Mermaid build guide

Version 1: 2013/02/23

Suggested hardware:

Motor:	2012-06 (2200kv)
Prop:	APC 6x4E
ESC:	30A+
Lipo:	3S 2200mah
Servos:	Hitec HS-55
Servo extensions:	2 x 12”

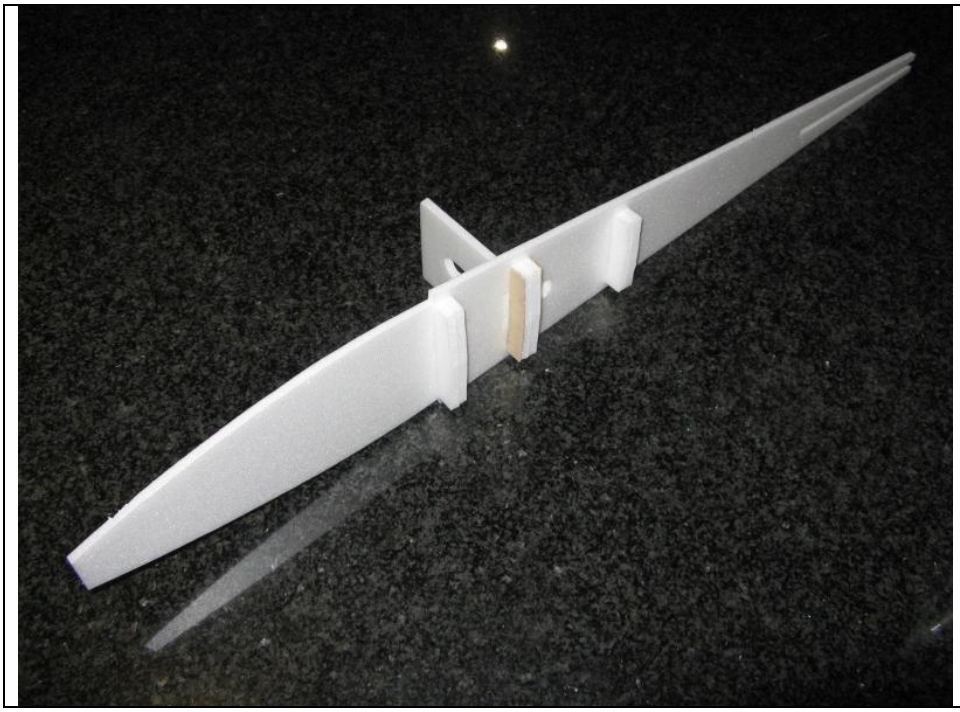

Photo 1

Begin by gluing the wing braces to the bottom of the deck.

The braces are all double thickness and the centre brace is reinforced on both sides with plywood.

The centre brace fits in the rear of the provided slot.

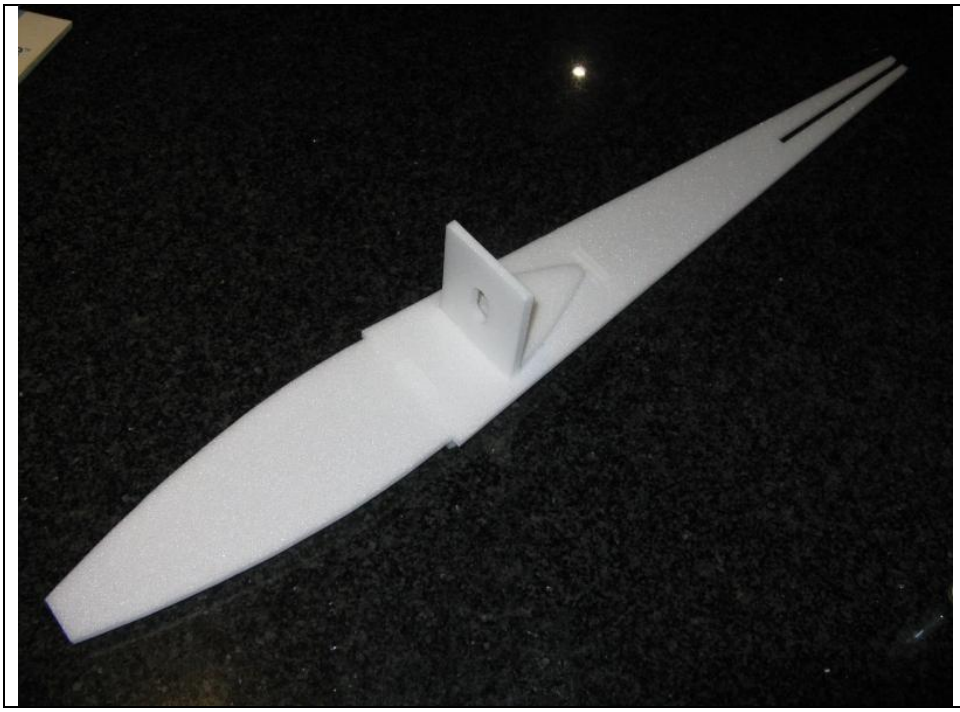

Photo 2

Glue the vertical and horizontal formers in place on top of deck.

Photo 3

Glue the fuselage sides in place.

Bend the deck down so that it ends just below the middle of the nose.

This provides space for the battery to slide forward is needed.

Photo 4

Fuselage sides fitted, bottom view.

Photo 5

Chamfer the nose former edges to fit and glue in place.

