

Foiling IMOCA “Malizia”

A printable RC sailboat by YACHTPRINT, Chris Angelduro

Version 2.0, 09/2025



The IMOCA (International Monohull Open Class Association) class consists of advanced 60-foot monohulls designed for solo or short-handed ocean racing. It is the premier category of the renowned Vendée Globe, an unassisted, solo, non-stop, around-the-world race.

This 3D-printable RC yacht model is built at a 1:18 scale, closely replicating the original boat with slight adjustments to the underwater volume to account for scaling. The model features a fixed keel box that is compatible with the DF95 keel, as well as hydrofoils. Like the full-sized version, this model can foil, lifting its hull from the water and doubling its speed.

TECHNICAL DATA of the model:

Scale	1:18
Length	1.000 mm hull / 1.115 mm incl. bowsprit
Width	322 mm without outrigger and foils
Weight	3,0 kg ready to sail incl. battery, thereof 0,8 kg for fin and keel bulb
Print plate	200x150x205 (minimum size for x/y/z)

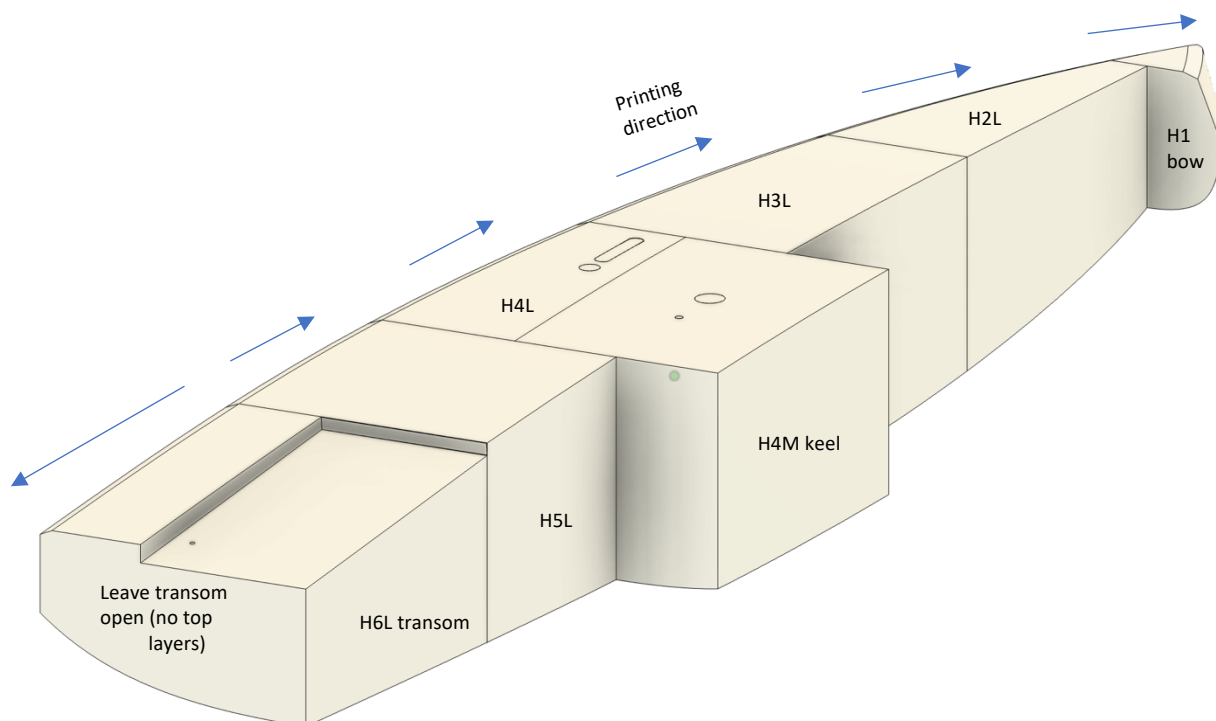
In addition to the printable components, you will need the following parts:

- 2-channel RC transmitter and receiver system, including battery
- Midi or standard servo for the rudder (preferably watertight)
- Sail winch for adjusting the sails, such as those from RMG, Robbe, or Windforce
- 10mm, 12mm, or 14mm carbon tubes (1mm wall thickness) for the mast and booms
- Sails from a Mini40 multihull, IOM, or a comparable size (can be ordered from YACHTPRINT)
- Sheet line (e.g., 0.5mm fishing line) and 1mm rubber line
- Ball bearings: 6 pieces of 4/13/4 with U-groove for blocks, 2 pieces of 12/21/5 for gooseneck (hole diameter, outer diameter, width), optionally a turnbuckle for version 2 gooseneck
- Keel from a DF95 (available as spare parts); the bulb can also be 3D-printed and filled with lead
- 4mm stainless steel rod for the rudder axis and foil connecting pins
- 5mm threaded inserts for foil rake adjustment (e.g., from Ruthex)
- Boat stand suitable for a 1-meter boat (can be ordered from YACHTPRINT)

3D PRINTING

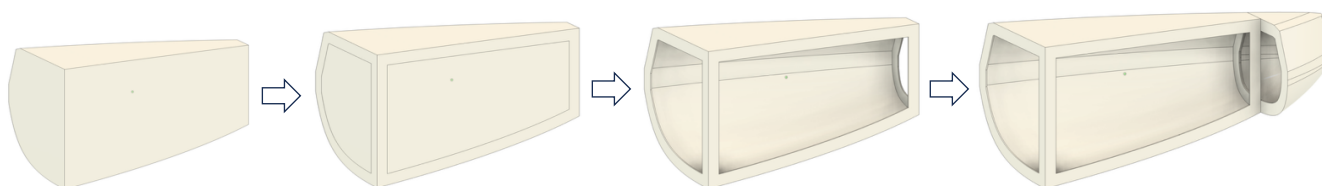
I suggest LW-PLA (e.g., ColorFabb at 252°C, 48% flow, 30mm/s max speed) for the hull, finished with a light glass/epoxy coating after assembly. ABS is also an option. Keep the boat as light as possible.

