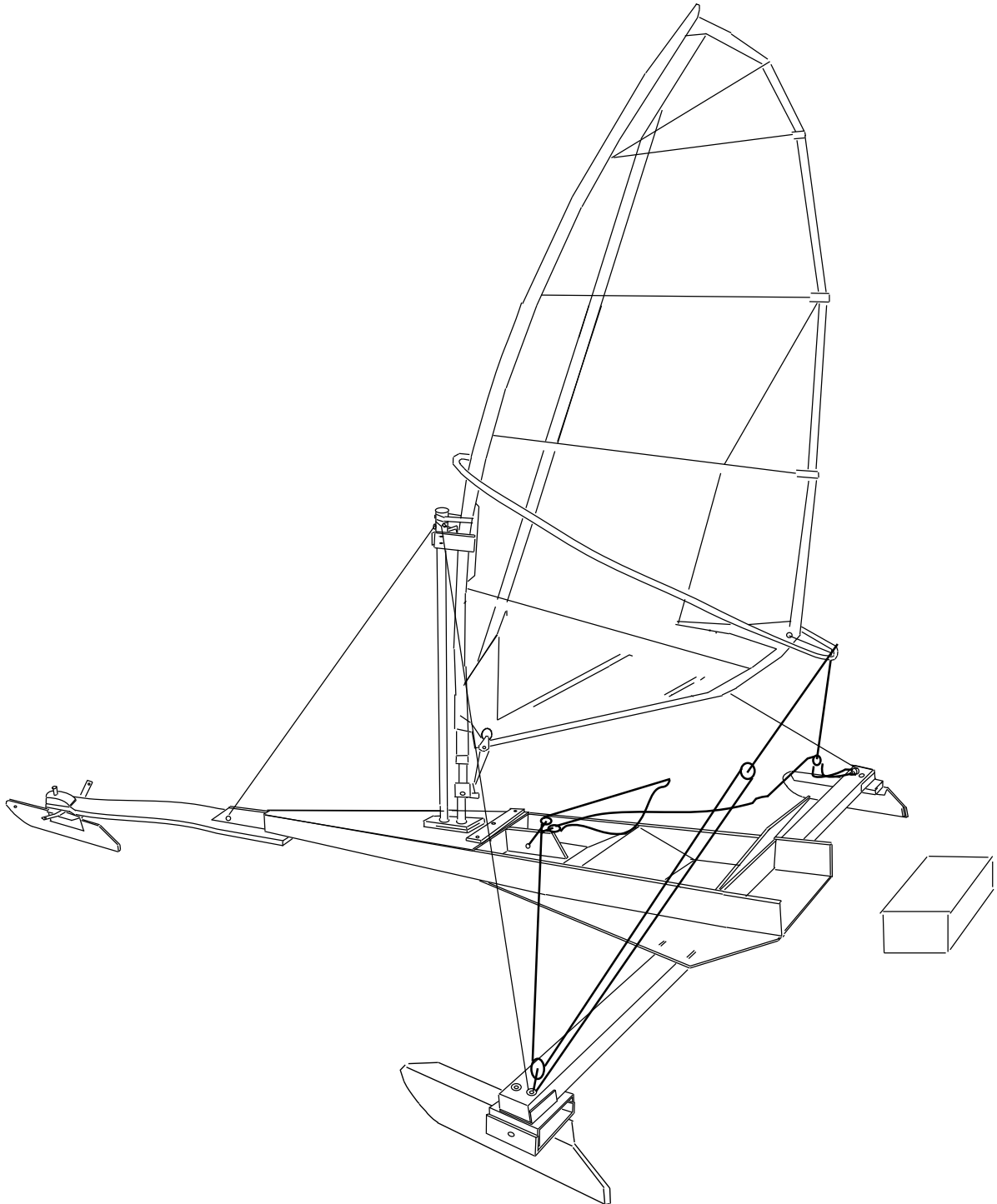


# Isabellakiss 2012



## In general terms

### About measurements.

We are building the Isabella Iceboat according to the KISS-rule, Keep It Simple Stupid. The directions are only recommendations ; all measurements are consequently approximate and the yacht can be built to suit personal wishes. We are hundreds who have tried these measurements. We have also tested different width; too large width gives less pressure on the ice and the Yacht is skidding. The gauge is 2500mm, (millimetre).

### About materials.

**Wood.** In Sweden we use ordinary planed wood. Our standard dimensions are for boards 23mm thickness and for planks 45x95mm. It is difficult to get clean wood for the runner plank 45x95x2500mm. If you can not get clean wood just glue two pieces 23x95x2500mm together. Use 500x40mm billets for the mast extension, 1000x30mm billets for the handlebar if you need one. A handle for the handlebar. 7mm plywood and you have to glue the foam plastic/Frigolit buoyancy . You need one board 1200x600mm plastic foam/Frigolit. The thickness of 100mm exist but you have to cut it to fit the 95mm board. It is easier to buy one board 50mm and one 40mm and glue them together. The remaining space fills the foaming Polyurethane-glue .

**The rig.** Nowadays we arrange a extra mast with a consol and a gaff on top of it.

An other way of setting up the rig is shown on Page 8. From this gaff the stay and shrouds are going to the yacht. Than you place the real mast on the console and fasten it with a strap. For this rig and the steering you need rope, Dyneemic 2002, 6mm thick. The sheet has to be bigger, 10mm. 40-45mm billet is enough for the extra mast. Note that there has to be at least 10mm room in the mast foot on deck for the mast to flex. The length of it is fixed when you have rigged the whole main mast with its mast foot and the gaff is just below the boom. Use some 60mm rings to make some cheap shroud-stretcher, page 8. One ring I fasten furthest away on the stay, then I tie the other ring furthest away on the stem. In this ring I tie a thin rope. When I put up the rig I thread the loose end of the rope into the ring on the stay, then back to the lower ring and then I pull and tie. So I can apply such a force on the stay so I can brake the mast. This is a fast and cheap shroud-stretcher.

### The runner.

Take off the runner and protect the edge from rust with Vaseline, not oil that is blacking. Polish the edge with fine 400-600 emery cloth. Never polish only just under the bolt-hole, it is important to keep the smooth edge-curve of the runner. The runner has to touch the ice only under this bolt-hole not in two dots. It is of course difficult to keep the edge-angle of 90 degree. But the job is easy when you use the grinding mould on page 10. Look at our web-site <http://www.isabella-iceboat.com/trim/trim.html>

There are many pictures of different kinds of solutions to construction problems.

