NORTH SAILS

One-Design

Optimist Tuning Guide

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One of the most important items, in terms of speed, for any sailing vessel, are the shape and properties of the appendages (foils and sails), since it moves due to a combination of aerodynamic and hydrodynamic forces onto these appendages. Therefore, good care must be taken on, sails, dagger board and rudder blade in the optimist class. Centerboard and Rudders are now One Design and can only come from licensed manufacturers. However sails can still come from any source as long as they conform to the class rules and this is where you can get an advantage over your competition. You must have a well designed and built sail to suit you.

Sail material is also restricted by the Class Rules, but an important allowance in the sail shape lets the designer improve the product in terms of speed, pointing angle, power, and weight of the sailor and so on. The Optimist sailor can also trim the sail in order to change the factors above depending on the weather conditions. This guide has been put together to help you get the best out of your North Sails Optimist sail.

Mast Rake

Below is a table which has suitable sail and mast rake combinations according to weight. These may vary slightly depending on the conditions and skippers skill level but will serve as a good starting point:

Sailor Weight (Kgs)	Sail Choice	Mast Rake (Cm's)
Less Than 35 Kgs	L-08	27.70-27.99
36-44kgs	M-08	28.00-28.19
45 + Kgs	H-08	28.20 - 28.60

Remember this is only a guide and all mast lengths vary slightly which will affect your rake. Also make sure your mast is a firm fit in the collar and there is no sideways movement so energy is lost, fore and aft movement is good because it helps rake the mast the correct way to improve performance.

Once you have found a rake you like mark the mast step so you can repeat the setting and also check to see it has not moved. Some of the good sailors have two rake settings a heavy and a light setting which I think is a great idea because of the increased mainsheet tension you need to run in the breeze.

Also talk to your coach about the type of spars that will best suit you. As you grow you should get stiffer spars to power you up. Also consider spar weights when deciding what spars to get.

There is a continuing debate about what is the best system to have, a cup or a pin. I think it's up to personal preference but I think it's important that the whole rig spins easily in unison so sprit tension does not alter from tack to tack. McLube or a similar type of spray will help the mast rotate.

The purpose of changing the mast rake is to change the position or the Center of Effort of the sail. Moving the mast aft, the Center of Effort moves aft and down; moving the mast forward, the Center of Effort will move forward and up. The Center of Effort is important in relation with the Center of Lateral Resistance of the hull and the appendages under the water. So we are talking about the horizontal distance between the Center of Effort and the Center of Lateral Resistance, which can also be changed by moving the position of the centerboard and/or the design of the rudder.

Moving the centre of effort forward will release the load on the rudder and make the boat sail lower and faster, visa versa if the rig is moved in the opposite direction.

SPRIT

It is common to think that the sail must show no creases and with the peak tension we can get rid of some of the most important ones...WRONG. The main function of the peak is to change the leech tension and more often than not it is not so bad to have a small crease on the sail in order to open the leech and allow a faster air flow. I have seen plenty of sails with creases from head to clew beat sails with no creases given the correct conditions, i.e. light and heavy. The leech tension also relates to the kicking strap.

Vang (KICKER)

As with the peak, the kicker also controls the leech tension, especially downwind. The luff tension (preventer) needs to be set before sprit and kicker tension are set else the boom jaws just slide down the mast altering the vang tension.

I set the vang in the Optimist principally for downwind, making sure that the leech of the sail will not be too open when the boom and mainsheet are eased, making the boat uncontrollable. I also ensure that I am not over vanged hooking the leech upwind and therefore stalling the flow of air off the sail.

The vang in the optimist does not get enough angle on it due to where the fittings need to be to comply with the rule. Consequently you need have very strong fittings because the loads are very high in the breeze.