All segments are printed upright, stern to bow, and are hollow (set infill to 0%). Always print bottom and top layers except for the stern segment H6, which is printed open with zero top layers.



The printing direction is forward, except H6, which is backward.

The insides of the mating faces of the segments are cut out while leaving a 10mm frame as glueing surface and for rigidity. You can use a soldering iron with a knife as tool piece for that cutout



Cutting out unnecessary inside walls of the segment while leaving a 10mm frame

Only left-side parts are provided! If a part is marked “L”, mirror it along X in the slicer for the right side.

To prevent buckling, increase wall thickness and print solid walls to avoid trapping water between 2 walls.

Rig fittings, cabin/cabin frames, foils, and rudders can be printed in ABS-GF or similarly strong materials; if heat isn’t an issue, PLA or PLA-HT is also suitable.

ASSEMBLY

Begin assembly at the bow and proceed toward the stern. Install the deck eyes before gluing segments together (see text further below).

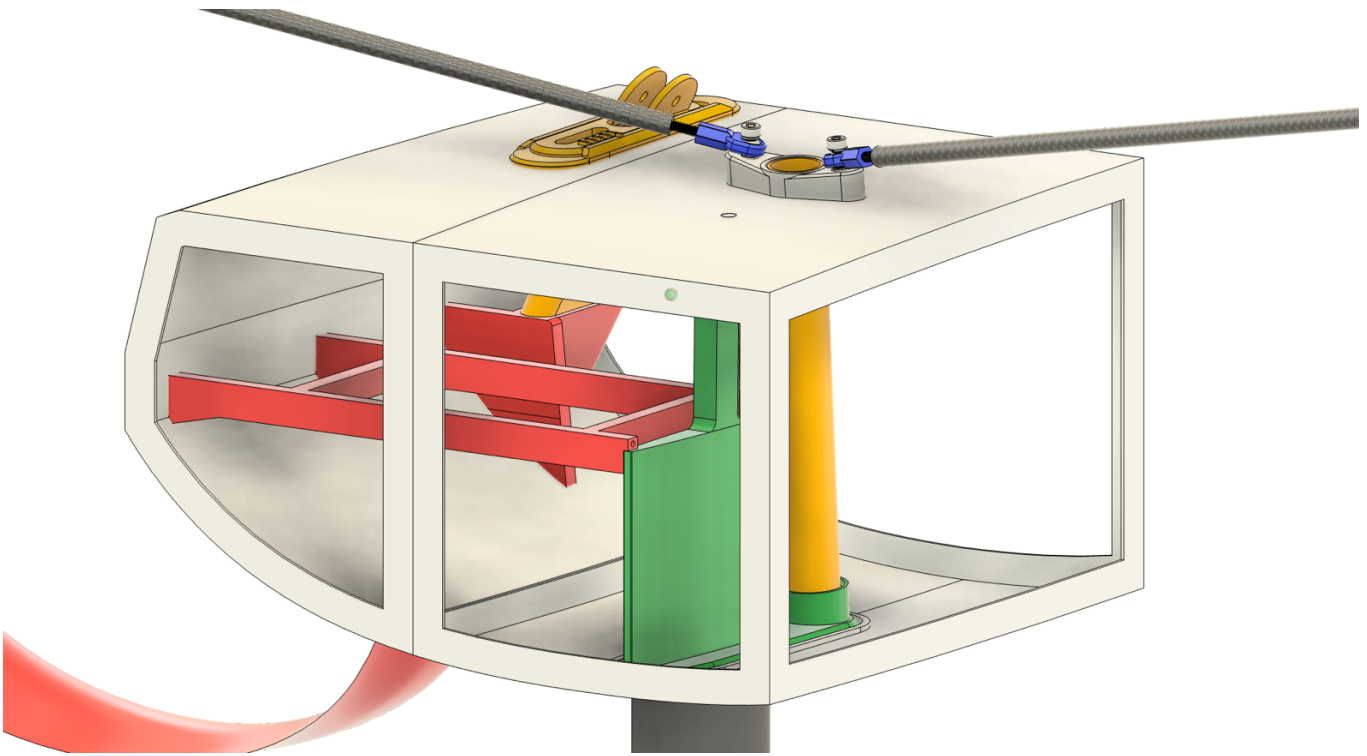
KEEL SEGMENT H4

The keel consists of three segments; segment H6L should be mirrored in the slicer for use on the right side.

The keelbox (pictured in green) is attached to the central section in the designated area. The hull is then opened below to allow the keel fin to slide into place. The DF95 keel fin and weight are compatible with these printed parts. A threaded wire is required at the top edge of the fin, passing through the deck and secured with a nut (not pictured).

The mast base (yellow), where the mast fits, uses a carbon tube measuring 16mm in outer diameter and 130mm in length. The outrigger base attaches above the deck as illustrated. All components are permanently bonded in place.