### Sailing.

There have been some remarkable mast-breakings. They were remarkable because they happened in light winds and only to beginners. On some occasions I was watching. I think the explanation is that they tried to gain speed by pulling hard on the sheet. The breaking force from the sheet to the boom on to the mast was too large. We also put a 30mm-billet into the whole elder plastic mast to make them stronger and stiffer. Than we do not need to pull the sheet all that we have the strength for. Our sails are not cut flat enough; fall of the wind, keep speed not height. In strong winds we change to smaller sails. We do not mow the mast.

Let me hear from you when there is a problem; or better, tell us that there were no problems and tell us how marvellously thrilling your first race was.

**See you on the ice!**

**All questions about this construction will be answered by**

**Bernd Stymer**

**isabernd@dataphone.se**



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## Isabellakiss

Simplification of model Tapo 2011. Can be sent.

More KISS for Isabella.

None of the carpentry on a box aft.

A plastic box with lid is clamped between the side boards that go into the stern.

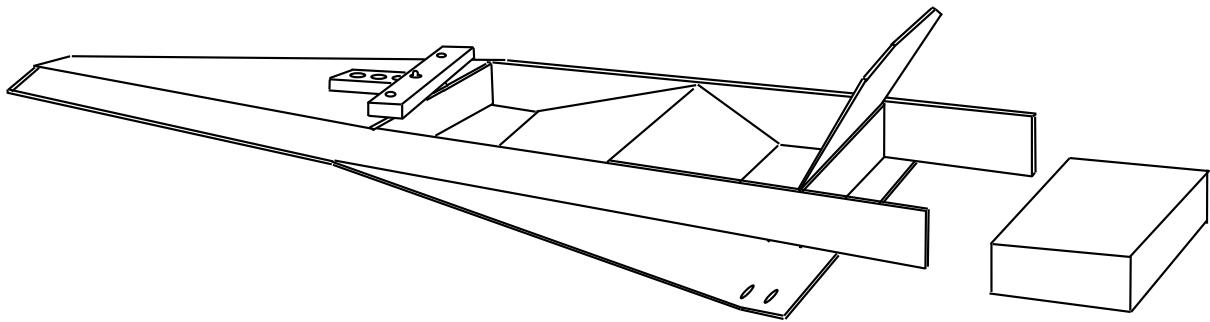
Bottom plywood passes the side boards in the stern.

Two straps attach to the hull plank.

The angle under the knees hold together the side boards.

Styrofoam in the nose and the angle below the knees.

Piece of cake.



### **About measurements.**

From the front edge of the plank there it is important to have 1300mm to the head-mast and 1000mm to the stem for the stay. The back slopes 45 degree and is 500mm high from the floor. Adjust the floor to your size. Stretch your legs, sit down to a wall and take the measure of them.

Cut deck and bottom with large marginal and clean the sides when you have finish the hull. The deck is 1100mm and the cockpit 1400mm to the aft. The width aft 500mm gives a good and safe seat. At the front bulkhead width is 400mm.

A very long person has to lengthen the plywood so the box is large enough.

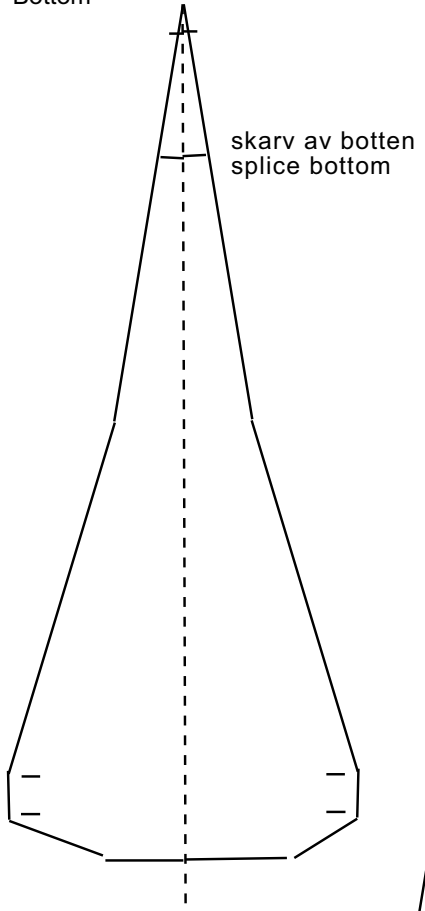
It is important you have 1300mm from the front of runner plank to the middle hole in the mast foot. This is important because you sail on this measurement. Too little and the yacht will luff. Too much and the yacht will fall off the wind.

The middle board has to have thickness because you have to drill 8mm hols through it on end for the bolts which holds the spring board.

The runner plank is 2500mm long

# Mått Measurements

Botten plywood  
Bottom



Nosbräda  
Springboard

— ung 3,20 M total skrovlängd  
about total hull length

— skarv av botten  
splice bottom

Mastfot 130 cm från plankan  
Mastfoot 130 in front of plank

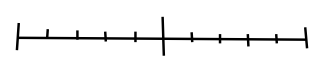
Skott som passar dina mått  
Bulkheads fit your size

