Apsara – Hard chine version

Update of the RG65WIKI page.

Introduction

One often encounter people on forums looking for simple to build hard chine hulls. The RG65 class is ideal for initiation to remote controlled sailing yachts, this design is intended to propose an alternative to earlier plans already on the web, Palo de Agua and JIF.

Both these models were designed a few years back, in line with the evolution of the class this hull is narrower (JIF2, Apsara…), but ease of construction is ensured with hard chine, flat deck and the very limited side shell twist. Finally, it is proposed with a swing rig as base case, which is also believed to be simpler to manage.

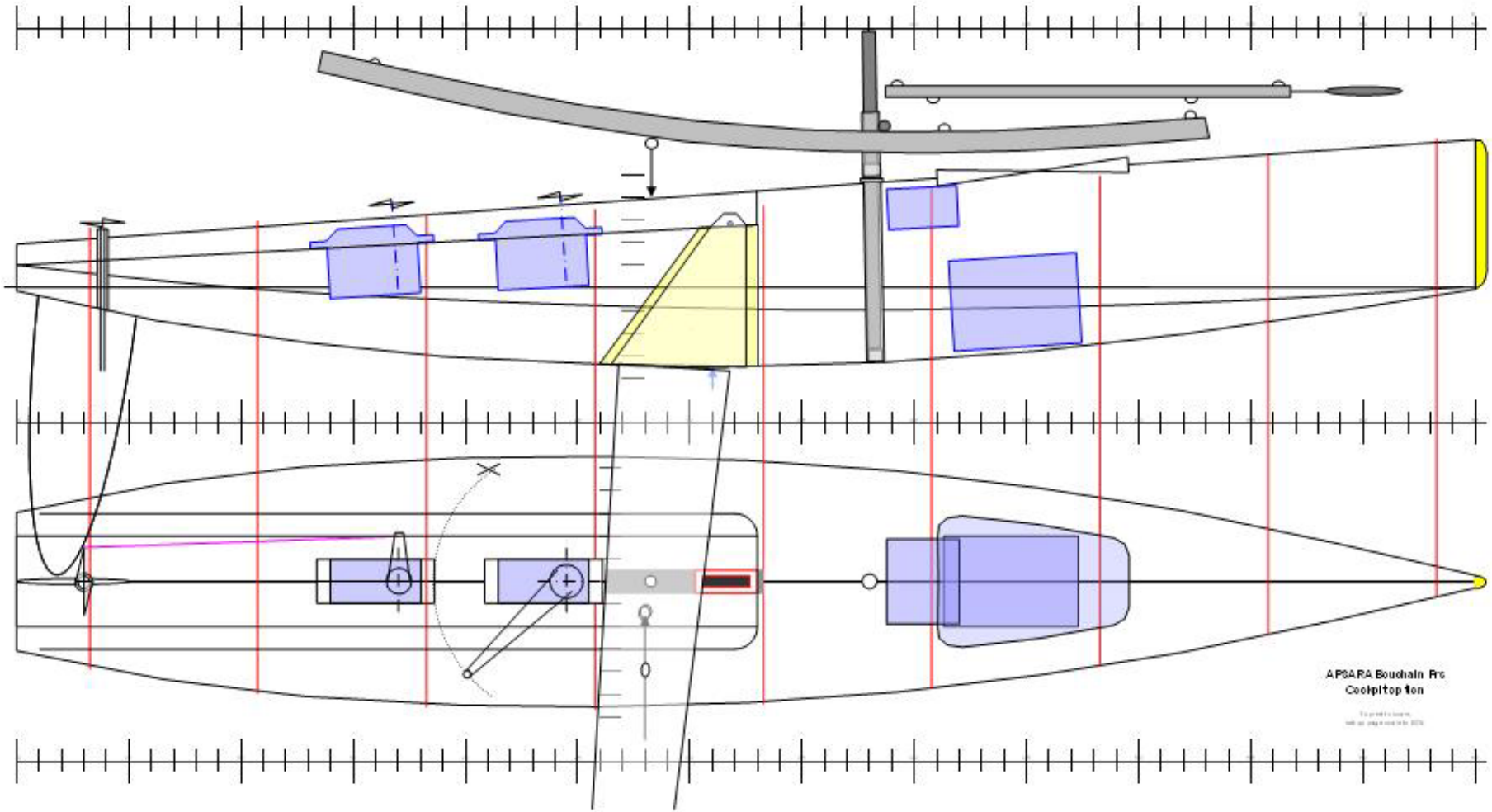
A 500g ballast weight was selected to further simplify construction, these can be found as « macquerel lead » in Western Europe, either in the in fishing shops or in the large sports stores.

The hull weight has no impact on the model stability, it can be made of wood.

