



**DOYLE**

**One Design NZ**

# ***Optimist Tuning Guide***

## **Sail Care:**

***To help you're new racing sail stay in top condition as long as possible here is some tips***

- Try not to crease your sail, some creases can cause MIT tears in your sail (a tear along the crease). Be careful when hoisting and lowering your sail. Also be sure too never put anything on top of your sail.
- Always roll your sail and keep it in its bag when not in use. Try to make sure the sail is relatively dry and free of salt water when storing it for an extended length of time. When rolling the sail make sure you go roll parallel with the battens and relieve tension from the top batten.
- Keep your sail out of the sun as much as possible, and try to reduce the amount of time your sail flogs.

### **Battens**

Your sail has batten pockets that make the battens interchangeable. While we only supply you with the correct amount of battens it is worthwhile experimenting with different batten weights for different breezes. Give us a call and we can order the battens in for you.

## Optimist Tuning Guide

### Tension on measurements:

0=no tension

3=full tension

		0-8 knots	8-16 knots	16-24 knots
<b>Mast Rake</b>	Determines the balance of the dinghy. If you rake your mast aft, you will achieve that your dinghy will have better pointing abilities. If you rake your mast forward you will ease the rudder pressure. The trim of the mast is very much individual. Its important to measure your rake frequently and mark it so you know where median is, Opti rakes can move frequently. I like to fine my rake with a tuning partner before the race. There is a more comprehensive guide below which incorporates the weight of the skipper.	278-280 cm	280-284 cm	282-286 cm
<b>Mainsheet</b>	Using the mainsheet in an Optimist is like changing gears in a racecar. The angle of attack between the sail and the wind is changed and you can control pointing ability and speed by easing and trimming the mainsheet. Remember always to adjust the tension on your sheet according to the wind and wave conditions. It is a good idea to splice a little, white wax thread into the mainsheet, just where the sheet exits the ratchet or at the block on the boom. This will make it easier to find the right trim fast and serve as a reference point, especially if your new to the boat.	1	2-3	3

<b>Sprit</b>	<p>The sprit influences the leech tension and overall shape of the sail. If you tighten your sprit, the leech will close and if the sprit is trimmed loosely the sail will open. It is important to avoid too much tension on the sprit, I would rather see creases to run from clew to head, rather than from the tack to the peak. Remember to adjust your sprit when starting the downwind legs.</p>	1	2	3
<b>Preventer</b>	<p>The luff tension is adjusted with the preventer, which also regulates the angle of attack. A loose luff moves the depth of the sail aft and decreases the angle of attack while a tightened luff moves the depth forward. In light winds a sail is powered up when you see small creases coming off the luff, I call these speed creases.</p>	1-3	0-2	0-1
<b>Kicking-strap</b>	<p>The kicker is used together with the preventer to control the angle of attack. Furthermore the leech is affected by the kicker. In the breeze it is essential to get as much kicker on as you can! So the boom goes out when you ease the main in a gust and not up which powers up the sail.</p>	0	1-2	3
<b>Outhaul</b>	<p>Controls the depth in the foot of the sail. You decide how much you want to use of the designed depth. It is important not to ease the outhaul too much, because the leech will close too much at the bottom batten, making you sail high but very slow.</p>	2-6 cm (8" - 2.4")	3-8 cm (1.2" - 3.15")	0-3 cm (0"-1.2")
<b>Your position in the boat</b>	<p>Is an extremely important trim option. By moving the weight forward and aft in the boat you can achieve changes in the boat balance. Try to keep the nuckle of the boat just tapping on the water. Laws of physics say that the sooner you sit out and further out you get the faster you go.</p>	Position all the way in the boat	Fixed in hiking straps, shoulders out, weight aft	All out hanging, further back in the boat, fixed in straps

**Sailor Weight (Kgs and Pounds)**

Less Than 32 Kgs (70)  
32-36kgs (70-80)  
36-40Kgs (80-90)  
40-45Kgs (90-100)  
45-50Kgs (100-110)  
50Kgs and up (110)

**Mast Rake (Cm and Inches)**

27.43-27.69 (108-109)  
27.69-27.94 (109-110)  
27.94-28.19 (111-112)  
28.19-28.45 (111-112)  
28.45-28.70 (112-113)  
28.70-28.96 (113-114)

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.

