

X-79 3D printable RC scale-sailboat

A printable RC sailboat by YACHTPRINT, Chris Angelduro

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The X-79 “3D” is derived from real size X-79 from the famous Danish Yard X-Yachts. The original is the first boat that the yard built and it still is an active racing class in Europe. The hull is a replica of the original hull- and deck lines.

You can print the STL-files as often as you like for your own use. Please don't share them or spread them in the internet. Thanks! ☺ Feel free to contact me if you have suggestions or questions!

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Parts needed besides the printables:

- Threaded inserts for PLA size M3, e.g. from “Ruthex”
- Sheet line and 3 ball bearing blocks or 3x ball bearings 4x8x3
- Keel & Bulb from DF95, IOM style rudder, see text below
- Sails and rig of a one-meter boat, see text below
- RC: 2-channel transmitter & receiver, strong sail-servo min. 30kg and midi-sized rudder servo, preferably water tight, like those from “Savöx”

For parts- and supplier reference please also check the website “www.boatprint.de”

PRINTING

The hull- & cabin sections are printed with LW-PLA. Slicing can be done in normal mode (not vase) with two perimeters/walls. Adjust the flow% and temperature until you achieve a wall thickness of 1,0-1,1mm using a 0,8mm nozzle. Print with 10-20% infill “Lightning” to facilitate the closing of the upper horizontal layers. Don't use any other infill type, as the segments must stay hollow for the equipment.

You can of course print in any other printing material. I made the best experience with LW-PLA though. It has a good strength to weight ratio and it is pretty heat resistant.

INSTRUCTIONS – X-79

There are two sets of hull STL-files. One for larger printers with less parts and thus seams and one for smaller printers up to 200mm build plate dimension.

The set for the smaller printer contains hull parts that are cut into left and right in order to fit them on the build plate. These parts are marked with an "(L)" and must be mirrored in the slicer for the right side.

The five hull segments from the "large printers set" in LW-PLA with two walls:



The bulkheads, keel box and shroud support are also printed with LW-PLA but much stronger with 3 walls and 30% infill in order to get the right strength.

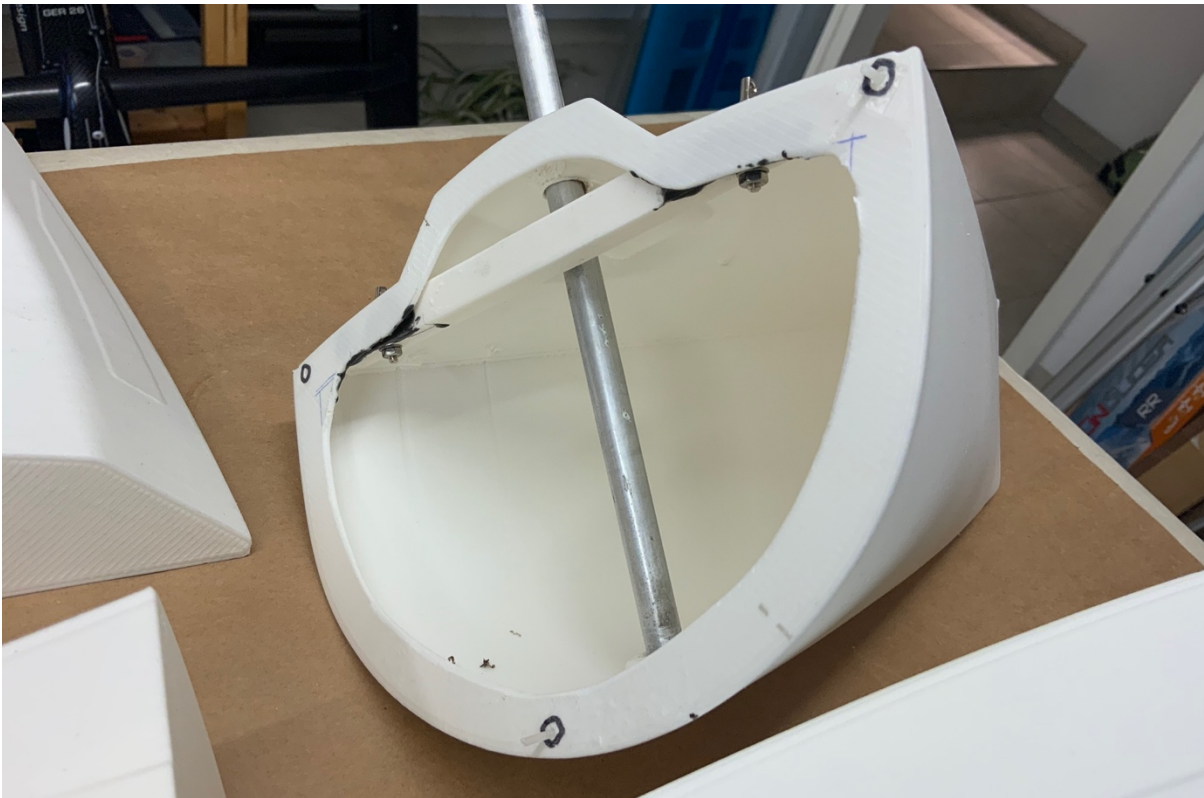
The fittings, keel box and servo tray can be printed in PLA or any other strong material



