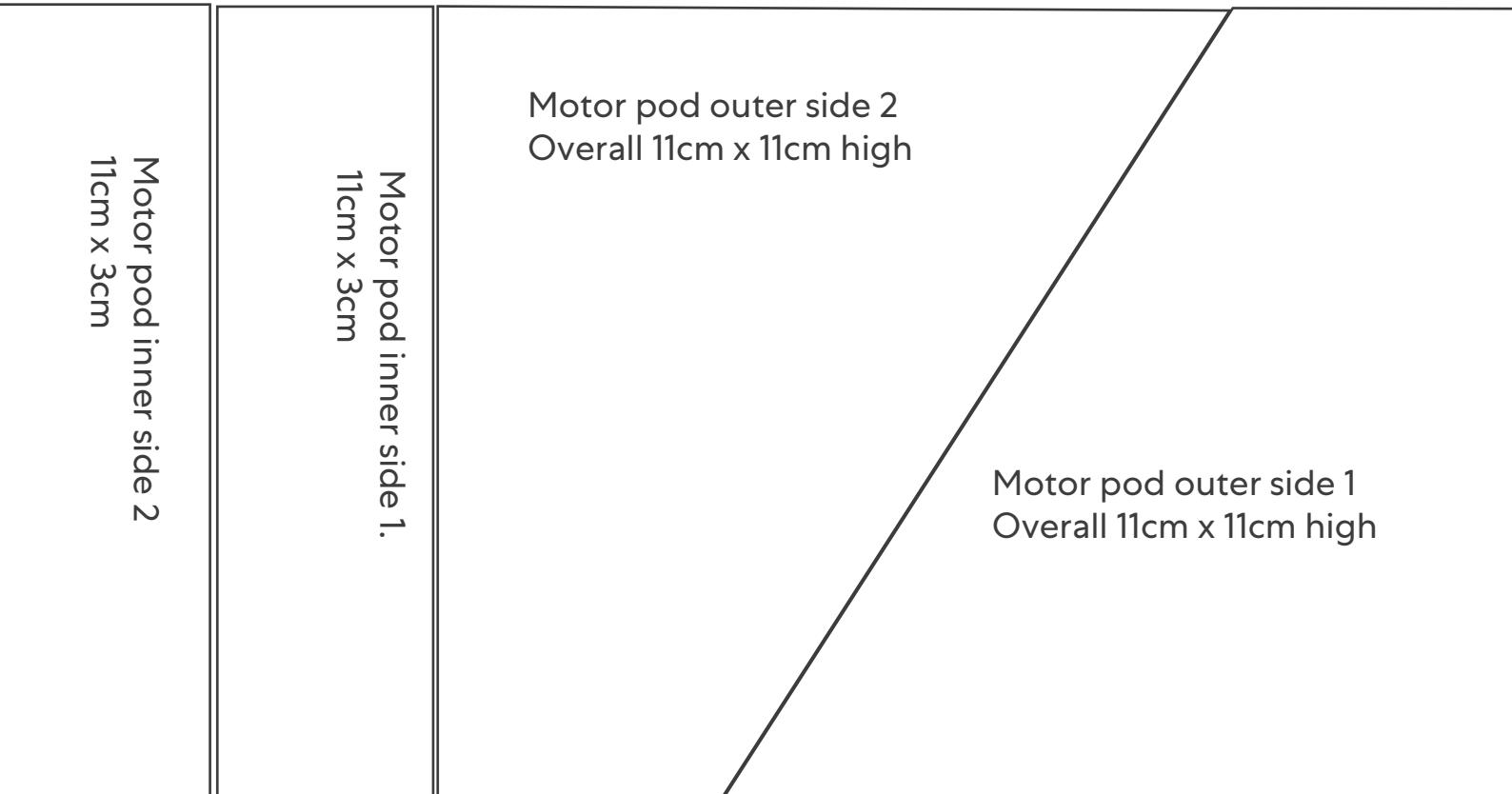
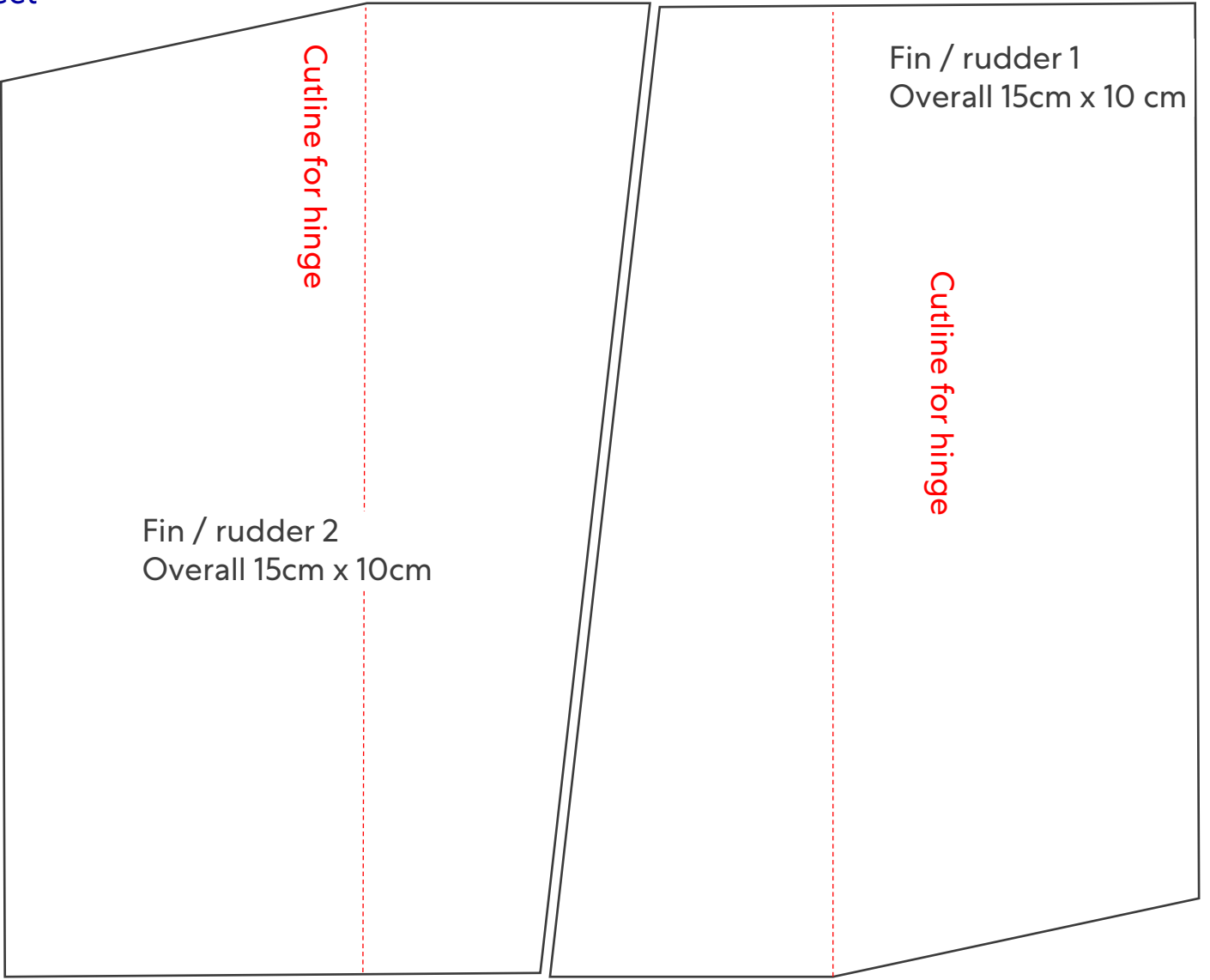
If the receiver is not waterproof it can be placed inside a normal party balloon with a zip tie around the neck to offer some protection.