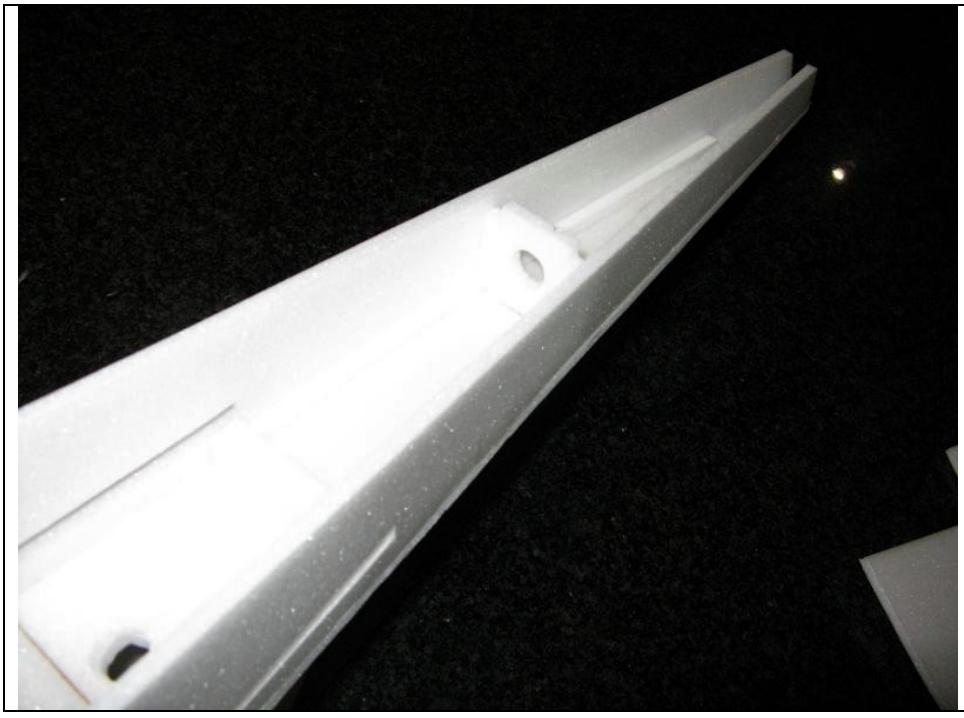

Photo 6

Use 6x6mm strips of crap foam to reinforce the upper corners of the tail.

Glue the tail former in place, just rearwards of the bend in the deck.

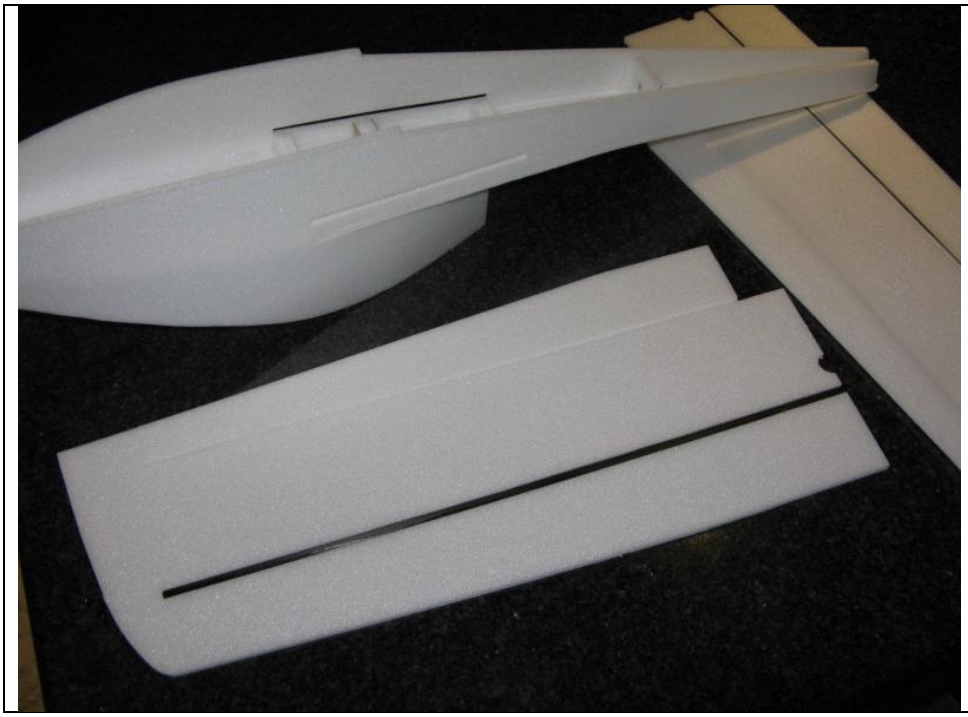

Photo 7

Install the 6mm diameter carbon rods and the ailerons in the two wing halves.

Photo 8

Insert the two wing halves in the slots and epoxy to the wing braces. Check for proper alignment before epoxy sets.

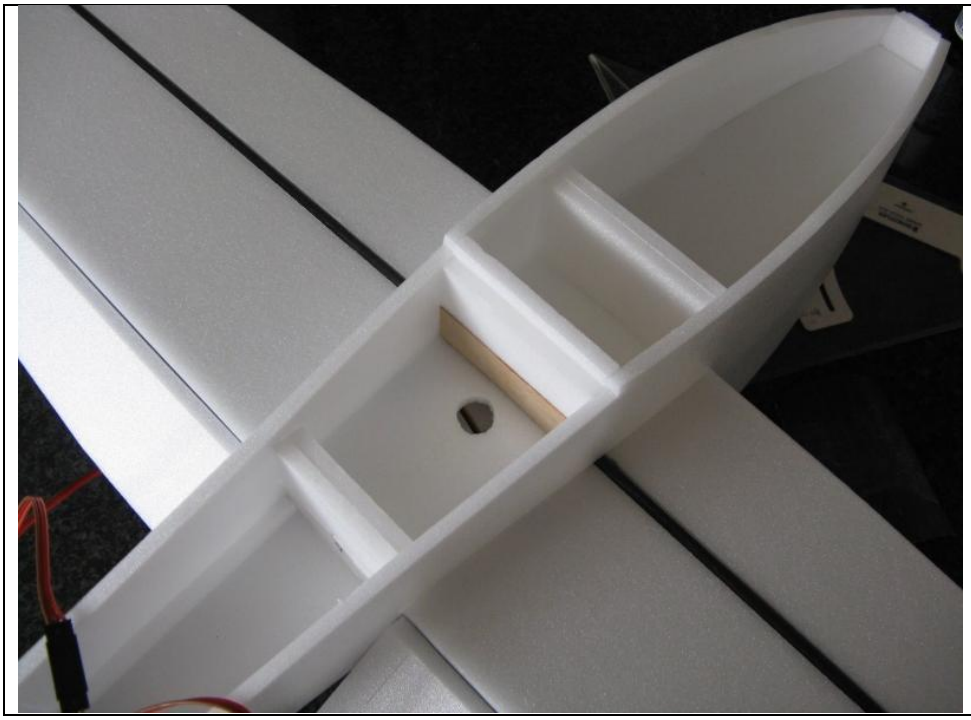

Photo 9

Glue the lower wing braces in position.