ASSEMBLY

The Hull sections are glued together flush with a butt joint. In order to facilitate the alignment of the parts small matching holes are included in the gluing faces of the sections. You can glue 5mm long pieces of raw filament with 1,7mm diameter into those holes on one side of the joint and slot them into the holes of the other side when joining the sections. Depending on your print settings you may have to drill the holes to size in order to accept the 1,7mm pins.

See below the filament pins on joint face of the bow section:



Cut away the inner section of the gluing faces as shown in the above picture and leave a 5-7mm edge as gluing surface. These edges serve as “integrated” bulkheads, so almost no additional bulkheads are needed.

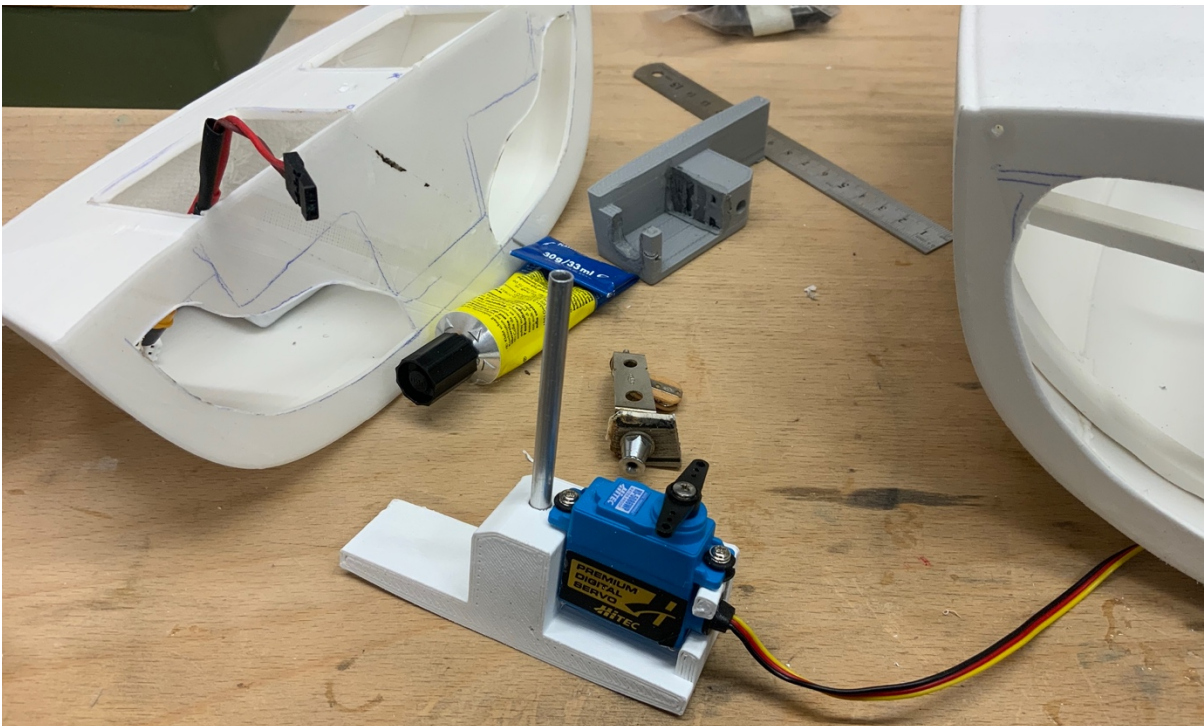
The following steps and pictures represent the printing parts for large printers (so less parts and no left/right split). The approach for the small-printer set goes accordingly:

Start with the bow section **H1** of the hull and reinforce the deck below the forestay attachment points with a strong plate or (better) one or two layers of 200g carbon. Install the shroud support beam as shown above as well as the mast base.

Next is mid-ship section **H2**. Cut open the inner portion of the vertical joining face again as for H1. Leave a 5-7mm wide edge like on the picture below. Same goes for the upper opening. Install the keel box counter piece from below and the keel box. Then you can install the bulkheads and servo-tray with its supporting column at the back.



The cockpit section **H3** is glued to H2 like the others. The transom section **H4** contains the rudder servo, the battery and the receiver. The components are such a way back in the boat in order to achieve a balanced weight distribution due to the lack of “people” in the cockpit.



There are two different servo mounts for midi-sized servos in the file package. The mount also contains the rudder stock.

KEEL & RUDDER

A scale-keel & rudder is part of the file package and can be fitted for display. For actual RC sailing however, you need bigger appendages. Use the keel fin and weight bulb of the DragonFlite 95 Yacht (DF95) which fits into the keel box.

For the rudder you can either scale up the scale rudder in the slicer or print the IOM style rudder from the file package. I have used a section of the keel fin of the DF65 as rudder. It directly fits the rudder axis with a diameter of 4mm.



Sailing configuration



Display configuration

The scale keel features a flange with the profile of the DF95 fin with fits into the keel box for display. The display scale rudder can be printed and fit with a 4mm axle as well. Make sure there's enough room to the skeg for both rudders.

SHEETING



The sheeting system consist of a central, strong sail servo with a long servo arm.

The sheet line for main sail and jib are attached on opposite sides of a long printable servo arm. The main sheet runs through a block in order to achieve more sheeting length and an aligned opening of jib and main sail.

The picture above shows a custom servo arm but you can use the STL with the included block if you wish. The STL-files for the little block uses a standard 4x8x3mm ball bearing and M2,5 screws. The sheets run through little eyelets called “Thorugh-hull” in the STL package



RIG and SAILS

The rig is a standard configuration with an aluminum mast and a self-tacking (pendulum) jib. Plans with measurements for mast and sails are found below.