To secure the propeller use two locknuts, this guards against the prop becoming loose when reverse is used.

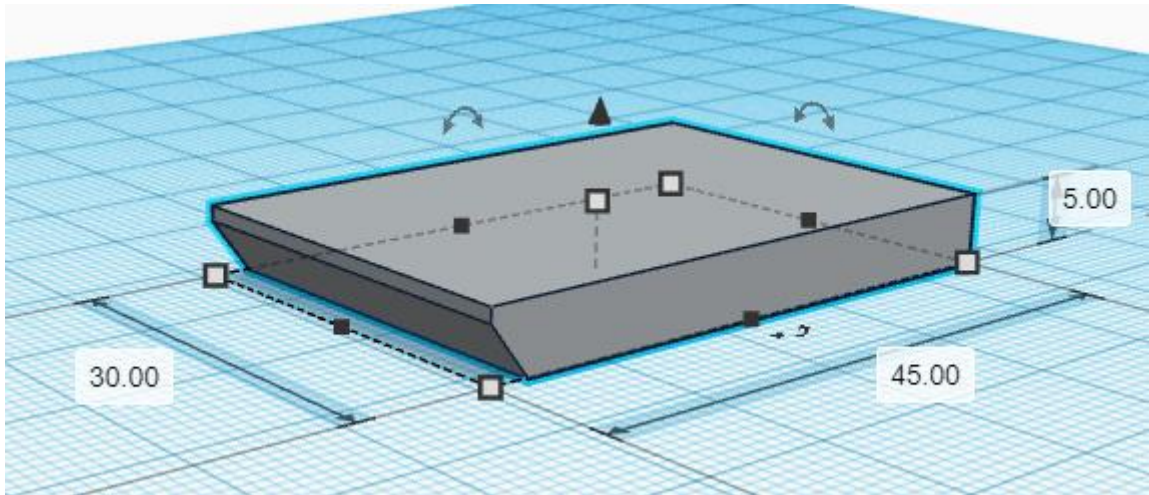
Large paperclips can be used as a source for the wire for the control linkages as they are easy to bend and cut.