Again, these are double thickness and the centre brace is reinforced with plywood on both sides.

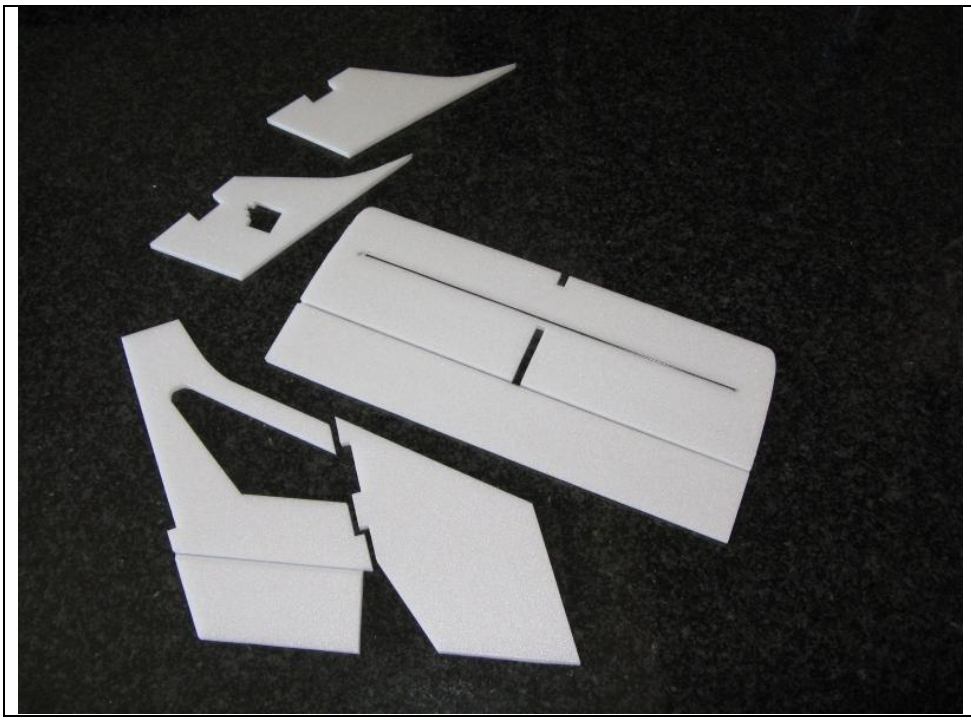

Photo 10

Cut out the tail parts.

Install the carbon strip and elevator in the horizontal stabilizer **(carbon strip on bottom, hinge tape on top)**.

Install the rudder in the vertical tail **(hinge tape on right hand side)**.

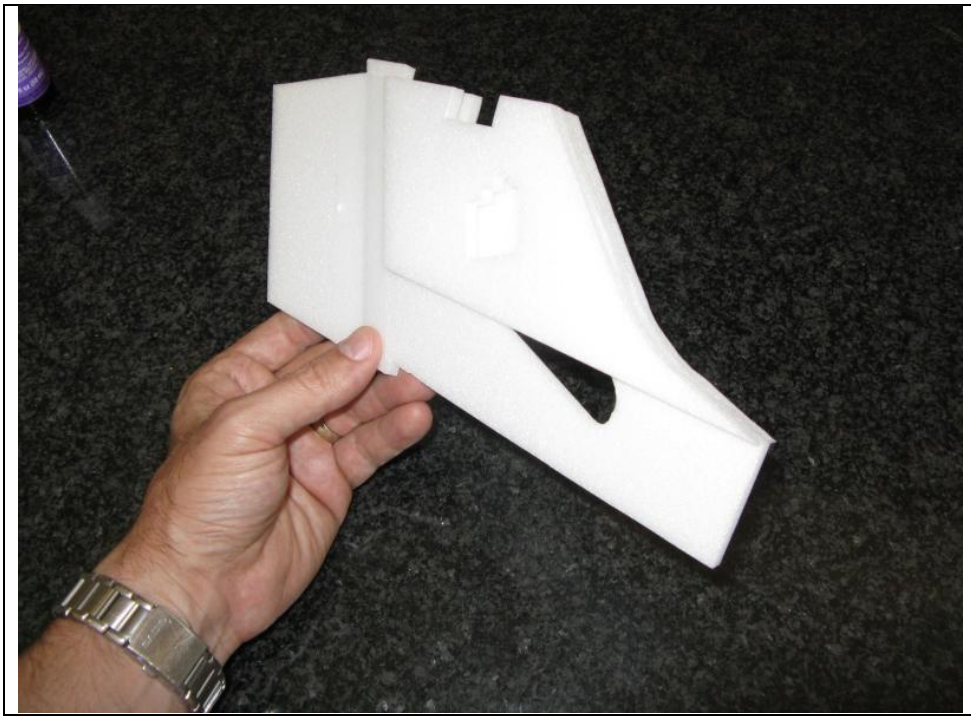

Photo 11

Glue the left and right hand sides of the vertical tail to the centre.

The side with the extra servo cut-out goes on the right (not clear in this picture).

Sand the leading edges of all tail parts round before continuing.