Weight breakdown	
hull	200 to 250g
RC	210g
ballast	500g
rig	60g
Appendices	25g
TOTAL	990 à 1040g
Displacement	915 à 960cm3

The hull

General arrangement

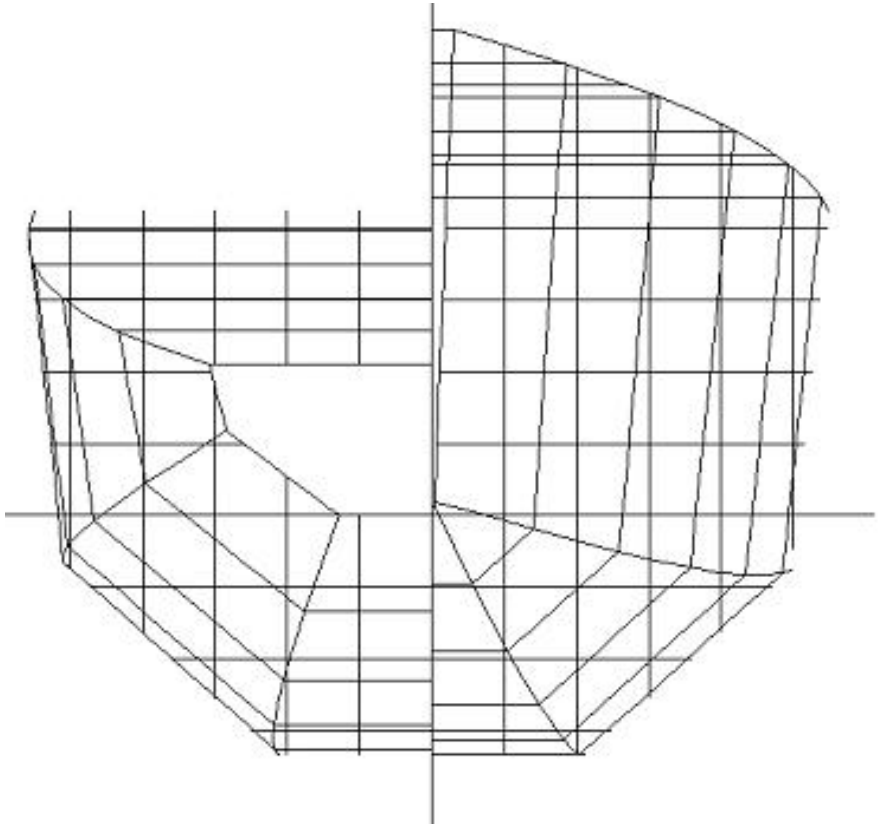


I’ve sailed with servos through the deck for quite a few years and never had a problem. This layout is lovely, all is accessible and fit perfectly with the basic 2-way RC kits.

Other layouts are of course possible, you may contact us on the forum.

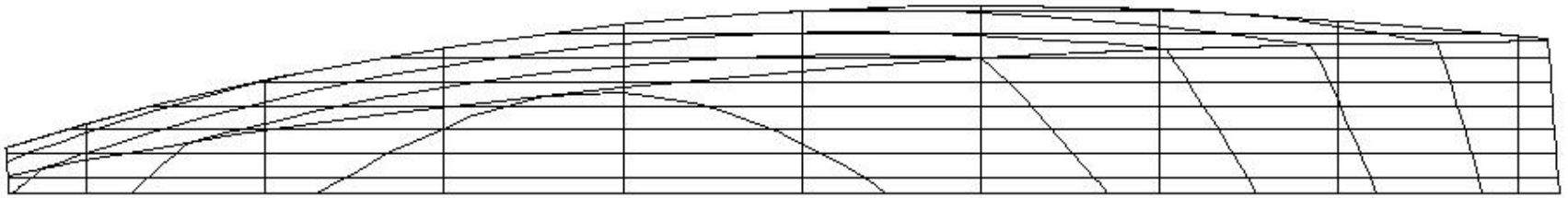
Hull shape

The design frames :



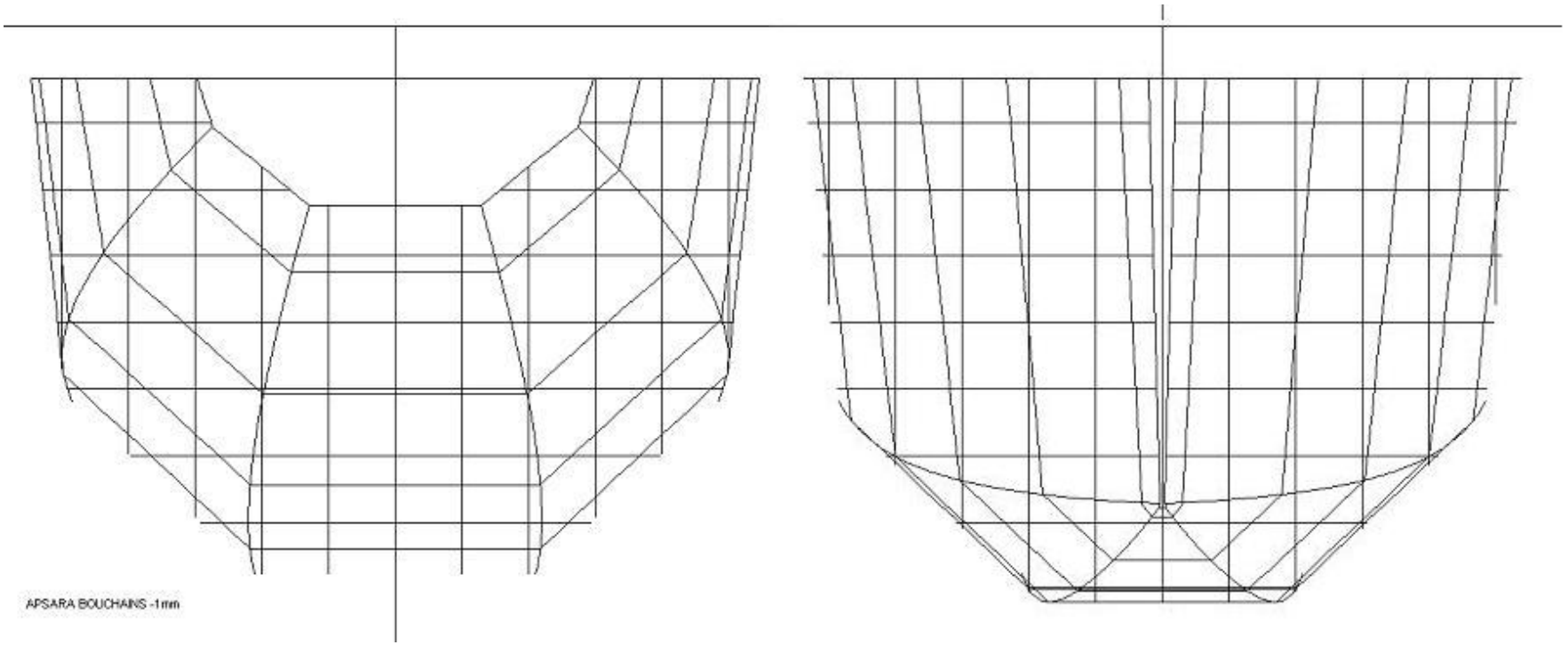
These frames are not for construction, refer to the following page !