**LIGHT WIND****FLAT WATER**

The airflow undergoes a change in velocity when passing by both sides of the sail. In light wind conditions we must ensure that the shape of the sail does not slow down the airflow by being too full, which would increase the aerodynamic drag (i.e. decrease the lift to drag ratio). On the other hand, we also need enough power to push the boat forward overcoming air and water resistance, which means that some sail fullness is needed. Hence, a compromise must be reached. It is always better, for flat Water, to have the sail slightly too flat rather than slightly too full.

**WAVES**

This is the most difficult condition in terms of both helming and sail trimming. Basically, the desired sail shape depends on the skipper experience, since critical shapes can be achieved with excellent performance, but the skipper must have very good knowledge of all wave sailing requirements or otherwise speed would reduce below standard. Hence, simple shapes are recommended for medium level sailors. Summarizing, for these conditions, leech should be slack and maximum camber far forward in order to increase power and therefore acceleration after the wave, rather than pointing angle.

## **MEDIUM AIR**

### **FLAT WATER**

In this condition every boat goes reasonably fast, it is the kind of weather in which sail trimming is simple for standard speed, but getting extra speed becomes quite complicated. The sail must be as powerful as possible regarding to the weight of the sailor, but usually due to nice wind and little wave resistance it might be interesting to point a bit higher than usual. We must look for a shape that allows us both higher speed and pointing angle.

### **WAVES**

Acceleration is the word for these conditions. The boat sails fast but she keeps on slowing down at every wave. Therefore, it is necessary that the dinghy gets the maximum speed back as soon as possible after the wave, not only for the speed itself, but also for the pointing angle that change with speed due to the change of apparent wind when the boat slows down and speeds up again. The way to get acceleration is to have a loose leech with tendency to open when the mainsheet is eased after stalling on waves. It is quite good to tend on the tighter side of luff tension.

### **BREEZE**

Obviously the sail must show a flat shape, but if the sailor is heavy enough, when waves are strong and short, the sail must be slightly more powerful. I tend to like a really tight luff and vang and moderate sprit tension. Remember to keep your boat empty of water and if you still find the boat hard to handle raise the centerboard slightly.

## **TRIMMING CONTROLS**

### **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. This is not completely wrong, but the main function of the peak is to change the leech tension and in some cases 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. Moreover, the peak tension always relates with the kicking strap. 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.

### **KICKING STRAP (KICKER, VANG)**



As with the peak, the kicker also controls the leech tension, the problem could be the luff tension if the preventer is not set well.

It is also important when sailing upwind in order to control the luff tension. If we need power on the sail, we want to move the maximum camber forward. The way to move the camber of the sail forward is giving tension to the luff, so the preventer must be loose and the kicker will pull the boom down, and vice versa, if we want some pointing angle, the preventer will pull the boom up so tension on the luff will be released.

### **MAST RAKE**

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.

### **MAIN SHEET**

If you are smaller I think it is worth your time to add another purchase to your mainsheet system . Remember to mark your mainsheet to have a reference point to repeat fast settings. Also if you are small you can increase the size of your mainsheet so you find it easier to hold on to.

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. 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 centreboard case, helping the skipper stay forward in tacks.

### **SAIL TIES**

The mast ties are always more important than the boom ones. Their mission is to keep the sail tied to the mast at a certain distance, and this distance is very important in order to adjust the sail properly. Remember that due to the Class Rules this distance shall not exceed 1cm.

Very light wind and calm water, the mast does not bend at all, so the luff is very saggy, but there are no waves and we therefore we could point higher. In this case, loosen the top and the bottom sail ties up to 8mm (1cm maximum), keep

the two middle sail ties as tight as possible (but still allowing the sail to change sides freely when tacking 1 mm distance) making sure that the change in distance from top to middle and from middle to bottom is gradual.

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. In this case, if the sail is fastened to the mast as in we will see that ugly creases appear along our sail (See Fig 4).

To avoid this we must loosen the middle sail ties and tighten the top and bottom ties. Do not forget to make the change in distance gradual

Before we finish and just as a reminder, the crease from the clew to the bottom batten that shows on many sails is not important in terms of sail shape. The lack of trimming controls on Optimist sails forces this crease on the sail. It could be possible to get rid of it, but we would ruin the ideal shape for best performance

Any Questions please don't hesitate to call the team at Doyle One Design on 09  
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