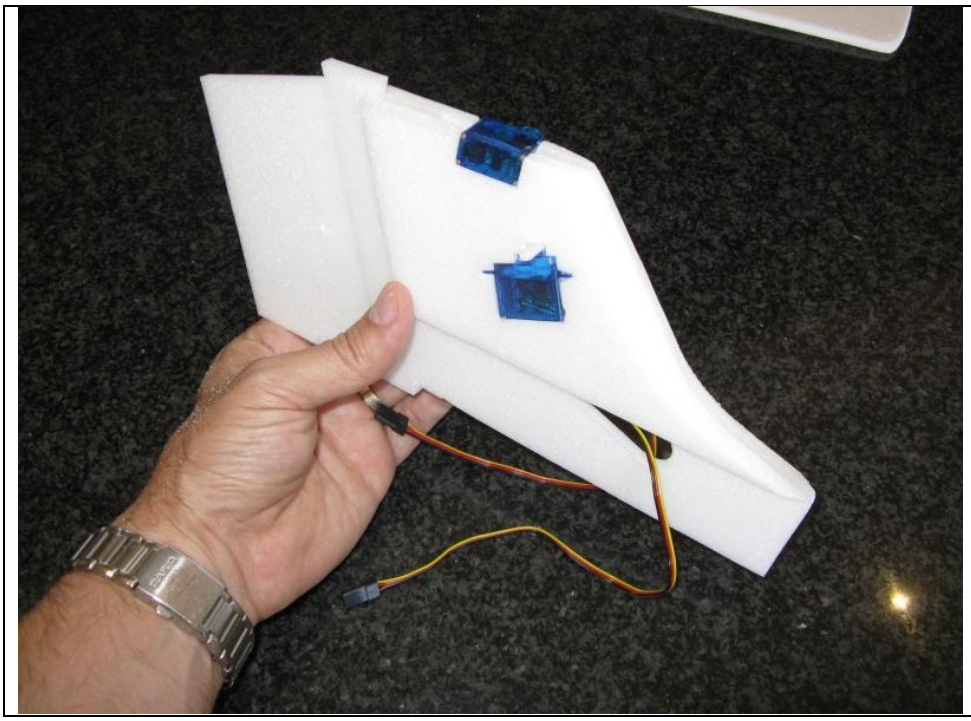

Photo 12

Install the elevator and rudder servos and run the servo leads down the cavity in the vertical tail.

Make sure the rudder servo horn is centred before installing the servo.

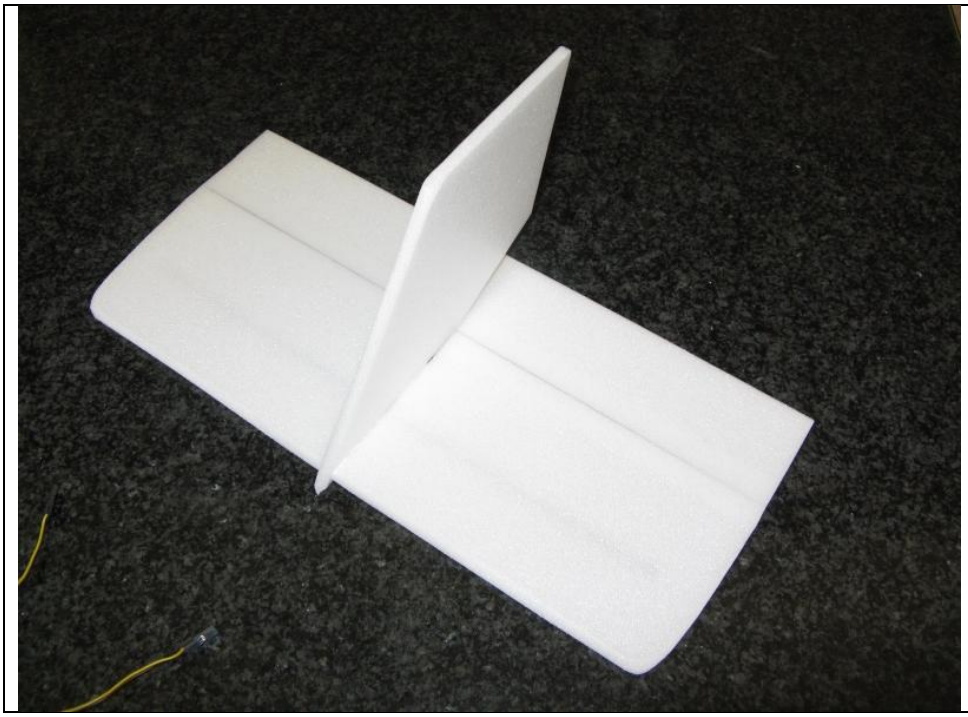

Photo 13

Glue the top of the fin to the horizontal stabilizer.

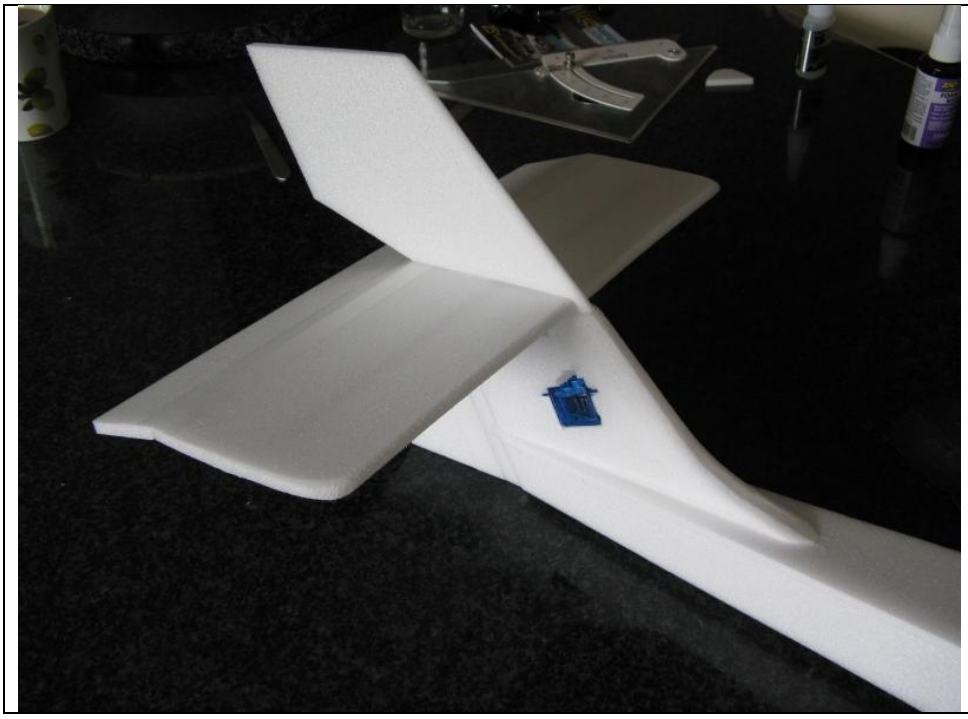

Photo 14

Complete the tail assembly and then glue to the fuselage.

