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# Clowns and other fish



Sometimes kites are born out of 'necessity'. Basically, I had a roll of orange cloth for a very different idea for some time. The initial idea didn't count any more, so the question was, where to use so much orange colored cloth. Why had the gorgeous looking clownfish not been transformed into a kite yet? No sooner said than done. Soon I would be able to test fly something new.

The story of the clownfish started five years ago. Meanwhile workshops have been held with it, and since a few years the large clownfish is produced and sold by *Premier Kites*. Various sizes and colors have been tried. The high demand and the overall positive experience with previously published construction plans in **KITE & friends**, [www.kite-and-friends.de](http://www.kite-and-friends.de) (see "Robby", **K&f** 1/2008, parrot, **K&f** 1/2009 and "Froggy", **K&f** 1/2010) was reason enough for me to work out yet another plan. The enormous creativity of kite builders in adopting the previous plans is very impressive. Nobody had expected so many unique design ideas, and also the community spirit in numerous workshops exceeded every expectation. Therefore with this plan we would like to contribute once more to keeping kite building great fun. Individual creativity is encouraged, because the identification with the homemade and the pride of looking at our own products stands in great contrast to cheaply bought and copied kites for the mass market. With this in mind we are looking forward to seeing colorful schools of fish in the deep sky!

## Colors

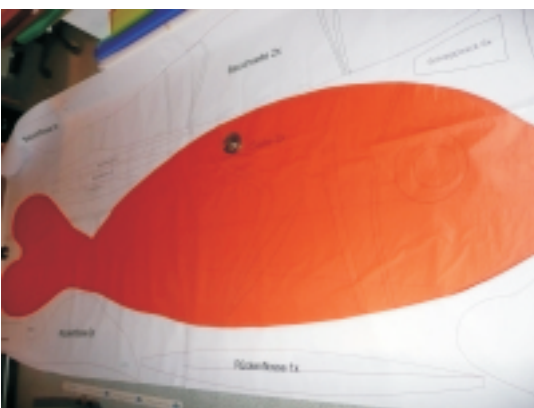
The natural colors of the clownfish are orange, white and black. With other colors they appear very impressive too, i.e. yellow / green, blue / white, or black and white. Also different colored fins can make a nice contrast with the main color. Even the Rainbow Fish is a variant of the clownfish. Creativity knows no limits!



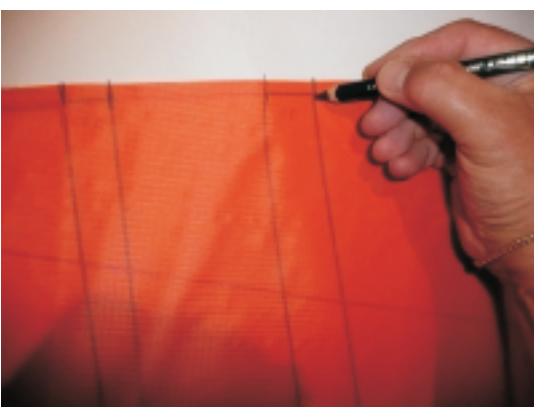
All we need to start building!



Cut by following the lines that are shining through.



This is how the individual parts are cut.



Using a pencil accurate marks for the black stripes are drawn.

## List of Materials:

The 'classic' clownfish are orange, white and black. But as mentioned before, other color combinations look nice at the sky also.

The list shows the approx. required fabrics in square meters (sqm).

Ripstop-Nylon:

- 15 sqm orange
- 3 sqm white
- 2 sqm black (for contours, eyes and lip)
- 1 sqm white (soft fabric for valve flap)

Bridle lines:

- 15m, dia. 0.5mm, 30daN
- 20m, dia. 0.8mm, 50daN
- 5m, dia. 1.0mm, 70daN
- 2m, dia. 1.5mm, 100daN

Whether the bridle lines are white or black purely is a matter of taste.

