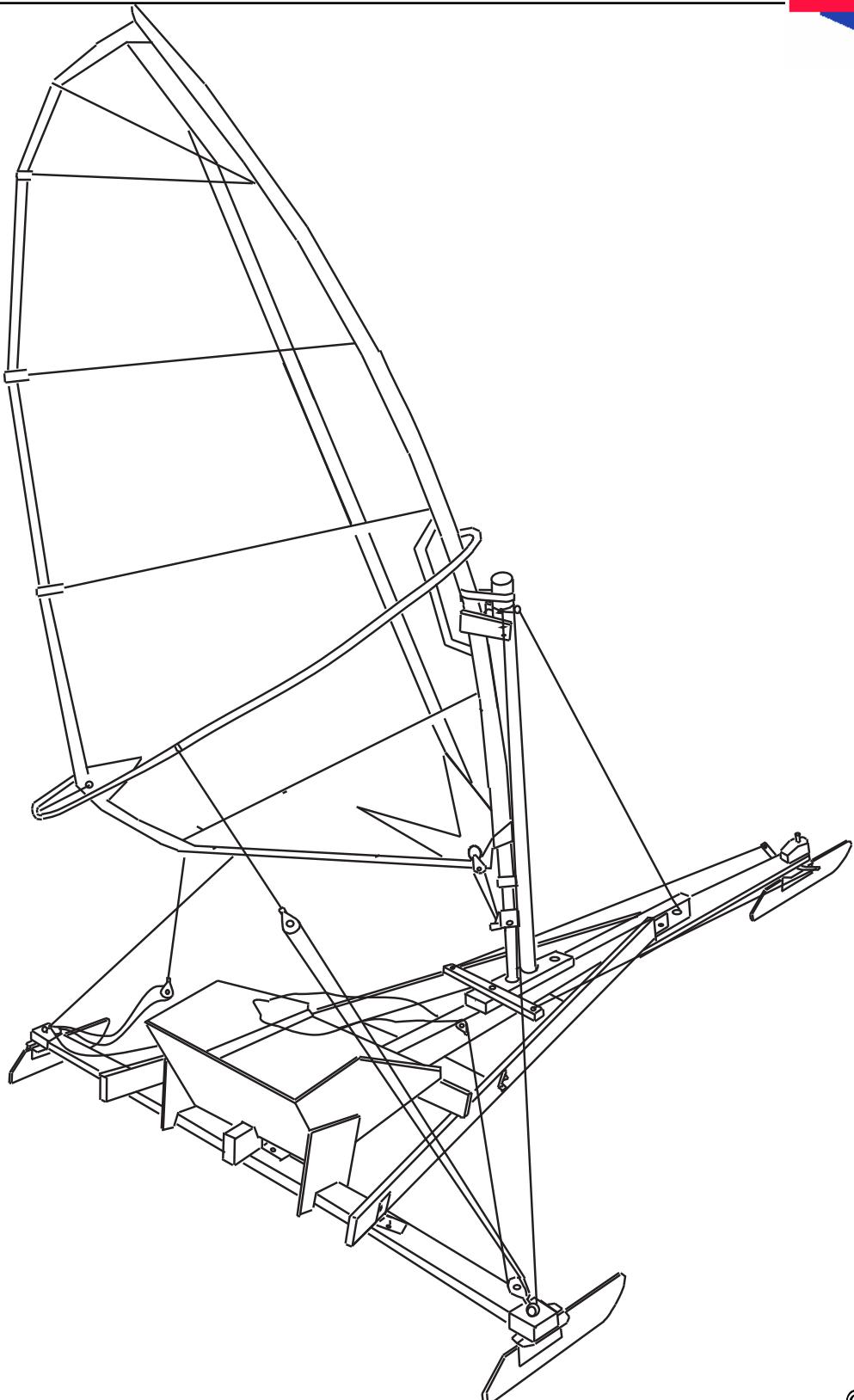


2018

# Isabella Classic

## Assembly directions



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## In general terms

### About measurements.

We are building the Isabella Iceboat according to the KISS-rule, Keep It Simply Stupid. The directions are only recommendations ; all measurements are consequently approximate and the yacht can be build 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 skiddering. 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. We have made our steelwork for these dimensions. These are available everywhere. You need 3000x45x95mm for the middle/centre-board, 2500x45x95mm for the runner-plank, 1300x23x125mm for the spring-board, 4200x23x95mm for the strut-boards. It is difficult to get good wood for the runner-plank 2500mm you need almost clean wood. If you cant get clean wood just glue two pieces 23x95x2500mm together. Use 500x40mm billets for the mast-extension, 1000x30mm billets for the handlebar. A handle for the handlebar. Cut the plank to its right dimension but do not cut the middle-bar before the yacht is finished. It is easy to shorten the wood but difficult to make it longer.

**The rig.** Nowadays we arrange a extra mast with a consol down and a gaff on top of it, 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. An other way of riging is when the main mast also stands on the mast foot on the middleboard, page1. For the rig and the steering we use Dyneemic 2002, 6mm thick. The sheet has to be bigger, 10mm. 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 9. 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 third ring I fasten at the end of the steering-wire (on the other is the S-hook ) and I stretch the steering in the same way.

### The runner.

The steel work is shown om page 10-13.

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 15. Look even at our web-site <http://www.isabella-iceboat.com/trim/trim.html>

There are many pictures of different kind 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. And then the spot where the sheet is fastened on the yacht in the stern has to be moved as in page 1. 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 marvelously thrilling your first race was.

**See you on the ice!**

## Buy

Steelparts:

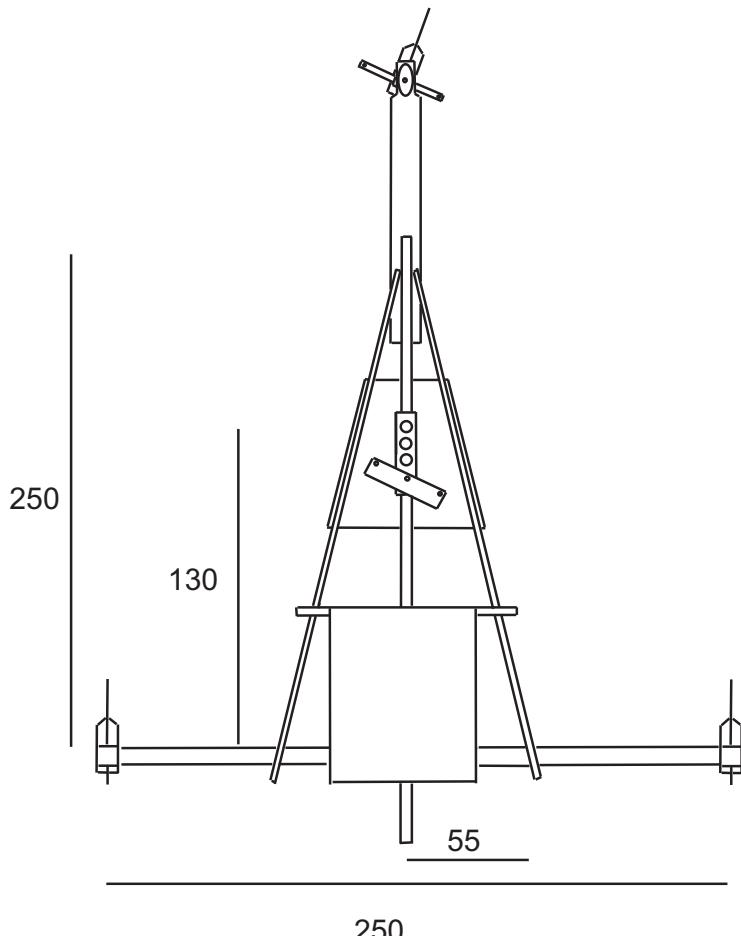
4 ordinary strong steel-angels

4 eccentric locker

2 strong hinges

2 125mm bolts

Description of a long spring-board  
Is on page 15

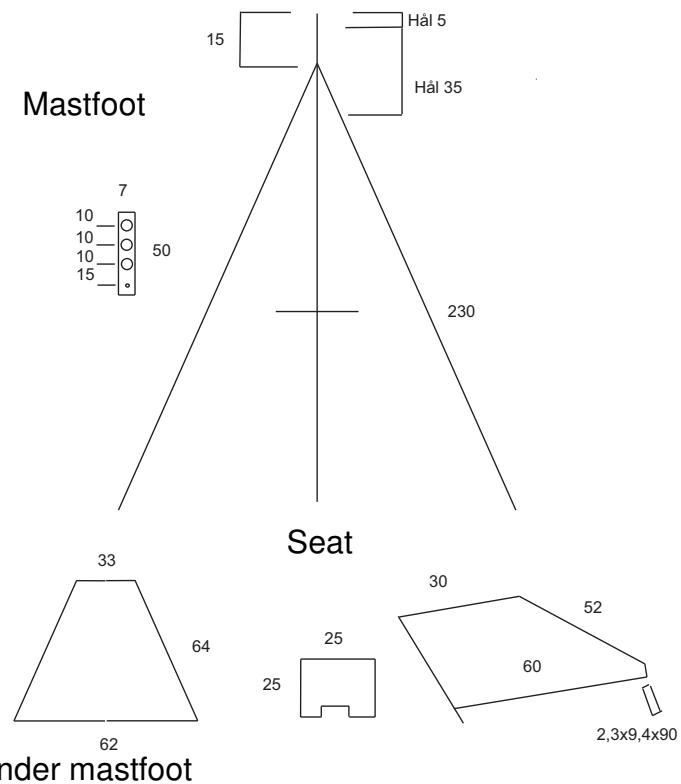


Measurements left in centimeter

The plywood under the mastfoot and footrest has to be strong , al least 12mm.

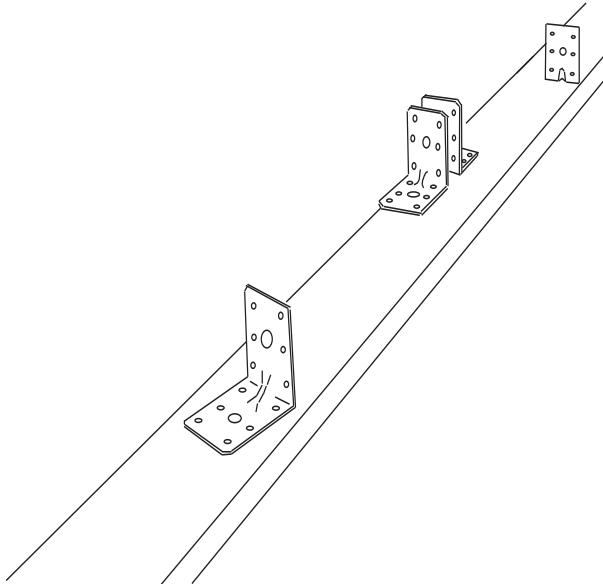
The wholes in the mast-foot are 55mm , 10mm spare room to the mast.

When the seat is 60cm broad you have space to carry a coffee thermos with you.

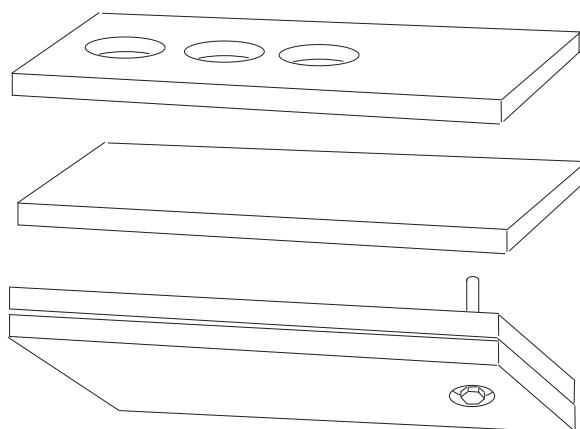


Under mastfoot

Planka med monterade byggvinklar

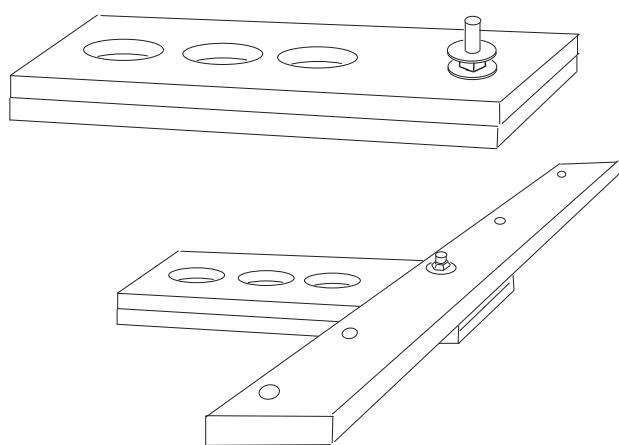


Shape the runner-plank to exact form (2500x45x95mm) and press the side chock on the ends of this beam.  
NOTE that the runners are bending inside, toe in, so that they will meet the ice in a right angle when the plank is bended down (50mm) due to your weight on the yacht.  
Put the steel-angels on the plank, two in the middle and one at each side for the strut boards.



Fix steering- and foot-prop assemble

Make a long mast-foot as shown left.  
Two boards 23mm thick glued together.  
Three 55mm wholes for the masts and  
8mm for the steering gear. There has to  
be at least 60mm wood aft of the 8mm  
bolt. It has to be strong when you push  
your feet at it. Important is that the large  
middle-whole is 1,3meter in front of the  
runner-plank.  
If the distance is too long the yacht runs  
down the wind.



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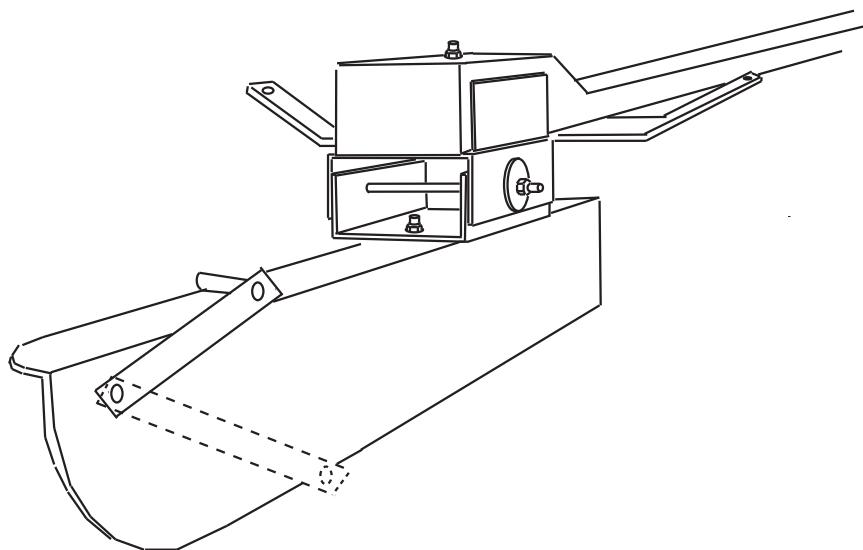
Drill two M8 holes for the (1300x23x125mm) spring-board right through the (3500x45x90mm) middle board in the stem. It is difficult to drill right-angled, but use thin drill at first and take help from an assistant. The first hole 100mm in and the next 300mm further in.