The model is designed to be built upside down :



To facilitate this, the frames have been drawn accordingly (below). With the exception of the bow to be set a bit backwards, the frames have been corrected to be vertical when building, and reduced to allow for 1mm thick wood. The grid is set at 1cm spacing, you may need to test a few settings with your printer to get the right scale.

Frame spacing is 75mm, first frame is 32.5mm forward of the transom.



Frames can be made of 3 or 4 mm balsa, a cutter is enough to cut them. 3mm x 5mm longitudinals run along the chines, we recommend that you cut the frames at the angles before putting them on the construction plan.

The centre board housing is a trapeze, to be installed along the frame 5 when setting the frames.

Hull construction

Frames and keel housing are glued to the construction plan, the the 3x5 longitudinals along the frames. Sand paper aligns the longitudinal angles to the frames shape.

The first plating piece is the bottom one, it can be pre-cut to the minimum half width dimensions below (spacing of the measures 67mm). These are the theoretical dimensions without contingency.

12.9 - 17.8 - 20.5 - 21.8 - 21.8 - 20.6 - 18.2 - 15.0 - 10.5 - 5.2 - 0.4

For the remaining side pieces, a paper template drawn is situ is recommended.

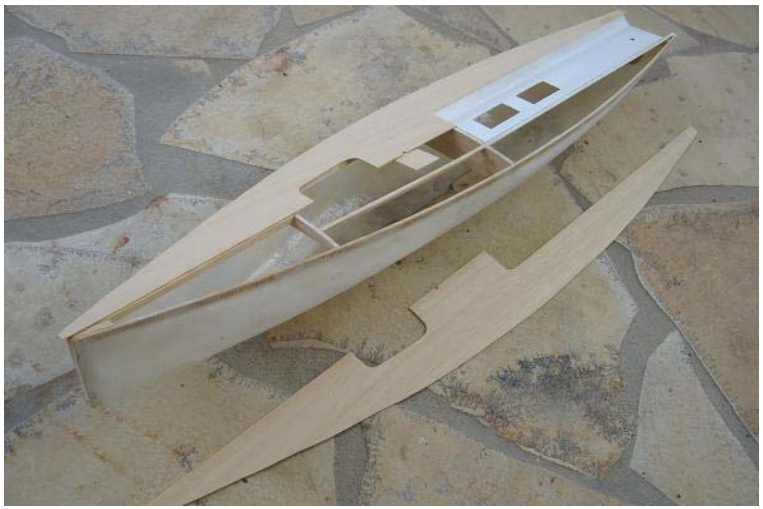
Deck construction

When the hull is complete and sandblasted, it can be taken off the construction plan.

When building with balas frames, the extra balsa in way of the future deck is also cut and set with sandpaper, and these frames are more than enough to hold the deck

You place additional 3x5 longitudinals in way of the cockpit and hatch edges, place the mast and rudder tubes.

The cockpit is pre-cut to the servos sizes and glued in place before putting the deck.

