



KITE FERRY

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List of materials

Kite ferry

Item:	Quantity:	Comments:	Part #
3D printed parts	5	Parts marked "V2". Material PLA.	1-5
Carabiner	2	Approx. H=60mm, W=30mm, D=4mm.	9
Carbonfiber tube, Ø6	40 cm	Outer diameter 6 mm. Inner diameter 4 mm.	7
Fiberglass rod, Ø3.1	46 cm + 4.5 cm	Solid, full wound fiberglass rods. Outer diameter 3.1 mm.	6
Tension rubber, Ø2	15 cm	Rubber band, outer diameter 2 mm.	12
Aluminium sleeve, Ø6	1	Sleeve for connecting or extending rods. Inner diameter 6 mm. Outer diameter 8.2 mm. Preferably with a separation wall in the middle.	11
Stand-off, Ø8 x Ø6 mm	1	T : horizontal diameter 8 mm, vertical diameter 6 mm.	10
Glue			8

Sail

Item:	Quantity:	Comments:	Part #
Carbonfiber tube, Ø6	200 cm	Outer diameter 6 mm. Inner diameter 4 mm.	7
Ripstop nylon (spinnaker)	70 x 70 cm	Approx. 48 gr/m ²	-
Bridle line	1 m	Approx. Ø1.5 mm (~70kg), wide and soft enough to sew on.	13
Split nock, Ø6	3	For 6 mm tubes.	14
Tension rubber, Ø2	3 x 10 cm	Rubber band, outer diameter 2 mm.	12



Figure 1

Kite Ferry

Put the carabiner in the 3D parts #1 and #2 and stick the 40 cm carbon tube through. Glue the carbon tube to the front and back parts of the kite ferry.

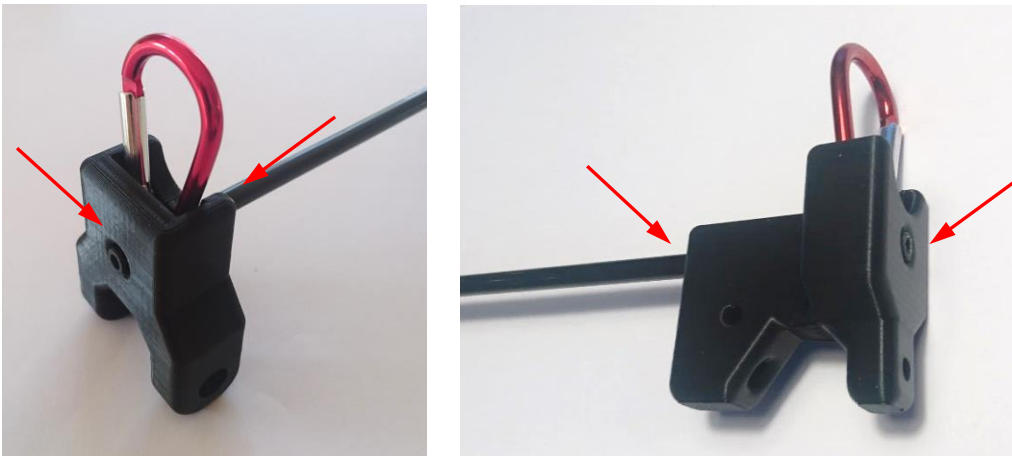


Figure 2

Press the 46 cm and 4,5 cm fiberglass rod into the 3D part #4 (7 mm) (**do not glue yet**).



Figure 3

Put the rod into the carbon tube and 3D part #1.

Press the fiberglass rod into the 3D part #3 (22mm all-in) (**do not glue yet**).



Figure 4

Test if the clearance is okay when pressed and released.
If everything is fine, **you can now glue** the fiberglass rods to the 3D parts #3 and #4.
Put glue inside the holes as well.