Note that the spring-board will increase the length of the yacht.

Put the middle plank in the right place between the angels on the runner –plank, sit down on the plank, put your legs forward and mark the heels on the middle plank.

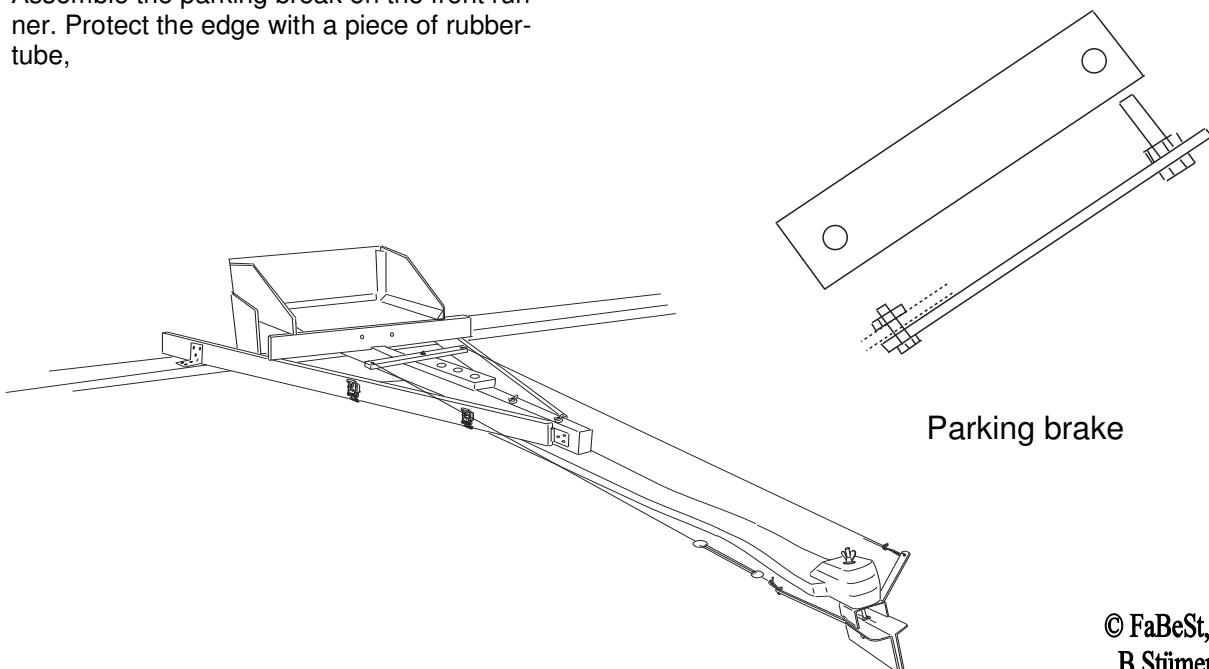
Make a steering-chock holder as shown left.

Note that the end is nar-



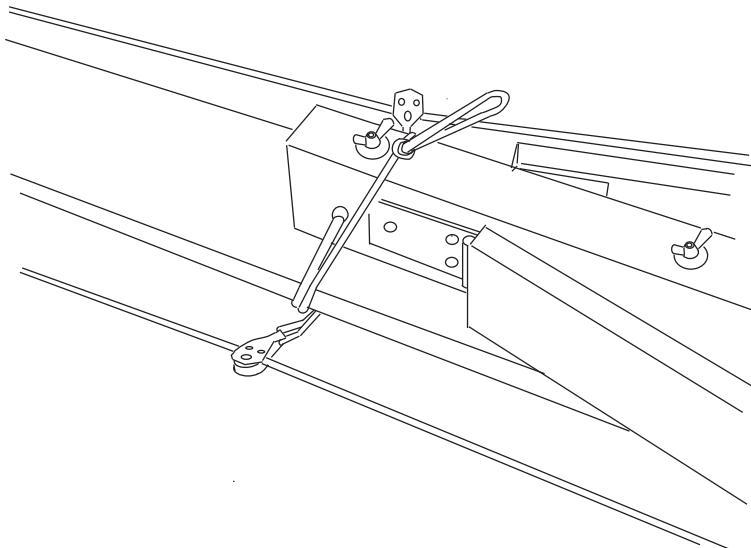
Press the aft end of the spring-board under the front of the board-board and make a mark through the holes you made under item 1. These corresponding holes are for to bolt the board under the hull/board-board. Press a 10mm piece of plywood in front of the first bolt and when you are tightening the bolt hard, the spring-board will point down and the spring will increase. At least 600mm sticks out but this distance must manage your weight. I have 900mm in front and my weight is over 100kg. Read about long spring boards at page 15.

Assemble the parking break on the front runner. Protect the edge with a piece of rubber-tube,

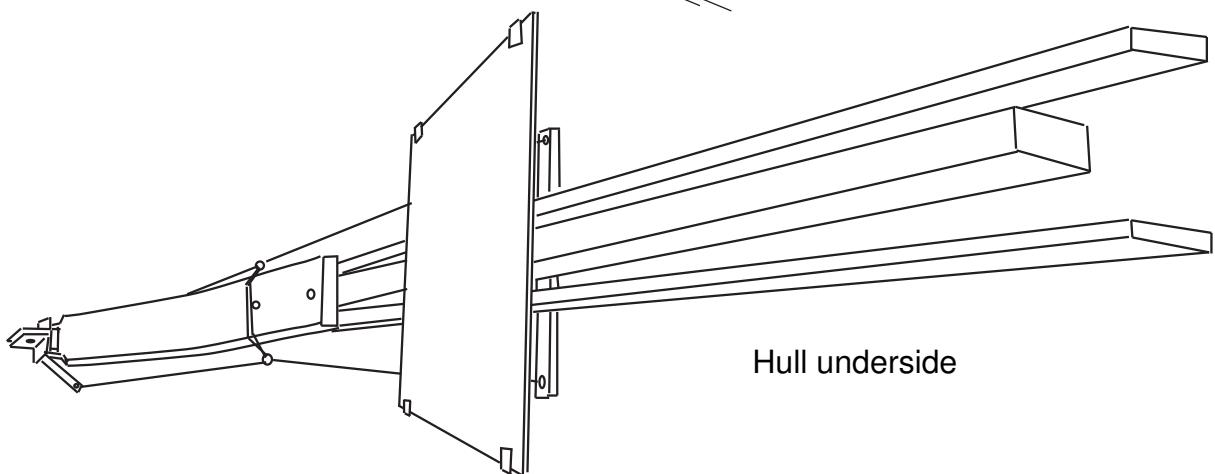


Parking brake

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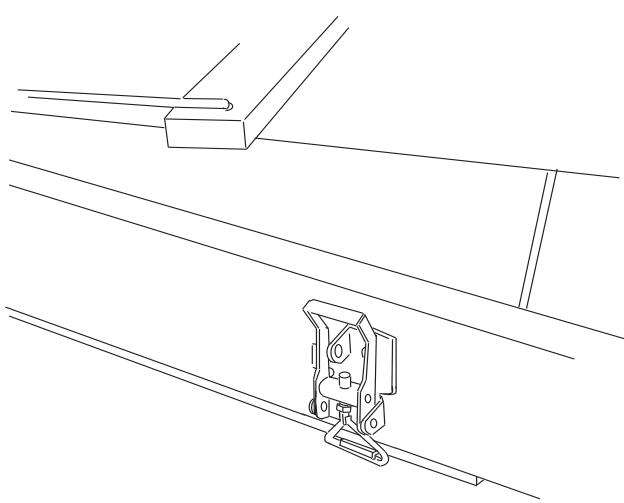


Use nylock nuts.