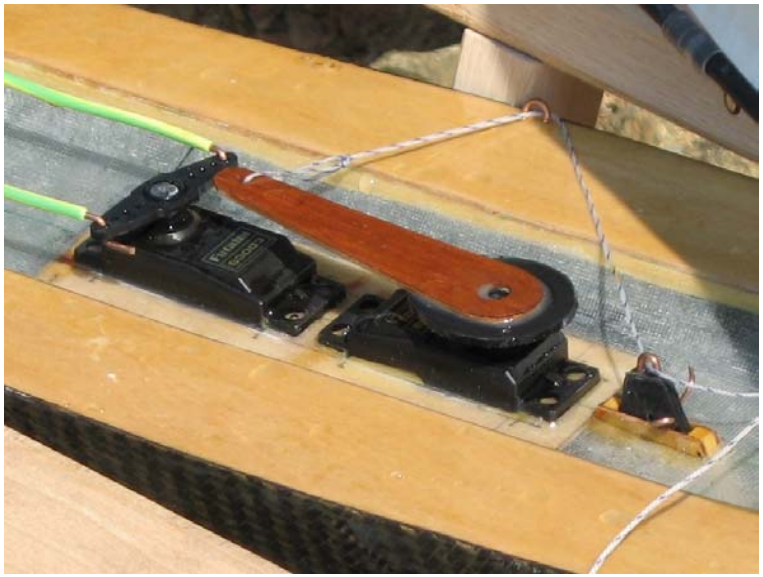


Outfitting

The antenna may run across the deck although in most cases it can satisfatorily remain below deck.

Detail of the servos in place.

The sheeting arm has to be 70mm when the eye on the boom is 90mm from the mast.



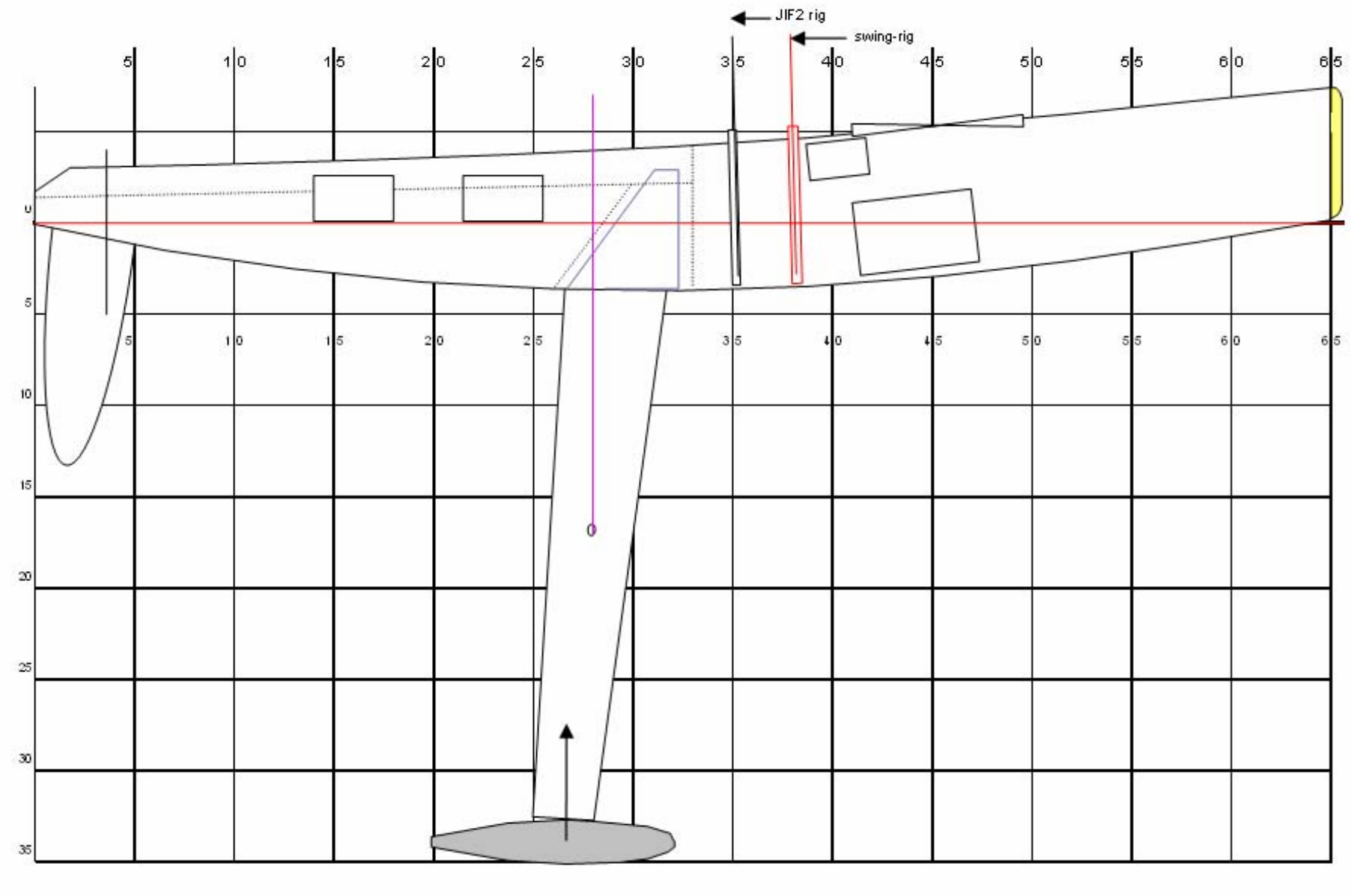
Keel

This is the most important element of the model with the sails.

For a 500g « Décathlon » ballast, we propose a 35cm draught (28cm keel, 5cm wide on top, 3cm next to the ballast.

It can be cut from a 3mm birch plywood.