MAIN SHEET

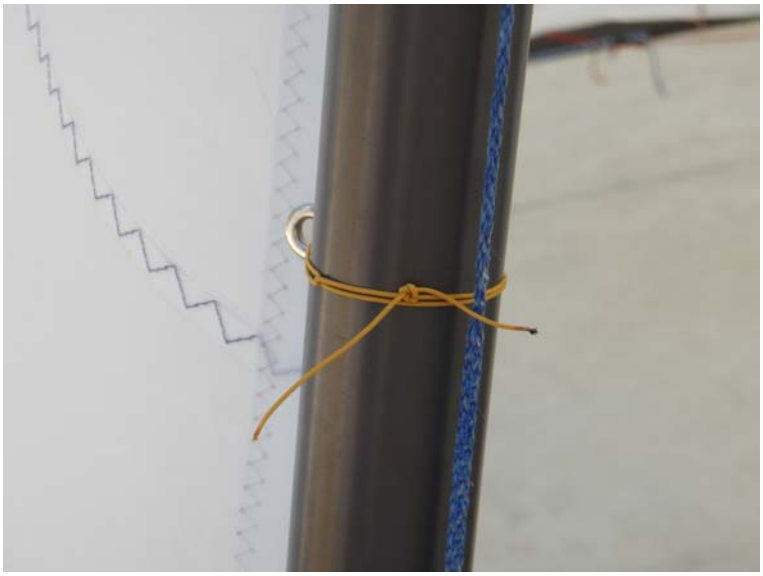
If you are smaller (under 40kg's) I think it is definitely worth your time to add another purchase to your mainsheet system. Also if you are small you can increase the diameter of your mainsheet so you find it easier to hold on to. Some people have different mainsheets for different wind conditions. Remember to mark your mainsheet to have a reference point to repeat fast settings, you can also mark where perpendicular is on your mainsheet to help you with downwind settings.

Most mainsheet systems come with a small strop, this serves to purposes; the first to reduce the amount of mainsheet you need to pull in at marks. The other is to get the mainsheet closer to centre line without having as much tension which will help stop the leech hooking. Most people don't realize this length is critical, the basic principle is longer is better in light winds and visa versa. Also make sure this connects to the boom bridle above the back of the centerboard case, helping the skipper stay forward in tacks. Because you do not need to be as far forwards in the boat during heavy airs tacks some people have multiple attachment points which is a good idea because having the attachment point directly above the blocks reduces load also in the breeze.

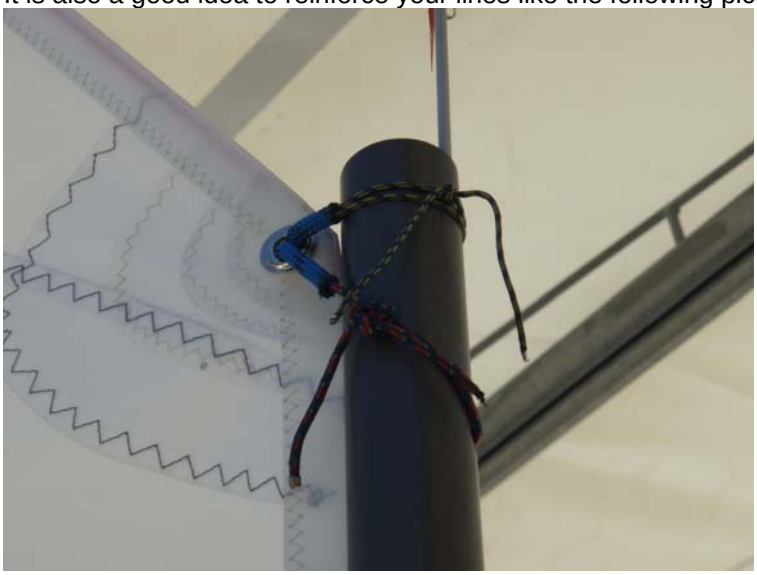
SAIL TIES

Their mission is to keep the sail tied to the mast at a certain distance, and this distance is very important in order to get the most out of your sail. Remember that due to the Class Rules this distance shall not exceed 10mm.

Use good spectra ties so they don't stretch and remember to really pull the knot tight once you have found where you want it, the spectra won't stretch but your knot will if it's not tied correctly!



It is also a good idea to reinforce your lines like the following picture to prevent chafe.



In very light wind and flat water, the mast does not bend at all; therefore we could point higher by making a small adjustment to the luff. In this case, loosen the top and the bottom sail ties up to 8mm, keep the two middle sail ties as tight as possible (but still allowing the sail to change sides freely when tacking, l mm distance from mast is recommended) making sure that the change in distance from top to middle and from middle to bottom is a gradual blended curve.

In medium breezes I recommend having all the ties 1mm from the mast.

If it is very windy and the mast bends a lot, it might happen that when your mast bends it shows a curve bigger than the luff curve of the sail. To avoid this we must loosen the middle sail ties to be about 4mm from the mast and tighten the top and bottom ties to about 1mm. Do not forget to make the change in distance gradual

If you have any further questions about any of the information above or your Optimist please don't hesitate to Derek or myself!

Good sailing and enjoy your new North Sail.

Andrew Wills & Derek Scott

50 years of FAST
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