

## New RC Sailing Model

The AMYA (American Model Yacht Association) Boat list includes some 34 different Models.

Out of this list can be noted that in the range of 36" there are 3 models and in the range of 39" there are 5 models and everybody appears happy!

With 41", there is one model as the "RC Laser" and with 45" there is only one model as the "Star 45".

Why a New Sailing Model ?

In my opinion and due to the technology progress, I'm searching for better speed performances in the Mono Hull range from 39" to 50".

Aiming therefore to develop the new model, I decided to use the average length between an IOM and a Marblehead.

The length chosen is:  $1000\text{mm} + 1290\text{mm} / 2 = \mathbf{1145\text{mm}}$  . This range is also equivalent to the "Star 45".

This Model should be capable, in theory, to sail faster than an IOM as well the Marblehead models.

It is normal to consider that the ratio "Sail Area /Displacement" is of primary importance.

The overall ratios are playing in favour for this assumption. See Table below :

### Comparative Data with existing RC Models

Data	Class IOM	Class M	Class AC120	New Model
LOA	1000 mm	1290 mm	1200 mm	1145 mm max
LWL	1000 mm	1210 mm min	1000 mm max	Free
Beam	Free	Free	165 mm min	Free
Hull Draft	60 mm	Free	Free	Free
Deept	420 mm *	660 mm	420 mm	500 mm max
DSPL **	4000 g min	Free	4500 g min	4300 g min
Mast	1600 mm	2160 mm	1750 mm	1850 mm max
Sail Area	0.61 m <sup>2</sup>	0.72 m <sup>2</sup> ***	0.80 m <sup>2</sup> max	0.78 m <sup>2</sup> max
Main Top	20 mm	20/40 mm	60-200 mm	160 mm max
Bulb	Free	Free	Free	Free
Fin Keel	2.5 kg max	NA	3.0 kg max	NA
Construction	~2000 g	~1500 g	~1500 g	~1200 g ****

### Overall Ratios

Bulb	60%	>70%	64%	>70%
SA / DSPL	1.55	1.60	1.77	1.81
Fin/Bulb R.A.	> 90 kg/cm	>160 kg/cm	>120 kg/cm	>150 kg/cm

* From Water Line
** Including appendices
*** 0.5161 m <sup>2</sup> as per Class Rules - Real Surface ~ 7200 cm <sup>2</sup>
**** New Servos & Battery technology allow lighter construction

In the above Table, I have compared similar models including the IOM, Marblehead and AC120 that cover the range from 39" to 50".

The AC120 is a particular case when compared with the Marblehead.

The AC120 is shorter but with larger Sail Area and with similar Displacement, therefore is expected to be faster under low wind conditions essentially due to the short Keel and lesser Wet Area.

The AC120 has the same Water Length of the IOM, but with 4.5% more weight and with 25% more Sail Area.

At the time, in 2007/2008, during the development of the AC120, I was personally in favour for a lighter Displacement to be closer to the real AC boats, but did not happen since this model was supposed to be built by young modellers with poor experience in the construction. I found pity that the AC120 and AC100 as well, have not got more chances outside Italy. Both are really fast and stable boats.

These models are making large use of Composite materials, but wood planking is not excluded

10 years later we can profit of technology progress and certain elements have reached lower weight like the Electronics and what was not possible before, it become feasible now days. This is the case of the in board Batteries and Servos.

The multi rotations Winch Servo like the Hitec HS-785HB is available for 110g and the Arm Servo HS-815 BB is available for 152g.

The 6 volts-1000mA/h NiCd Battery weight 130g.

The Arm Servo like Savox 1256TG is actually available for 62g and the 6Volts 900mA/h NiMh is available for 63g. Some additional gains in weight are possible with the Rudder Servo as well with the Fin/Rudder modern manufacturing techniques. The 3D printing may also offer some gains in particular with the internal support structures and not only !

Actually the Electronics minimum weight gain is of 167g.

Today, without changing the construction allocation, the AC120 could weight:

$$4500g - 167g = \mathbf{4333g}$$

The Sail Plan is similar to the AC120 with a large Main Top width limited to 160mm.