Vinkel under knäna  
Angle under nee

Ryggstöd  
Seatback

Planka  
Plank

För rem  
Holes for belt



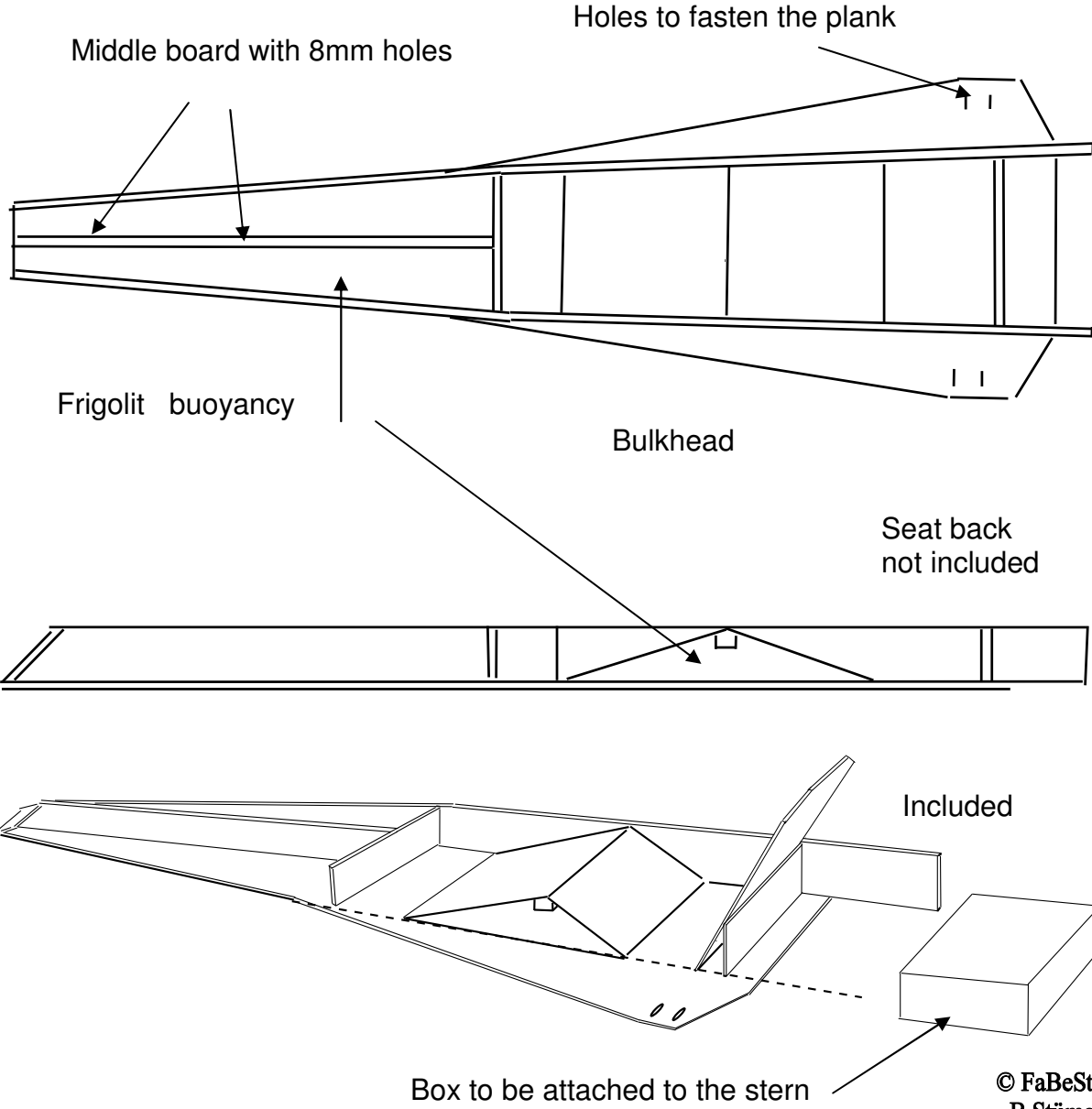
1 meter

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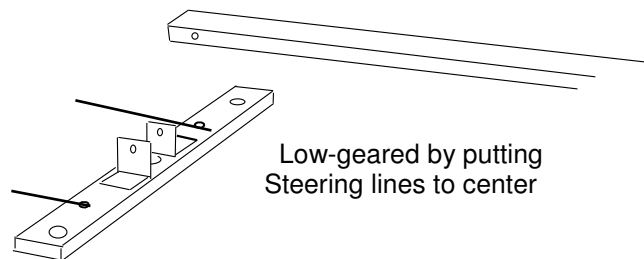
Saw with large marginals deck and bottom from plywood.  
 Draw middleline and bulkhead on the bottom  
 Drill small holes through this lines as marks from the under side.  
 Saw the rest of parts first when the sides of the hull are fixt so you get it right.

Drill holes in the middle board , from the side 10mm-holes in font for the stay and aft for the sheet. Drill 8mm-holes on end 100mm from nose and one 400mm aft. It is difficult to drill right through. Get help to look from the side.  
 Fasten the middle board on the floor, glue and screw. Drill now through the 8mm-holes and through the plywood floor to mark the holes for the spring board.

Make bulkheads on the side of the middle board and aft.

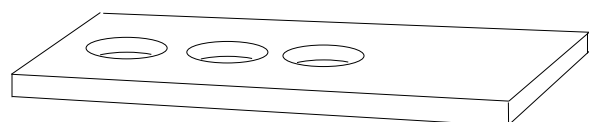
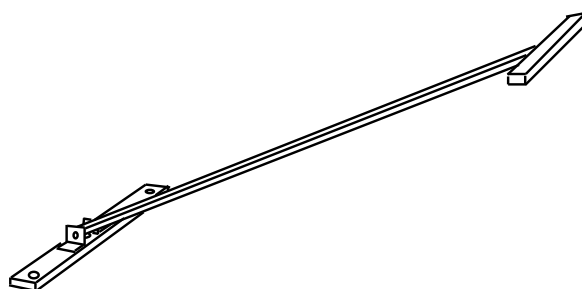


Make a mast-foot as shown below three pieces of board the large holes are 55mm or at least 10mm wider than the mast so it can flex when sailing.  
 In the beginning it can be safer to steer with a tiller but we than steer with feets.



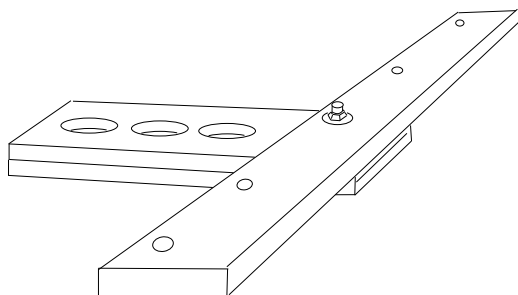
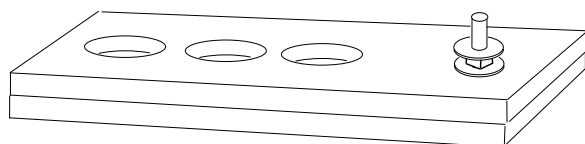
Low-gearred by putting Steering lines to center

Handlebar

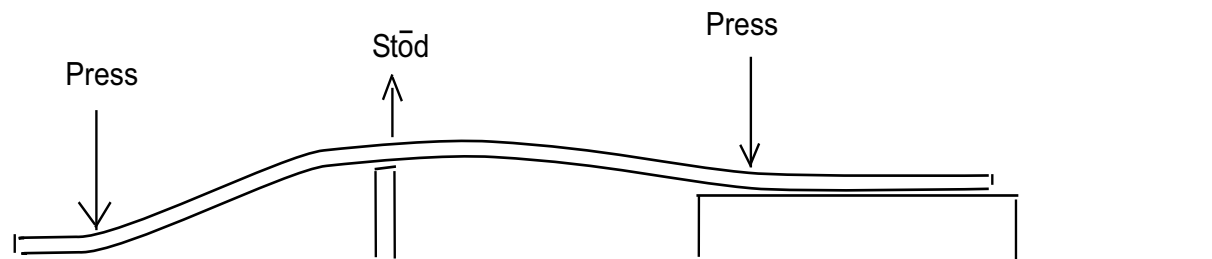


Glue two 23mm boards the upper with 55mm holes. Put a 8mm bolt from under and glue it so the bolt-head not sticks out on the under-side. The steering board is 23x95x300mm and the wholes for the 8mm bolt and the steering lines has to be drilled so there will be at least 60mm wood aft the steering bolt. This is so you not can break it with four feet.

