

# ***29er* COACHING MANUAL**



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**International 29er Class Association**

# Introduction

The focus of this manual is as a quick reference for your 29er rig setup and sailing in various conditions including coaching tips and exercises, described in words, photos and video clips. It is split into several sections – Rigging for Light, Medium and Heavy Winds, Training Exercises, Planning for a Major Regatta, Comments on Coaching, Care & Maintenance of the 29er.

As each section is completed it will be added to the [www.29er.org](http://www.29er.org) webpage under the Technical Section. We would welcome feedback regarding the information, whether it is easy to understand or more description and photos are required. Any specific conditions that you have at your home club would be fun to hear about and perhaps we can help you if you write to us ([info@bethwaite.com](mailto:info@bethwaite.com)) and describe the situations that you may be having difficulty with.

We are committed to making this manual as current as possible and have enlisted the advice of many of the class champions over the past 2 years. If you have a technique that works and would like to share it with us, please send it in and we'll put it up with your name and home club.

In the Rigging for Light, Medium and Heavy Winds section, we are assuming that you have already rigged your boat. If you are unsure about how to do this, there is a 29er Rigging Manual already posted to the [bethwaite.com](http://bethwaite.com) website.

## Going Sailing and What to Wear

The most important thing to think about before you hit the water is your clothing. Even if it's hot walking around the boatpark, the water temperature will always be cooler and you should dress for it. Being cold out sailing is not only unpleasant but you will lose energy very fast and not be able to perform very well. If you have a coachboat with you, pack extra clothing on board so that you can change if necessary but don't waste time, try to think ahead so you don't keep your sailing partner waiting while you try to make up your mind what to wear.

## Exercises on the Water

In this manual, there are some examples of sailing exercises that can and should be performed on your own, without any other boats being near. This is so that you can get all those racing manoeuvres down pat before testing yourself against another boat. There are also examples of training exercises that involve several boats, although if there are more than 3 boats you are probably better off conducting short races and practising starts and strategy.

It is very important to decide what you want to practise and then just do that. You might combine tacking with gybing or mark rounding and rudderless sailing. It has been proven over and over again, that spending a maximum of an hour or two (depending on how fit you are) is as much as you should target, as to spend longer usually means that the quality of your performance will start dropping, rather than improving.

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*About the author: Nicky Bethwaite grew up in Sydney, Australia, learning to sail at Northbridge Sailing Club. She sailed many types of dinghies, nearly all designed by her father, Frank. This included winning the Cherub World Championships in 1976, being crewed by her brother, Julian, before embarking on an Olympic path in the 470, being the first female to represent Australia at the Games in 1988. Competing in 3 Sydney to Hobart yacht races in the next few years, Nicky found herself coaching the Soling at the 1996 Olympic Games in Savannah, USA. Helping to establish the 49er and 29er (designed by Julian) became the focus for the next few years until Nicky was selected to represent Australia at the 2004 Athens Olympics in the Yngling class. Selected again for the 2008 Beijing Olympics but unable to attend due to an injury sustained while mountain biking, she is now living in Cowes on the Isle of Wight, UK and enjoying the total sailing ambience*



# SECTION 1

## RIGGING FOR LIGHT AIR, MEDIUM & HEAVY WINDS

Light: 2-8 knots or 1-4 m/s  
 Medium: 8-15 knots or 4-7 m/s  
 Heavy: 15+ knots or 7+ m/s

### Rig Tension

On the left is a picture of a rig tension gauge, made by Loos. It is available from most marine shops or if not, they can probably get it in for you.



When it is placed on the forestay the Loos gauge reading should be:

<b>Light</b>	<b>18-19</b>
<b>Medium</b>	<b>19-21</b>
<b>Heavy</b>	<b>21-24</b>



## 29er Coaching Manual - Section 1 - Rig Settings

The **rig tension** is adjusted using the shroud adjusters on the side stays (pic at left). The closer the pin is to the top of the shroud adjuster, the looser the rig will become. It is important that the pin in the shroud adjusters be in the same hole on both sides.