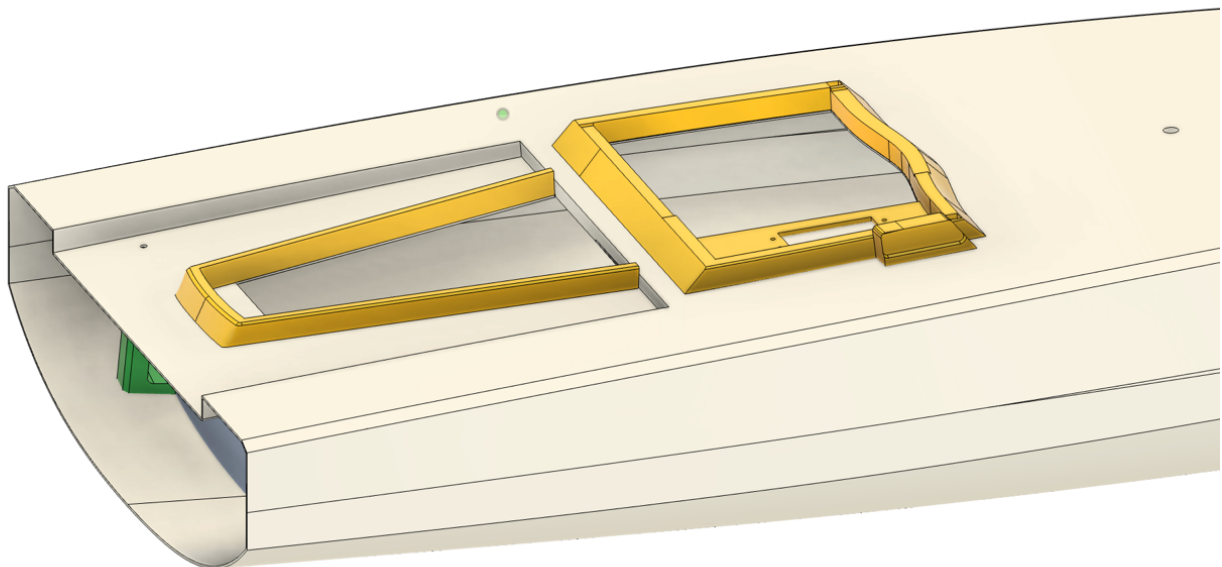
The strongbacks - main and foil (red) are installed as indicated. The foil-piece includes a marking on the hull for accurate positioning. Both pieces should be mirrored for installation on the right side.



The keel section with installments

CABINS

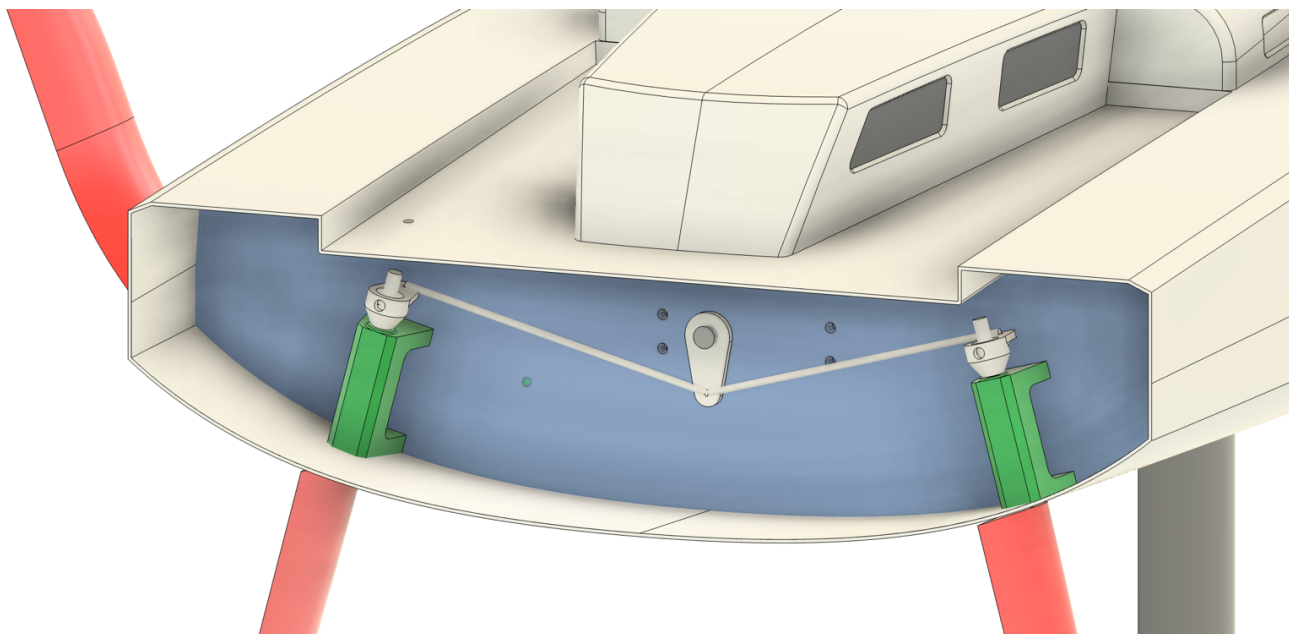
The cabin consists of a detachable forward section, secured by friction or magnets, and a rear section screwed to the mounting frame to hold the mainsheet eyelet. Both cabin frames (yellow) are glued to the deck, and then their inner parts are removed.



The frames of the cabin are glued to the deck and the inner part of the deck is cut out as indicated

TRANSOM ARRANGEMENT

The transom bulkhead (blue) is positioned 51mm forward from the trailing edge to accommodate the rudders and rudder horns within the overall 1m length. The image displays the arrangement of the rudder linkages. If feasible, ball joints should be used on both the rudder and servo horn. Securing the rudder horns requires shaft collars with an outer diameter of 8mm and an inner diameter of 4mm.