Correx parts layout for
A4 sheet

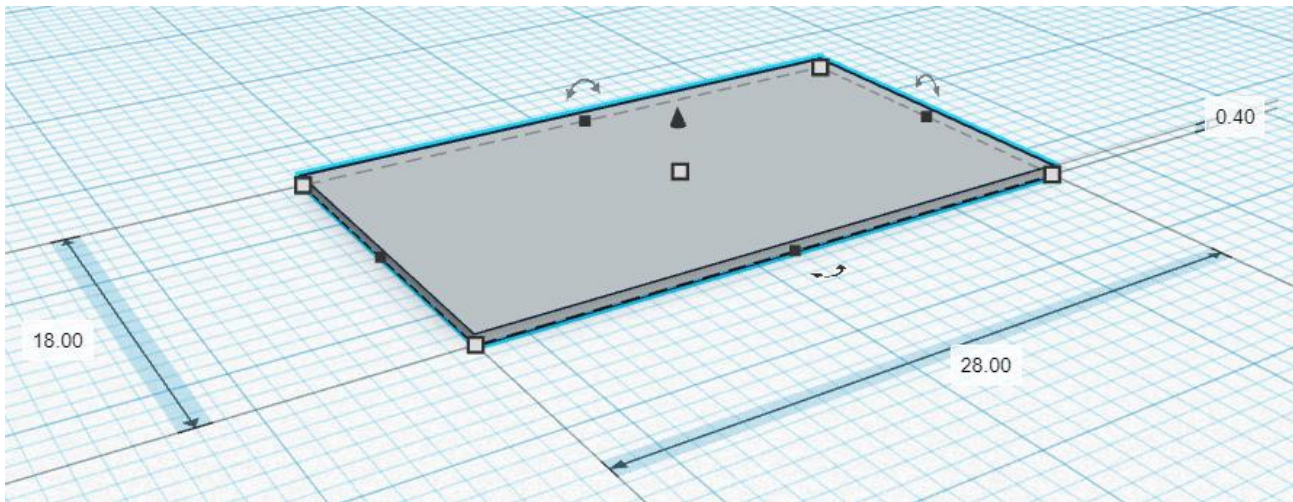
A4 size 4mm correx (corrugated plastic sheet)
Direction of corrugations



1. Cut the hull to size at 30cm wide, 45cm long, adding a 45 degree chamfer at the bow.

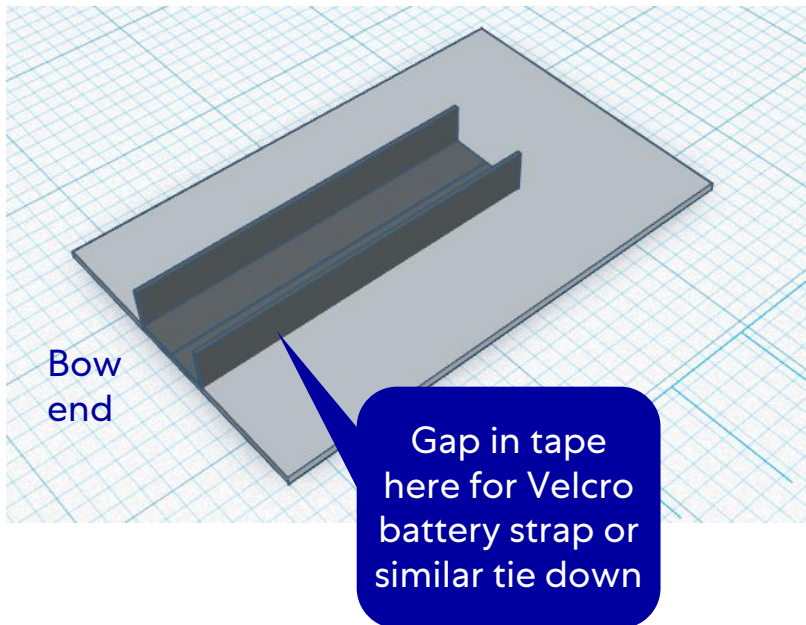


2. Cut the superstructure base plate from 4mm correx 18 x 28cm



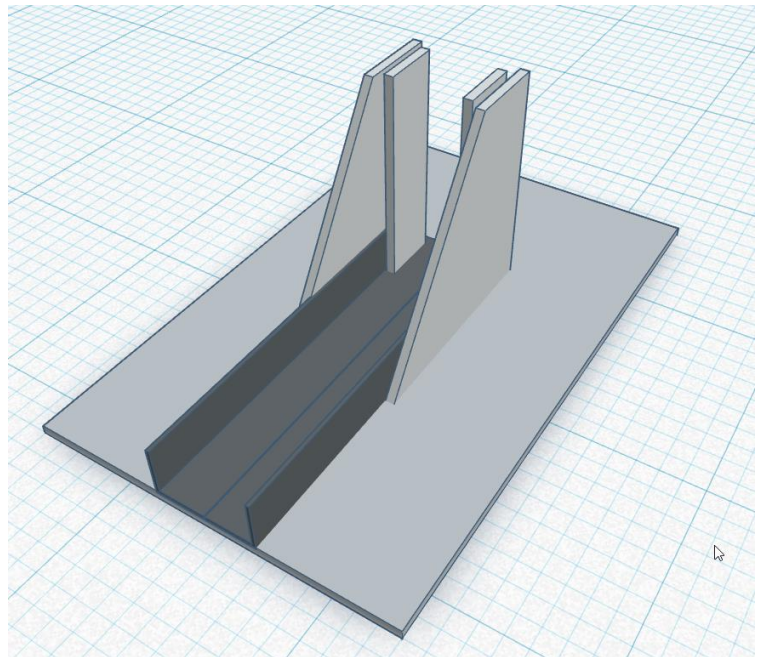
3. Cut two 20cm lengths of the PVC angle, these will form the battery tray and join the motor support to the base plate.