Because the length of the wire measurement can vary from boat to boat, you will need to check it each time you sail a different boat.

If you are sailing the same boat all the time, make a note of the number of holes the pin is in, either from the top or the bottom. Write it down somewhere so you don't forget it and set it to those numbers each time you have similar conditions.

New wires can stretch up to 10-15mm, mostly on the side stays, and this needs to be monitored particularly after a heavy blow.



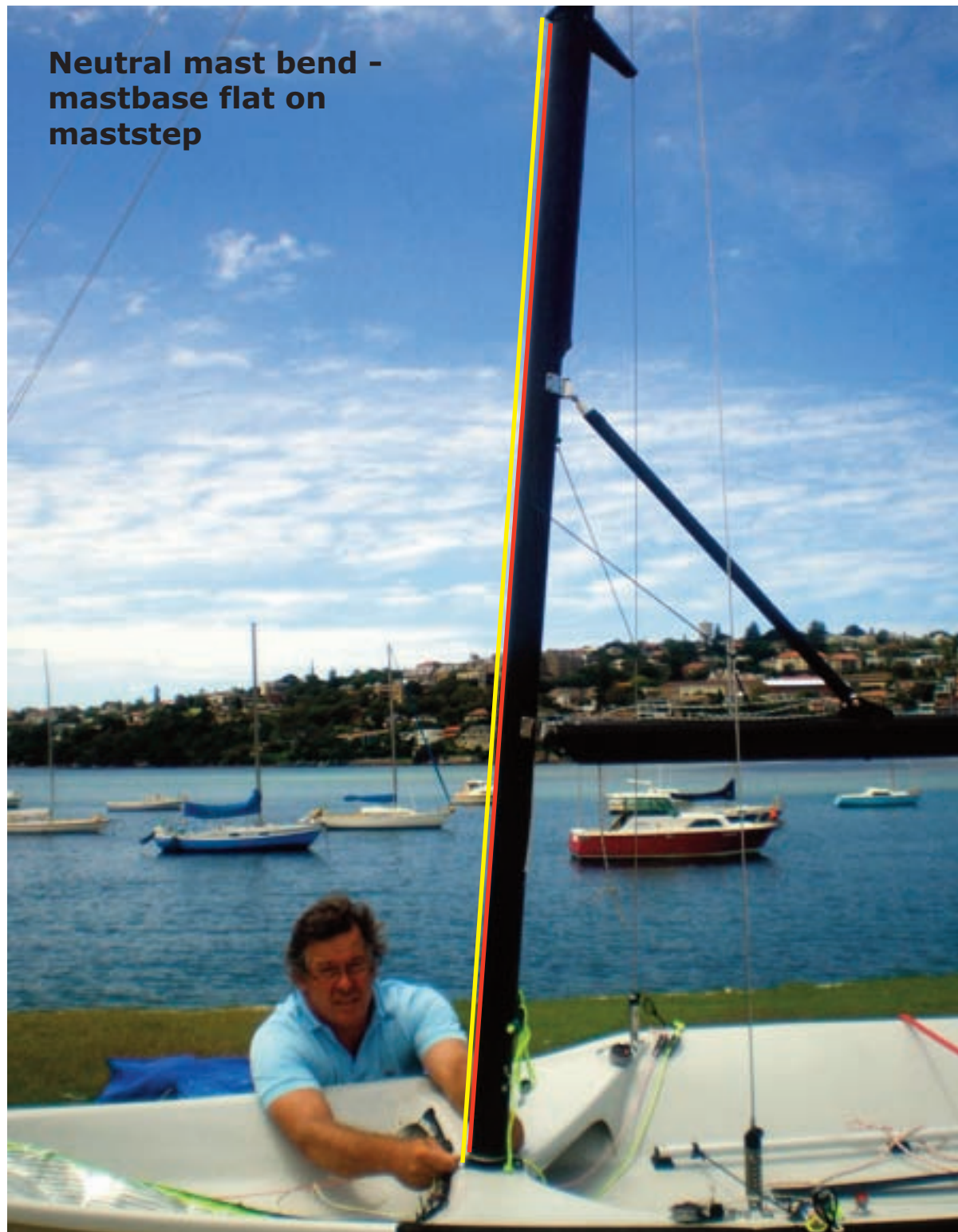
If you don't have a Loos Tension Gauge or can't borrow one, a rough guide to the rig tension for **light** air (18-19) is to find someone who is 73kg (160lbs) and ask them to hang from the trapeze wires at the bow of the boat. You should just be able to insert the forestay pin into the forestay fitting. If you can't do this, move the pins in the side chainplates up a half hole until you can get the forestay attached. The pins in the side chainplates come down a half hole for each increase to **Medium** and **Heavy**.

