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Tuning Guide - Optimist

Introduction

This tuning guide has been designed to help you get the best out of your North Optimist sail, it is written by Rob Wilson of North Sails One Design in the UK.

Setting up a great sail well means that you are going to be very fast! The Optimist class rules allow a certain amount of tolerance in the design of the sail, which means that the sail designer can alter the shape of the sail to suit the sailor weight. North Sails provide three radial sail designs to suit; light sailors the L 08, medium sailors the M 08 and heavy sailors the H 08. There are also two cross cut designs for the; light sailors the XL 08 and the heavy sailors the XH 08. Radial sails allow better orientation of the cloth along the load lines than cross cut sails, which means that they are slightly firmer and hold their shape better, potentially giving slightly more speed. However cross cut sails are generally a little easier to set up because of the give in the cloth. Ultimately both sails are very fast given the right set up and trim, it is a matter of personal preference which you choose. The World Championship winning sail, an H 08, is a radial design.

Which Sail to Choose

Weight	Sail	Rake-inches	Rake-cm
< 35kg	L08,XL08	109-110	277-280
35-43kg	M08	110-111	280-282
44kg+	H08	111-112,5	282-286

Onshore Set-Up

Onshore set the sail up as close as possible for the expected conditions of the day, then less adjustment will be necessary on the water. You can then focus on sailing the boat fast and winning races.

Sail Ties

Getting the sail ties right is very important, especially on the mast. If one tie is too tight compared to the others it creates a hard point on the sail and upsets the natural luff curve that is built into the sail. Make sure the ties are tight so that they do not slip, and then tie a half hitch around either side of the reef knot to ensure it does not come loose.

Mast ties

As a start, set the mast ties so that there is a 1mm gap between the front edge of the sail and the mast. Make sure that the top tie is tight, as there is a lot of tension here pulling the sail from the mast with the sprit. If it is too loose there will be a tension line running from the sail tie below it (see figure 1 - head tie is too loose - rectify by tensioning the line from the second tie). The main tie at the bottom of the mast can be eased about 5mm to allow the tack of the sail to sit cleanly above the boom. The diagonal tie at the top of the mast is very important and will control where your sail is on the black bands. In light to medium winds set the tie so that the sail is towards the top of the black bands. In strong winds, especially if you are light, set the sail so it is towards the bottom of the black band. There are two schools of thought as to whether the sail ties should be adjusted on the mast. The first and easiest is to leave the mast ties for all conditions. In light winds the mast does not bend therefore keeping the sail ties equally tight will make the sail slightly fuller in the luff and easier to steer to. In medium winds the mast will bend and the luff curve on the sail will match the mast bend. In stronger winds the mast will bend slightly more than the luff curve on the sail, however this is not a problem as it will be necessary to lose power anyway. The other theory is that the sail ties should be eased slightly at the top and bottom of the mast in light wind to compensate for the mast not bending. About 8mm then gradually tighter and tighter to a 1mm gap in the middle. In medium wind the ties should be tied evenly which will match the luff curve to the mast bend. In stronger winds, especially for heavier sailors, the mast will bend more than the luff curve, therefore the top and bottom of the mast should be tied tight and the middle eased about 4mm. Personally I favor the first option, however give each method a try and see what you prefer.

Boom ties

Tie the boom ties so that there is an 8 mm gap all the way along the foot, remember that the ties cannot be looser than 10mm. At either end of the boom tie the ties tight in a breeze (1mm gap) and slightly more eased in light wind (4mm gap).

Mast Rake

The recommended mast rakes for different sailor weights are given in the table



Fig.1 Head tie too loose

The recommended mast rakes for different sailor weights are given in the table above. These are designed as a starting point as there will be a slight variation between different boats and masts. Pull the mast back (without bending) when measuring the mast rake as this will be the position the mast will be in when sailing upwind. Notice there is a certain amount of movement fore and aft which is good as it allows the mast to rake forward slightly for downwind. Make sure the mast is tight sideways, or power from the rig will be lost. Raking the mast forward moves the centre of effort forward and very slightly higher, meaning there is less feeling on the rudder and there is more power. Going forward also means that you sheet down the leech more so you have to be careful in light winds not to close the leech. Raking the mast aft gives more feeling in the rudder and reduces power slightly. In the old days Optimist sailors used to rake back to 107 inches in strong wind and there was a huge increase in weather helm, especially on the reaches. Set your mast rake to the guide and try a little further forward (1 inch) and aft. Find what suits you and put a mark on the mast foot so that the setting can easily be reproduced. Once you get more confident with your sail you may want to try raking slightly forward (1 inch) when you are powered up, sitting on the side just beginning to hike, this will give you a little more power and boat speed when you really need it.