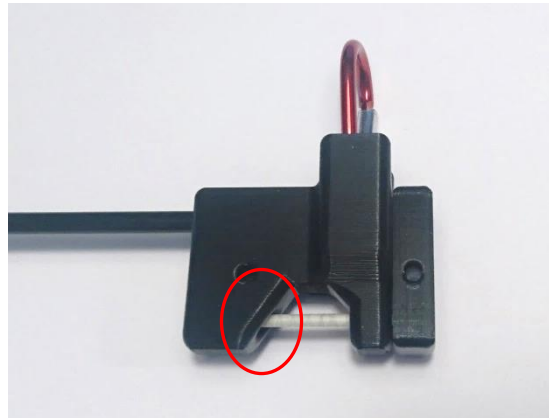
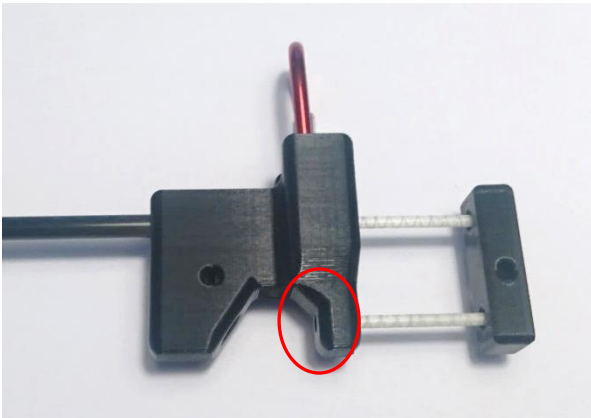


Figure 5

Cut a 15 cm piece of $\varnothing 2$ mm tension rubber.
Make a double knot and attach as show on Figure 6.

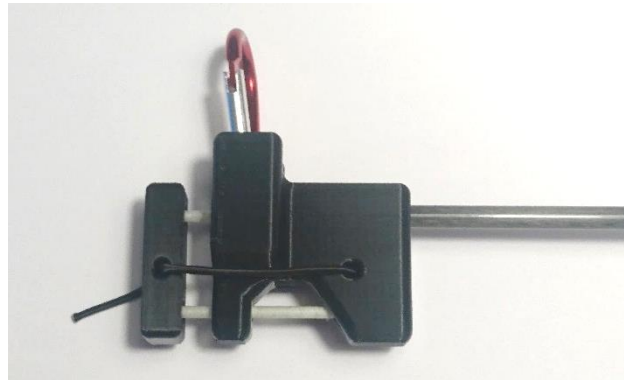
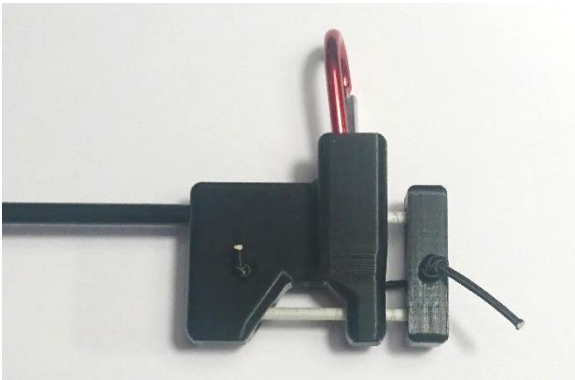


Figure 6

Mount the aluminum sleeve and stand-off to 3D part #2.



Figure 7

The Kite Ferry should now be fully assembled 😊

Sail

Cut the ripstop nylon in a square 70x70 cm.

Cut the square into 2 triangles with measurements as shown in Figure 8.