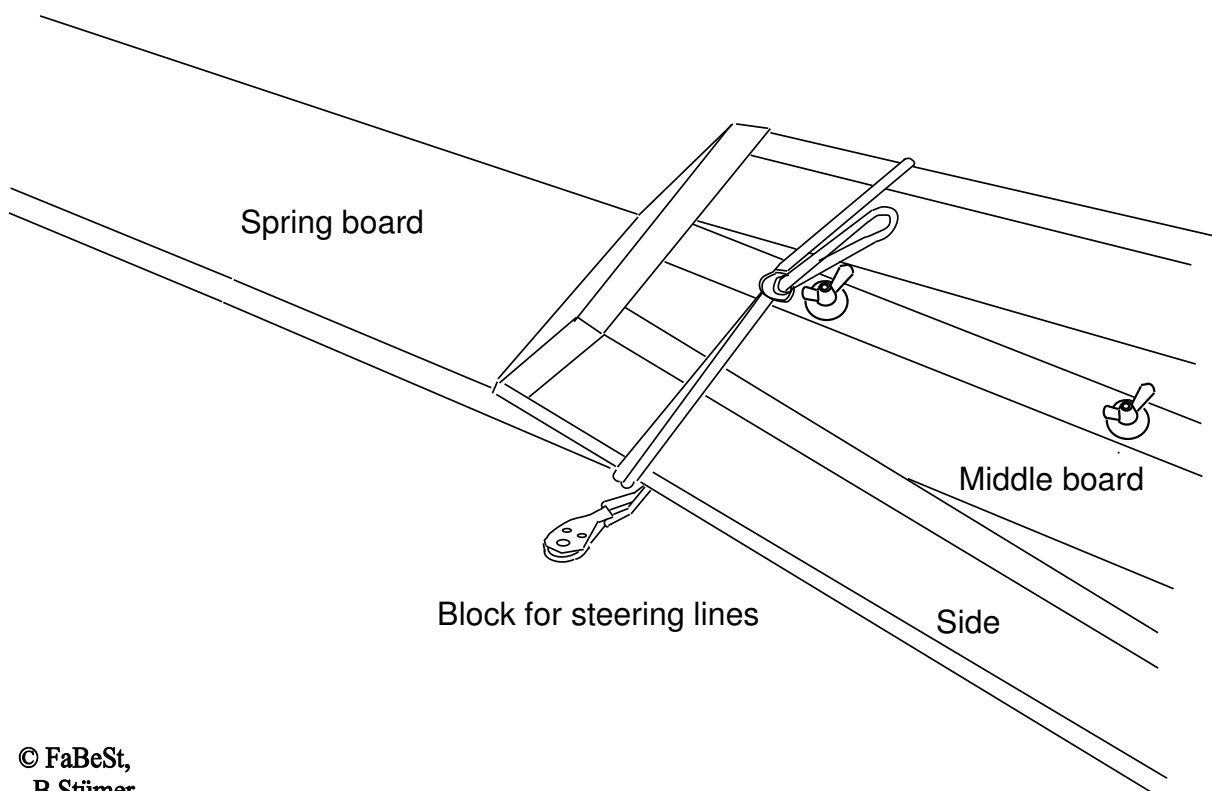
Remember the important distance 1300mm from the front of the runner plank and the middle hole in the mast foot.