When you are sailing, the side stay on the leeward side should not be loose.



## 29er Coaching Manual - Section 1 - Rig Settings

**Heel tune** – you can affect the way the lower mast bends by the way the mastbase sits in the maststep. You are allowed to permanently adjust the mastbase and/or maststep to either make the lower mast bendier (the load is on the aft edge of the mastbase) or stiffer (the load is on the forward edge of the mastbase).



**Heel tune** – lower mast bend can be increased by loading up the aft edge of the mastbase. Be careful to check your rig tension if you do this, as it will be increased. This could be useful if you are a **light crew**.





## 29er Coaching Manual - Section 1 - Rig Settings

**Heel tune** – lower mast bend can be stiffened by loading up the forward edge of the mastbase. Be careful to check your rig tension if you do this, as it will be increased. This could be useful if you are a **heavy crew**.



## Jib luff tension

When you have rigged your boat and changed into your sailing gear, there are some adjustments to make to the rig before you leave the shore. We'll take these one at a time.



<p><b>Light</b> (2-7 knots)</p>	<p>Quite soft, with the cloth just behind the luff tape definitely not stretched tight (see photo left).</p>
<p><b>Medium</b> (8-25 knots)</p>	<p>Firm, with no wrinkles along the luff wire.</p>
<p><b>Heavy</b> (above 15 knots)</p>	<p>Before leaving the shore, tension the cloth so that there is a slight bubble behind the luff wire.</p>



## Clew Outhaul tension



**Clew Outhaul tension - Position 1**



**Clew Outhaul tension - Position 2**

## Clew Outhaul tension

<p><b>Light</b> (2-7 knots)</p>	<p>If it is very light, then the outhaul should be quite firm with only 6-7cm or 2-3 inches of depth (Position 1 above). However, if the wind is above 5 knots (2.5 m/s) or the water is quite bumpy, then you should give the lower mainsail some fullness by easing the outhaul so that there is 15-18cm or 6-7 inches of depth (Position 2 above.)</p>
<p><b>Medium</b> (8-15 knots)</p>	<p>From 8-10 knots (5-4 m/s) set the outhaul at Position 2 then above this go to Position 1.</p>
<p><b>Heavy</b> (above 15 knots)</p>	<p>Set at Position 1.</p>