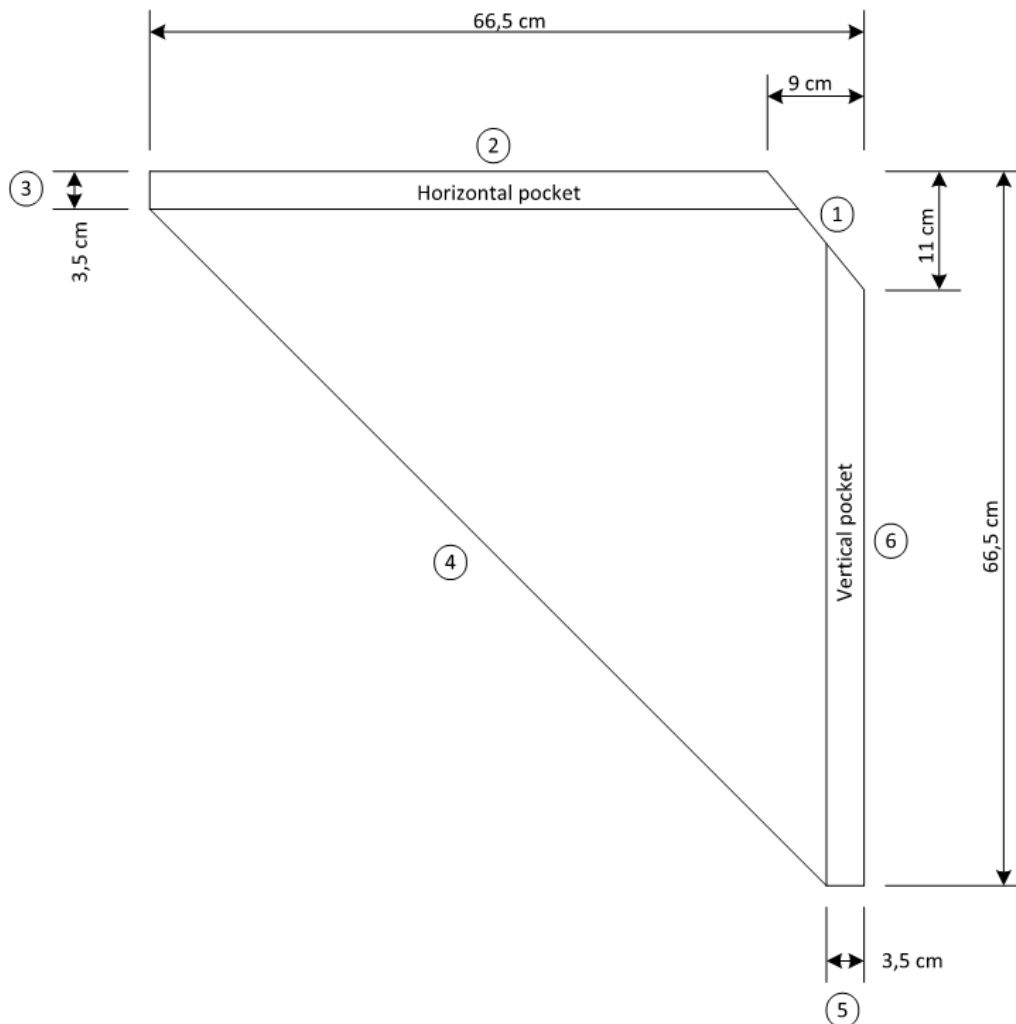


Figure 8

Make a 5 mm hem on side 1-5 of both triangles. Sew with zigzag stitches.

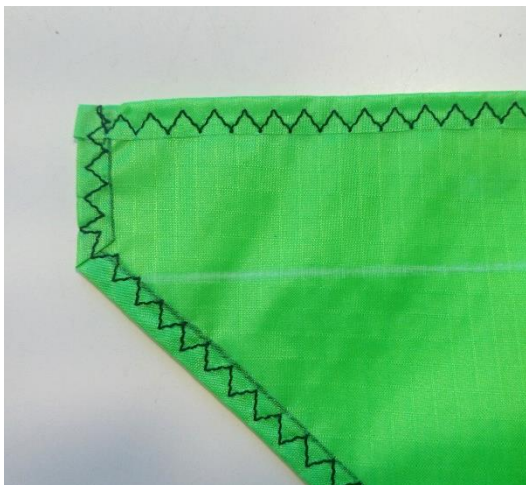


Figure 9

Lay the two sails front to front and on side 6, sew with straight stitches 3.5 cm from the edge (7).

Fold both sides around to a 5 mm hem and zigzag them together (8).

Fold again to the straight stitch to create the vertical pocket for a $\varnothing 6$ rod. Use straight stitches.

