

## 49er Rigging for beginners.

So you have a 49er but can't seem to get the best out of the rig? Well don't worry it took a long time and much trial and error for the smarties like Chris Nicholson and Emmet Lazich to get it right but the benefit for us is the principles are pretty well understood now...and unfortunately they have gone and changed the rig to a full carbon model that is quite different from the old model but the principles remain the same.

### PRINCIPLES

Before we worry about bend numbers and rig tensions, it's critical to understand what is happening and why up there.

I am not going to go into how sails work, I hope you already get that but I will discuss the fundamental variables when rigging and how we use them:

1) Mast bend. Measured by holding the kite halyard tight, laying it down the front of the mast (most people have a small groove filed in the front of the bottom spreaders) resting on the front of the bottom spreaders and touching the mast about half way between the goose neck and spreaders. You will find the bend at the front of the mast right in front of the goose neck is generally between dead straight and 40mm.

Mast bend is set via changing the turnbuckles on both the lowers and main shrouds (with caps). To change gears as conditions change a simple rule is three turns for main turnbuckle, 1 turn for lowers. For example, if wind kicks in and you want to move the rig up one gear, you may ease lowers a full turn and tighten shrouds three turns. This will bend the mast more and increase rig tension.

2) Rig tension. Julian Bethwaite designed the modern skiff mast to work with the wind as it changes. A flexible mast makes small adjustments to wind pressure by bending to depower and straightening to power up.

The rig tension, generally measured by a loose gauge at the forestay may vary from mast to mast but generally sits between 27 and 34.

As a very general rule when sailing up wind we need rig tension set so the windward shroud is just pinging (bouncing) as we sail upwind. This goes for all conditions except when it's light when the dynamic mast fails to really operate (as it's too stiff).

(Note when going sailing, it is generally best to set the mast up for what is on the course now and then change it on the water as conditions change.

If you don't have turnbuckles on your rig, put them on. They are worth the investment.

Another element of rig tension is forestay tension. In whatever the conditions the jib luff should be straight, if the wind is bending it, it's not fast. Always check your jib halyard tension, having it too soft (and it stretches) is slow.

3) Caps. Generally I don't worry about the caps too much. If it's really windy, easing the caps can help to depower the rig but you must keep enough tension in order to keep the mast stable down wind. In really light airs, you may also ease the caps in order to encourage the top to work but if the breeze kicks in and you are caught with them off its slow.

Cap tension will generally stay uniform as main turnbuckle is changed. Most run at 15-17 for all conditions. Note again every mast is slightly different.

4) Jib. Critical to have your jib set up right. There is a great little self-cleating system you can put on your tack that allows the tack to be lifted or lowered easily for the current conditions. The neutral setting is having the bottom of the jib (material not ring) at the top of the swage. For heavy air the jib tack can come right down to close to the bottom of the swage and for light air 15mm above the swage.

It's important to have the jib set correctly both at the tack and the clew (always use the middle hole for the jib sheet shackle). The jib track is next and very simply, start on the

second hole from the inside for light air and work your way out as conditions get fresher. Closing the slot between main and jib is slow but opening it more than required is low. Sailing fast upwind in heavy air means sailing pretty low with main off centre so jib needs to be open. This involves having tack low, track out, halyard tight and likely ease sheet in gusts.

5) Main. Obviously the big engine upwind so important to get right. Start with the halyard, must be right at the top of the mast. Cunningham needs to be set for the lulls. Vang needs to be changed as pressure changes; ideally the vang is on hard enough to keep the mid leach up. Without the mid leach up the boat does not point. If the vang is on too hard for the conditions, the main will stall. The leach telltales will tell you this if they are not flowing off the back of the main. As the crew is forced to excessively ease the main to depower, the cunningham needs to come on. Ideally the main is not eased more than say 30cm from centre line in a gust. Outhaul is generally just pulled on and left but it can be eased when the wind is strong as this improves the cunningham's effectiveness. It can also be eased in light winds to create a fuller main.

6) Centreboard. Critical control in strong winds. Bringing it up as rig setting is over powered will be faster and make boat easier to handle. It can be raised from 20mm to 200mm. Between races board can be raised as far as possible without stopping the boat tack and this will make waits between races far more tolerable.

## SETTING UP

The simplest way I have found to think about rig settings is to start with a neutral setting then change it up a gear as conditions require. Strangely the change for lower wind conditions is the same for the mast (different for jib and main). Therefore the setting that you use for 5kts will be the same as for 20kts. That means start with your neutral setting (around 8-10kts) and then simply increase bend and rig tension as wind moves away from this setting. As I said before you can move with a 3 turns, 1 turn process to keep things simple.

A neutral setting is where the boat is set for perfect conditions, maximum power, both crew trapezing with little ease.

This would usually involve:

Mast: close to straight to 5mm bend, 30 on forestay.

Jib: tack on top of swage. Halyard tight but not maxed out. Clew middle hole. Track 3rd or 4th hole from centre. Jib will be sheeted in, in all but the freshest gust.

**2nd Gear.** As conditions move away (strengthen) from neutral you will find the boat will trip over or feel resistant to going forward. You will know what I mean when you feel it. The crew may have the main right off but the rig still feels too powered up.

This will start to happen from about 10kts+.

Increase mast bend to 10mm-15mm (Probably 6: 2 turns). Increase cunningham, vang. This may be enough. If not, jib down 5mm at tack and out one hole on track. Exactly what you change in what order may be governed by conditions and time but it is important to depower main if possible.

Just this simple change will help depower mast and open jib up. This will make a big difference.

## 3rd gear

In the event the next gear needs to be made (15kts), jib tack down another 5mm. Out another hole on jib track, halyard will probably need to be tightened.

Main bend again to 20-25mm with another 6:2 turns. Make sure main halyard is still right at the top.

Vang harder to keep leach up and cunningham on as required.

Board may need to start coming up as a quick, easy way to decrease power.

4th gear involves being over powered (20kts+).  
Max out mast bend (40mm), max out rig tension (35), have jib tack bottomed out. Jib outside of track, halyard maxed out. Centreboard up. Cunno and vang on hard, up wind. May ease caps a hole.  
Main will be flat and the boat will do much of its sailing on the jib.

### **REMEMBER ITS CRITICAL TO SAIL YOUR 49ER FLAT ALL THE TIME**

#### **LIGHT WINDS.**

In effect the process for light winds is the same as above in regards to mast. Simply increase bend as winds get lighter (don't worry about rig tension). This helps open the leech and keep the wind attached to the sail as its strength drops. The wind's ability to open the main falls with its wind speed so if you don't open the main with mast bend the mainsail will stall...very slow. Go easy on the vang. No cunno UNLESS your mast is too straight for the conditions and your main is stalling. As a second-best alternative, you may pull on your cunno to open the leech.

However in regards to the jib, it's opposite.  
As conditions lighten, move jib tack upwards, move track in and ease halyard.

#### **SUMMARY**

There are no exact instructions that can be provided as every boat is different, every mast is different, conditions differ and crew weight varies, however it is time well spent to set up your rig as best you can for the prevailing conditions. It makes the boat significantly easier to sail and faster and therefore MORE FUN.

There's nothing finer than sailing a 49er.  
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