4. Using strips of double-sided tape mount the two lengths of PVC angle to the base plate. Align them centrally and to the bow edge of the base plate and make sure they are spaced so a battery can fit between the vertical edges (about 50mm) Make sure to leave a 30mm gap without tape in order to leave room for a battery retaining strap to pass under them.

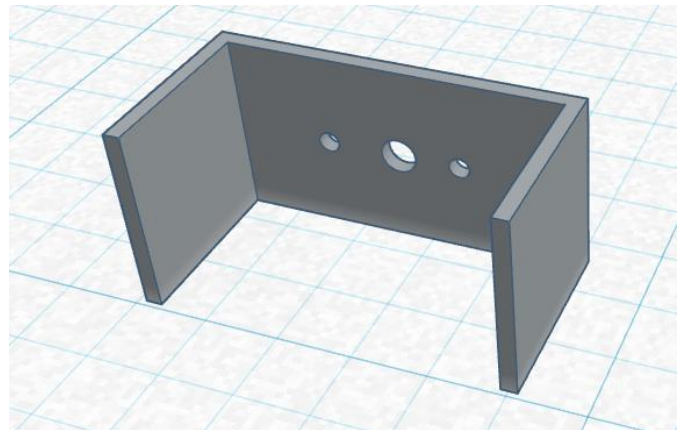


5. Cut the motor pod sides from 4mm correx, ensure the corrugations run on the vertical axis.

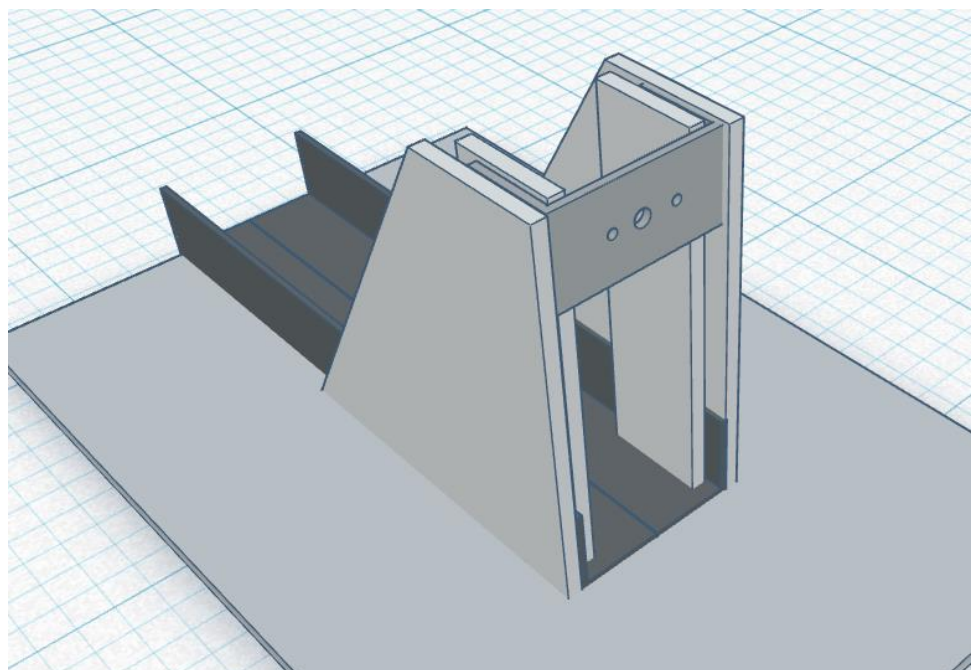
Mount these towards the rear of the battery tray using double-sided tape. The large panels on the outside edge and the smaller ones on the inside, set in from the rear of the battery tray by about 1cm.



6. Create a motor mount by bending a 100mm x 25mm strip of aluminum into a U shape wide enough to fit between the motor pod sides. Drill the appropriate holes for the motor shaft and mounting screws



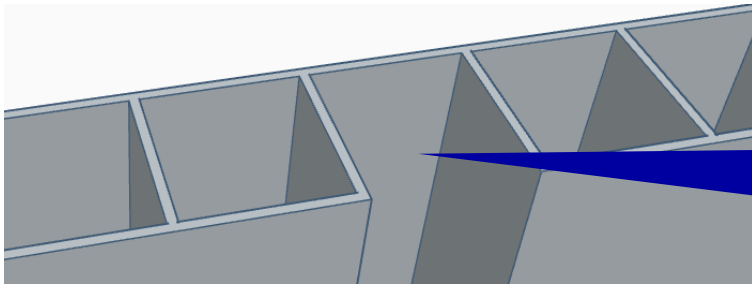
7. Secure the motor mount to the top of the motor pod side supports using double sided tape on both the inner and outer edges.