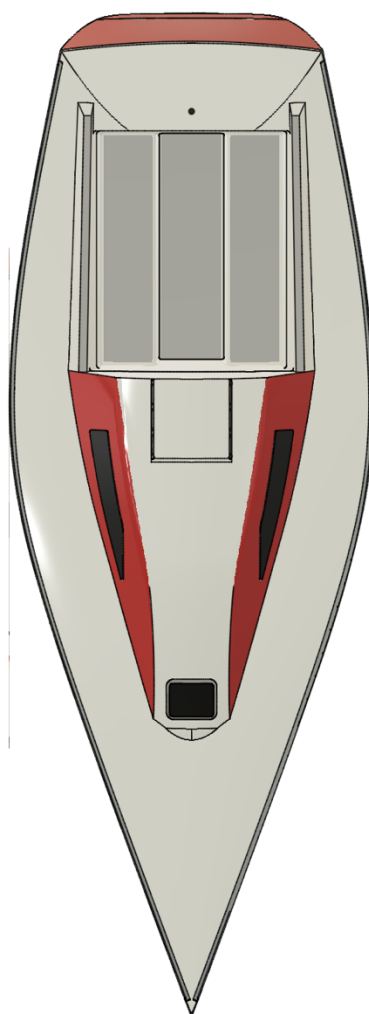
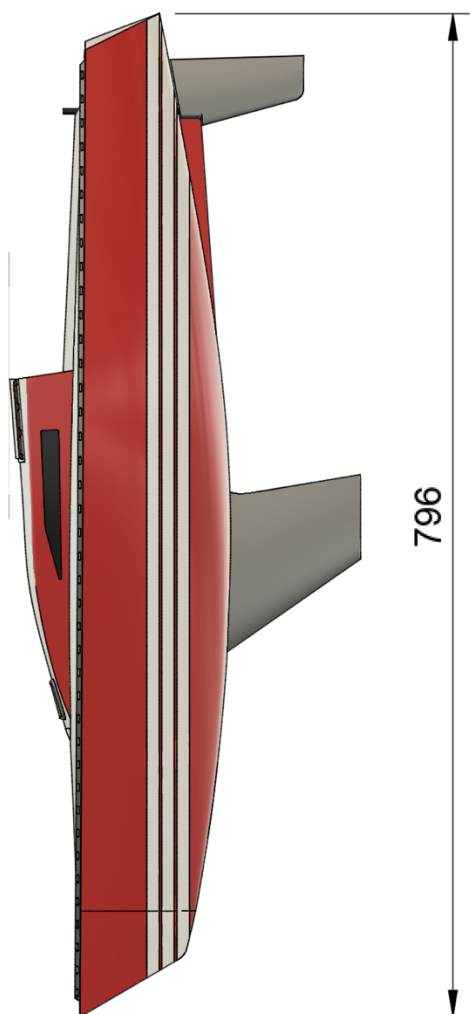
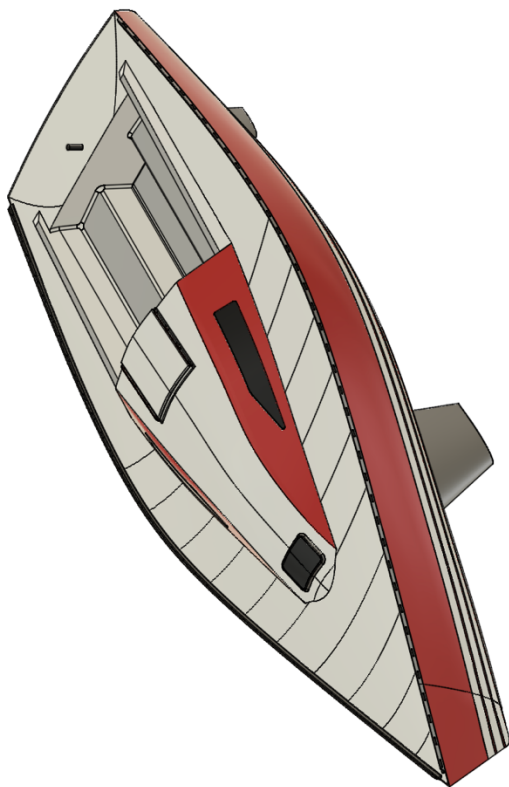
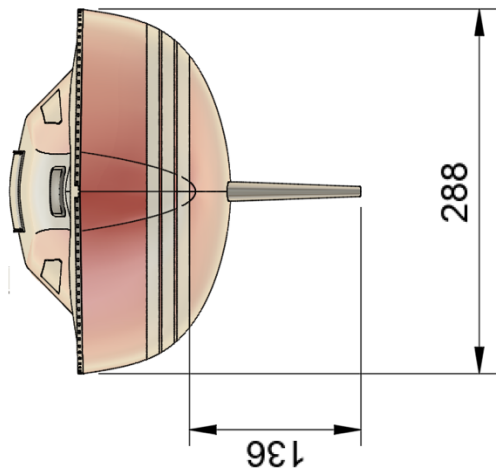
The mast stands on the keel in front of the keel box and can be built from standard aluminum tubes with a wall thickness of max. 0,5mm. 1mm wall thickness is too heavy. Total length is 1.240mm. The boom is 360mm