The rudder system in the rear bulkhead, the rudder horns need 8mm shaft collars secured by a screw

DECK EYES

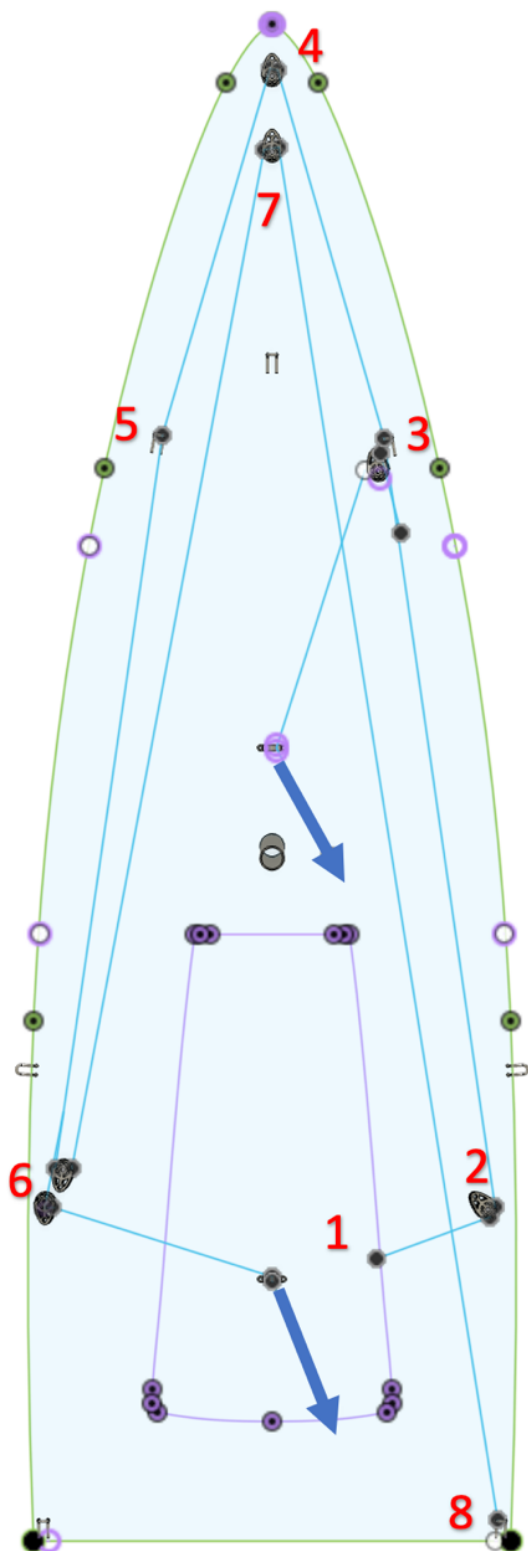
To create deck eyes, shape a wire into a U and trim it to approximately 15mm. Bend both ends 90 degrees in the same direction and insert them into two small holes on the deck, securing with epoxy. The orientation of the ends is important, as they need to apply pressure against the deck when force is exerted. The positions for the deck eyes are indicated in the plan further below.



The deck eyes are simple wire bents (example picture from another boat)

SHEETING

The sheeting system uses a rubber band to keep the winch sheet under tension. Two sheets from the winch sheet then lead to the jib and main. The winch servo is mounted in the forward cabin frame, with the sheet exiting through a hole in the frame.



1 Sail winch pulling in and out.

2 first turning block

3 deck eye and attached a jib sheet through the block

4 front block

5 deck eye

6 main sheet block and turning block. After the turning block the line is rubber

7 rubber line front block

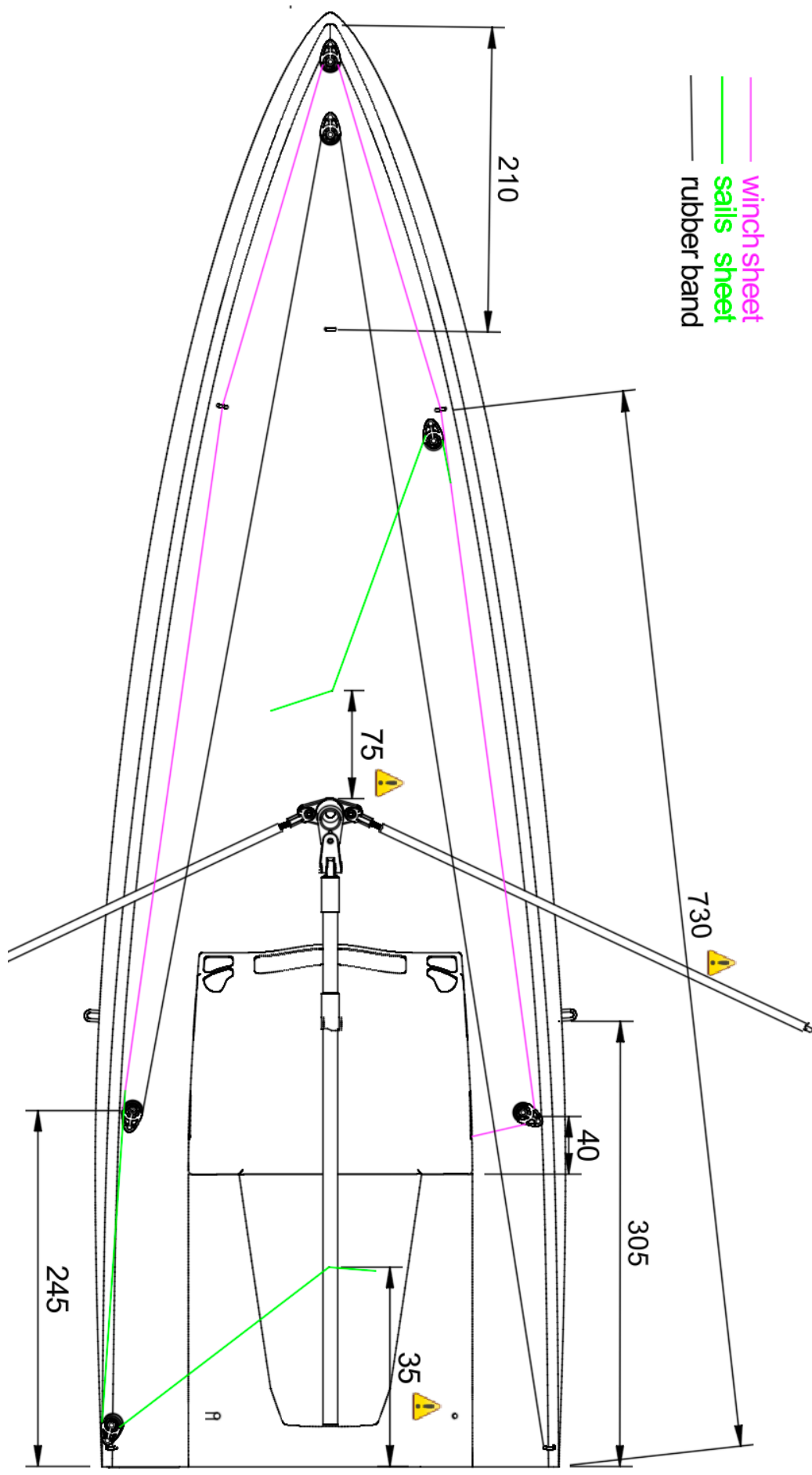
8 rubber line attachment

The rubber line must still just be tensioned in the full out/eased position. The winch pulls against the rubber line when sheeting in for upwind sail configuration.