If you have carbon fibre, you may also select to use it on the keel. Refer to file “Keel proportions +” for more details in http://groups.yahoo.com/group/RG65SailboatsUS/files/


JIF2 rig
swing-rig
5
10
15
20
25
30
35
40
45
50
55
60
65
0
5
10
15
20
25
30
35

Rig

The swing rig is not stayed and rotates around the mast axis.

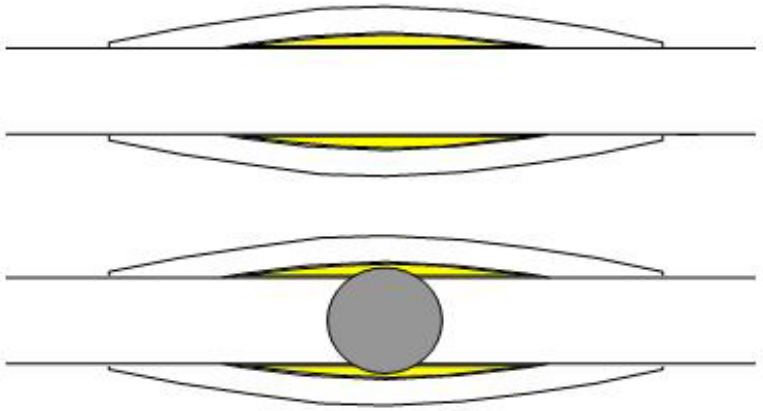
- Simple and easy to set (you slot the rig into the mast tube, secure the sheet and away you go !) ;
- No wang ;
- No stay ;
- Less traction on the sheeting servo.

The only difficulty is the passage of the mast across the extended boom.

Boom construction

A laminated wood construction is the simplest when you have no fibre construction facility

- 3x5mm wood,
- Wood glue
- epoxy glue
- copper wire (electric cable parts)



the boom is made of 4 elements of 3x5mm wood laminated together 40cm long and bent to a 2cm bow. To glue it together, one finds a 2cm piece, and hog the wood over it with weights at each end.

You then need to build a reinforcement in way of the mast before drilling a hole for the mast (see sketch).

Mast

A 6mm carbon tube, purchased from the kite shops, an eye made of copper wire for the jib, a sleeve to prevent the boom from climbing along the mast and that's it !

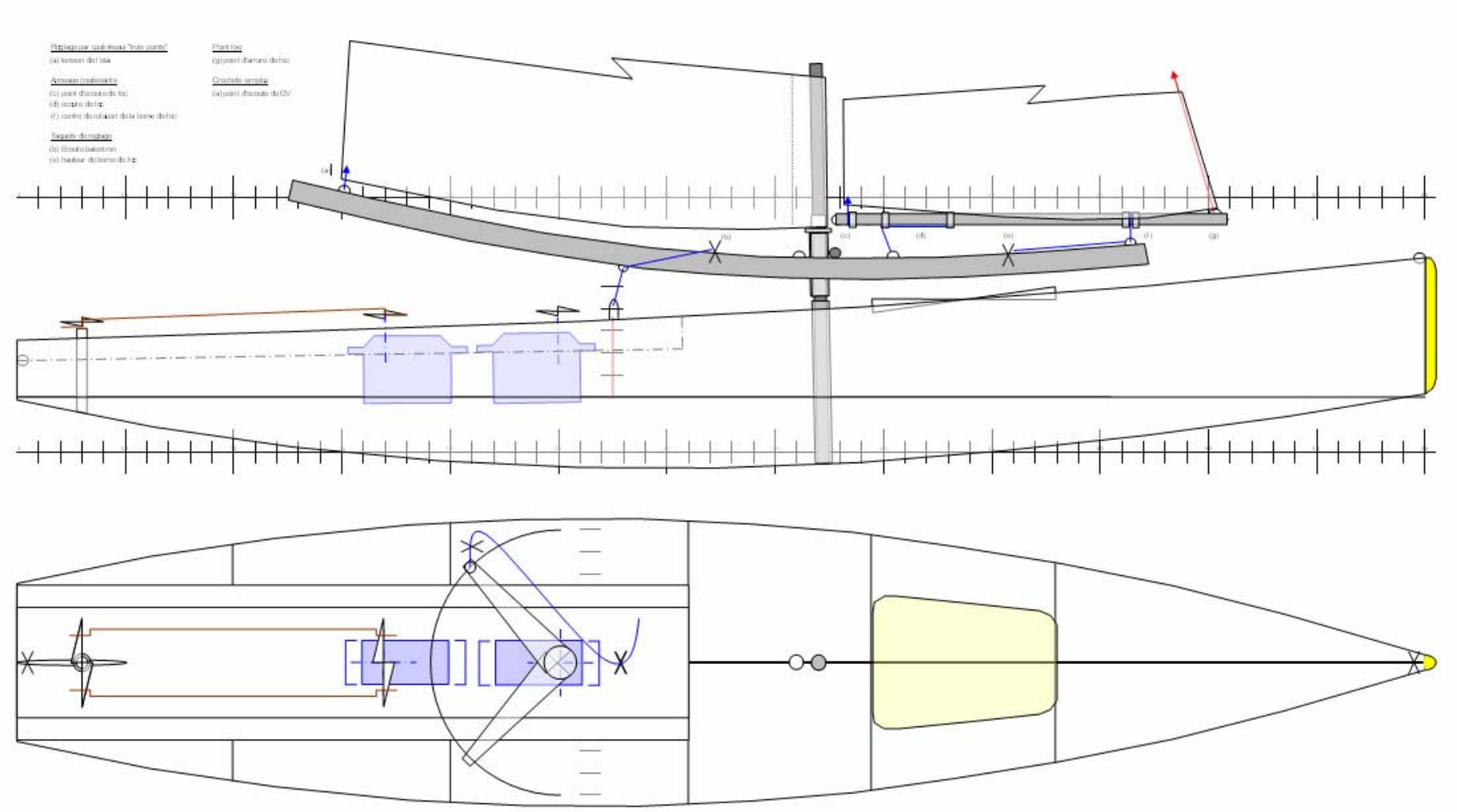
RG65 builders are famous for re-using all sorts of pen or bicycle parts…