Mast

There are a variety of masts to choose from. Generally the heavier you are, the stiffer the mast should be and vice versa. McLube the mast so that the ties rotate freely and do not stick.

Cup or Pin

There are two options for the mast foot, the cup or pin. This is a matter of personal preference, the pin probably has slightly less friction. Whichever option you go for make sure that the mast can rotate freely and that there is no sand in the system, McLube this area to reduce friction.

Boom

Skinny boom or fat boom? A more bendy boom will flatten the base of the sail, however only if the outhaul is pulled tighter accounting for the bend that will occur and the effective shortening of the boom. Heavier sailors should go for a stiffer boom, and lighter sailors for a more bendy boom.

Preventer (luff tension)

The luff tension needs to be set to less in light winds (more twists) and tighter as the wind increases (less twists). In light winds when sailing the luff tension should be only just tighter than the creases made visible by the mast ties. As you get to sitting on the side beginning to hike out take more twists out, up to maximum tension in the breeze. As a guide three twists in the light to no twists in the breeze (see figures 2 & 3).

Kicker

In light and medium winds the leech tension on the main will mainly come from the mainsheet tension. Therefore the kicker needs to be set for downwind sailing. The leech should be able to just flick open as the boat goes over waves. As a general rule of thumb the top batten should be parallel to the boom, if it is outside this it is too tight, if it is inside this it is too loose. In strong winds you need to get the kicker almost as tight as it will go. Do this by sheeting the main really hard and pulling the kicker tight.

Out Haul

The outhaul has a major effect over the shape of the sail, especially in the bottom half. This should be calibrated and settings recorded so that when you find settings that suit you, they can be reproduced. In very light winds and flat water the sail needs to be slightly flatter to help the air flow over the sail. In these conditions you can tighten the outhaul so that wrinkles are removed from the foot, keep tightening and stop just before a tension line parallel with the boom starts to appear. In medium winds ease the outhaul so that wrinkles just begin to appear perpendicular to the boom. As the wind increases and you start to get overpowered go increasingly tighter on the outhaul (see figures 4, 5, 6 & 7).

Sprit

The sprit is a major control over the leech tension of the sail and hence the air flow and the power. If it is too tight wrinkles appear from the top of the sprit parallel with the sprit (figure 8). If it is too loose wrinkles appear from the clew to the top of the mast (figure 9). It is better to have it slightly too loose than too tight! In light winds slight wrinkles are good from the tip of the mast to the clew as this will help open the leech. In medium winds the sprit can be a little tighter so the wrinkles are just gone, only appearing in gusts. When you start to get overpowered it is possible to ease the sprit slightly, it doesn't look nice but will help to depower the sail. Remember don't depower the sail just so you do not have to hike as hard. In powered up conditions the harder you hike the faster you will go! Downwind especially in light



Fig.2 Luff too eased



Fig.3 Luff too tight



Fig.4 Outhaul not tightened



Fig.5 Outhaul not tightened



Fig.6 Outhaul tightened



Fig.7 Outhaul tightened



and marginal winds ease the sprit slightly to get the most out of the sail, no creases equals fast here. Practice tensioning and de-tensioning the sprit so that you don't lose ground while carrying out the adjustment (figure 10 shows the perfect trim).

Mainsheet

The mainsheet is one of the most important controls you have over the sail. As a guideline the sheet should be trimmed so that the boom is just over the back corner of the boat. As long as you are not overpowered, in gusts you should sheet in a little tighter (about 1 inch of main) and in the lulls/ waves ease very slightly to keep the boat moving. Work hard on getting a feel for the boat and how it is going through the water. If you are too tight on the main the boat will feel slow and sticky, too loose and you will not be able to point. In light winds look for the leech tell tales flying about 90% of the time. In medium winds the leech tell tales should fly about 70% of the time, in strong winds you will find they fly most of the time! In strong winds once you start to get over powered and you are having to ease the sheet out of the back corner of the boat, it is time to depower the sail, first of all outhaul, then sprit. Keep a tuning diary each time you go sailing so that you can reproduce fast settings. The Optimist is a tweaky boat and to get the most out of your North sail it is important to be on top of the settings.

Good luck on the water!



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Fig.8 Sprit too tight



Fig.9 Sprit too eased



Fig.10 Perfect trim

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