7. Cut two 35mm lengths of the PVC angle, these will form the rudder mounts.

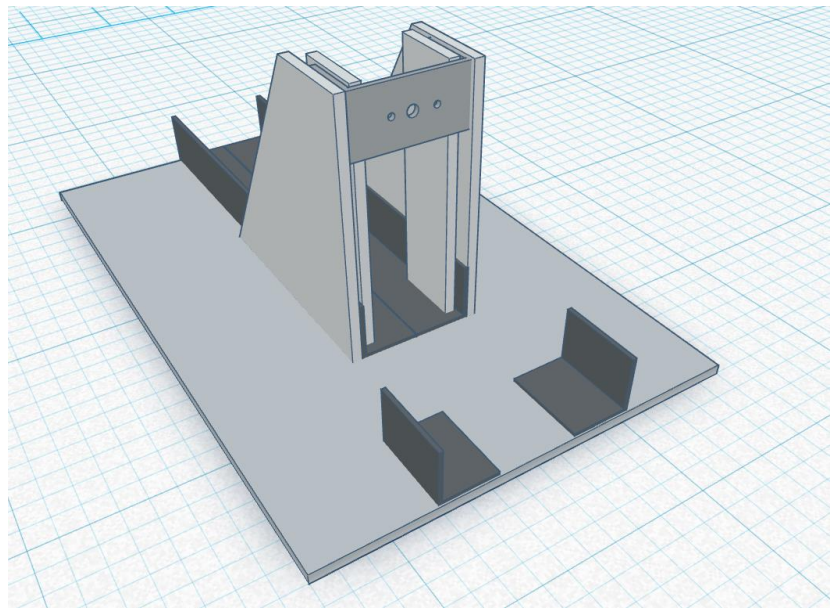
8. Cut the rudder / fins from the 4mm correx each should be approx. 10cm x 15cm. Ensure that the short edge is perpendicular to the corrugations.

9. Form a hinge in each rudder fin by carefully cutting through **one** side of the correx along one of the corrugations about 60mm from the back edge of the fin. You will need to cut away the full width of the corrugation to allow clearance for the hinge to move freely.

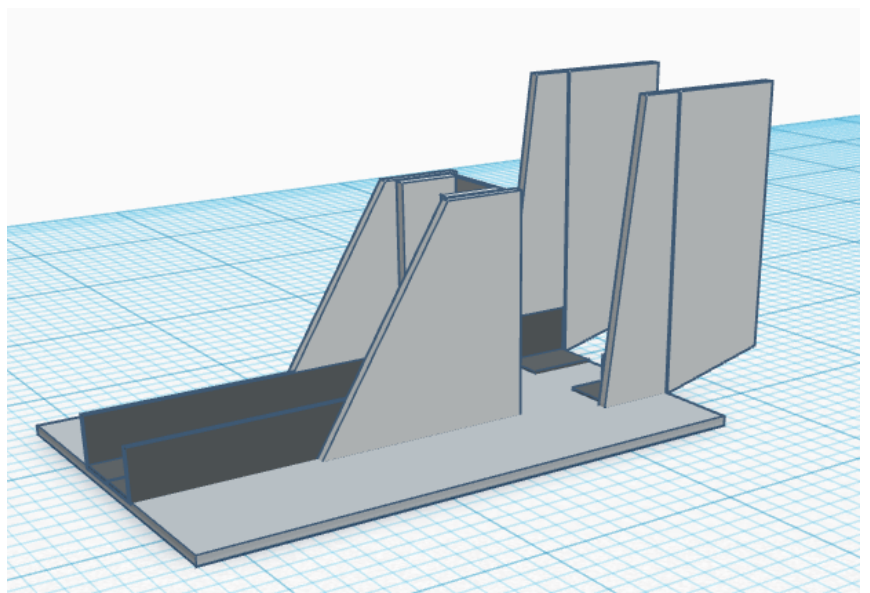


Hinge formed by removing one side of the sheet in-between a corrugation

10. Mount the rudder supports to the base plate using double sided tape. These should be aligned to the back of the base plate and the vertical edges be about 8cm apart (4cm away from the centerline each).

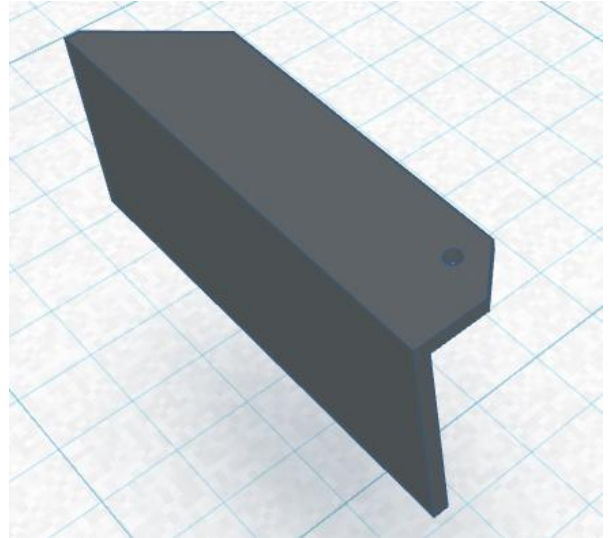


11. Mount the rudder fins to the outer edges of the supports using double-sided tape. Ensure the hinge line is just behind the rear of the support so that the hinge can move freely.