Jib boom

I've long tried to avoid it, you need one : any 4mm tube can do, one eye at the back end, 4 rings of rubber along it for the settings.

Outfitting plan

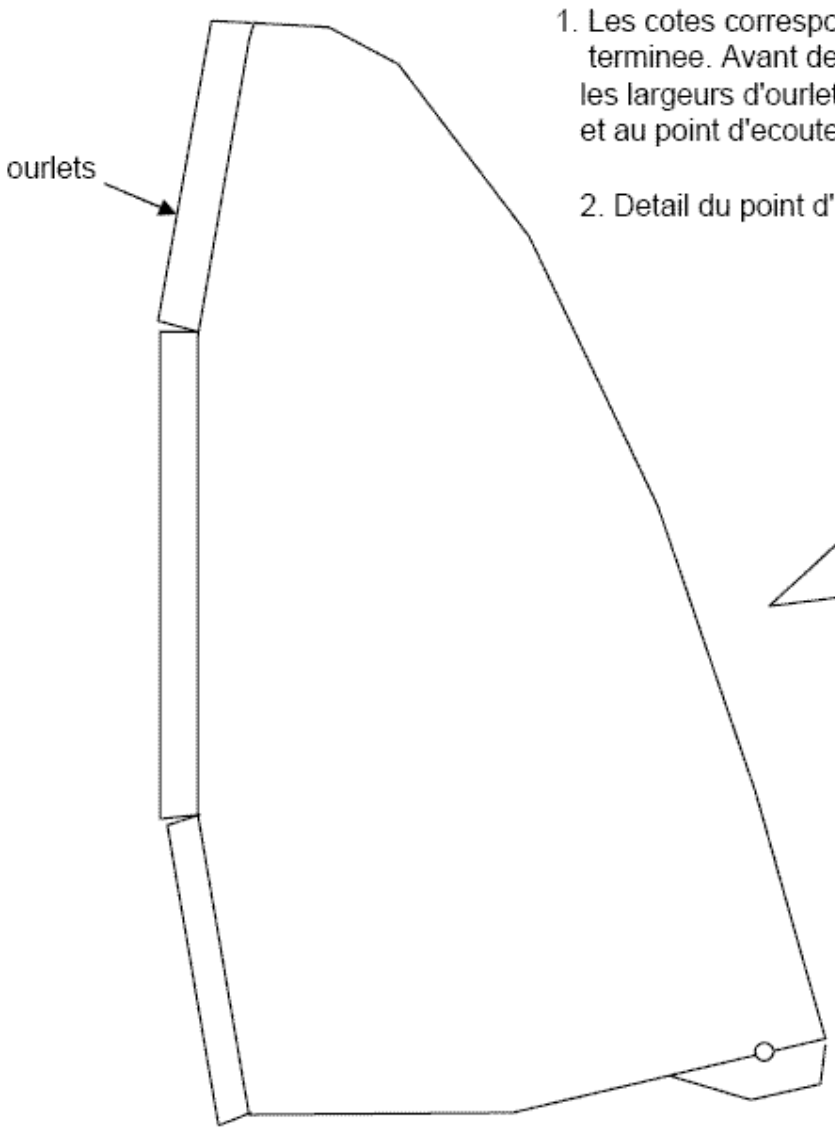
The following plan is an attempt to summarise the outfitting elements



Sails

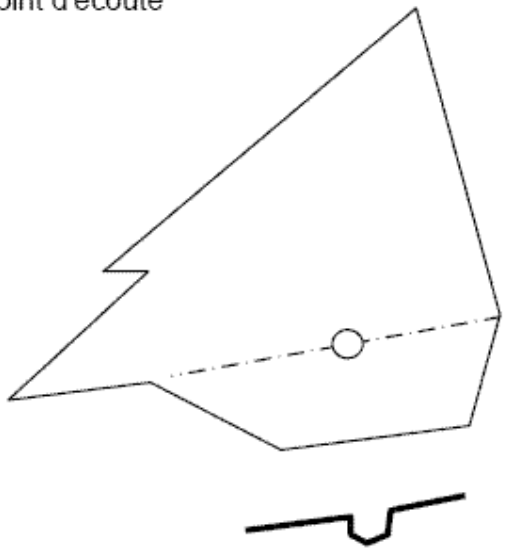
Beginners only have one mast, therefore the sleeve for the mast.

One soon realises though that two or three complete rigs make life a lot easier when sailing regularly.