Reinforcements:

- approx. 6m of simple string, easy to sew on
- approx. 1m of narrow belt webbing or inextensible string

Optional:

- Zipper of approx. 40cm (for the tail fin)

**Commercial use of this plan is strictly prohibited!**

With its size of 3.5 meters the material requirements of the clownfish are comparable to preceding plans, though the simple and clear shape should not hide the great sewing complexity and difficulty! Sewing and kite building experience should therefore already be present with the builder.

Anyone who has studied the previous plans or even built a kite following one of the plans will find repetitions and similarities in some passages. This is fully intended, as the earlier plans have been found plain and easy to comprehend. However, this fish is not a kite that flies on its own, but only as line laundry.

### Templates

The general drawing shows the individual segments. Anyone who wishes to may enlarge them to scale (see 'clownfish\_overview.jpg'). If this is too much work we have provided the templates for download as PDF files. The full-size printed PDF's should be joined by gluing the abutting edges and then serve as a template. As the drawing shows through the cloth, shapes can be drawn along the lines or be cut right away. For the black cloth it could be a bit difficult, but more on that later.

Usually the large segments are cut with sharp scissors. For smaller parts or the non-fringed lip a hot knife should be used. The templates don't include any seam allowance, this works with tightly sewn hems. If you prefer wider hems you need to add allowance prior to cutting. The template width is also just right for the use of fabric that comes in a width of 1 meter.

### Body and Design

Cut the body and belly segments as two pairs. With a pencil or crayon mark the placing of the black stripes, the placing of the fins and the positions of eyes and bridle points. Then exactly cut the white panels including the black lines, and mark the placing or respectively the width of the black stripes on it. If you like you may vary the outline of the black stripes. The only important thing is to match the parts up where the segments join. We have given exact dimensions on the template.

However, if the widths of the stripes are not the same, they will show severe misalignments when the large panels are joined.





*Using the white parts as templates.*



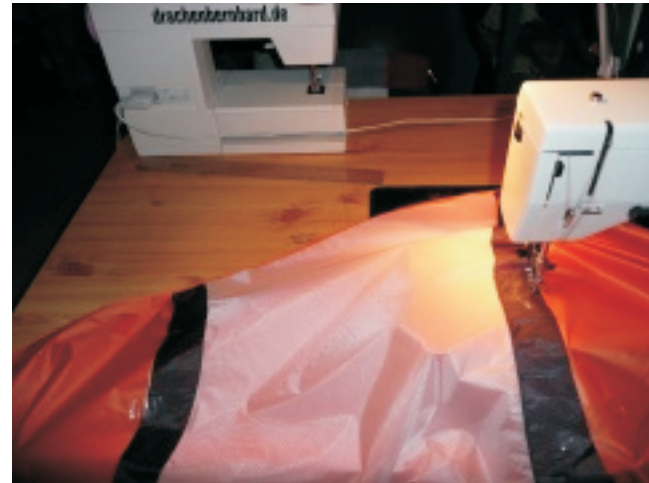
*The black stripes sewn on and cut free.*

Cut the black stripes and fix them onto the edges of the white segments. For the black cloth this is admittedly somewhat cumbersome.

A simpler method is to use the white segments as templates. Each outer contour of the black stripes emerges from the outer edges of the white segments. Lay the white segment on the left side of the black fabric. Fix the respective outer edge with adhesive, tape, glue stick or 'hot tack' it and cut along. The marked width of the black stripe should be visible through the white fabric. Sew along the mark and then cut away the excessive black fabric.

Now the completed white segments with their black borders can be applied onto the main orange panels. But please, sew these fields only at the edges of the fabric, because next you need to cut away the orange behind the white areas. The result already looks a lot like a clownfish!

The orange leftovers are great for making a drogue and a bag.



*Completed white segments are applied to the orange basic fabric.*



*Step by step form and layout evolve.*

## **Sewing Sequence and Reinforcement**

Except for the applied strips all stitching is done with a plain seam on the wrong side, which after construction will be on the inside of the kite. In areas with particular strain, reinforcement strings are sewn on. Along the first sewing line fold the seam to the side and with a straight stitch sew on a length of string.