Hull underside

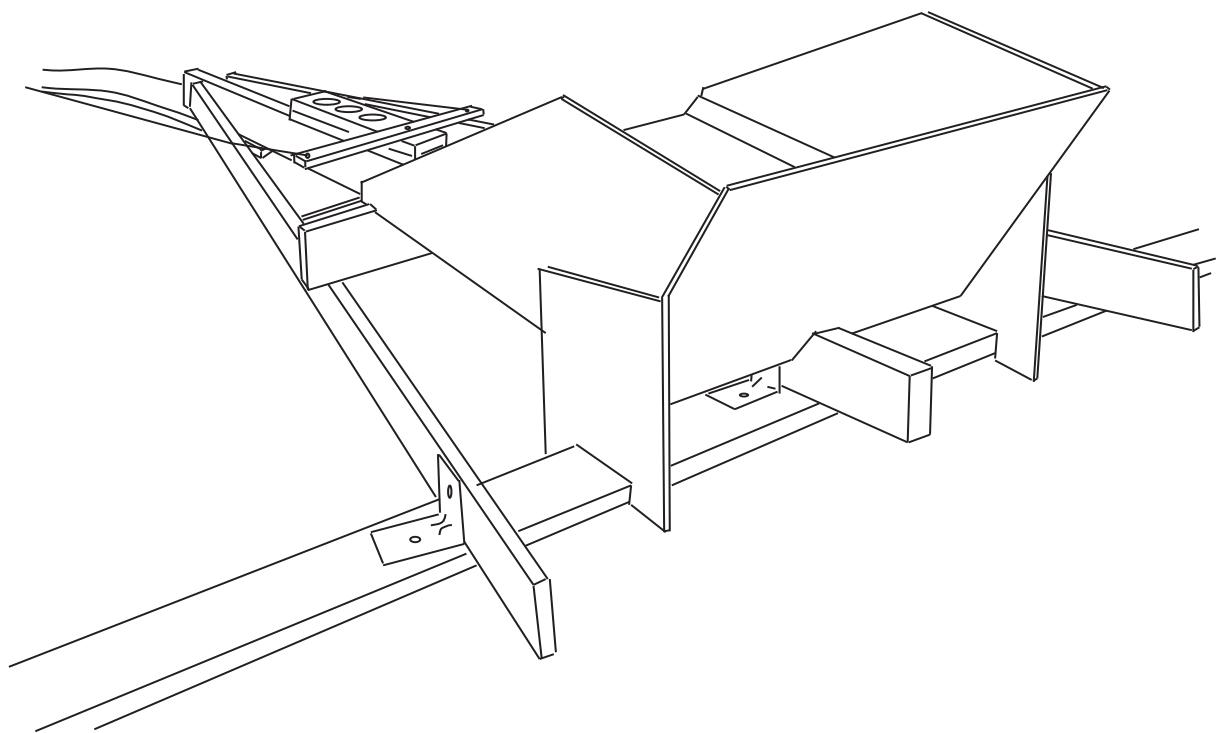
Cut the strut-board in two halves and put the 2 strong hinges similar on top of these boards as shown and fasten them 200mm in on the middle-board. The strutboard meets the runner-plan 55cm from the center against the angels. Mark and cut the 10mm plywood under 10cm behind the mark of your heels. Screw and glue this bottom on the underside. The figure shows the steering lines which two small blocks are lifting when the long spring-board is bending down.



Fasten the eccentric locker outside the strut-boards in front and aft the plywood bottom.

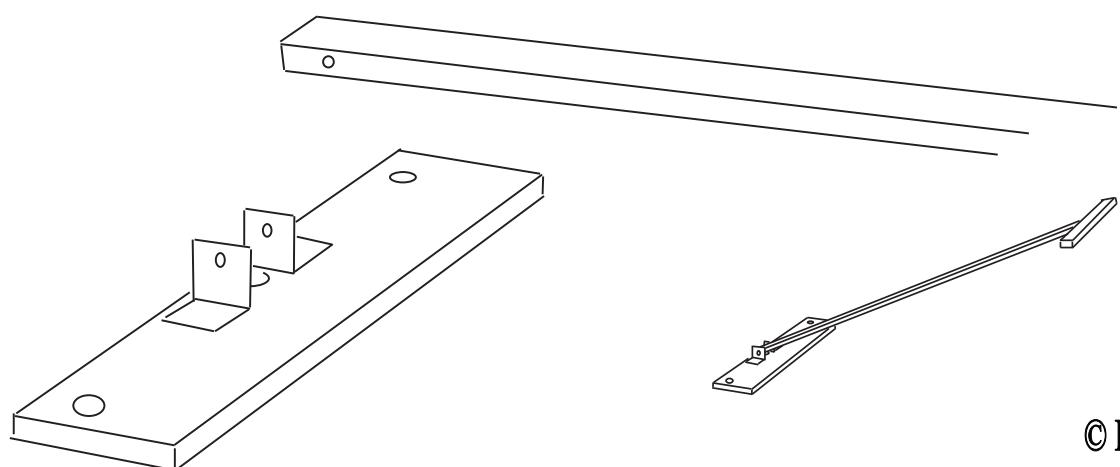
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Make the seat. 60x60cm is comfortable but in a more narrow one you sit firm. The board on the front reaches over the strut-boards, aft the sides are getting hold of the runner-plank. Tie the front of the seat to the middle –board.