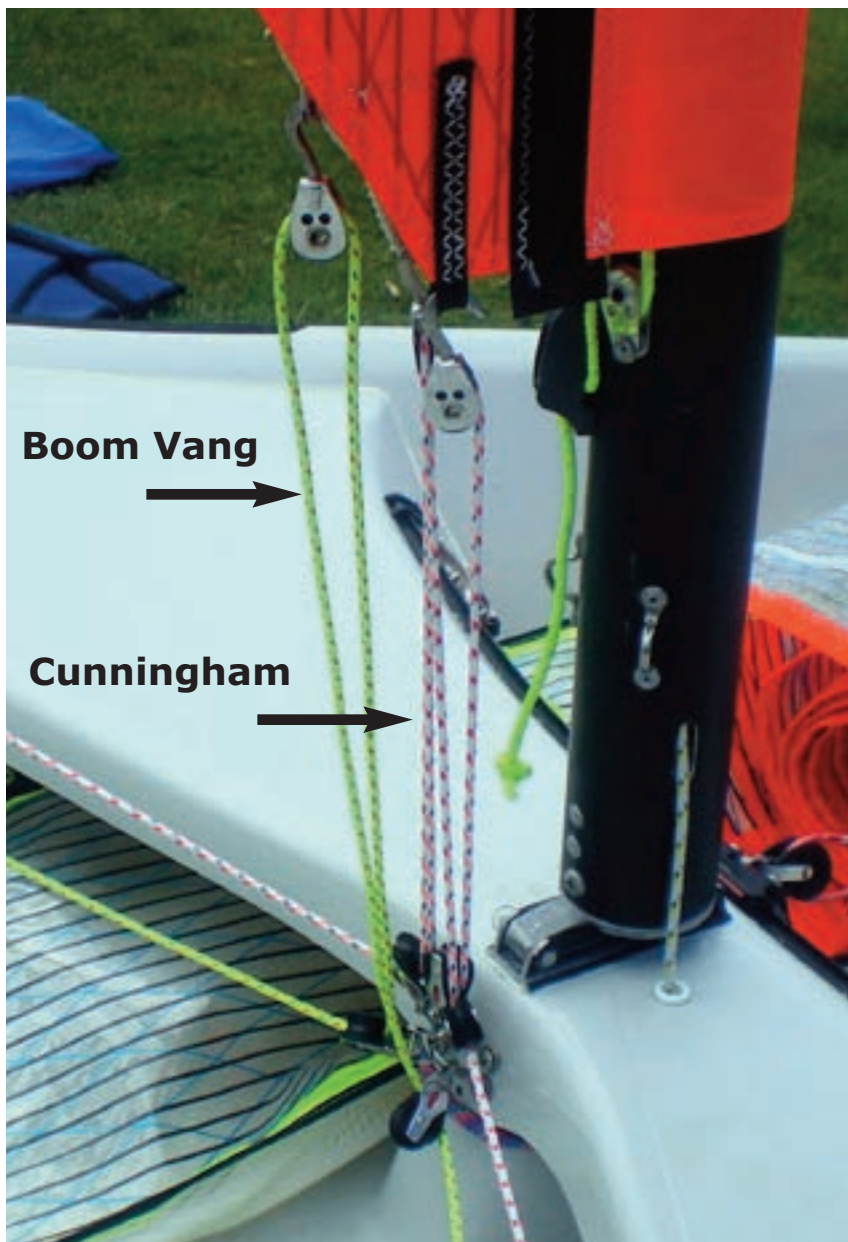
Mark the outhaul rope so that you can refer to it again in similar conditions (see below).



### Outhaul calibration -

using a black marking pen (on a light colored rope) put a mark on the outhaul rope at the maximum eased position.





<b>Light</b> (2-7 knots)	No tension
<b>Medium</b> (8-15 knots)	Vang should be firm, just so it isn't loose when the mainsheet is on.
<b>Heavy</b> (above 15 knots)	In 15-20 knots, very firm.  Above this, if the boat becomes uncontrollable, ease the vane to allow the main to twist.

**Cunningham**

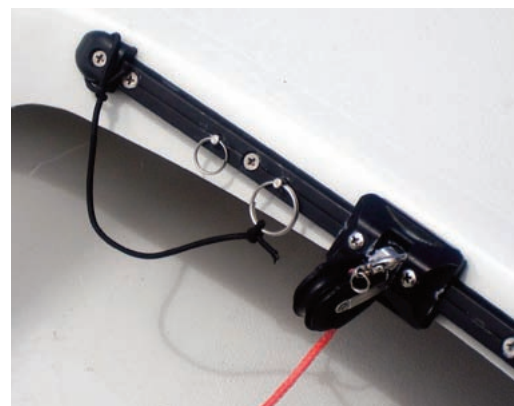
<b>Light</b> (2-7 knots)	No tension
<b>Medium</b> (8-15 knots)	None to slight tension, just enough to ease wrinkles.
<b>Heavy</b> (above 15 knots)	Very firm tension, do not ease downwind.