At bridle points and the drogue attachment points the reinforcement strings should cross to avoid fabric tearing during flight. The plan shows the positions for the reinforcement strings as blue lines.

Since the body of the clownfish is pretty voluminous and line traction will be moderate we can abandon inner tensioning lines. Such lines would be used to keep the kites shape (i.e. flat) or to distribute bridle forces. Only the fins need to be kept from being inflated out of proportion. At positions marked with 'inflation restrictor' strings or narrow belt webbings of appropriate lengths are applied.



*Creating the bridlepoints with reinforcement strings.*



*The eyes are sewn with a single stitch.*

## Eyes

For the small fish the eyes are not three-dimensional. The pupils simply are applied to the white circles. As a simple seam is fully sufficient, the eyes are quickly finished. Then they can be sewn onto the orange base and cut free at the back.

## Fins

The panels of the dorsal and ventral fins are needed to be cut as pairs each, the side fins two pairs, and the corresponding black profile strips are cut out one per fin. Using a light-colored pencil mark the profile strips on the black fabric. If the fabric is very dark and the lines of the template are not visible, try to slowly roll the fabric over the template and trace the profile bit by bit. Include the bridle positions and sew on string crossings.

Optionally you can sew in a zipper in the profile strip of the tail fin, in case you are planning to inflate your new clownfish with a blower to use it as an aero sculpture. Now all parts of the fins are ready to be joined.



*Optional zipper*



*Air intake for the side fins*

## Side Panels

Before the side fins can be inserted, the narrow lip strips are sewn to the side panels.

For the fins you must precisely transfer the outline of the openings to the fabric. Within the outline cut open the center line to a length of 50cm at most. Now place the fin with the upper tip at the top of the marked outline, right on the right. This way the inside (left) easily can be reached for sewing. Sew up to the bottom fin tip and then, with the needle down, turn around all the material in the other direction. Although this is a bit tedious, it works!

Sew as far as possible, secure the seam and complete it on the other side. To prevent the side fins from being inflated too much, a length of string or belt webbing of approx. 7cm is sewn centrally across the opening to the inner hems.

When both fins are sewn in, the main side segments can be joined. At this point carefully check if the lip and the black contrasting stripes meet flush. Possible inaccuracies still can be corrected, the fabric can be shifted or pulled a little. Now start sewing at the mouth up to the front tip of the dorsal fin. Insert the fin by sewing it side after side, always working on the 'wrong' side of the panels. Go on until you reach the attachment point of the tail fin profile. As before the positioning of the contrasting stripes needs to be checked now and then, and if necessary be corrected.

Next a reinforcement string is applied, either along the entire seam or at least in the section of the lifter points. Resiliently sewn string crossings strengthen the lifter points, as they have to withstand high strain during flight. The inner side of the lip receives reinforcement string too, and more string crossings are affixed at the bridle points.





*Important: Thoroughly sewn lifferpoints.*



*Inflation limitation of the dorsal fin by lengths of belt webbing. Reinforcement strings also work.*

Now the top half of the fish is almost done. Only the inflation restriction of the dorsal fin is missing. Positions and lengths for strings or belt webbing are shown in the drawing.



*The white valve flap placed inside.*

### Valve Flap

The fabric of the valve flap should be as soft and smooth as possible since it then snuggles nicely into the opening and keeps it tightly closed.

If at hand, parachute fabric can be used. Because of the visual appearance white fabric is recommended.

The round shaped side is applied to the lower edge of the upper lip. If you sew it onto the left side of the reinforcement string the seam will be invisible later. The best way is to start in the middle, sew on one side, then sew the other side up to the first black stripe. Leave the protruding straight edge as it is. During flights it will close the valve due to internal pressure.

### Belly

The belly parts are assembled pretty much like the sides. First do the black bordered white panels, then fix the lip stripes, and then combine all parts. Again starting from the lip sew until you reach the starting point of the ventral fin. Insert the fin one side after the other. Now the seam can be closed all the way to the tip of the tail fin.