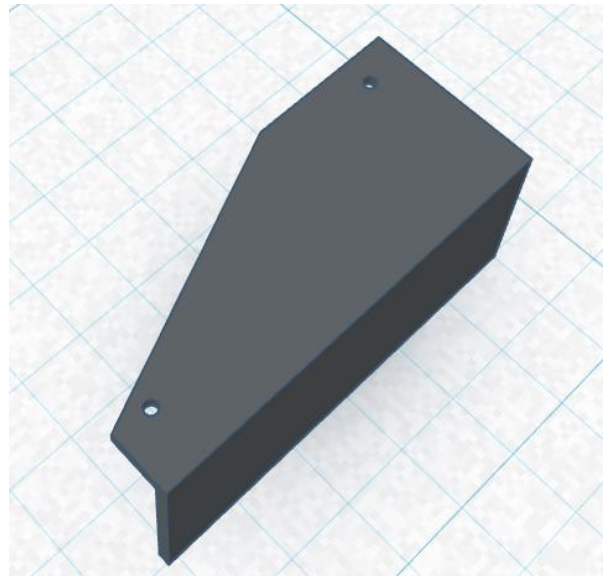


12. Cut two 5cm lengths of the PVC angle, these will form the control arms for the rudders.

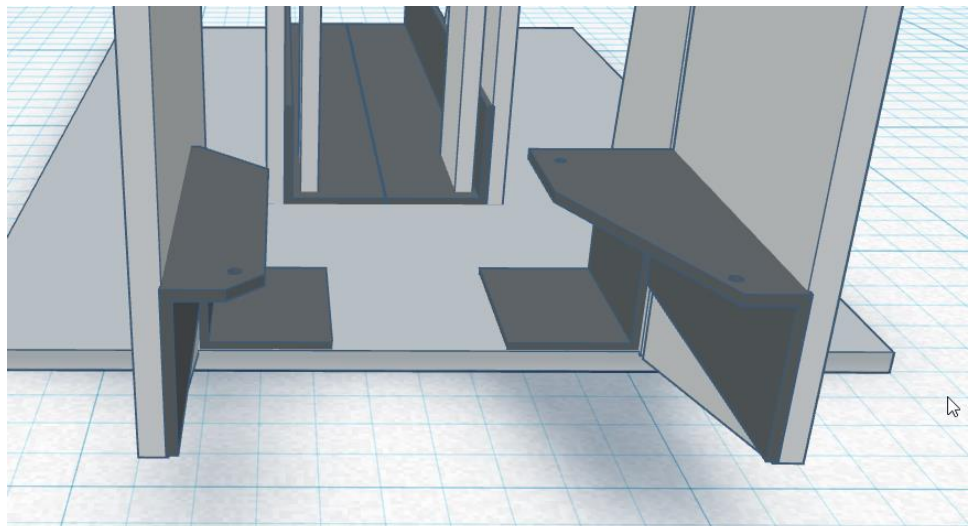
13. For the port control arm piece trim one of the edges to 1cm wide and chamfer the corners of this narrow edge. In the narrow edge drill a 2mm hole about 5mm from the end which will be at the rear.



14. For the starboard control arm piece cut away the rear corner section of about 4cm x 1.5cm. Then drill two 2mm holes, the first about 5mm in from the front and side edge and the second about 5mm in from the rear.

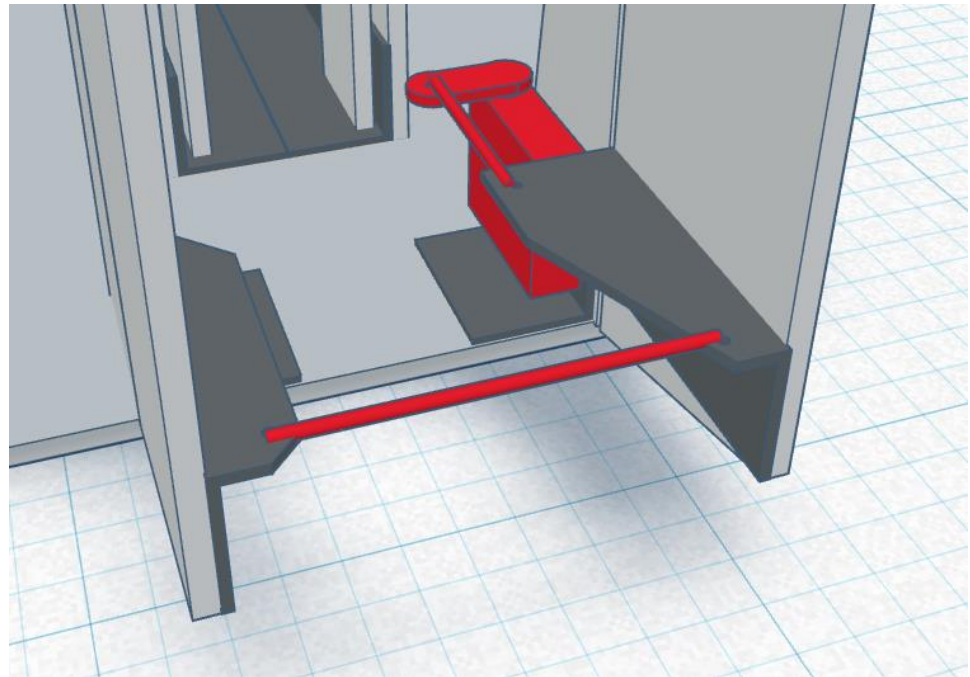


15. Secure the control horns to the movable sections of the rudders using double-sided tape. Ensure they are positioned behind the hinge line to allow the rudders to move freely.