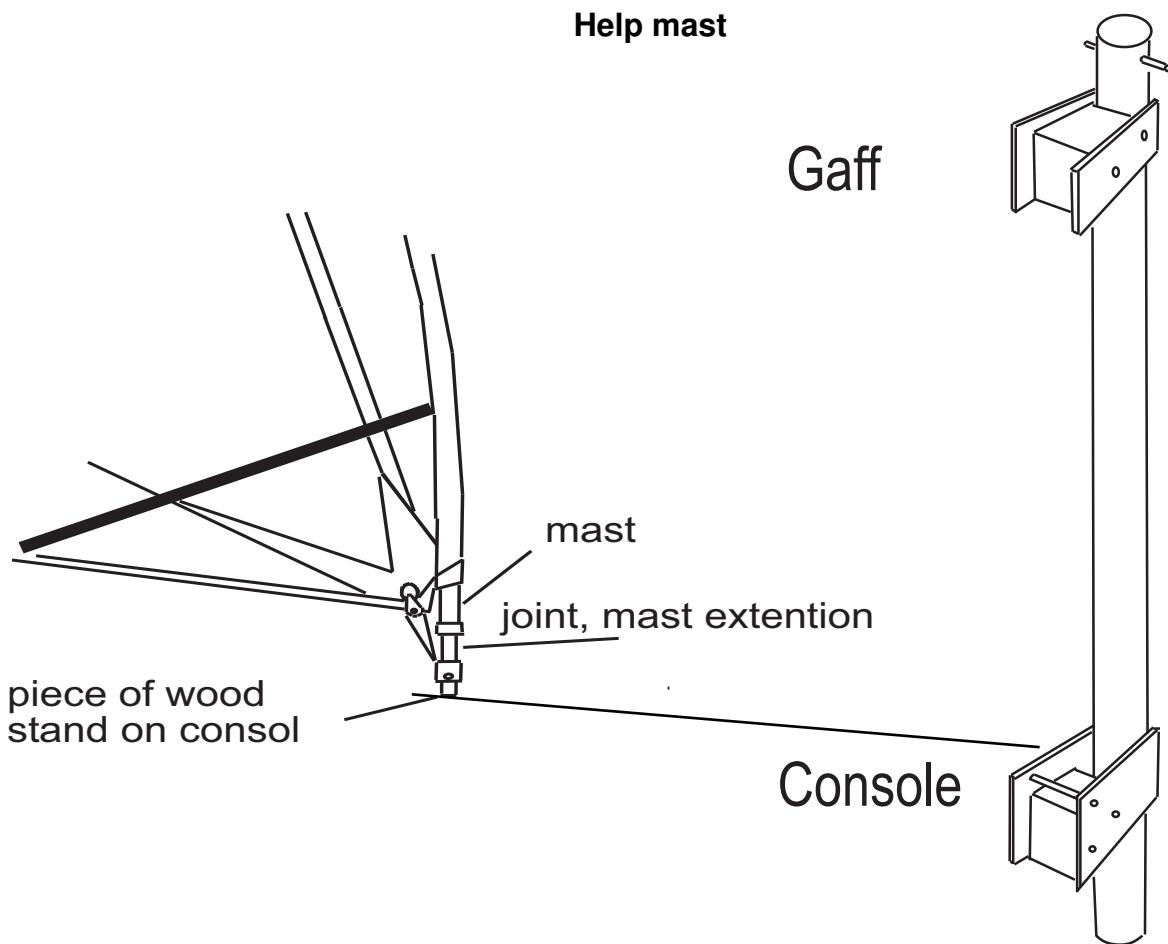


Steering- and foot-prop assemble

In the beginning it is safer to steer even with a steering lever which is easy to lift. This lever has to have a handle bar. Later when you are more skilled you steer only with your feet. Fix gearing if necessary when moving the steering-lines more to the centre of the foot-prop. This makes steering calmly.



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Fix a help mast. Take a billet 1700mm( millimeter) long and 40-45mm thick. Make a consol, a support for the main mast. Take plywood for the sides and a block as bottom. Per-vading 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. 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 9.

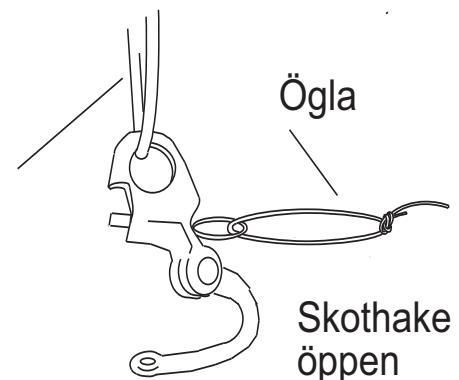
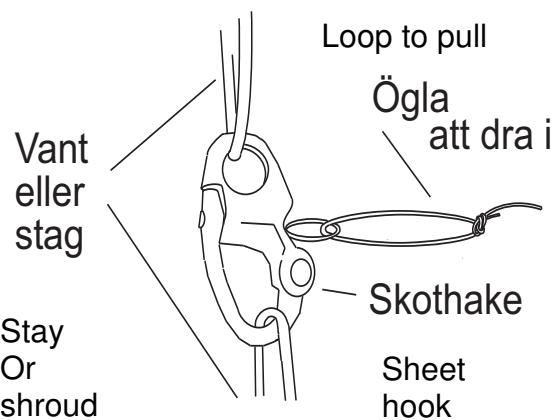
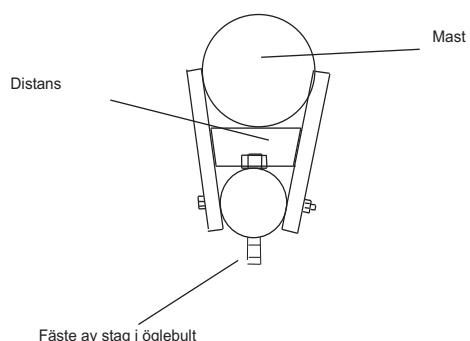
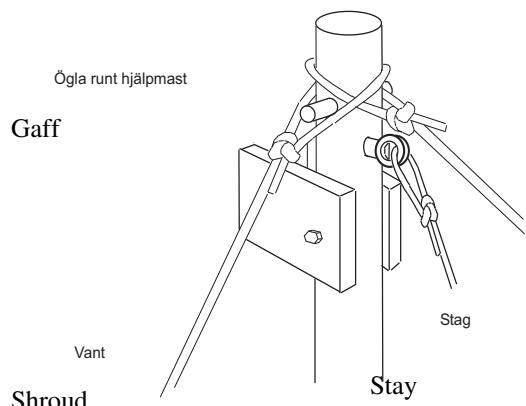
Fix the sail, boom and mast. There are many kinds of windsurfing-sails and many Isabella sailor are sheeting to blocks on the side shock-holder than to the middle of the yacht. Page 1 Note that to sail a iceboat is to pull the sheet hard and to tack even down wind.

Make a mast-lengthener from a 45mm billet putting out 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.

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## Riggning av hjälpmasten

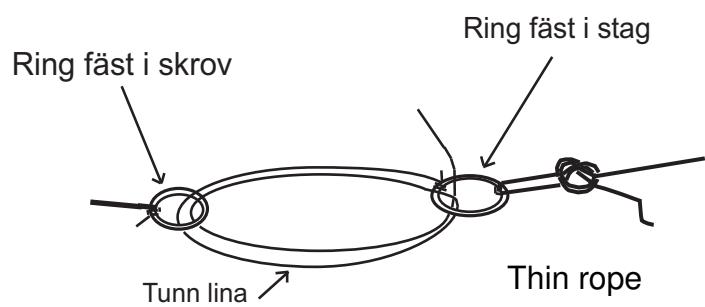
I varje slag glider hjälpmasten i vantens öglor och staget håller riggen i vinden.



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

## Spännare

tighten a rope

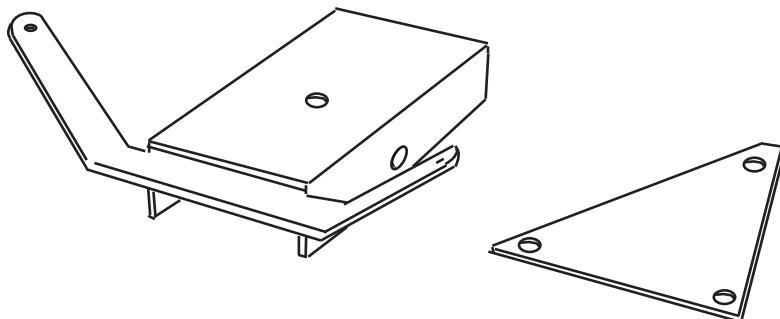


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**Nya beslag**      **New steel-work**