For the center seam up to the first black stripe use a simple flat seam. Sew on reinforcement and bridle point strings. At the tagged positions the ventral fin receives strings or belt webbing to limit inflation. Also the lower edge of the lip needs a reinforcement string and cross strings for the bridle points.

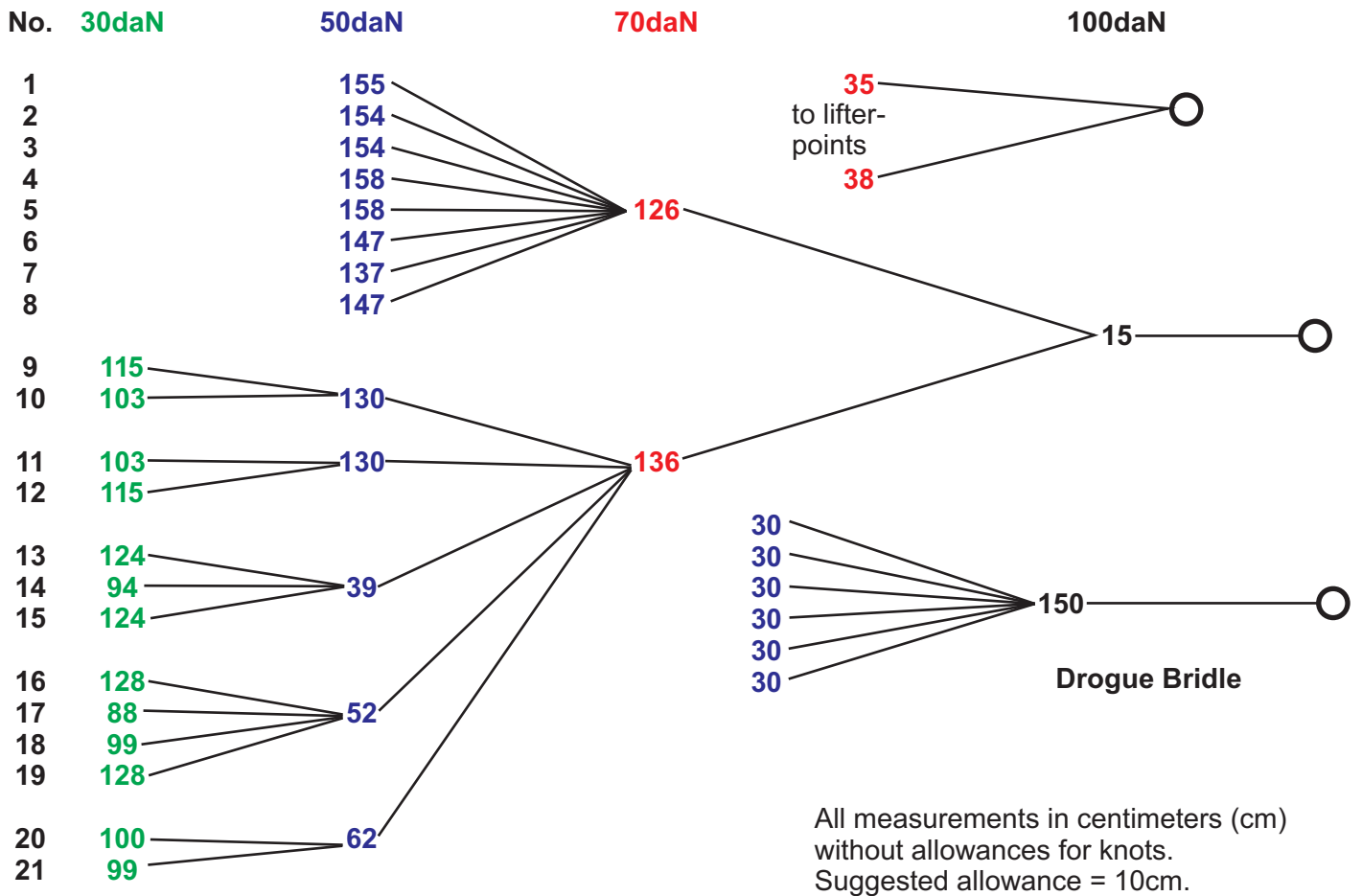
### Mouth

The lower edge will flap freely in the wind and therefore should be hotcut. Between bridle points 4 and 5 the mouth remains open, so the hem of the lip needs to be finished with extra care. You may want to reinforce it to prevent ripping.