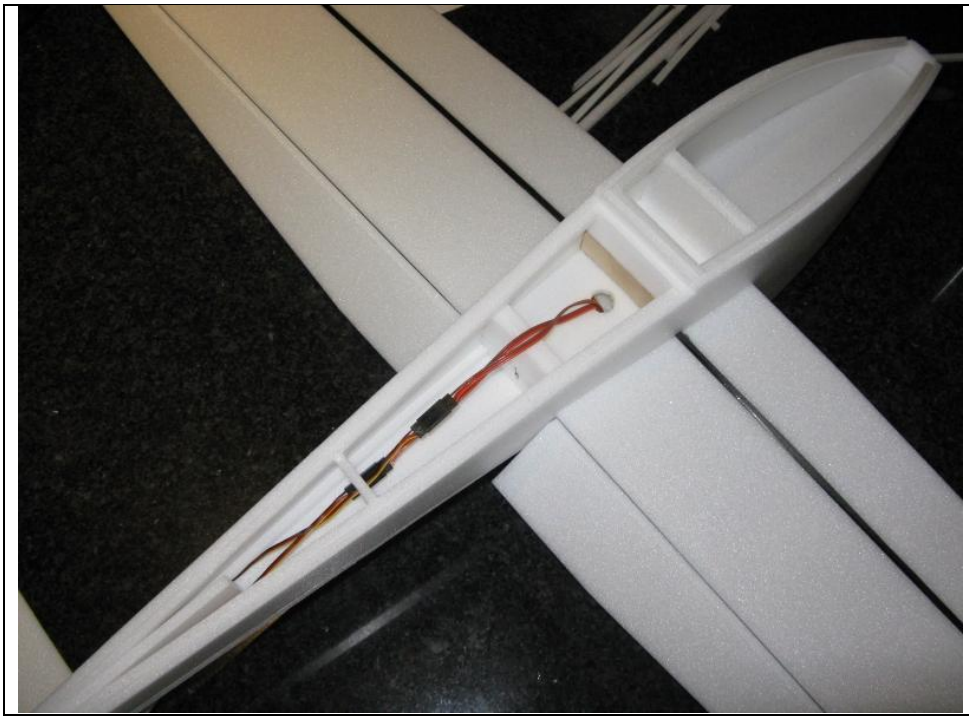

Photo 15

Fit servo lead extensions and route to electronics compartment. 12” extensions should be sufficient, depending on servo lead length.

Reinforce all the bottom fuselage edges with 6x6mm strips of scrap foam.

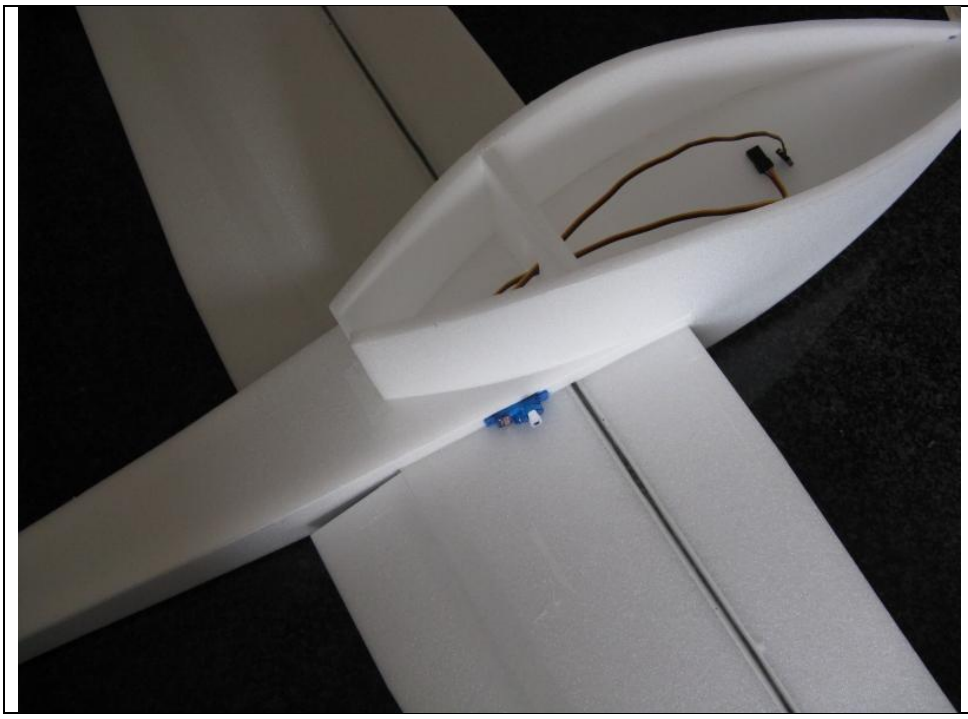

Photo 16

Cut holes for the aileron servos and fit in position. Route servo leads to electronics bay.