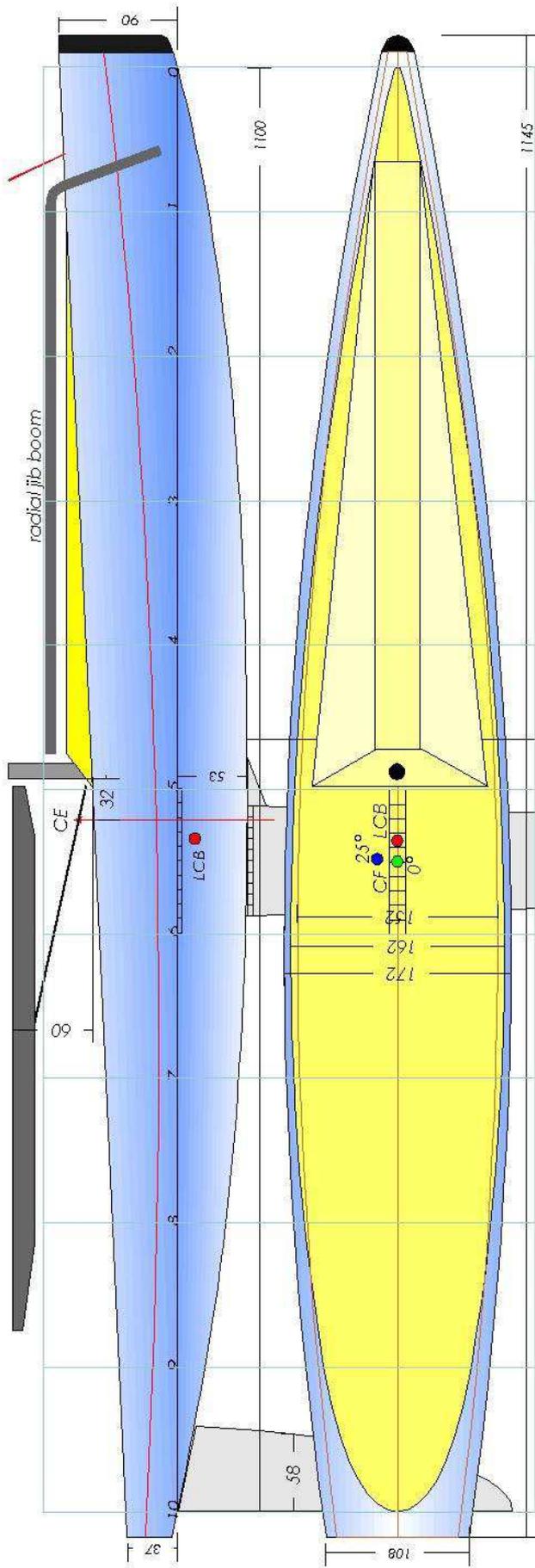
The IOM, while lighter then the AC120, it use the same Keel length but starting from the Water Line instead from the Hull bottom. Major difference is also with the Sail Area.

**My New Model is taking advantage over the AC120 by reducing the Displacement to 4300g and increasing the Fin length and shorter length of 5.5cm and from the IOM using also a deeper Fin and much larger Sail Area, heavier Bulb and few cm longer at Water level.**

**Against the Marblehead I see the lower Displacement and the increased Sail Area.**

Here below the picture of the :

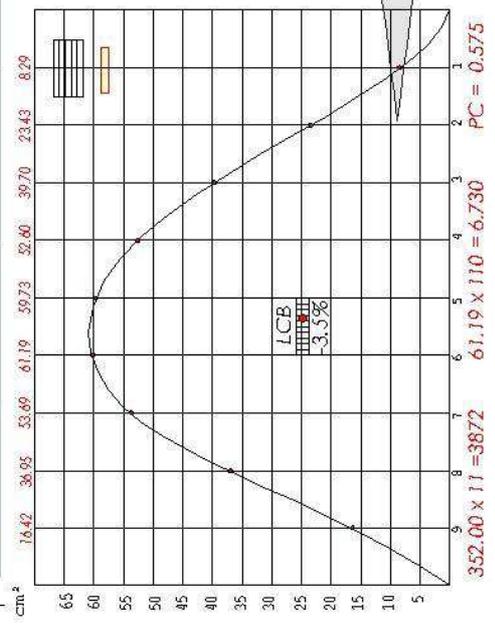
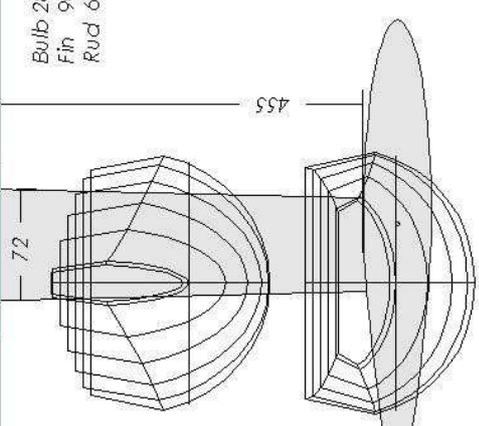
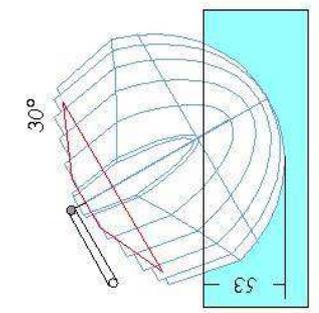
***"ESTEREL"***