BLOCKS

As blocks you can purchase parts e.g. from “Cap Maquettes” (French store) or “Sailsetc.” (UK store).

Alternatively, you can use the printable parts provided here. To complete the blocks, you need ball bearings with a U groove and a size of 4x13x4 (in mm, inner hole/outer diameter/thickness).



APPENDAGES (keel, rudder and foils)

The boat is compatible with the Dragon Force 95 (DF95) fin and keel bulb, which are widely available as spare parts. Alternatively, you can 3D print the bulb and fill it with lead and epoxy to reach about 550g.

The rudders are printed in an upright position, positioned on their root section and secured with a brim. Preheat the 4mm rudder axis prior to inserting it into the rudder.

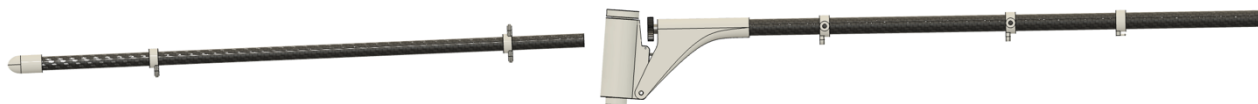
The foils are printed as a single piece in PLA or similar rigid filament. Connect them to the shaft with two 4mm pins and secure in the foil case using a small pin. The foil cases allow adjustable angle of attack. An angle of +3,5-4 degrees works well. There are reference lines for each degree of aoa on the foil case.

RIG AND SAILS

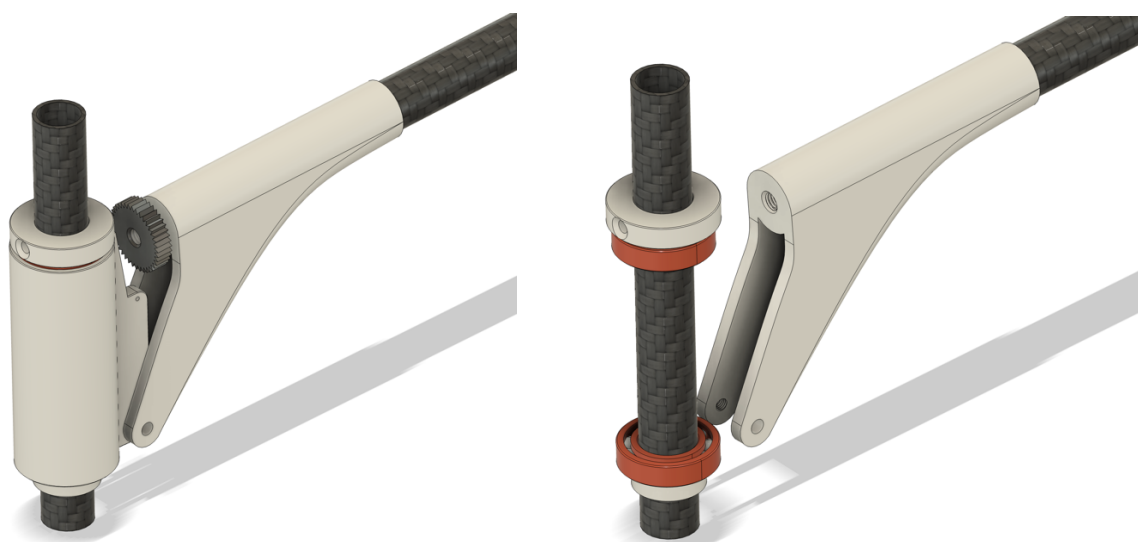
The provided printable rig parts can be used to assemble a custom rig with 10-16mm carbon tubes. The B- and C-rigs of a Mini40 trimaran are suitable options; the B-rig closely matches the scale of the original IMOCA, as indicated in the sail plans below.

NEW: you can purchase sails and chose from different materials from www.YACHTPRINT.de