16. Using double-sided foam tape mount the servo to the inside face of the starboard rudder fin support, ensure the servo control horn is at a similar height to the rudder control arm.

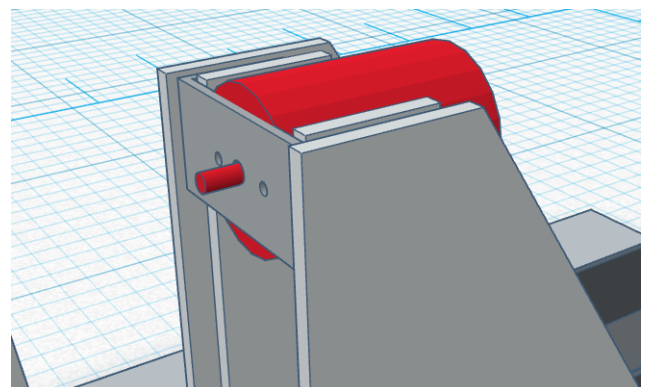
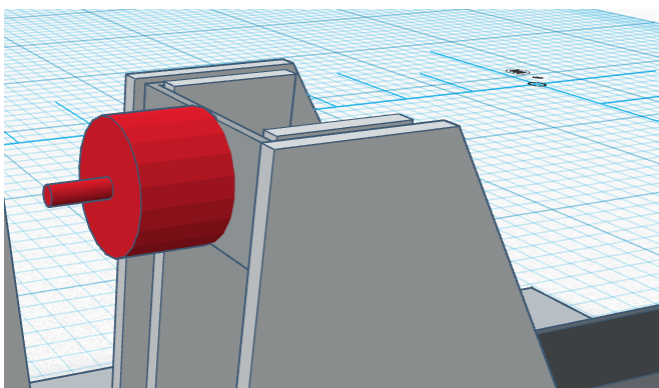
Connect the servo to the forward hole in the starboard control arm using a piece of wire with 'Z' bends or suitable linkages. Ensuring the rudders are parallel, connect the rear holes in the two control arms together using a piece of wire with 'Z' bends or suitable linkages.



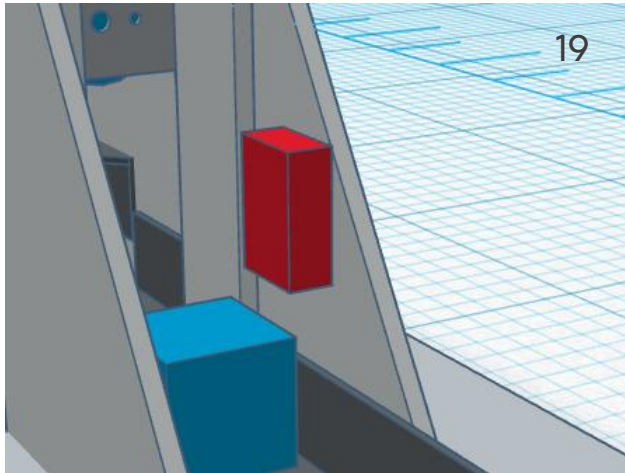
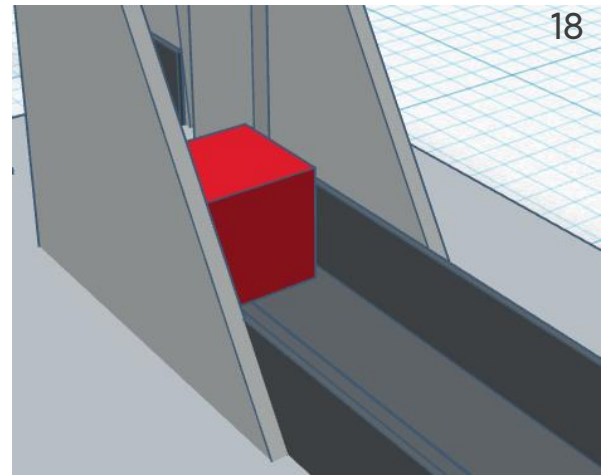
Important!

Use some gorilla tape, or similar, to stick down the servo cable in the area under the propeller to prevent it being hit.

17. Mount the motor to the motor mount, a brushless outrunner would normally be located on the rear face of the mount while an inrunner / brushed motor would be on the front face. Add the propeller as appropriate.



18. Mount the speed controller under the motor and secure to the motor pod supports / battery tray using double sided tape. Mount the switch using double sided tape.