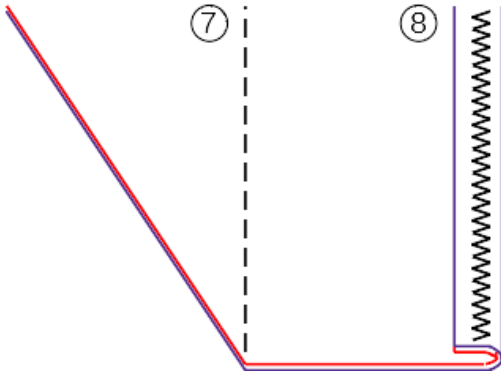


Figure 10



Figure 11

Fold side 2 to the 3.5 cm marking to create the horizontal pocket for a $\varnothing 6$ rod. Use straight stitches. Do the same for other side of the sail.



Figure 12

Cut 3 lines in length of 7 cm and sew them in a small loop below the rod pockets at position 3 and 5. Use a bridle line that is wide and soft enough to sew into.

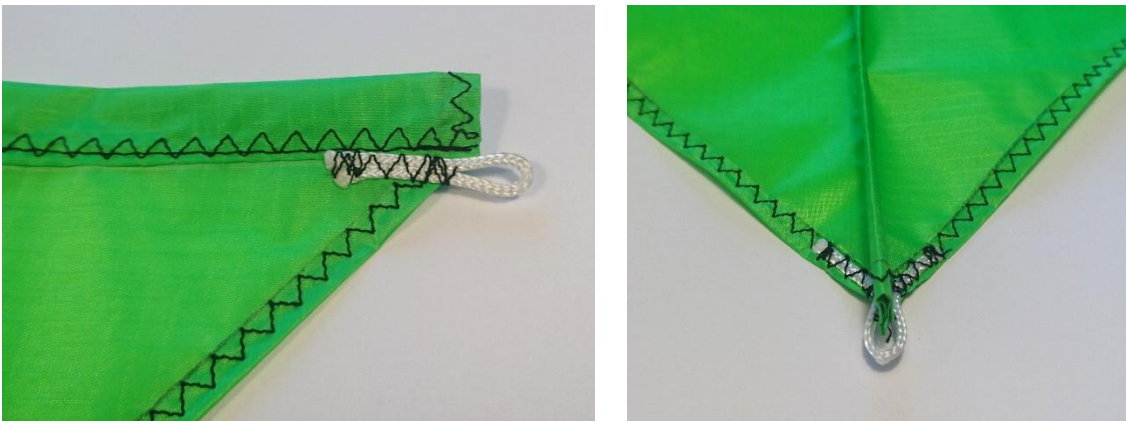


Figure 13

Cut 3 tension rubber bands in length of 10 cm and tie them to the 3 bridle line loops. Use the rest of the bridle line (~79 cm). Tie it to the bottom end of the sail and make a loop at the end.

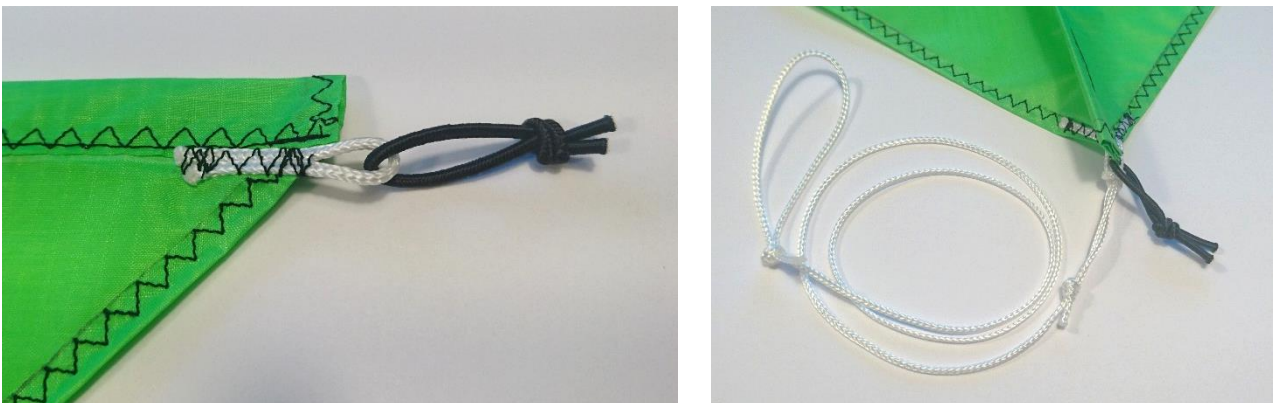


Figure 14

Cut the 200 cm $\varnothing 6$ carbon tube in 3 equal lengths and glue a split nock (part #14) on each of them. The sail should now be fully assembled 😊