1. Les cotes correspondent au contour de la voile terminee. Avant de decouper, il faut donc ajouter les largeurs d'ourlet, le long du bord d'attaque et au point d'ecoute

2. Detail du point d'ecoute



un ourlet est forme,perce d'un trou sur le pli.

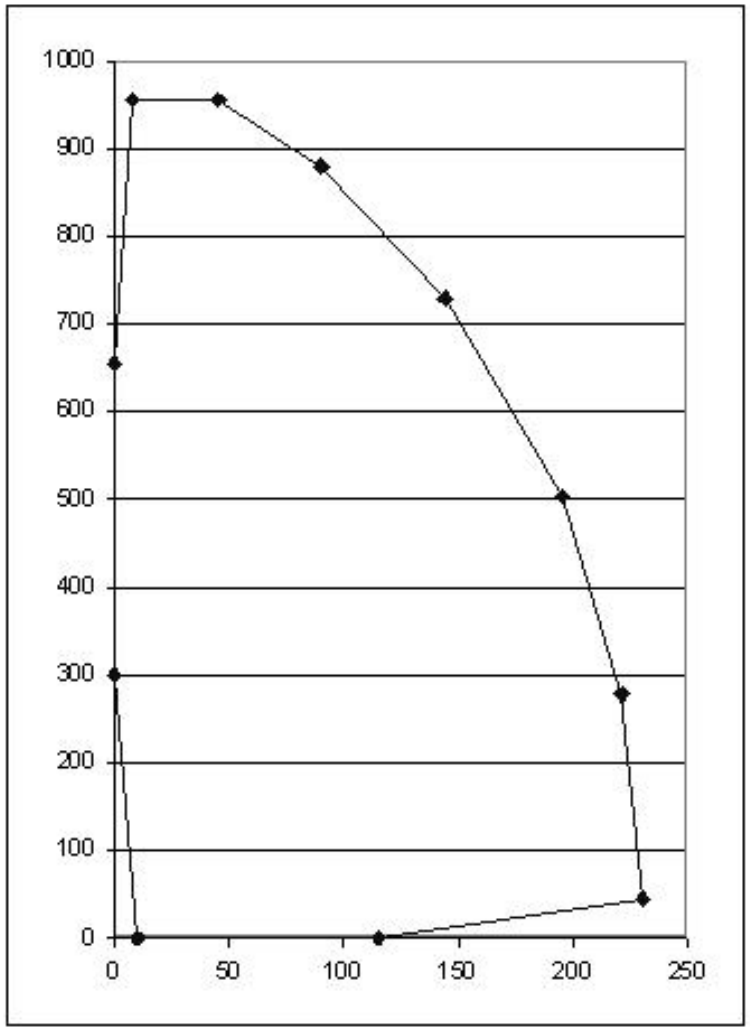
Un fil de cuivre forme en Omega se glisse dans l'ourlet, la boucle sort par l'ouverture

Contour de la voile GV-A

Pince haute	**8**
	300
Pince basse	**10**
	300
H	**955**

b	h
10	0
115	0
230	45
221	278
195	504
144	729
90	880
45	955
8	955
0	655
0	300
10	0

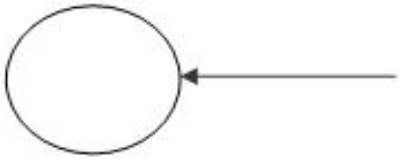
16.55 dm2



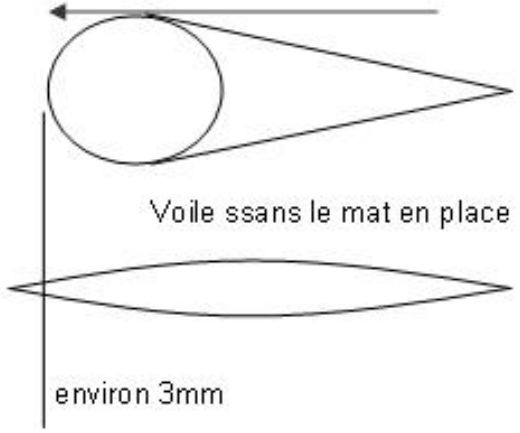
Attention !

Si le mat est glisse dans la grand-voile, la mesure pour la jauge se fait mat en place.
Pour un mat de 6mm, il faut ajouter 3mm aux cotes horizontales

Cas de base :



Cas voile glissee dans un ourlet :