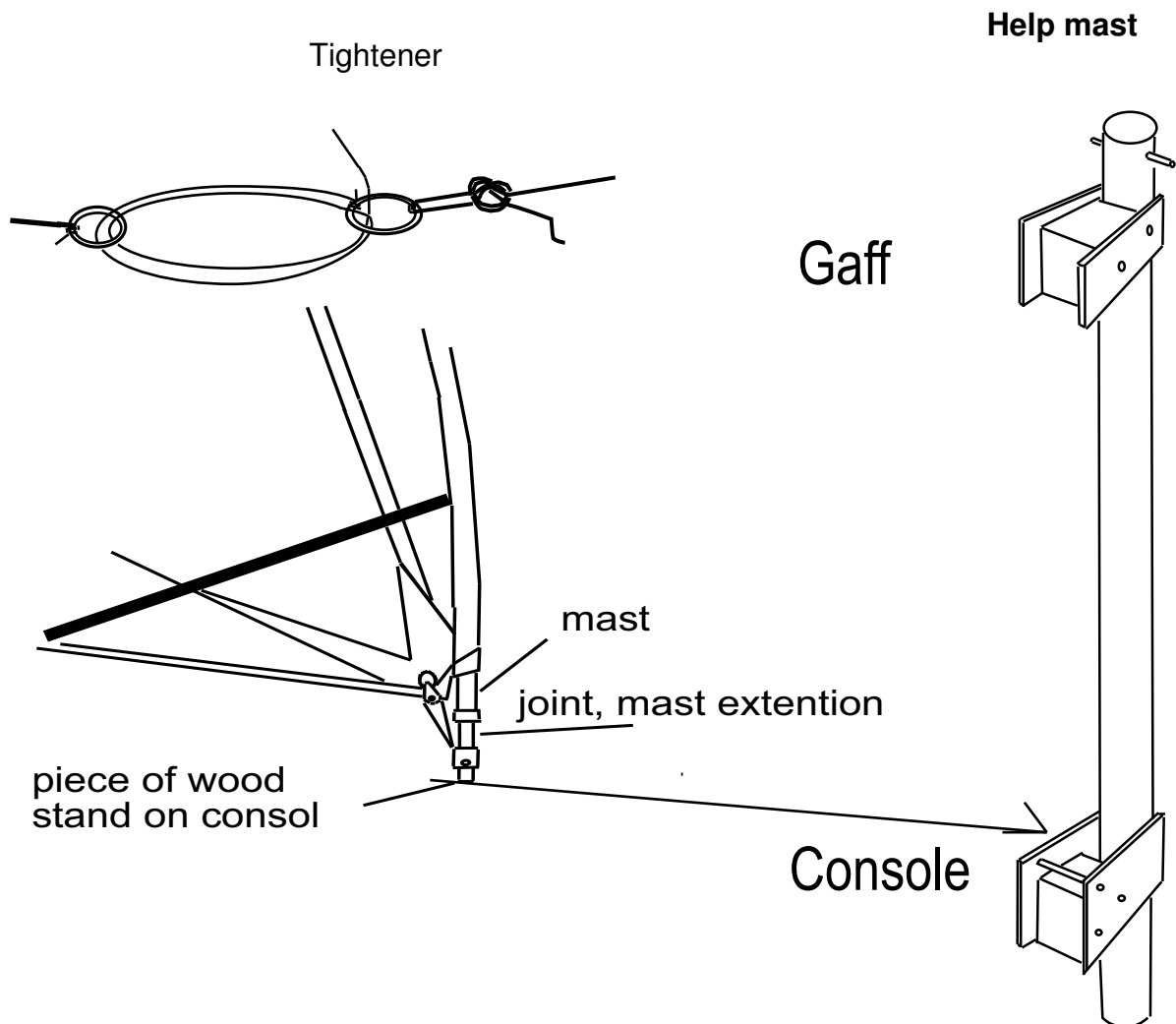


The spring board works like a shock absorber.  
 Put a 10mm bit of board under the stem above the springboard before you tighten the first bolt through the hull. Now the board will bend downward and the absorber will increase.  
 I like long spring boards. I glue two 15x120x2000mm boards together and press them as shown below. This give a curved spring board and it is stronger sidewise.



If you use long spring board you have to fix the steering lines as shown because they will slacken when the board is pressed upwards while sailing.  
 The steering lines lines are going through block s fastend as skown below.





Fix a help mast. Take a billet 1700mm( millimetre) long and 45mm thick. Make a consol, a support for the main mast. Take plywood for the sides and a block as bottom. Pervading M6-bolts will not break. Fasten the consol so high on the billet so you can see under the sail when the mast with its mast foot is situated on it. Make also the gaff of plywood and a block and fasten it on the billet so it is just under the boom of the windsurfing rig. Note. The mast foot on the consol has to be so close to the billet as possible while it has to be distance at the gaff. The block in the gaff has to be so wide so the bending mast not will reach the billet. Mast and billet are consequently not parallel. When sailing the whole rig is rotating in the mast foot on deck if you fasten the rig as shown in page 10 . Accident can happen and you must lower the rig easily at once this you can do if you fasten a sheet-hook as in page 10.

Fix the sail, boom and mast. There are many kinds of windsurfing-sails and many Isabella sailor are sheeting to blocks on the side shock-holder than to the middle of the yacht or fasten on the sides by the steering gear. Page 1 and 16. But the most simple way is to sheet to the centre beam at the aft end. Note that to sail a iceboat is to pull the sheet hard and to tack even down wind.

Make a joint, mast-lengthener from a 45mm billet putting out of under the mast and which replaces the ordinary windsurfing joint. This wood stands in the console of the help mast. If you have a old plastic mast put a hose-clip to the bottom of it for protection. Tie tape around the part of the lengthener in the mast to make it stiff in the mast.

Note that we on page 1 show a different way of rigging. The head-mast is also standing on deck and if the distance between the masts is more than 100mm you need no distance on top of the help-mast.

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If the head mast is standing on deck as shown in page 1 there is no need for a distance at the gaff of the help mast, but there has to be space at the bottom in the mast foot so that the bended rig not touch the help mast. 200mm can be necessary.

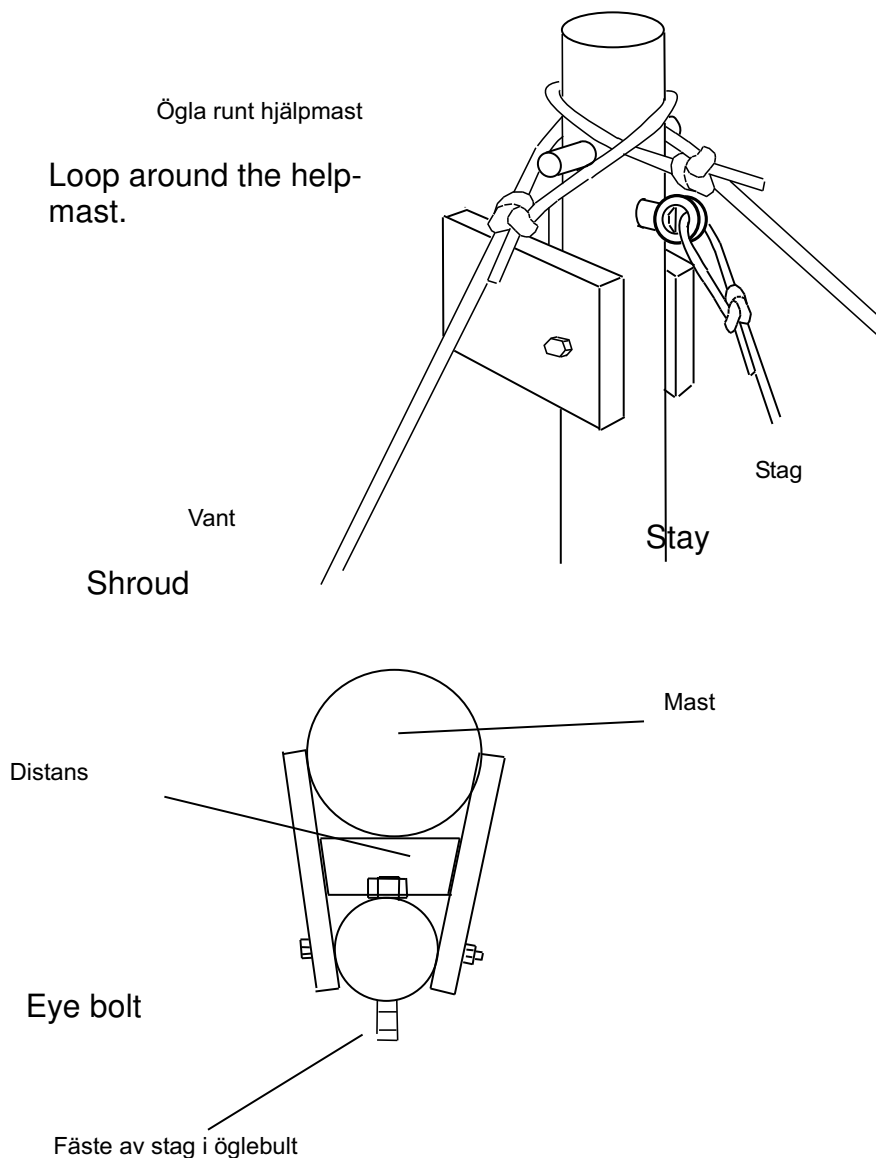
### Rigging the help mast

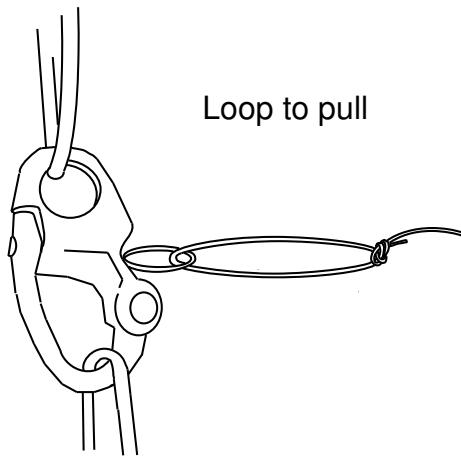
In every tack the rig is sliding in a loop on the shrouds

The stay in the eye bolt holds the rig in the wind.