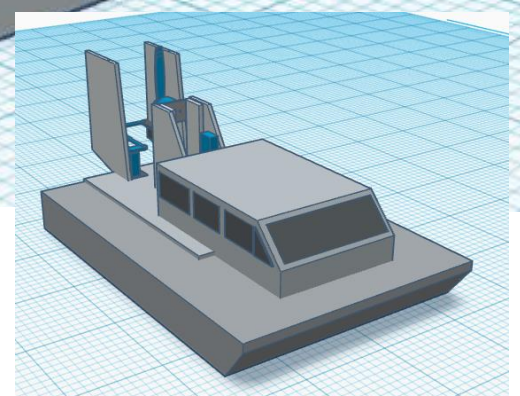
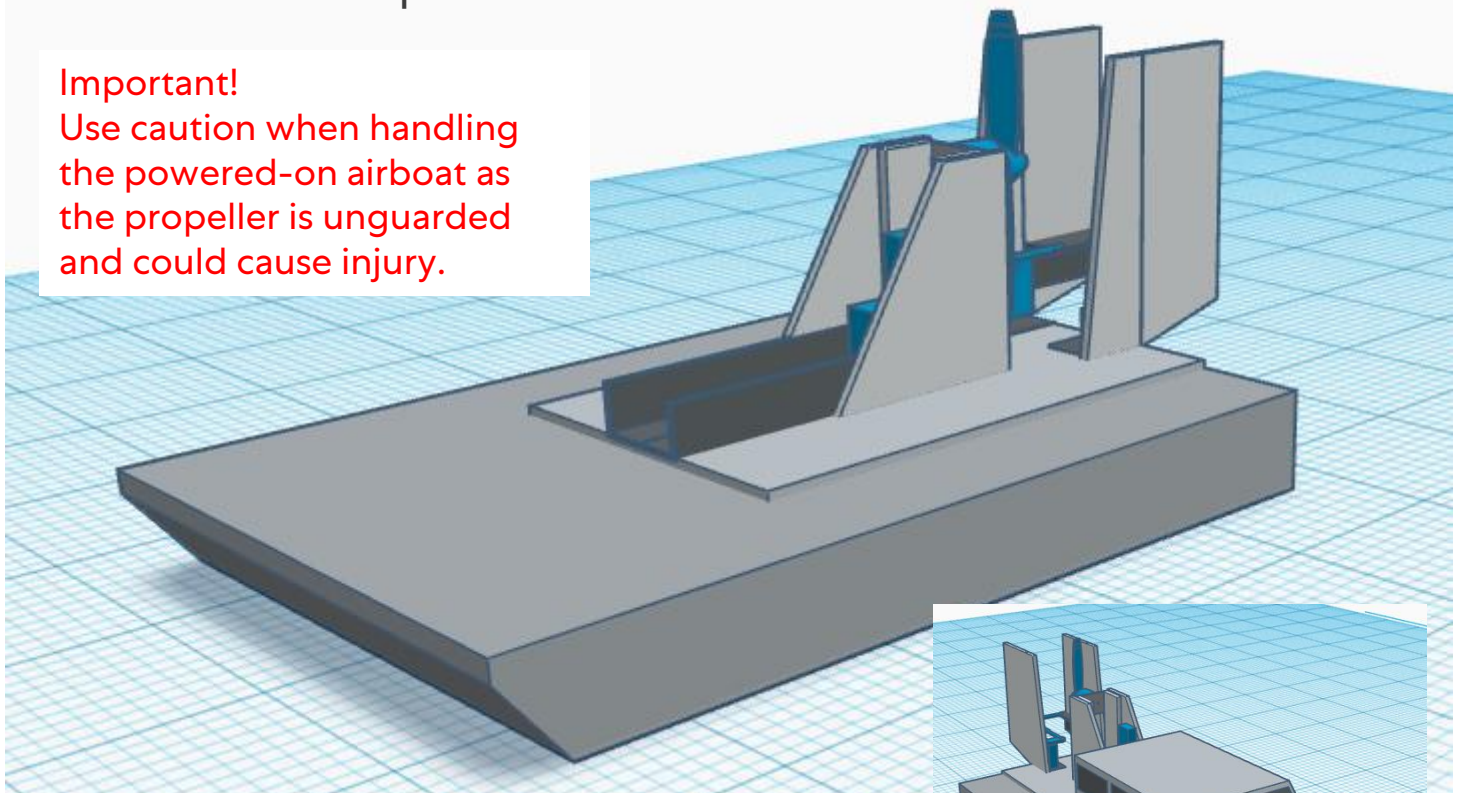


19. Mount the receiver to the side of one of the motor pod supports using double sided tape or zip tie to the smaller support. Use cable ties etc. to ensure all cables are secured and cannot be hit by the propeller.

20. Mount the completed superstructure assembly to the hull. Position the superstructure so the rear of the baseplate is flush with the rear of the hull and ensure everything is aligned to the bow to stern centerline, then secure with gorilla tape down the long edges of the base plate, or by gluing plastic wallplug fasteners into the hull and screwing the deck to them.

The completed basic airboat.

Important!
Use caution when handling the powered-on airboat as the propeller is unguarded and could cause injury.



If desired, a semi-scale look can be achieved by making a simple superstructure and securing it with Velcro. A simple propeller guard can be made from wire mesh if required