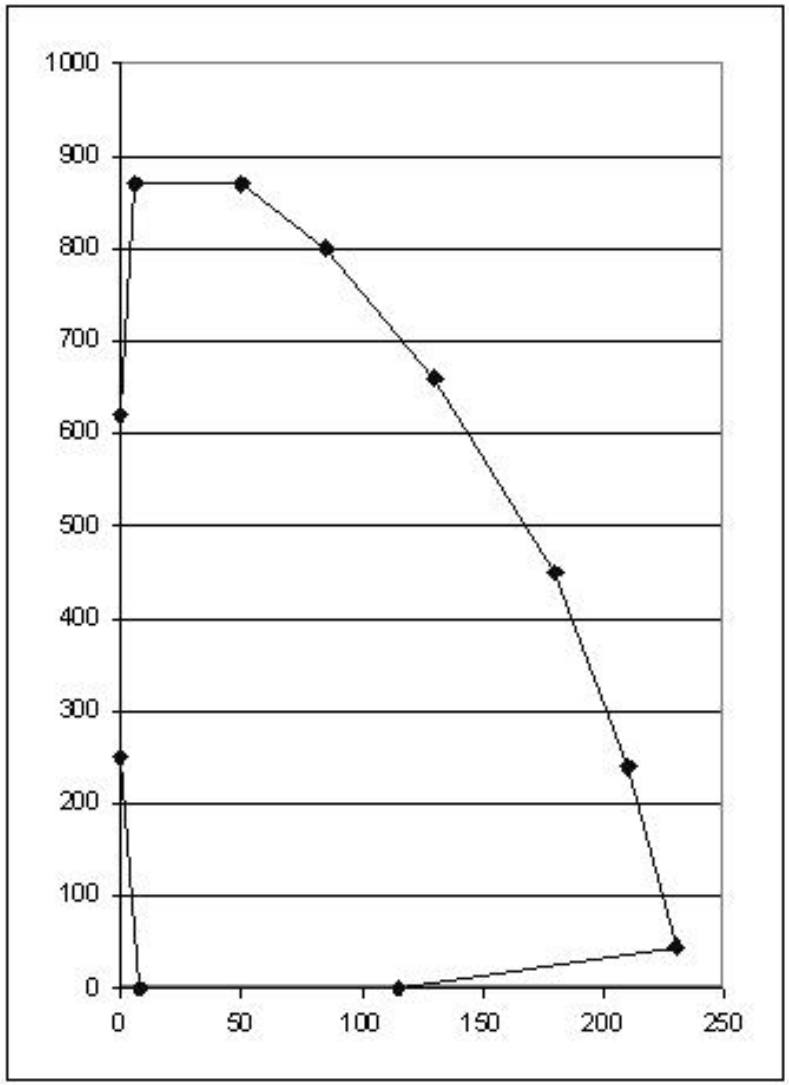


Contour de la voile GV-B

Pince haute	**6**
	250
Pince basse	**8**
	250
H'	**870**

b	h
8	0
115	0
230	45
210	240
180	450
130	660
85	800
50	870
6	870
0	620
0	250
8	0

14.22 dm2



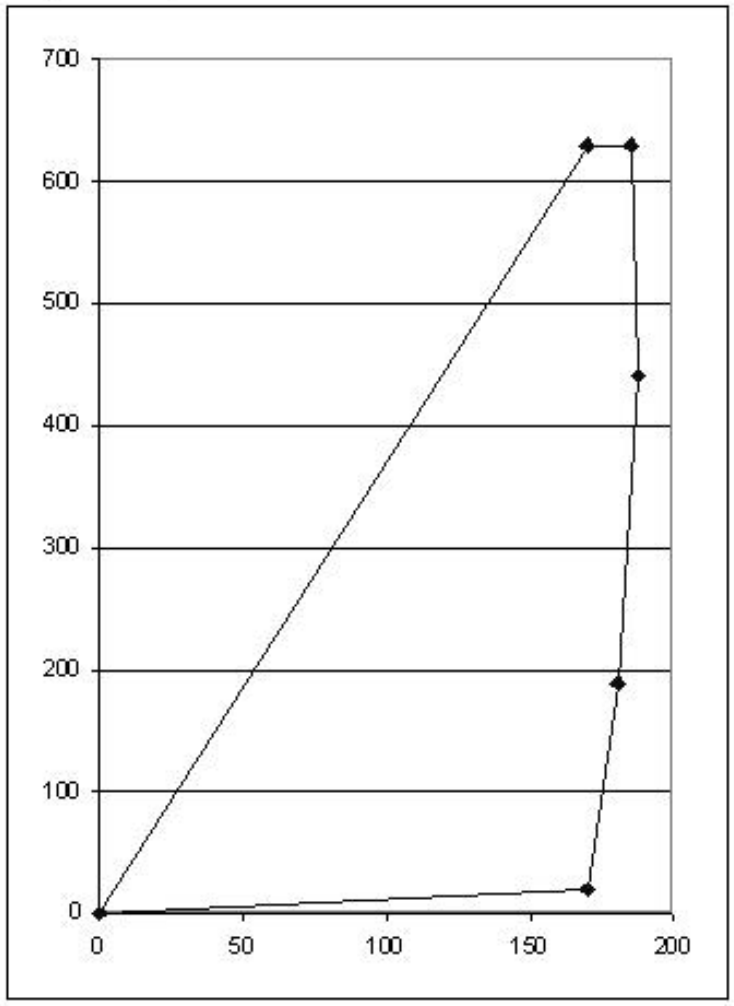
Contour du foc

5.95 dm2 disponibles pour le foc
26%

Pince haute	**7**
Pince basse	**6**
H'	**630**
Lf1	**15**
Lf2	**170**

0	0
170	20
181	189
188	441
185	630
170	630
0	0

5.93 dm2



Variante : Pour un gréement traditionnel suivant les cotes du JIF2, le mat devrait être positionné à 35cm de l'arrière.

Essais

Pour les conseils généraux pour les essais, voir http://navi.modelisme.com/article303.html

Une photo de la superbe réalisation de Samol :