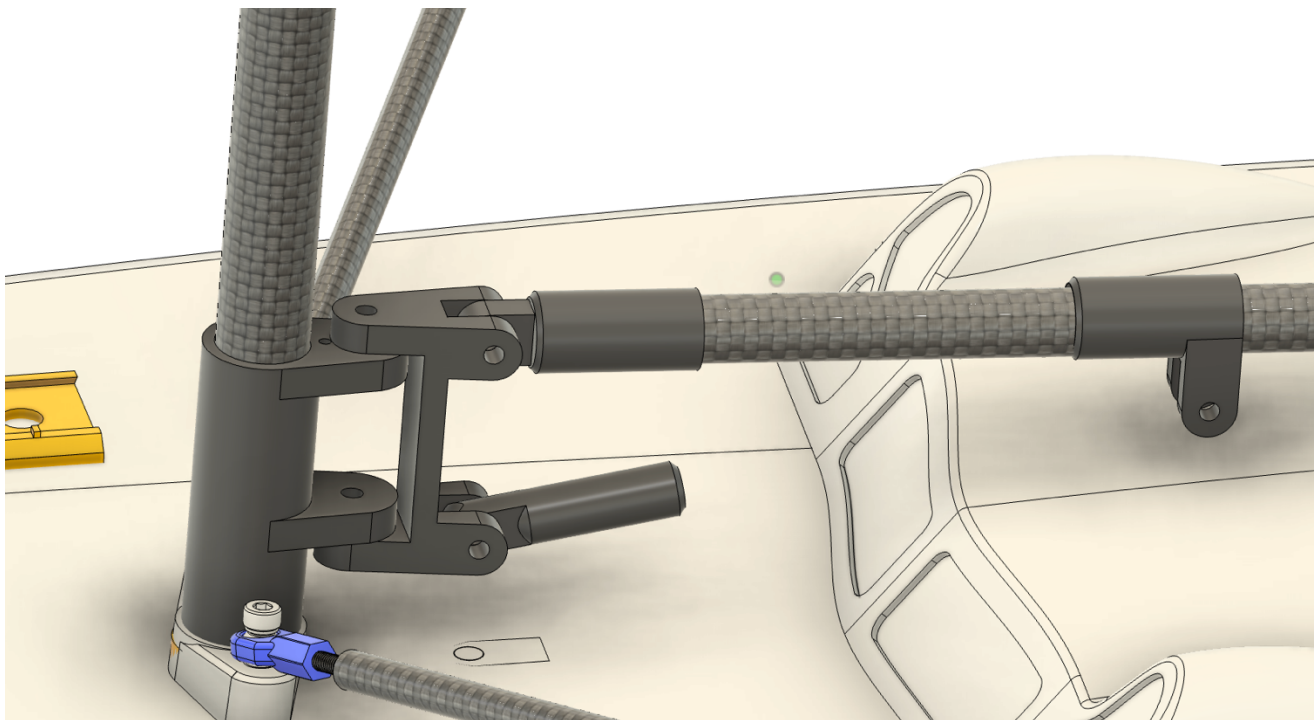
The mast step is 16mm in diameter, fitting a 14mm mast foot. The mast measures 12mm, tapering to 10mm at the top for the last 20%. Use 10mm and 12mm booms for the jib and main, respectively.



The gooseneck is also printable. Two versions are available. The first requires two 12/21/5 ball bearings (inner diameter, outer diameter, width), shown in red below:

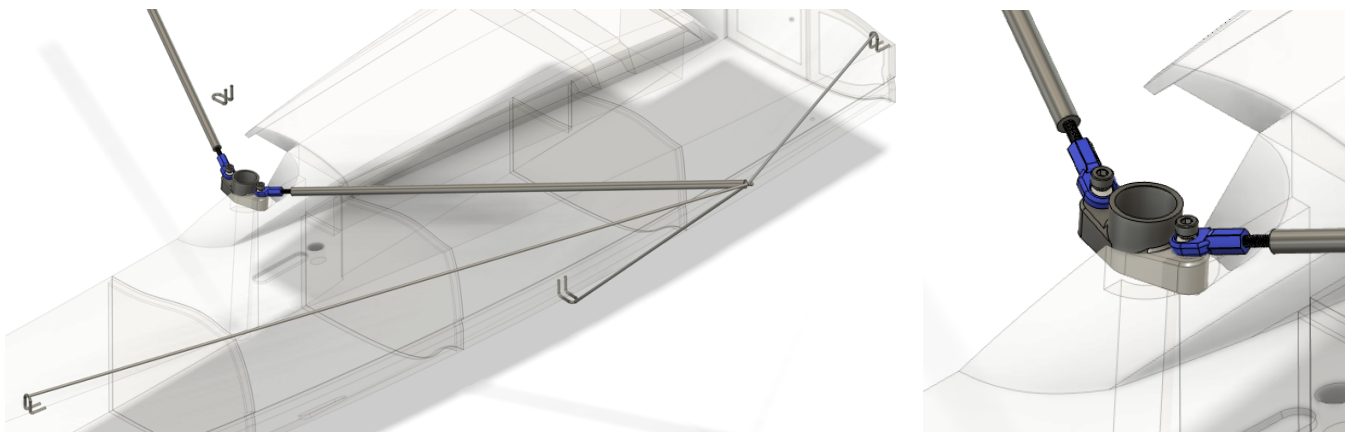


A simple gooseneck is offered as an alternative version. This arrangement requires a turnbuckle to connect the base of the gooseneck to the boom:



Attach the outrigger poles to the mast step above deck level using ball joints. Use 6-8mm carbon tubes for the outriggers.