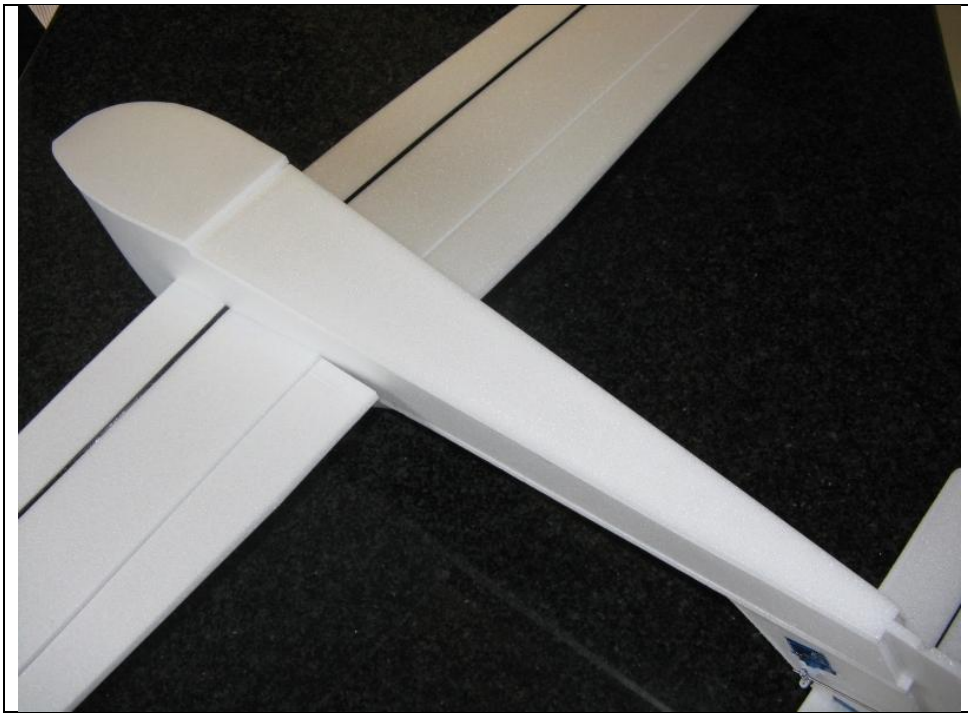

Photo 17

Glue the fuselage nose and tail bottoms in place.

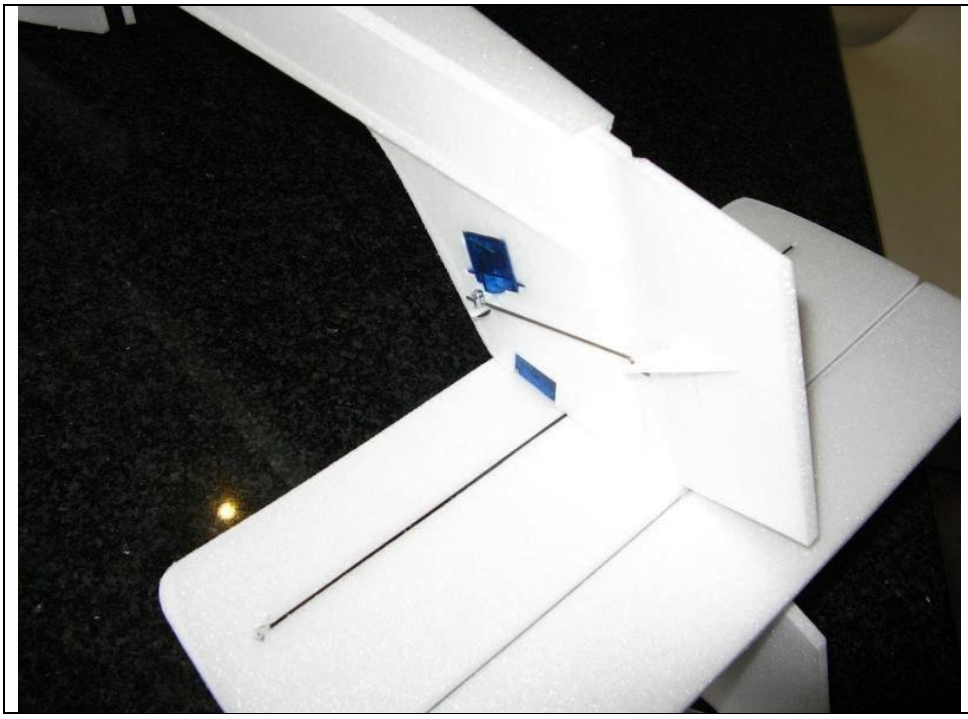

Photo 18

Install control horns and linkages.

This photo shows the rudder set-up.

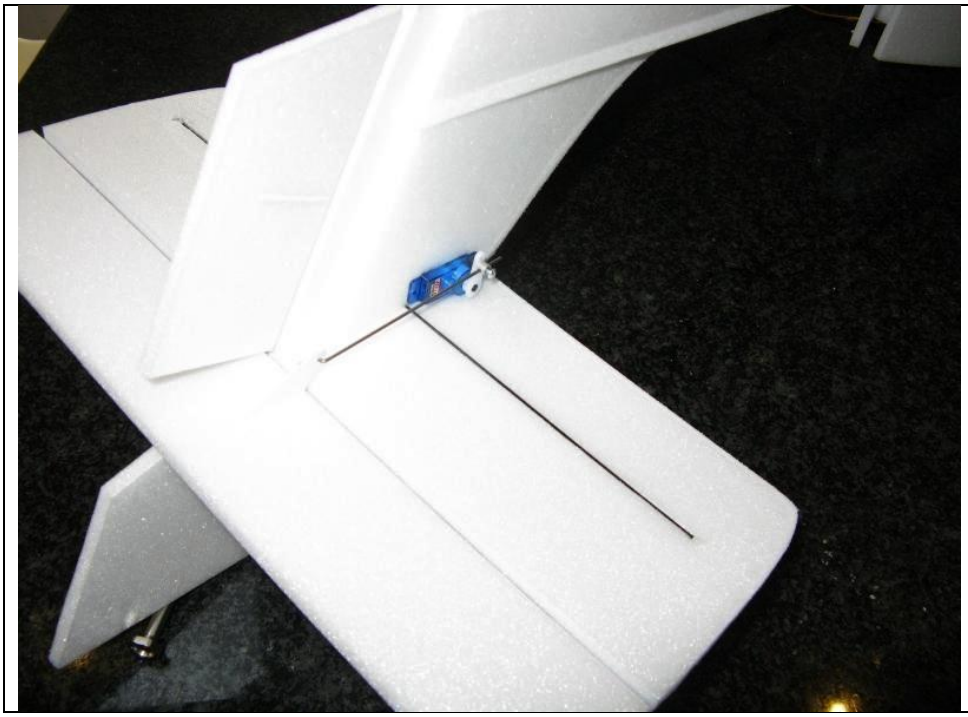

Photo 19

Elevator control linkages.