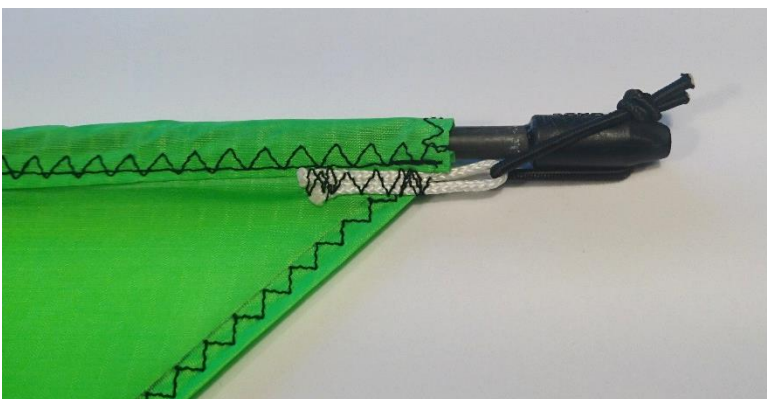


Figure 15

Enjoy !

Parachute

The Teddy Bears needs a parachute to safely perform the jump.
 This parachute consists of 18 equal pieces sewn together to a hemisphere parachute.

List of materials:

Ripstop nylon (spinnaker)	Approx. 70 x 140 cm	Approx. 48 gr/m ²
Bridle line	10.8 m	Approx. Ø1.5 mm (~70kg), wide and soft enough to sew on.
Thicker line	1 m	Eg. shoe laces.

Make a template with the size shown in the figure below and cut 18 pieces.
 It is always nice and better looking to use more than one color.

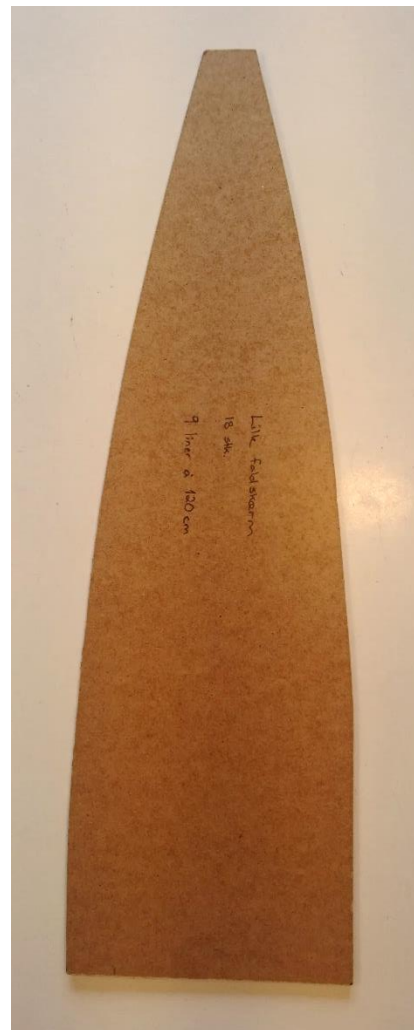
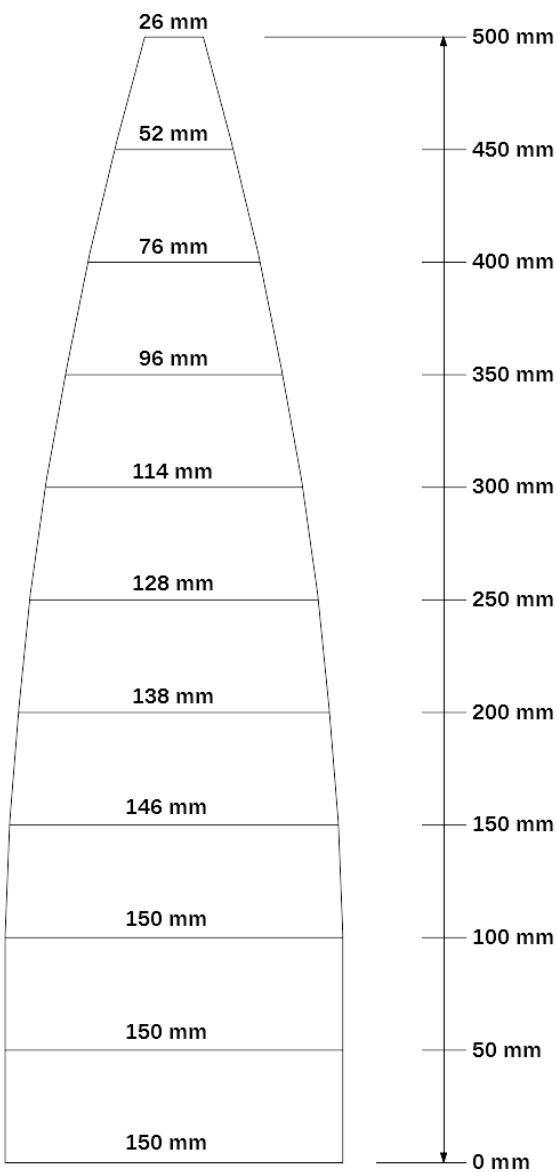