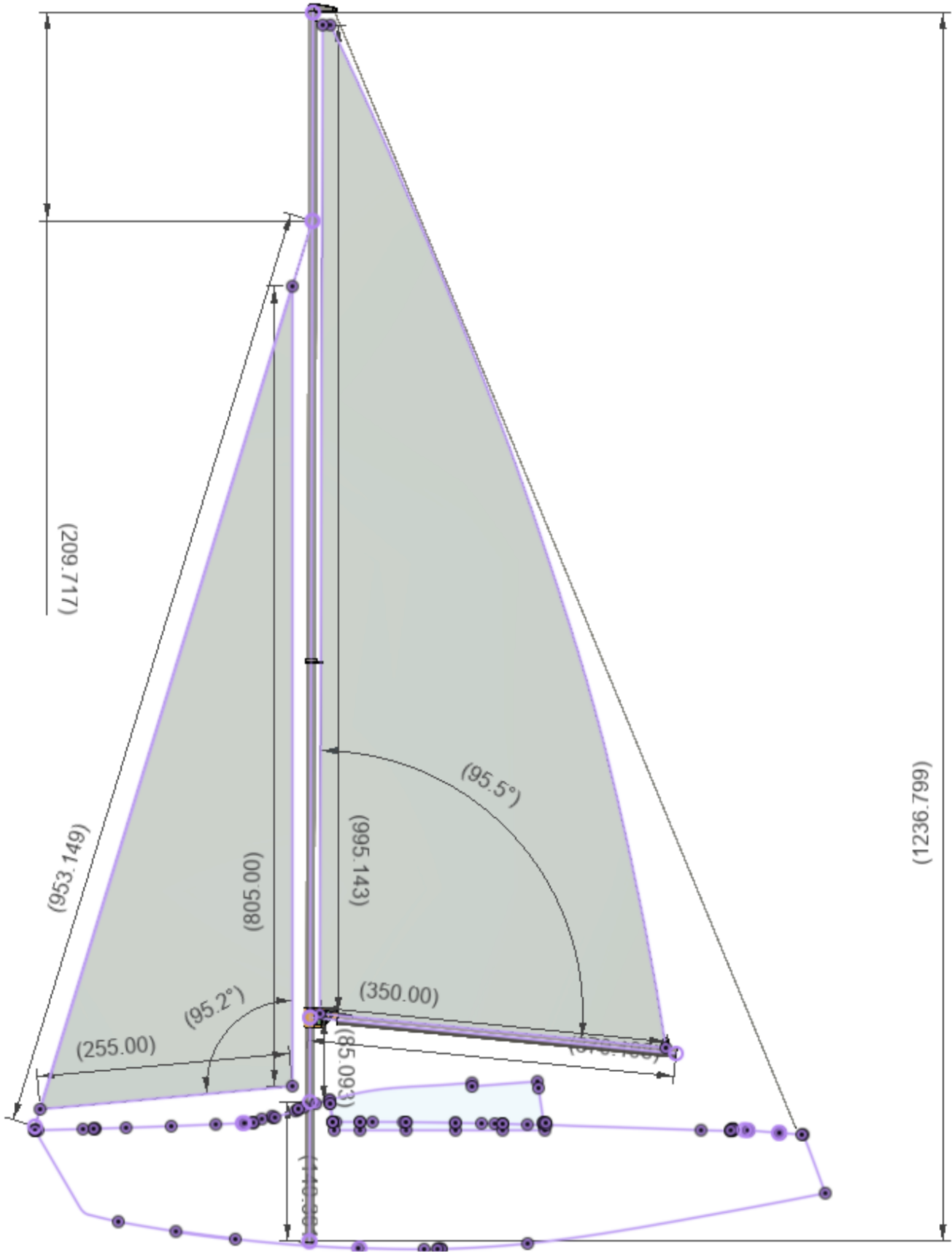
You can taper the mast by slotting in corresponding tubes of 10mm for the lower part and 9mm for the upper part like shown on the picture.