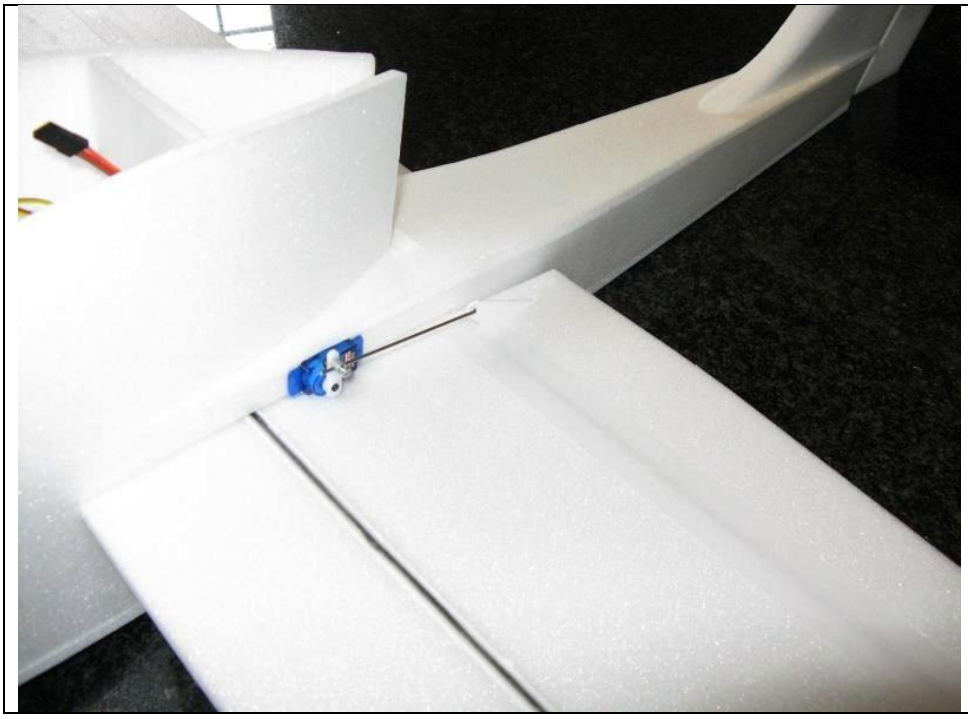

Photo 20

Aileron control linkages.

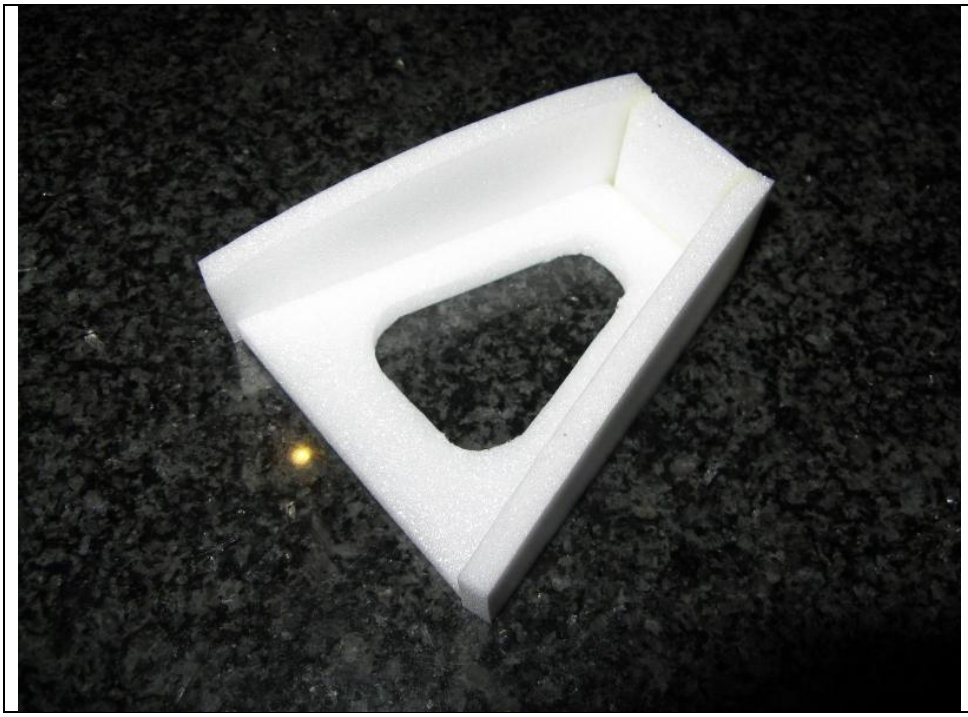

Photo 21

Build the motor mount box, starting from the bottom.

Photo 22

Once the foam parts are glued together, sand square and epoxy the plywood motor mount in position.

Drill holes for the mounting screws.

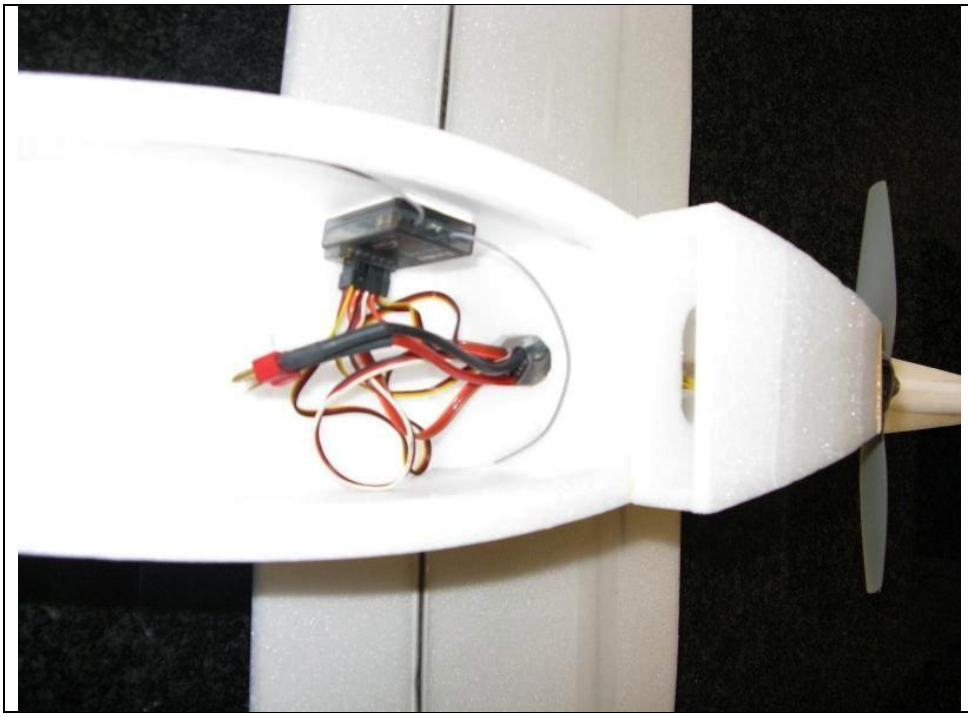

Photo 23

Reinforce all the top edges of the fuselage with 6x6mm scrap foam strips.