## Rigging av hjälpmasten

I varje slag glider hjälpmasten i vantens öglor och staget håller riggen i vinden.

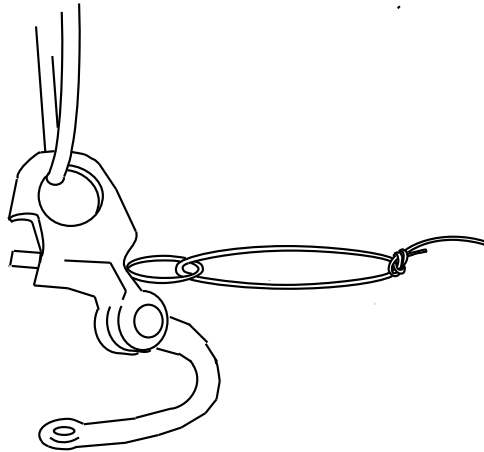




Loop to pull

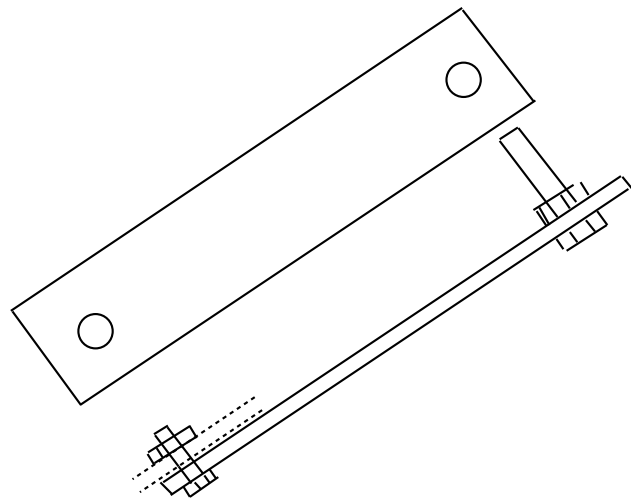
Make the loop so Large so you can pull with strength and open the hook  
Despite the rig is stretched hard.

Shroud  
Or  
stay

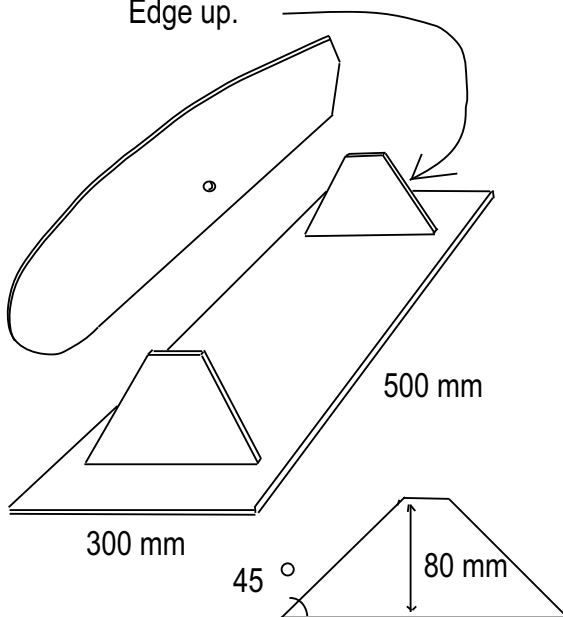


Parking brake must be present when the yacht has to stand still on the ice when you leave it.

A steel bar bolted in the runners nose and a long bolt holding it in the raised position. See page 13



Runner  
Edge up.

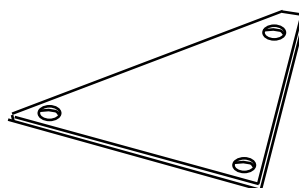
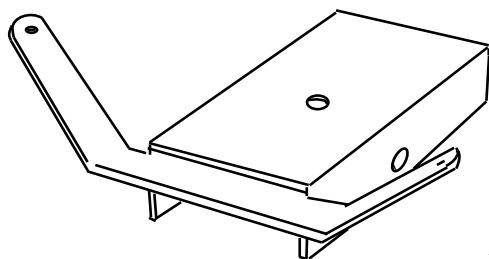


### Grinder

Make a grinding mould. We grind our runner 45 degree on each side. It makes a 90 degree edge. The picture shows a simple mould where you grinde one side on each runner at the same time. Put the two runner in the mold with there edge up and use grinding paper on a block to grinde. First rough paper and than fine. Grinde only along the edge, never across.

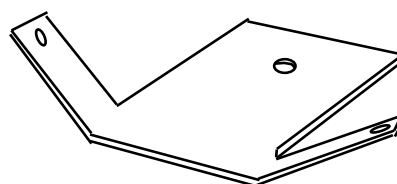
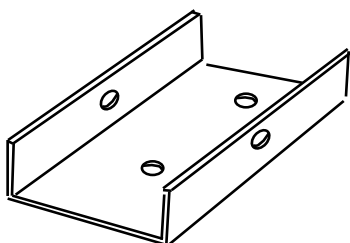
# Förmedhållare