*Top halve of the clownfish*

# Bridleplan



## Seaming Up

Starting at bridle point 4 or 5 respectively, the fish can now be stitched together. First one side to the tail fin, and then the other. Again make sure that the contrasting stripes meet as nicely as possible. At the end of the tail fin its profile still needs to be inserted. Don't forget the string crossings where marked, because they will serve as bridle points for the drogue.

Those who also would like to use their fish as an aero sculpture should sew in a zipper or velcro tape here. Otherwise this last seam may be pulled outside through the mouth and be sewn up. Since the mouth is left open it will act both as a service- and maintenance opening.

## Bridle

At first prepare the bridle attachment points made from short lengths of 50daN (deka-Newton) bridle line, each approx. 10cm long. Using a cobbler's awl or a strong darning needle pierce through the fabric from the outside and as close to the string crossings as possible. Inside, drive the awl or needle around the reinforcement crossings and back out again. Finally tie tight knots to the loops. Later the bridle lines will be attached to the loops by so-called larks heads.

The compound bridle is built with lines of graded braking strengths. Around the mouth it starts with 50daN lines. Next to the body the strength of 30daN for the initial lines is appropriate. These are connected to 50daN lines. The lines coming from the mouth as well as the line groups attached to the body then are bundled to 70daN lines. Finally the 70daN lines are connected by a short length of 100daN line. All bridle lines get a stopper knot at one end and a loop at the other end for making a larks head. This is the easiest way to connect the bridle lines. Also the bridle can be adjusted anytime.



Attachmentpoints for the drogue



Piercing through the fabric



Read the bridle plan starting topmost at the mouth, going down to the ventral fin. The front section of the connecting line for the lifter points should be shorter than the rear section. All bridle measurements are given net. That means you will have to add approx. 10cm for knots and loops.



*Completed drogue*

## Drogue

The six elements of the drogue may be of same color or mirroring the fish's colors. They should be hotcut to save the extra work of hemming. Join them in desired order and apply six short lines, each approx. 30cm long. A line of 150cm will attach the drogue to the tail fin. In a light steady breeze use of the drogue may not be necessary.

Those who wish to may quickly sew a small storage bag. On a rectangular shaped piece of fabric (approx. 35cm by 50cm) sew a seam for a draw string on the long side, join the circular bottom at the opposite end and close the side seam.



## Maiden Flight

Now the clownfish is ready for its maiden flight. The inflation through the mouth will take a little time, that is quite normal.

The bridle should actually be quite accurate, but due to individual differences in sewing and knotting adjustment may be necessary. After a period of flying all fabrics and lines will be stretched. Depending on the lines some knots have the tendency to unravel at the beginning. Once the bridle has been under high tension the unravelling will not happen any more.

Use a flying line that is not too heavy. Depending on the wind speed a breaking strength varying from 70daN to 100daN should be sufficient.

Have lots of fun building and flying above the meadows! We would appreciate your comments on this plan. And of course we would love to see photographs!



### **Author's note concerning prints:**

Since there are so many varying printers available, five (5) different formats of pdf-files are provided. From experience we know that sometimes errors can occur, i.e.

- printed lines that are not shown at the screen
- printer dropouts
- false paper formats or scaling.

The sources of these errors are not the pdf-files.

In most cases the used pdf-reader and the printer driver(s) are incompatible. Usually the use of another pdf-reader solves any problem, or to print the files on a different computer or plotter, respectively.