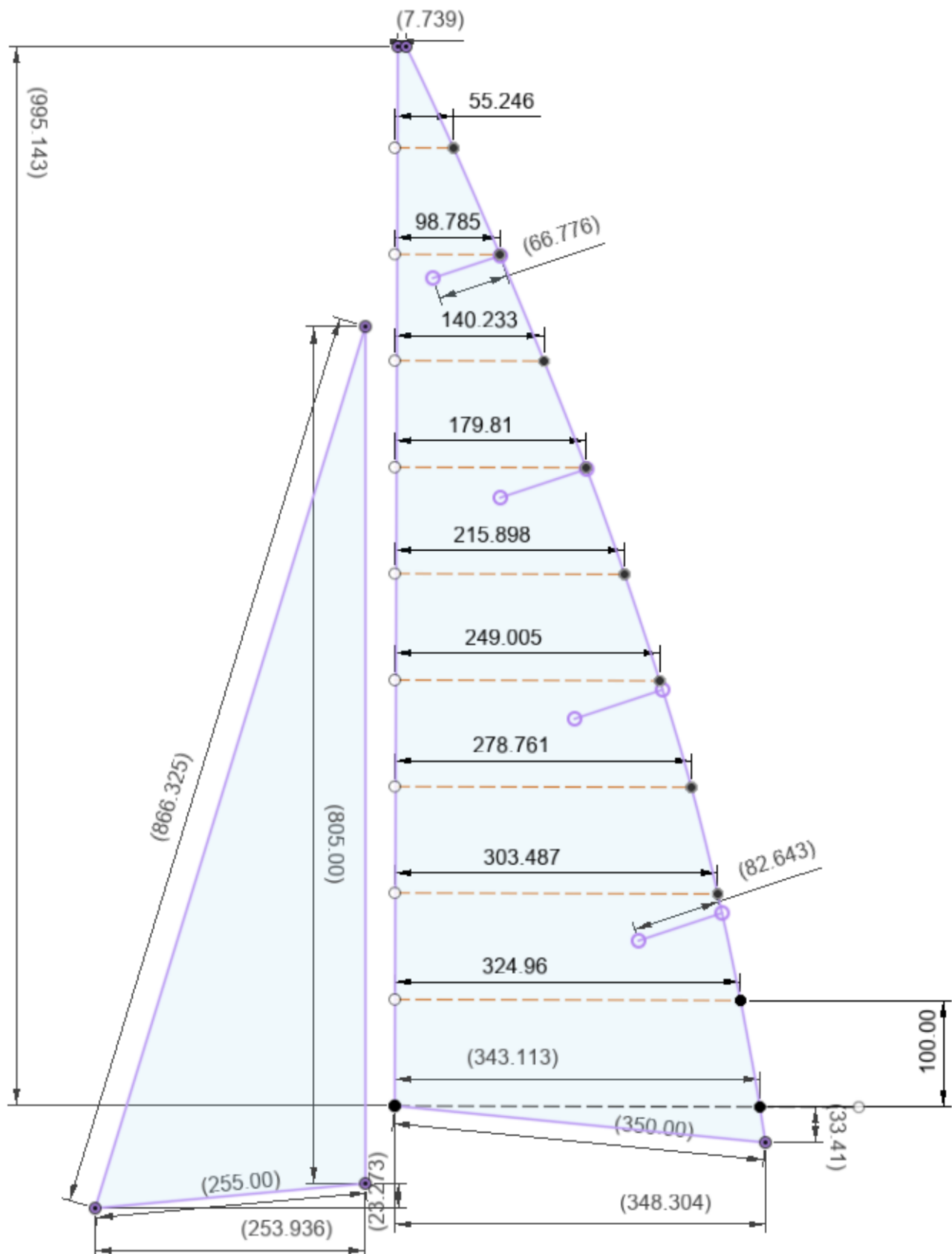
As spreader you can use a tube as shown or print the STL spreader.

A gooseneck is included in the STL package for different sizes as well.

The boom will typically have a diameter of around 8mm.







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
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