## Front - chock



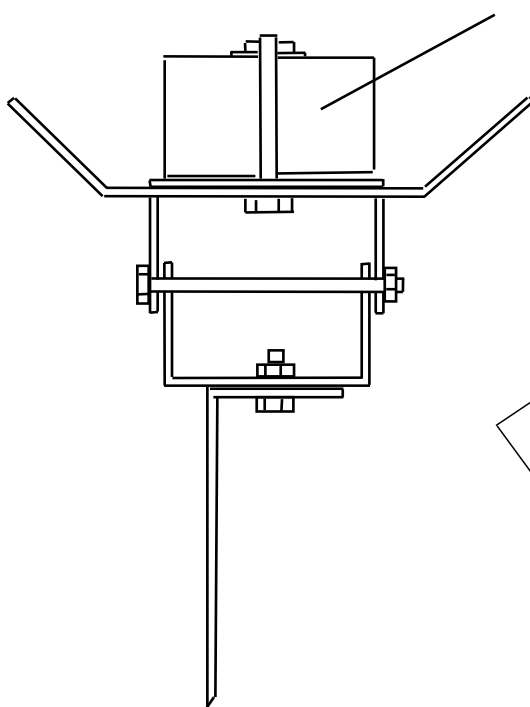
Fäste för styrlinor

**Alternative**

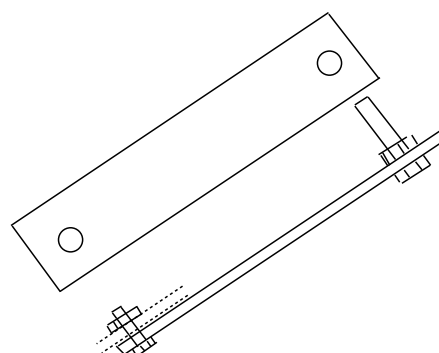


Nosbräda

Spring board



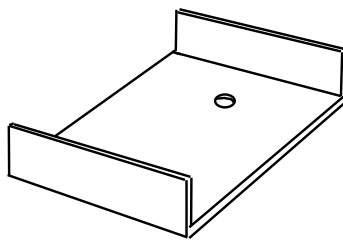
Parking brake



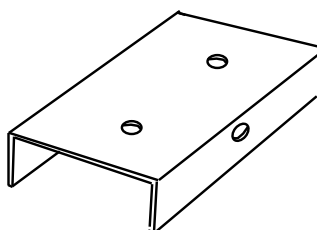
## Sidomedhållare

### Side - chock

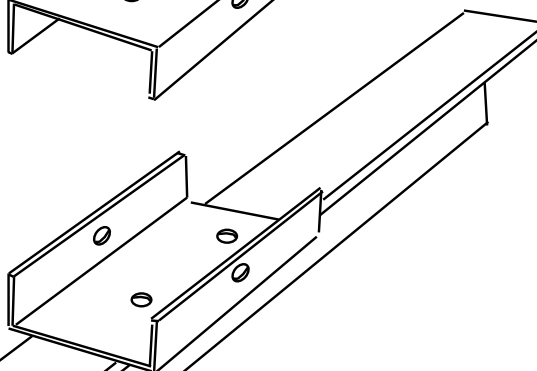
C



B

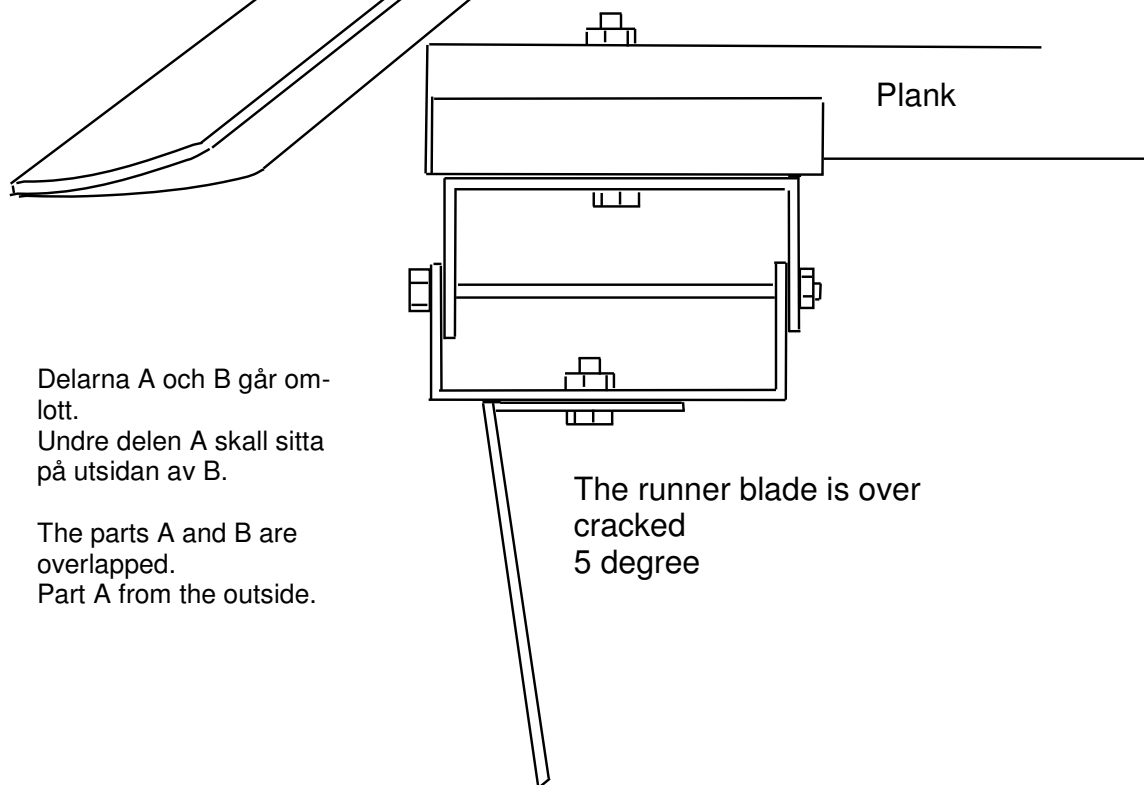


A



Del A och B är exakt lika.  
Del C håller plankan.  
Alla bulthål i delarna och  
meden är exakt lika.  
Delarna bultas tillsam-  
mans med M8 bult.

Part A and B are exakt  
the same.  
Part C is holding the run-  
nerplank.  
All bolt-holes are exact  
the same.  
The parts are bolted to-  
gether with M8- bolts.