Figure 16

Lay 2 pieces together (front to front) and sew with straight stitches along the long side, approx. 5mm of hem from the edge. Continue to do this with all 18 pieces. Make sure to have the hem on the same side for all pieces. Do **not** sew the first and last piece together yet.

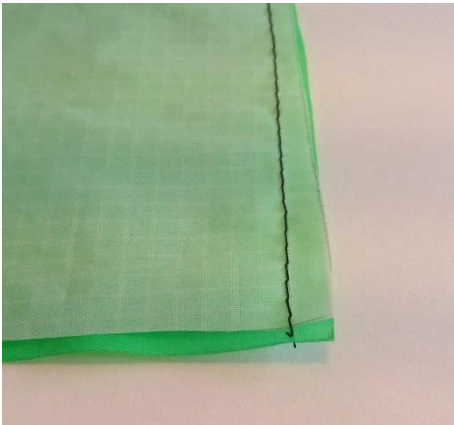


Figure 17

Fold the hem over to the side with the darkest color. This will minimize the shadow on the lightest color. Sew with zig-zag stitches.

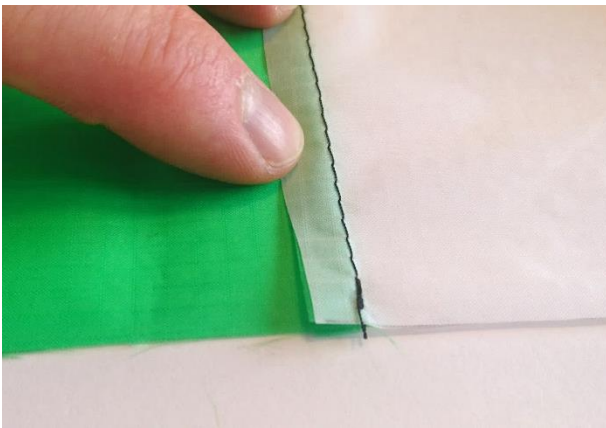


Figure 18

Fold the top and bottom ends to make a 5 mm hem. Sew with zig-zag stitches.



Figure 19

You can now sew the first and last piece together to create the hemisphere shape.

Cut 9 pieces of bridle line in lengths of 120 cm. Sew them to the bottom ring on every second piece.
Cut 1 piece of bridle line in length of 15 cm. Sew it to the top ring mid ways to create a loop. This loop will be attached to the Kite Ferry.



Figure 20

Join all the 9 bridle lines in one knot and attach a 100 cm thicker line to tie around the Teddy Bear.



Figure 21

You now have a parachute for the brave Teddy Bears 😊