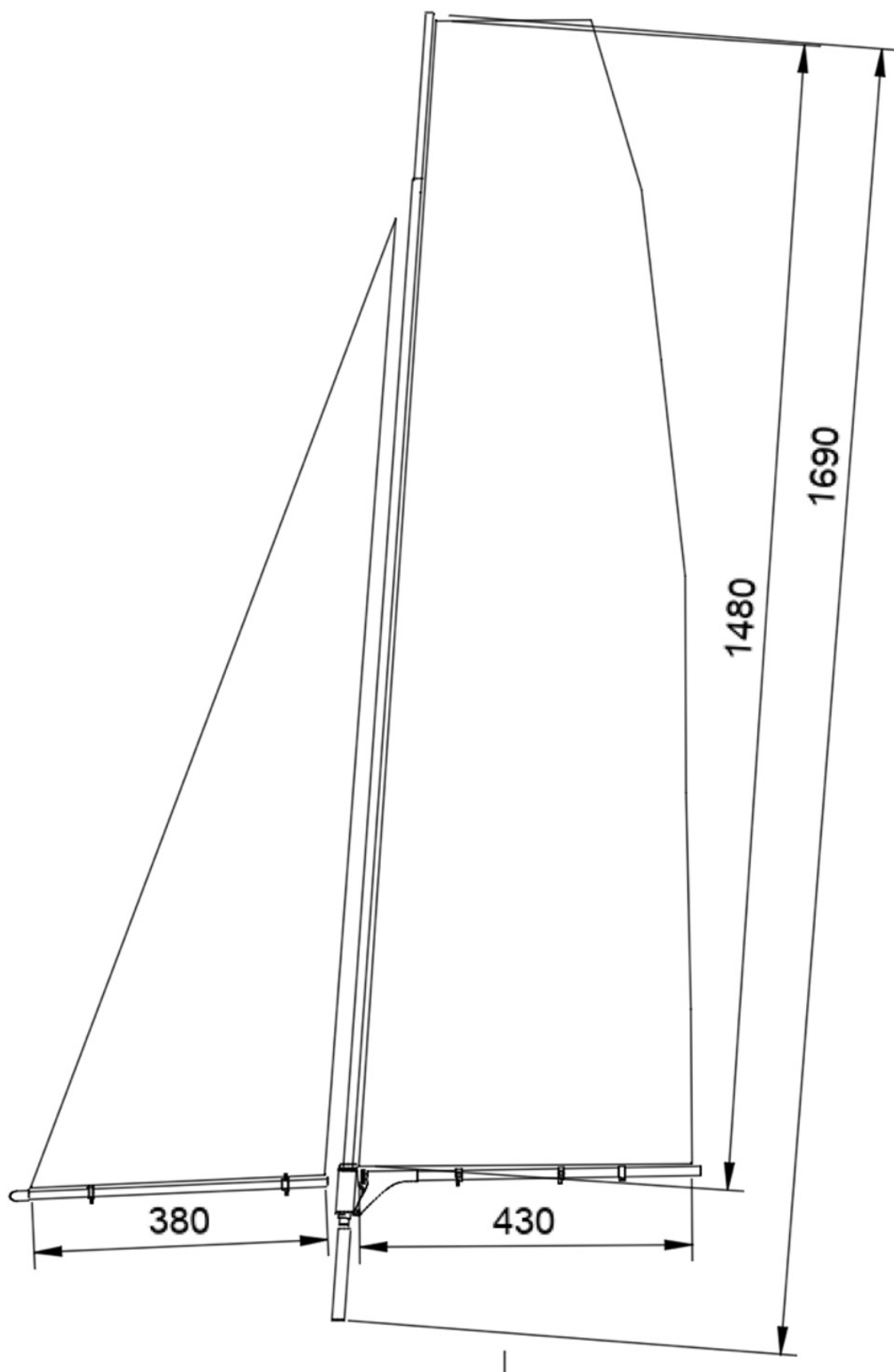
Secure the outrigger poles with three lines/wires attached to deck eyes: two lines go more longitudinally to front and to the rear. The middle line at the hull side handles most of the shroud load—reinforce this hull area with carbon fiber. All lines must be tight and strong, dyneema fishing rods are suitable for that.