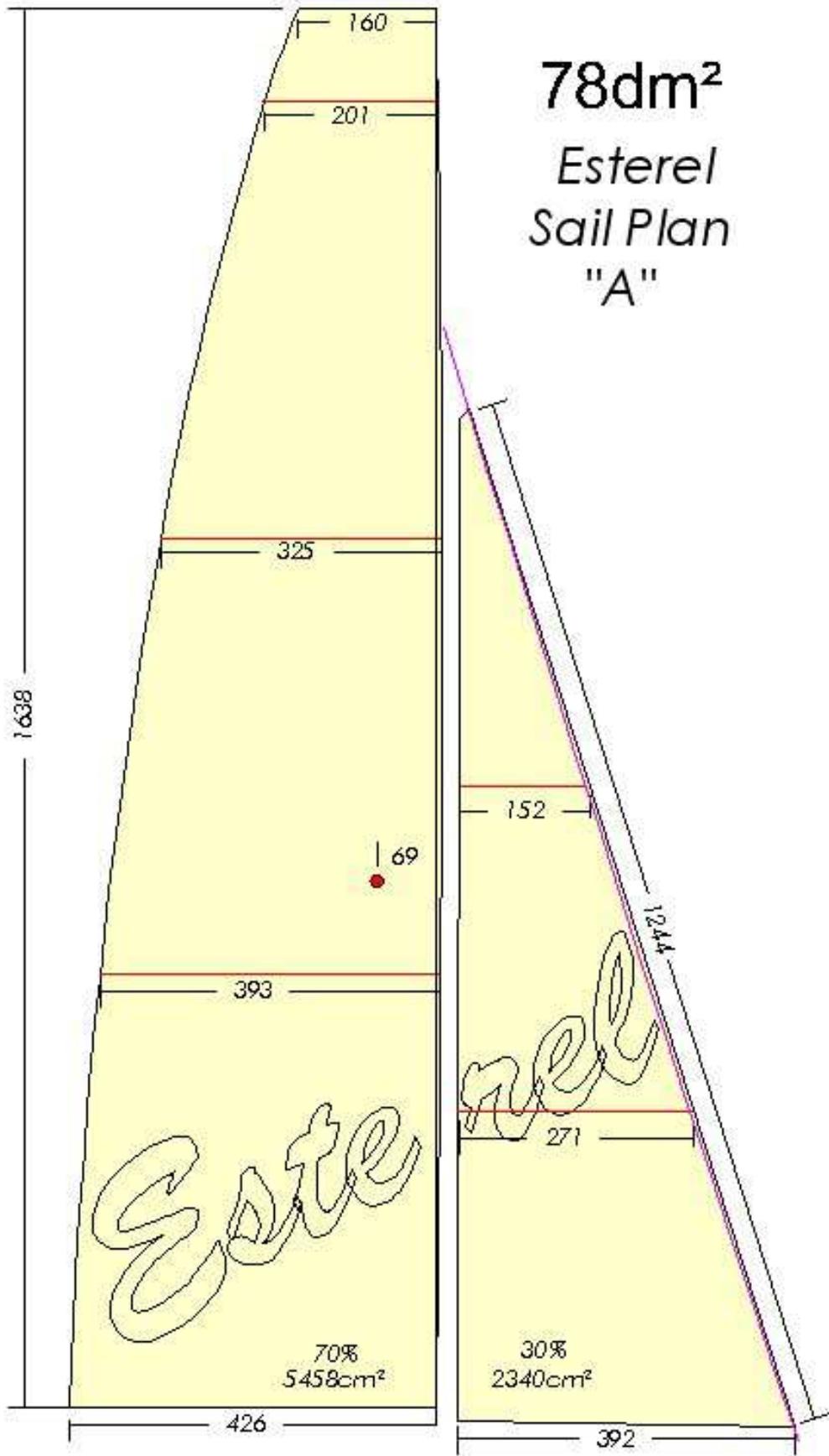


### ESTEREL

LOA	1145 mm
LWL	1100 mm
Beam	172 mm
Wbeam	162 mm
Dbeam	152 mm
Draft	53 mm
Wplan	1243 cm <sup>2</sup>
DSPL	3872 cm <sup>3</sup>
Append.	430 cm <sup>3</sup>
Tot.DSPL	4302 cm <sup>3</sup>
Constr.	1302 g
Bulb	3000 g
Ratio	69.7 %
LCB	-3.5%
PC	0.575
SA	78 dm <sup>2</sup>

Bulb 280cm<sup>3</sup>  
 Fin 90 cm<sup>3</sup>  
 Rud 60 cm<sup>3</sup>





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