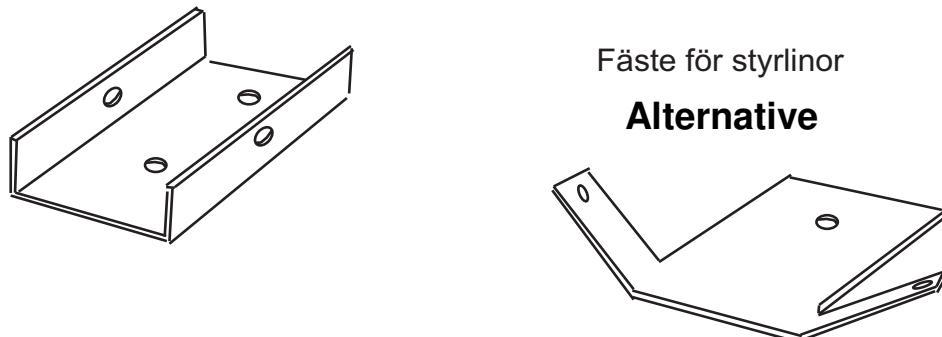
Förmedhållare

**Front - chock**

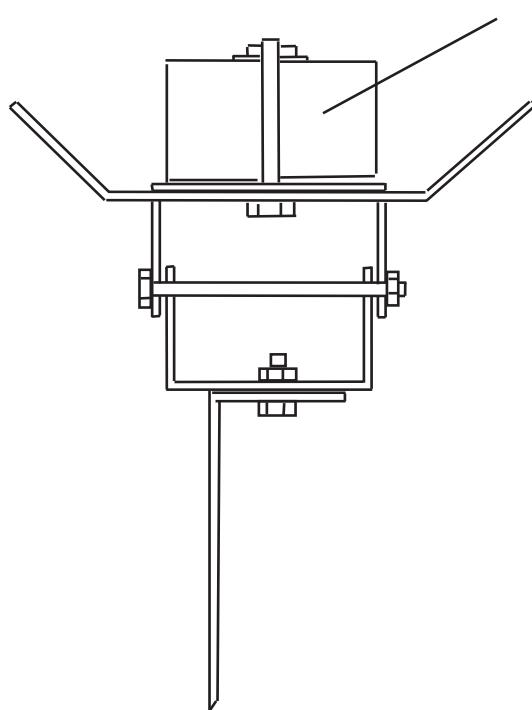


Fäste för styrlinor

**Alternative**

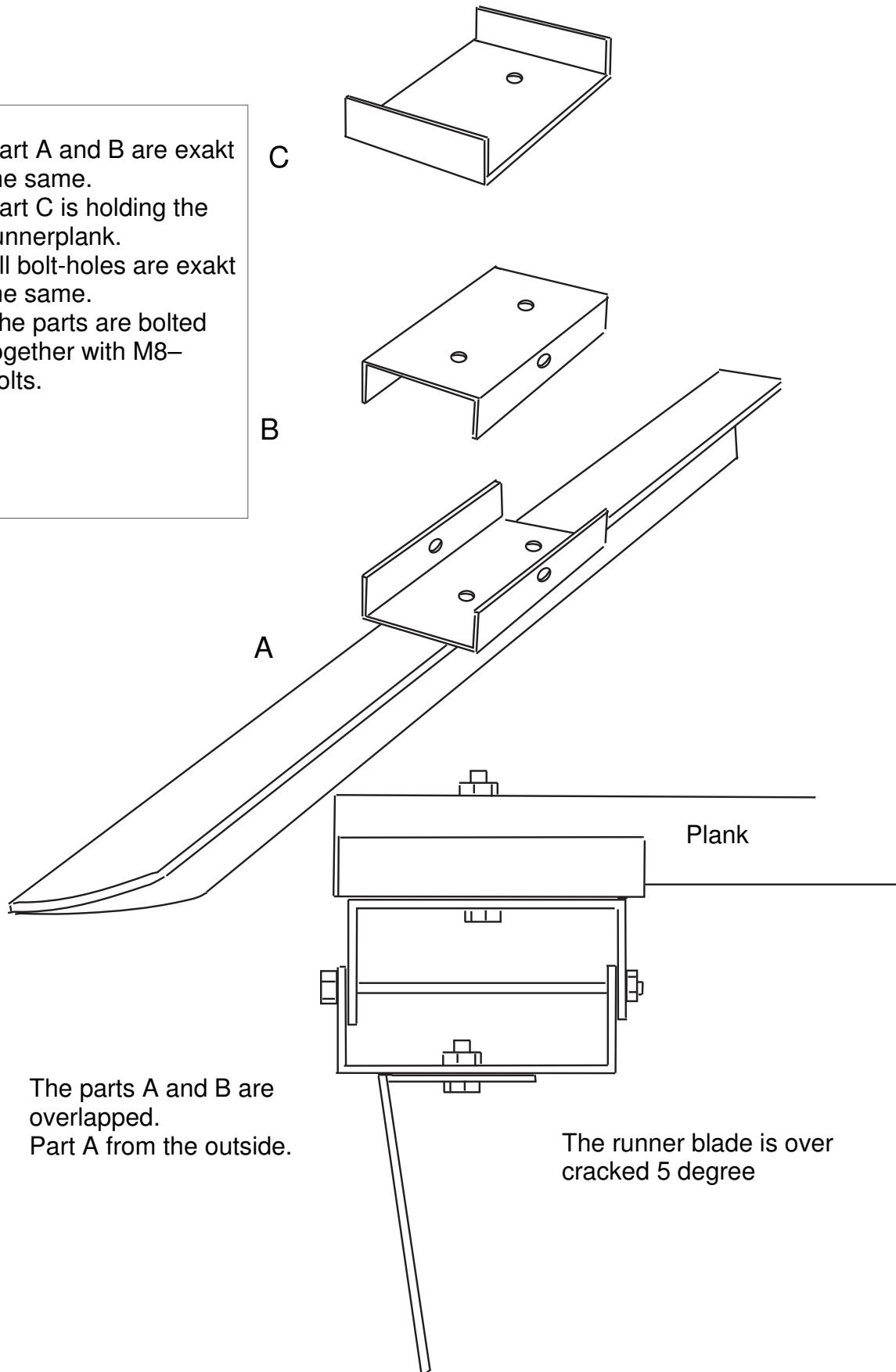


Nosbräda

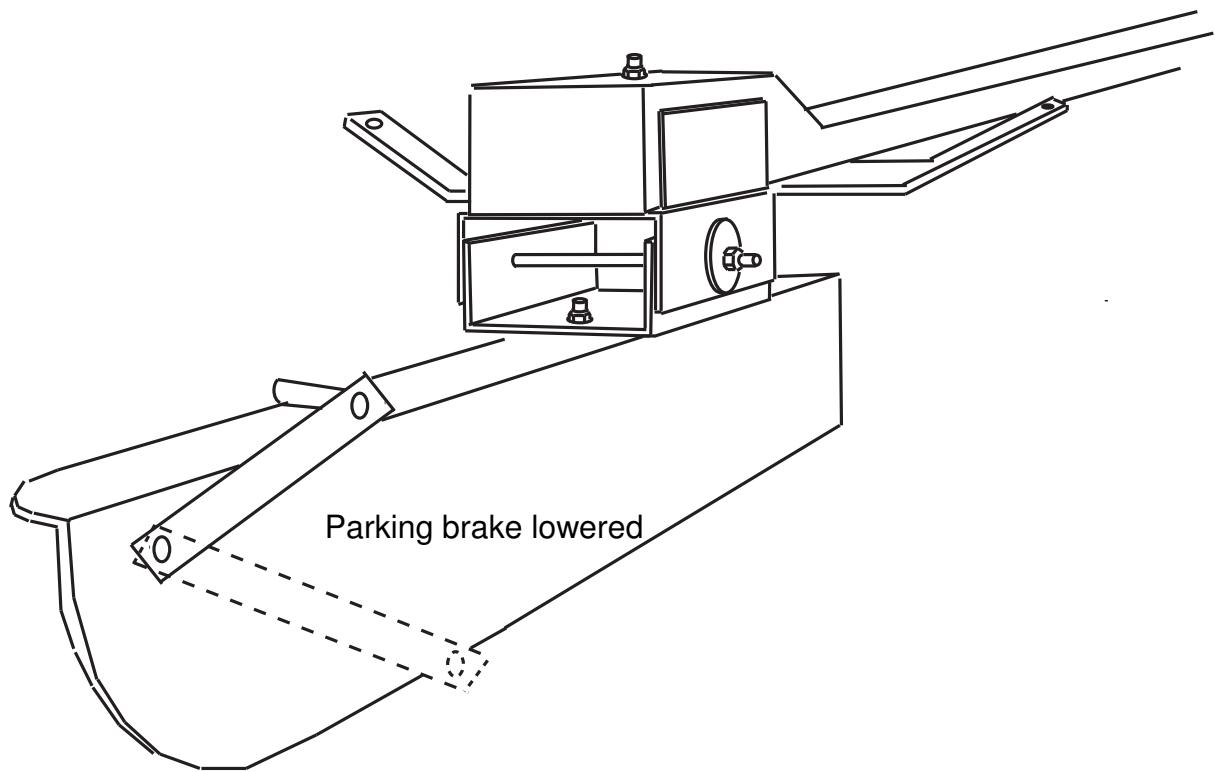


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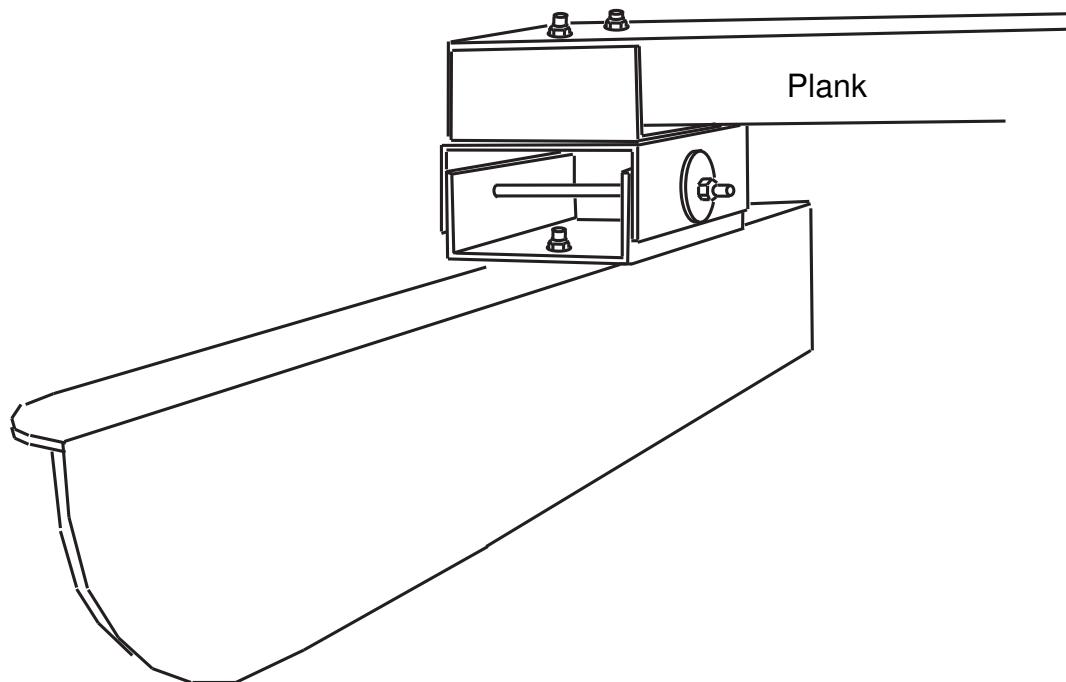
Part A and B are exakt the same.  
Part C is holding the runnerplank.  
All bolt-holes are exakt the same.  
The parts are bolted together with M8– bolts.



Front runner whith parking brake



Side runner



# Medar Runner

Subject dimensions, etc.

Side runner 130X600X6 mm

Front runner 130X600X4 mm

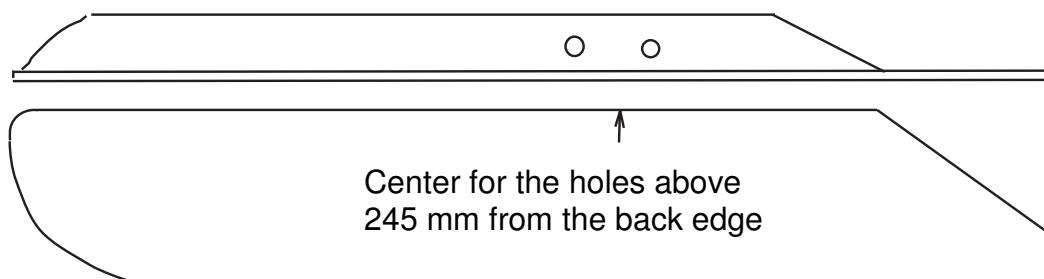
Front runner



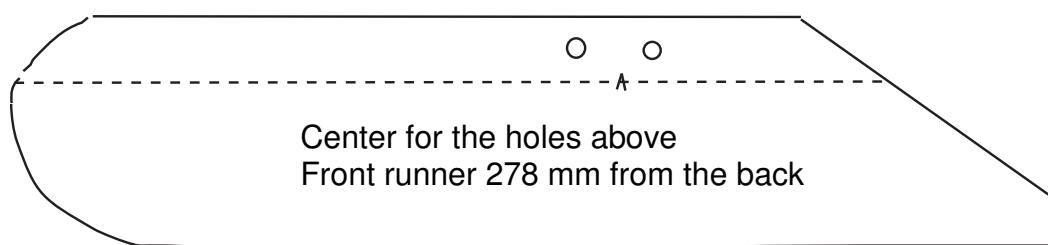
Side runner right left



chisel grinding  
45 degrees



The curve that lies against the ice is at least 400 mm  
build 2-3 mm down straight below the center of the holes above



## New steelwork 2018

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.

## Paralellism

If the metal parts are manufactured with precise angles and holes, the runners will be perpendicular to the plank and thus parallel.

Even so, the runners may need to be adjusted to be parallel.

Adjustment can easily be done by drilling one of the aft holes one in Part A attached to the runner, 8.5 mm.

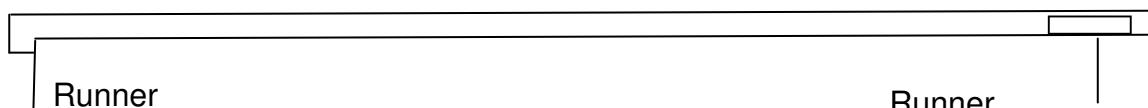
NOTE.

Only one of the aft holes in Part A.

Once the runners have been fitted with the planks and the bolts have been tightened, the bolt in the 8.5 mm hole is slightly loosened and the runner can be tapped to parallelism. Then the bolt is tightened.