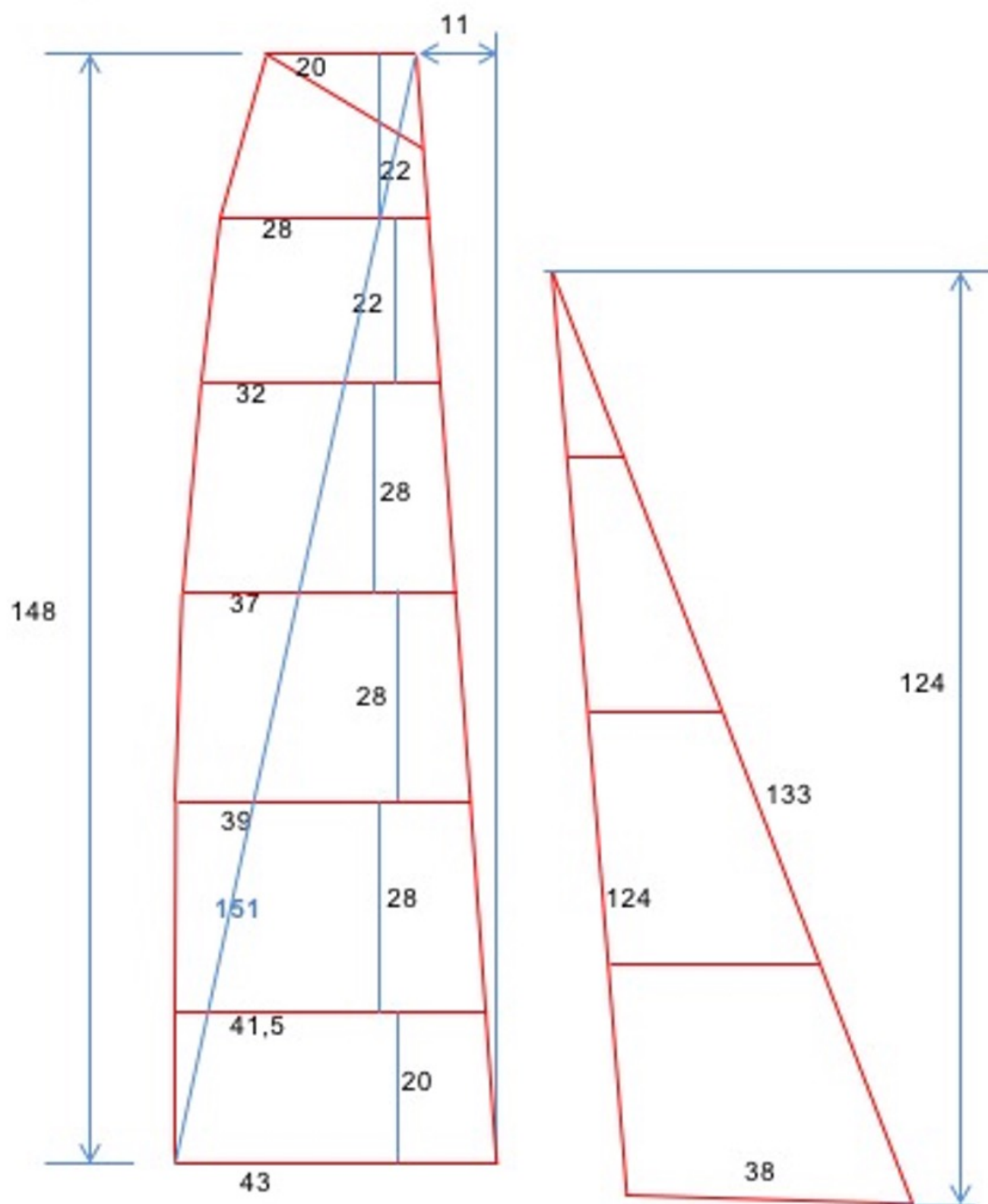


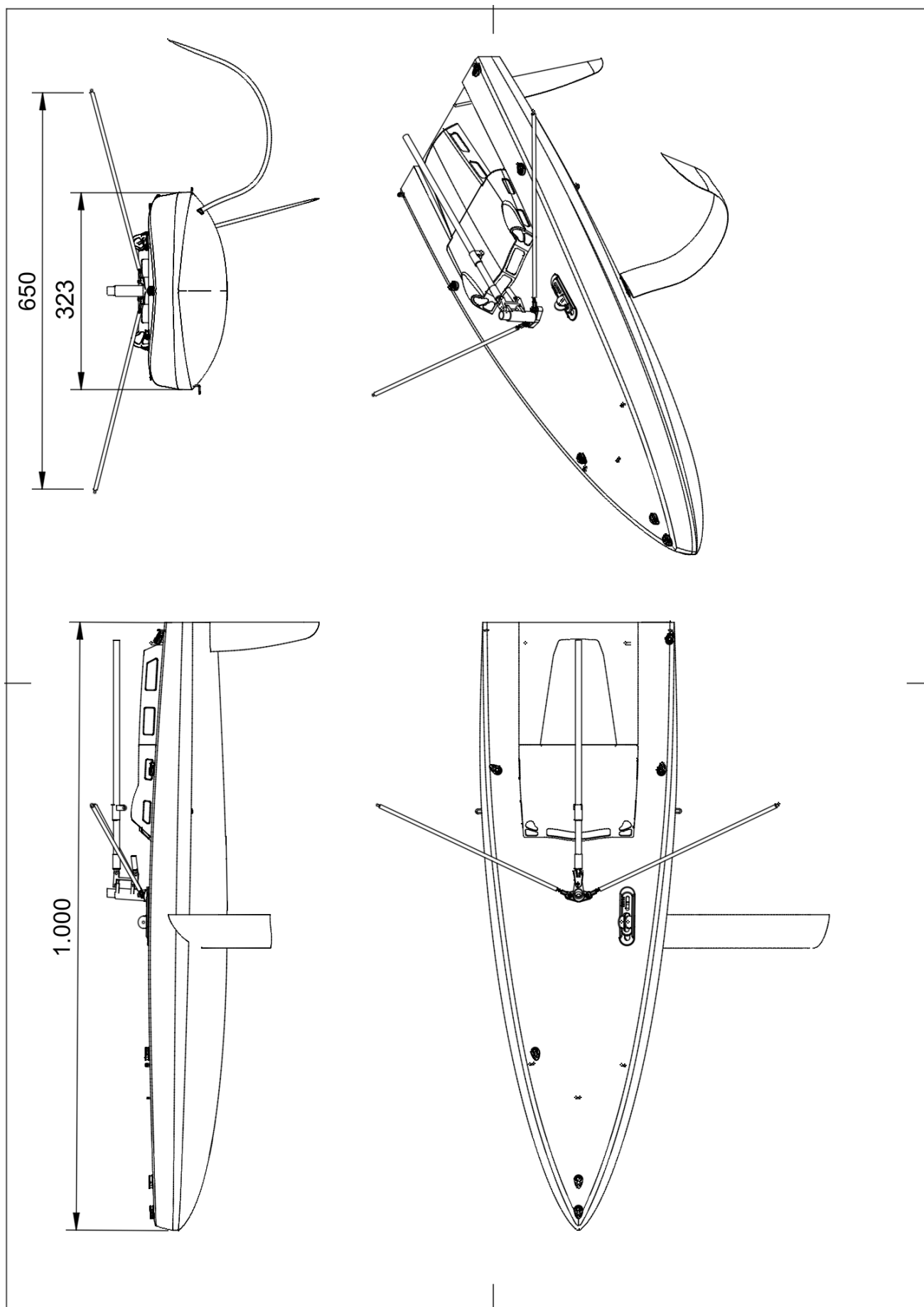
Rigging the outriggers (the boat on this picture is MACIF). They need quite some tension!

The rigging, shrouds, and deck eye attachments are built strong to handle significant forces, particularly during foiling. The design results in a durable boat suited for tough conditions and high performance.

SAIL PLAN IMOCA Malizia











GENERAL REMARKS

PLEASE DON'T SHARE THE FILES. A lot of genuine work went into it and there are hundreds of scammers selling other people's intellectual property. As I cannot secure this technically, I depend on you.

You purchased a license to print as many boats and parts as you wish for YOUR OWN PERSONAL USAGE.

When you sell a boat, THE LICENSE GOES WITH IT. Please purchase a new license if you have another boat in use or if you want to build another one. If in doubt, just contact me at info@yachtprint.de

You can use third party printing services but PLEASE MAKE SURE THEY DELETE THE FILES after printing.

If you consider building up a fleet, e.g. for club racing, ask me for a VOLUME DISCOUNT starting at 3 units.

If you run into problems, have any questions or If you wish changes to certain parts PLS CONTACT ME.

ACTIVELY post about your project in the Facebook community. I love discussing and gathering new views.

PRINT IT, BUILD IT, SAIL IT and HAVE FUN!

Your

Chris Angelduro
YACHTPRINT

