

## *How to set up an optimist?*

### **A - Factors influencing mast raking**

You don't really want to copy your mate mast rake set up, even though he has the same boat and sail than you and is seemingly faster. In fact there are several other parameters that are very different

- **Sailor size and weight, the experience and sailing style, your current fitness and motivation**

Why do you want your personal setting ? lets look at all the parameters affecting a mast rake!

Lets have a quick look at IODA hulls.

For each **IODA Hull** (Van wettum, Winner, Harty...), there are about 5 different measures affecting directly a mast rake. For example, the distance from the back transom to the mast hole (measure 38) can vary from 1994 mm to 1999 mm affecting directly the distance between the top of the mast to the transom. effect on the steering feel and therefore may require mast raking

Raking the **centreboard** will have direct adjustment.

The maximum volume is not placed the same way within all the **different sail** on the market (and the introduction of radical new shapes-J sail-), affecting directly your mast rake setting.

### **B - how to set up your sail ?**

The clew tie and how you set up your outhaul has a major influence on your sail profile and obviously a direct impact on your sail efficiency depending on sea state and wind strength. I noticed that on the same sail, we could affect the overall profile of the sail up to the top batten by just adjusting the outhaul.

On a "conventional" sail (Olympic, toni tio...), a loose outhaul on a powerful sail will result in a tighter leech and the draft being further back. A flatter outhaul (or a flatter sail) will leave the leech a little softer. The J sail has the main volume higher and back. The outhaul has a limited effect on the full profile, so other controls (kicker, pin stop and sheeting will have a more direct effect on the overall profile)

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## 1 - light wind

### flat water

You don't want too much volume in the sail. It is actually better to have a sail too flat than too full. You should adjust the outhaul to obtain a tight leech (but not hooking too much). The mast can be raked to your maximum forward setting. Flat water=flat sail

### Short chop

The leech must remain soft and the volume towards the front of the sail to increase power (this will help you going through the waves). The mast rake setting directly depend of the standard of the sailor and his ability to sail in short chop. Too much mast rake forward linked with over sheeting would result in a very tight leech, loss of speed and quickly a decrease in the pointing ability.

## 2 - Medium air

### Flat water

Everyone can actually go fast in these conditions (providing they know how to sail). You then need to find that little edge to be able to go faster. The key then is to try to increase the power of your sail without affecting your pointing ability. Your mast rake can be pretty much identical to light wind flat water setting.

### Choppy conditions

The bow of the optimist is really prone to be hit by the waves slowing you down as a result. You need to be able to permanently get your speed back up after each wave. To achieve this, you don't want to much tension in the leech to allow your sail to naturally spill wind when you have too much pressure in the sail and close when the pressure disappear. Some form of natural-automatic pumping!

Your luff must have some volume and your mast must be raked back to avoid having to much pressures on the bow (especially downwind).

## 3 - Windy conditions

In these conditions, you can experience two different sea states and often some form of combination of both. Short "nasty" chop and big rollers.

You need to flatten your sail to de-power. It all depend on your size, weight and fitness levels. Your objective is to be able to sail with the

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boat flat, even slightly heeled to windward when you hike fully. This heel will allow you to bail your boat and maintain maximum speed.

## C - these controls are your tools !

### 1 - The sprit

The main purpose of the sprit is to work on the leech tension and in a few situations, it is not that bad to have a few horizontal crises in the sail to open the leech and obtain a faster move of the air through your sail.

### 2 -The pin stop

with the pin stop, the boom cant travel vertically anymore having several implication.

Downwind, the boom cant go low when the pin stop is on, otherwise it would have the effect of tensioning the luff and letting the boom go high (very unstable).

Adjusting the length of the pin stop (more or less twist) will directly affect the luff tension.

To obtain a more powerful sail (waves), you need to move the volume forward. You therefore need to have a tight luff (move some material forward). The pin stop will be quite long (limited nber of twists) allowing the kicker tension to bring the boom low. Be careful to always keep an eye on the measurement bands on the mast as playing with the luff may affect the sail position along the mast.

On another hand, a tight pin stop (several twist) will bring the boom higher easing the pressure on the luff moving the volume back allowing you a better pointing ability.

### 3 -Kicker

The kicker is usually associated to the pin stop or/and the sprit. It helps to control the leech tension and where the volume is. It also make the boat handling downwind easier.

### 4 -Main sheet

The main sheet associated with your mast rake has an influence on the leech tension.

### 5 -The ties

On the boom, it is pretty much straight forward as it is the same in any conditions. The clew and the luff ties have to be pretty tight (1-2 mm) and then as you tie towards the middle of the boom, you ease

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progressively to have the middle one at the maximum allowed by the rules (10mm).

The mast ties can provide a little more fun as the way you tie them can have an effect on the luff shape. It is therefore very important to pay attention on how you tie them. Sliding the mast through is definitely not an option! The luff of your sail is curved (the importance of the curve all depend on the sail you are using. Light weight sail have usually a straighter luff whilst powerful sail have more curve). Your mast is straight, so when you tie your sail you create some volume along the luff. This gives you power but reduce your pointing ability.

Except in very particular conditions, it is better to tie the ties the same way (1-2 mm from mast possibly 3mm in very light wind) along the mast as it will give you the optimum shape for you sail (the one the sail maker imagined)

However, two little tricks main allow you to adjust the performance of your sail outside the thoughts of the sail maker !

#### - flat water and very light wind

In these conditions, the mast have no bend what so ever. You may want to target for the best pointing ability.

In this case , you can ease the top and bottom tie to the maximum allowed by the rules (10mm) and have the middle one tight (1mm). The others ones are progressively eased from the middle towards the top and from the middle towards the boom. By doing so you reduce the influence of the luff curve. This is especially efficient for very powerful sail.

#### - Strong winds

In this case the mast will bend more or less depending on the mast rake. In some case of sail with a limited luff curve (lightweight sail), it is possible the bend becomes more important than the luff curve. In this case you can do the opposite than above having tight ties at top and bottom and a looser one in the middle. Rare case!!!

### **And finally...**

You need to find **YOUR average mast rake** depending on all parameters described above. Now most sail and hull would work at an average of 282 and it could be your starting point. Work around it to find YOUR measures. It seems the J sail require the mast to be raked further forward (2006 work with Cian O Regan).

Put a precise mark beside your rake

Choose wisely your sail as it will last you a few month, possibly a year. It is probably better for a small sailor who may grow during the year to get

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a sail a little to powerful for him to allow great speed in light air and learn how to de-power to limit damages in the big breezes. Furthermore, 80 % of races occur below 12 knots.

In any case, you sail is your engine and your speed is your first and best tactical tool, so keep the good work and keep adjusting your sail.

**Good luck and don't forget it is all fun and great time afloat!**