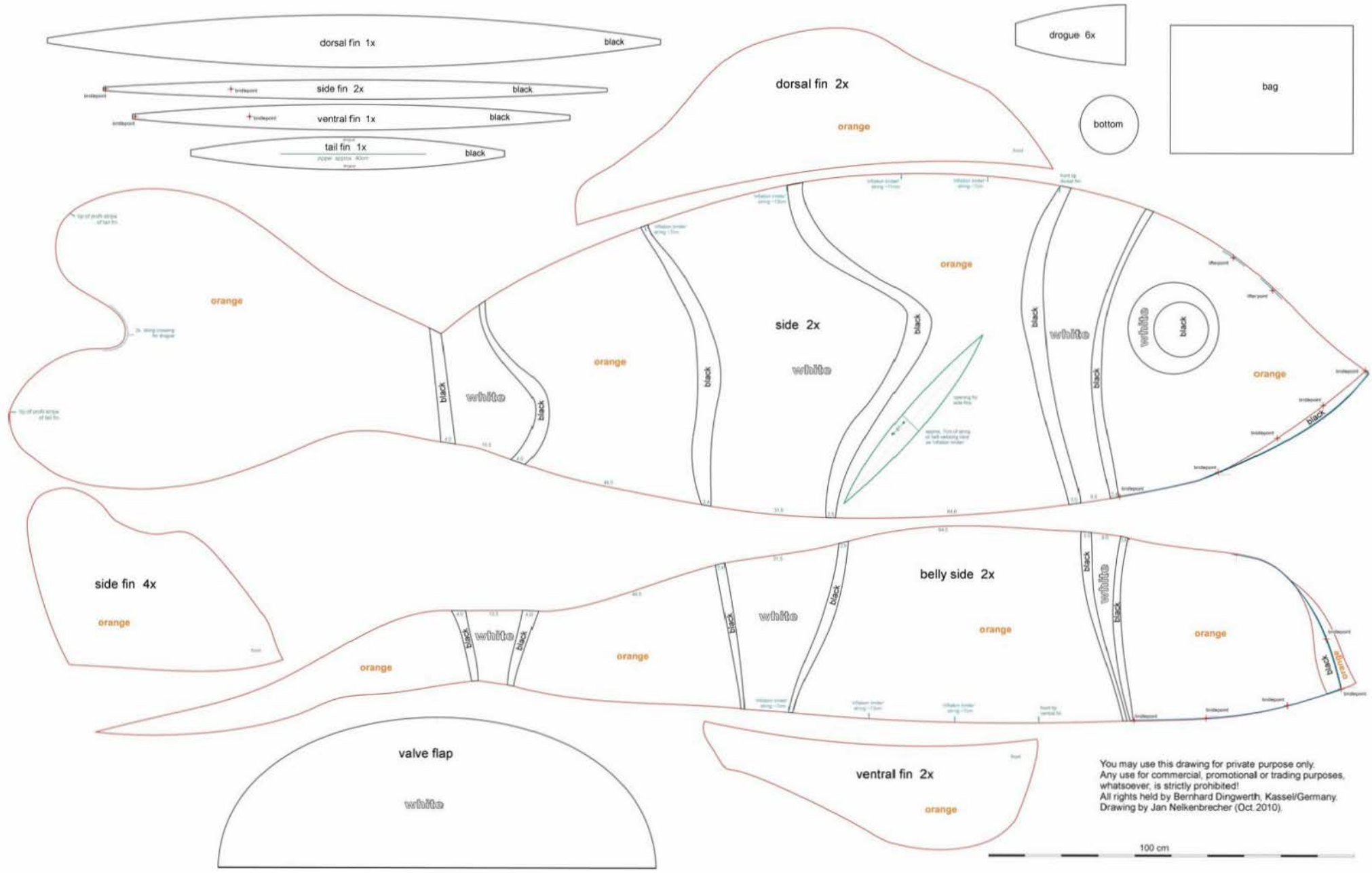
### **Acknowledgements:**

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More pictures can be found on my homepage (<http://www.drachenbernhard.de>).

**Please note:** Do not use this plan commercially!





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100 cm