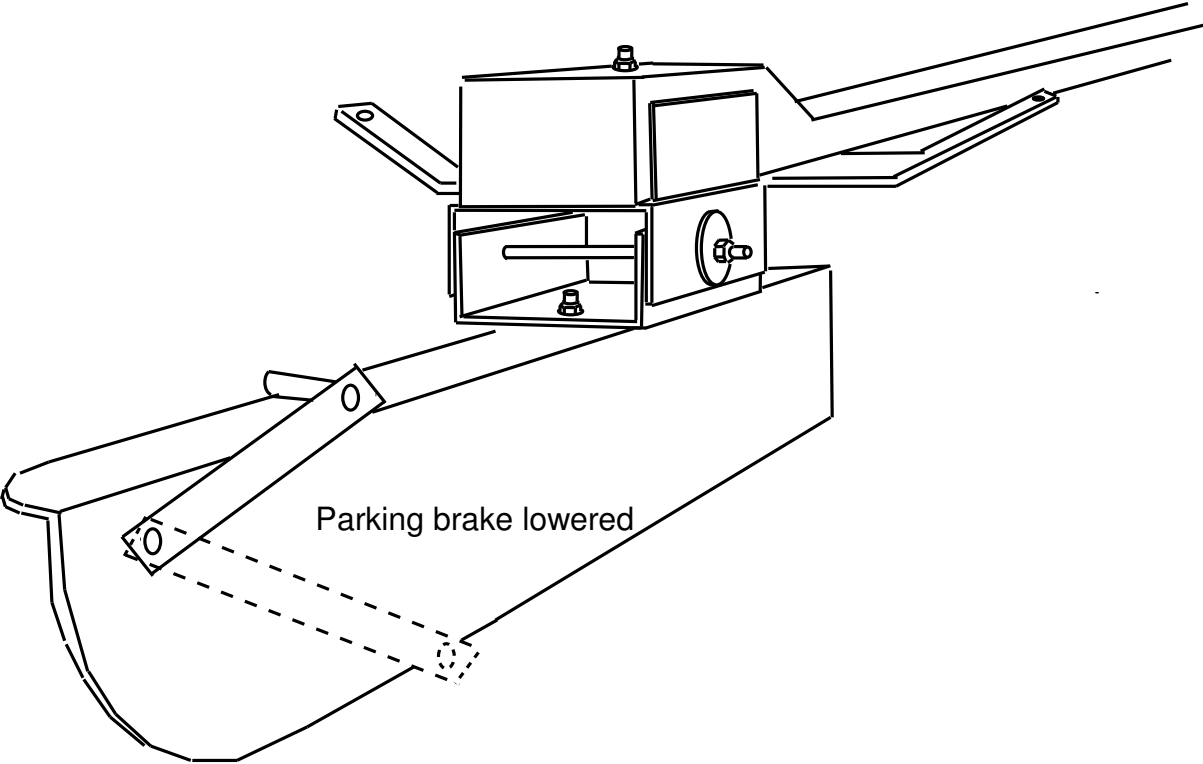


Delarna A och B går om-  
lott.  
Undre delen A skall sitta  
på utsidan av B.

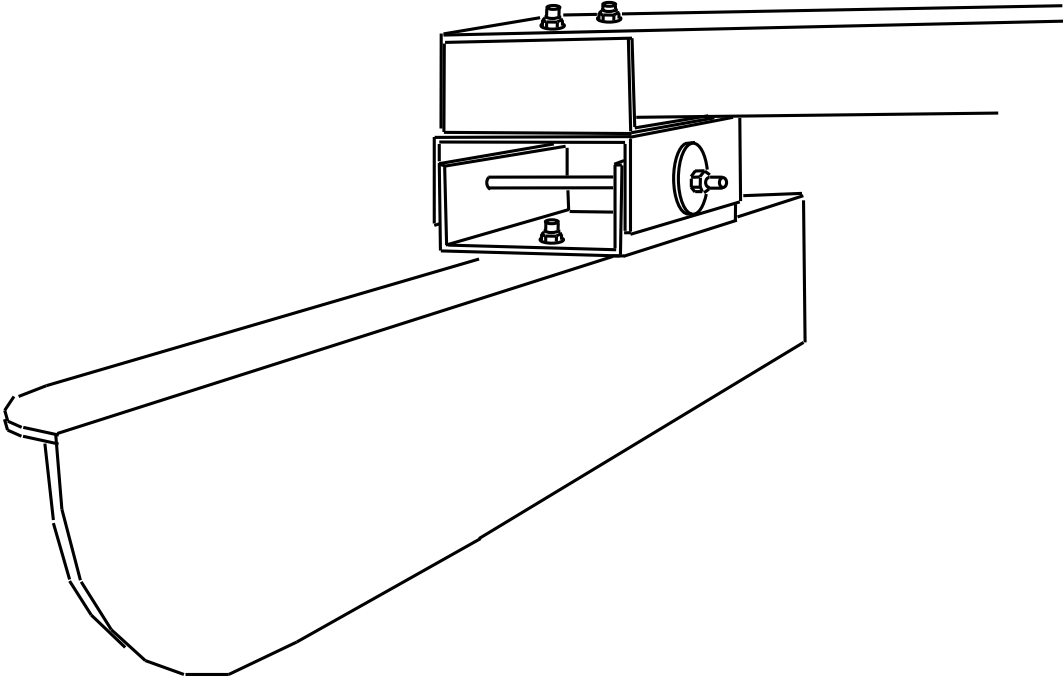
The parts A and B are  
overlapped.  
Part A from the outside.

The runner blade is over  
cracked  
5 degree

Front runner on springboard



Side runner



## **New steelwork 2012**

The runners are made of standard steel 600x130x5 to 6 mm where a angle 40 mm is pressed.

The runner can also be made of angle iron 50x100x 6mm and this is available as standard-steel.

Bolt holes is in this case where the through-bolt through the upper B and lower A parts of the backed makers. It rotates along the runner. Bolt holes from the stern 245mm side runner, 278mm steering runner.

Side chock-holder consists of three bended 4 mm plates, one part that grips the plank and keep the bolts that hold the next tray in place and two others overlapping each other in the up bended part.

The only dimension needed is the dimension of the runner-plank which has to fit in part C. We use 95x45 mm wood as the plank. How high the upturned edges are due to press tools in the press. 40mm would be good.

Important is the runner to rotate in the longitudinal direction of at least 10-20 degrees.

The runners must have a curve of 2mm to 400mm glide surface beneath the pivot point and an edge can either be ground to chisel edge outwards or 90 degree edge, 45 degrees from each side.

Runners must tilt 5 degrees toe in for it to hit the ice at a right angle when the plank bends down when sailing. A wedge is glued and screwed in the wooden ridge when right-angled steel is used.

Front runner chock-holder

The same upper and lower parts of the side chock-holder are used.

But another hole for the steering bolt must be made.

The steering bolt holds from underneath the wings on which track rods are attached, two ropes.

Note

We have not been able to real test the new steel-work on the ice.

We have to test more.

## **About safetyness.**

Certainly it can be dangerous sailing iceboats and that goes for most activities if you are ignorant of the danger, neglectful or careless.

If you prepare yourself so that; you know the danger, if you are attentive and take all necessary precaution measures, then you can avoid the danger.

- X** Never sail on unknown ices. Examine the ice. Ask! Telephone!
- X** Never sail alone. If you don't sail with other Isabella-sailors it is sufficient if someone watches you.
- X** Never sail without ice-prods, life-cord and get on your soft buoyancy jacket under the boiler-suit. It even makes you warm.

Certainly the Isabella can tip over but it goes slowly so your big, warm cap protects you. Remember, no fun is worth the price of an accident. It must be avoided at any price. Always! Good luck and see you on the ice!