Glue motor mount box in position, **(make sure it mounted squarely)**.

Fit motor and all electronics, also battery Velcro.

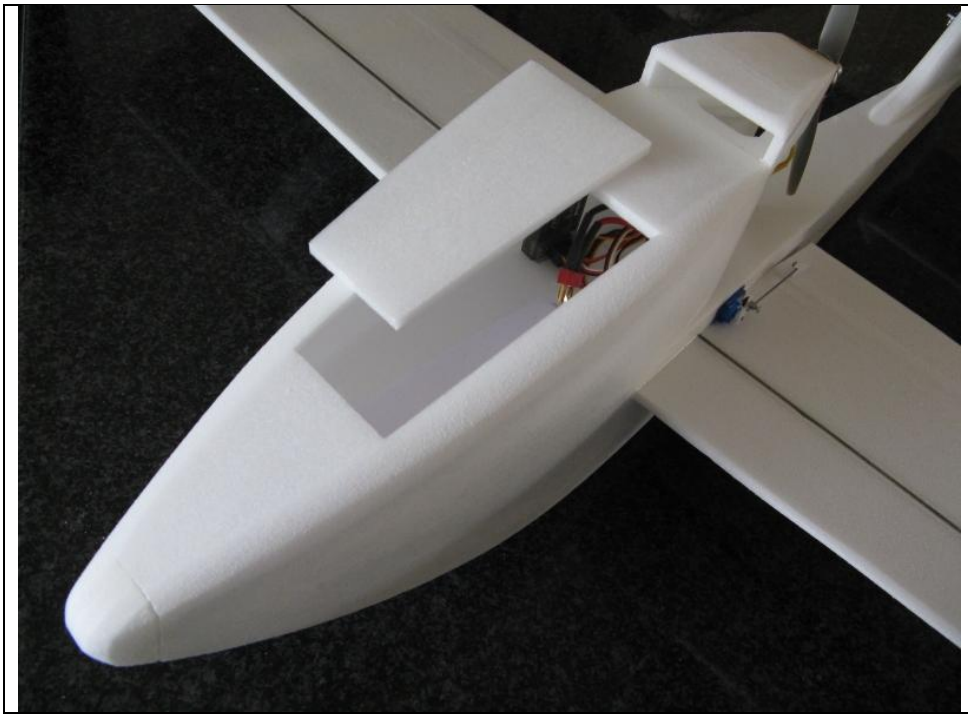

Photo 24

Glue the fuselage top in place.

Sand the nose square then glue the stack of nose parts in place.

Sand the nose and top corners of the fuselage round.

Cut out the hatch and fit in position.

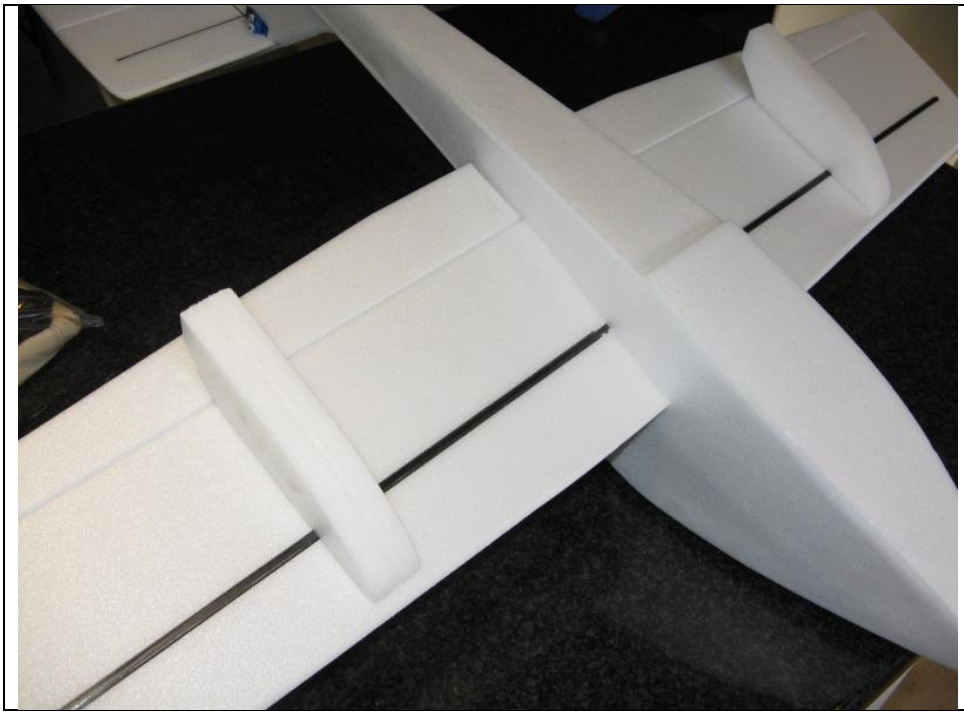

Photo 25

Build the wing floats and glue in position.

Waterproofing:
Seal joints with epoxy/micro-balloon mixture. Waterproof servos by sealing cases with epoxy. Seal servo horns with grease/Vaseline. Fill cavity around rudders servo horn with grease/Vaseline.

Control set-up:

Elevator:
Up/Down travel: As much as possible without touching fin/rudder.
Exponential: 50% (Reduce sensitivity)

Rudder:
Left/Right travel: As much as possible without binding.
Exponential: 30% (Reduce sensitivity)

Ailerons:
(Measured at the wing root).
Up travel: 22mm
Down travel: 13mm
Exponential: 30% (Reduce sensitivity)

Centre of gravity:
Balance on carbon wing spar.