Measure board

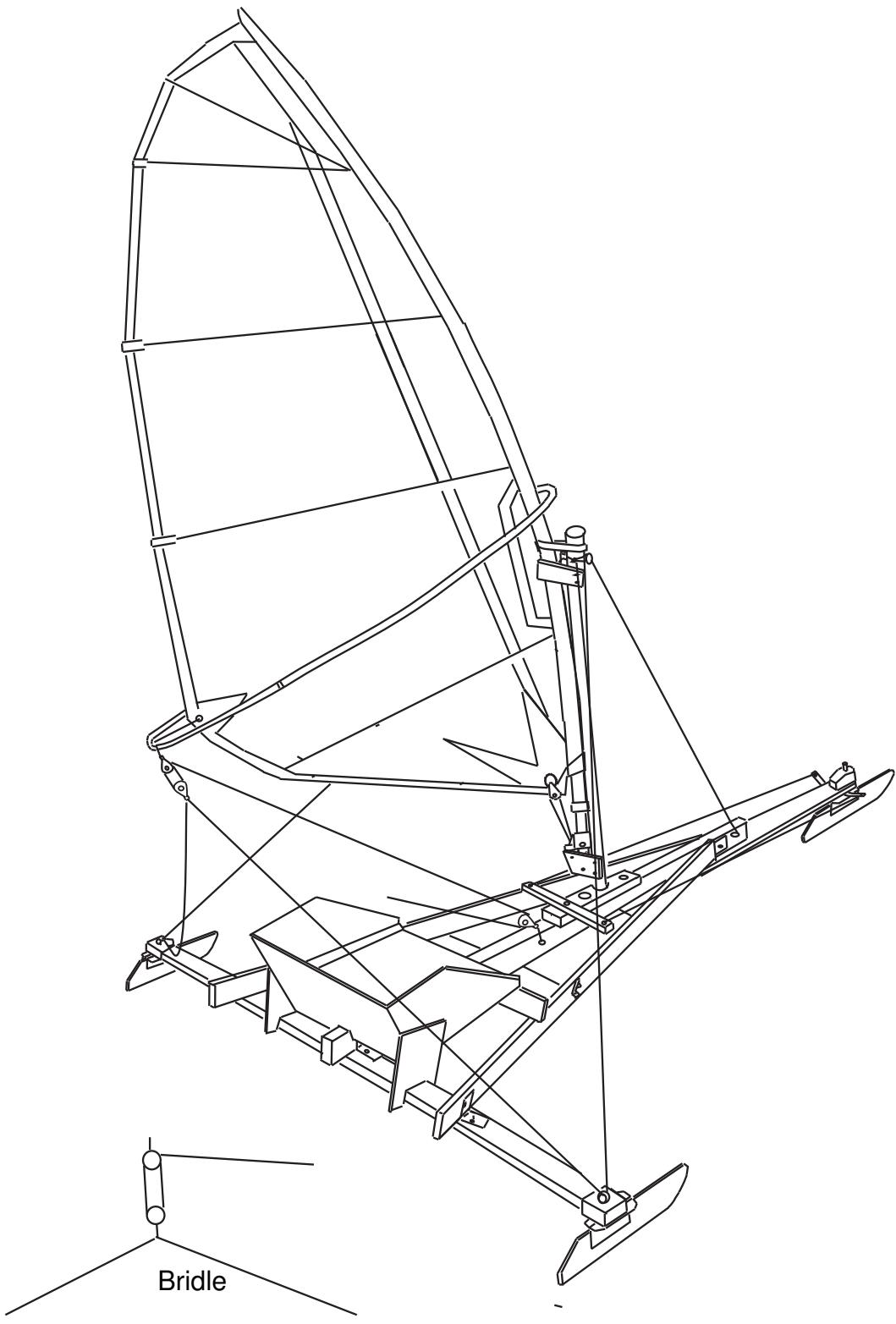
Tape to mark the edge



Runner

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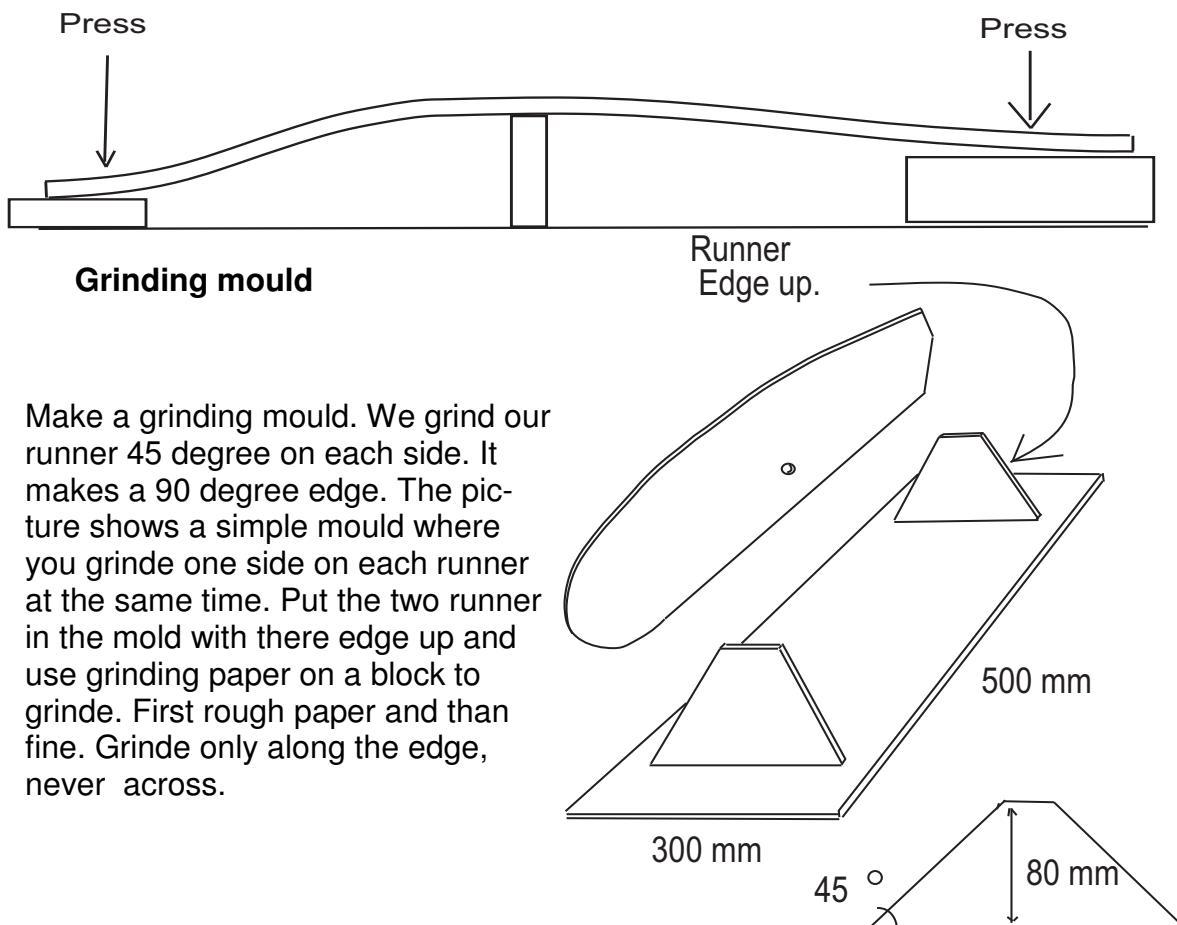
To sheet home can be done as on page 1 through blocks on the ends of the runner plank or as shown below. The tackle blocks get into touch with each other when pulled hard so the mast can not be broken. Here you can not sheet home over the centre –line to windward



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## Operating instructions and tips.

Take care of your yacht. Keep her well and dry during the time you don't use her but not indoors. A special seat which can be made broader for two person is seen below. I like long springboards. I make mine by gluing together two 12x125x200cm boards with 50mm spring.



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 grind one side on each runner at the same time. Put the two runner in the mold with their edge up and use grinding paper on a block to grind. First rough paper and then fine. Grind only along the edge, never across.

### 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!

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## To sheet home and to sharpen the runner.

There are many forms of windsurfing-sails. The old ones with long booms are better sheeted home to the center board which is long extended aft.

The modern sails have often shorter booms and are to be sheeted home higher up quite near the top of the seat-back. The best variant is to sheet out to the chock holders on the plank. Page 1 shows the tackle.

## Putting the yacht together.

1. Screw on the runners
2. Lay down the runner-plank.
3. Put on the board-board in place in the cross.
4. Fix the strut-board
5. Arrange the sail, boom and mast. Fix the sail to the mast and tie it to the mast-lengthener.
6. Mount the rigging assemble.
7. Fasten the shrouds.
8. Raise the mast to the gaff on top of the extra mast. Fasten with a strap.
9. Fix the pulley-rope.

and **Sail !**

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