*Jib car pin in outer position*



**Jib car position** should be on the outer pin in **very light** air (2-4 knots or 1-2 m/s) and in the middle in 5-8 knots or 2.5-4m/s. In **medium** air, it should be in the middle and in **heavy** air, move it back to the outer position.

*Jib car pin in middle position*



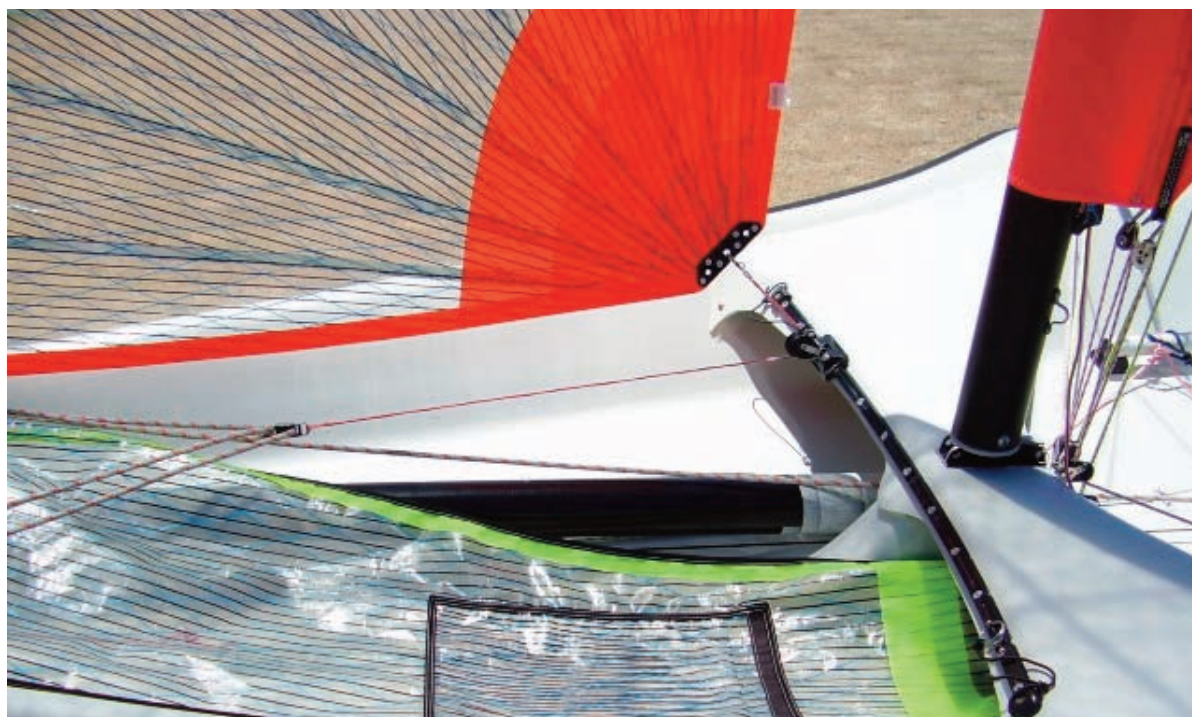


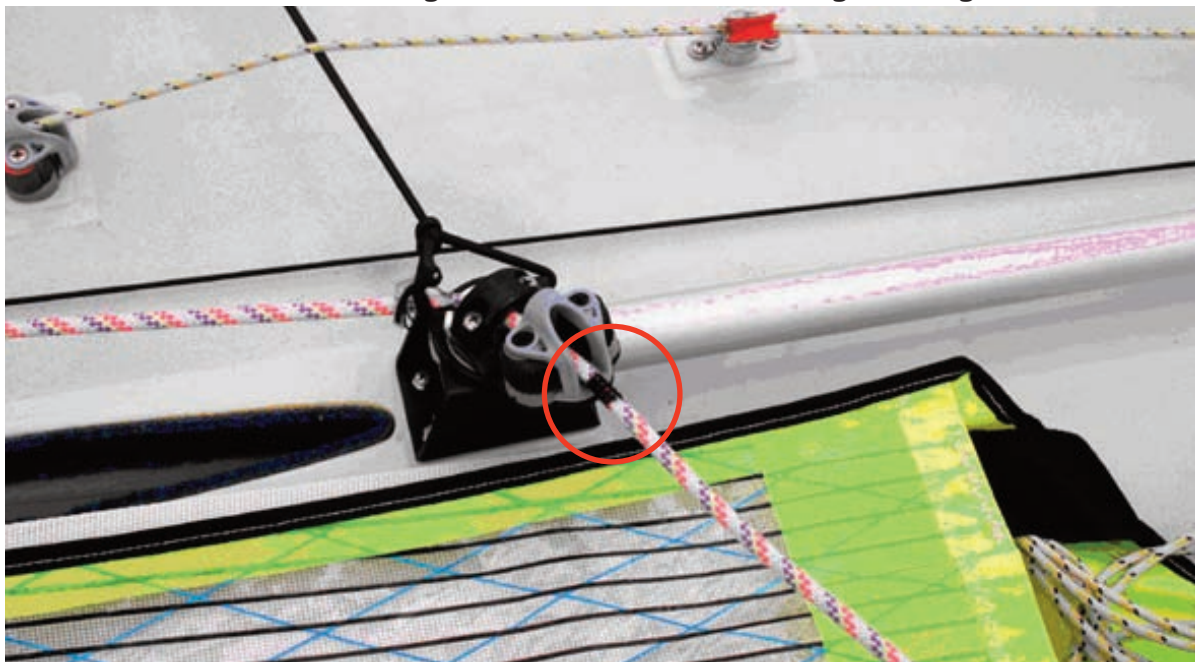


**Jib clew position** - set in the middle hole in the clew board for the majority of conditions

In **light**, **medium** and **heavy** air, clip the jibsheet into the middle hole of the clew board. This will give you the best combination for speed and height. However, in very light or very heavy air, you may find it faster using the lowest hole in the clewboard, so as to open the leech in the jib.

Opening the leech will open the slot between the main and jib, which in the extremes of **very light** and **very heavy** air will give you better speed. In both these extreme conditions, speed is far more important than height.

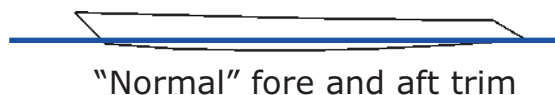




*Jibsheet calibration is extremely important. 5mm (1/4 inch) difference in sheet tension will give an entirely different jib leech profile, affecting both height and speed when you are going to windward. Get down to leeward and have a look up the jib leech so that you become familiar with what happens when you trim on or off. Experimenting with this in different wind and wave conditions against other boats is the secret to good consistent boatspeed.*

### **FORE AND AFT TRIM IN LIGHT AIR**

Where you sit in the boat in very light air has a big impact on your boatspeed. Both experience and hydrodynamic theory shows that by having the bow down so that the stern is just skimming the water is the quickest way to sail the boat in light air. To help set the sails heel the boat to leeward. Heeling the boat also gives less wetted area on the hull and so lessens the drag.



"Normal" fore and aft trim



"Bow down" trim for very light air



## 29er Coaching Manual - Section 1 - Rig Settings



This is a good example of what the wake should look like for minimum drag. The water leaving the stern is reasonably smooth with very few bubbles.

Do your own experiments by moving your weight forwards and backwards and noting the turbulence behind the boat. Do this with the boat perfectly flat and also heeled. If the chines are digging into the water, there will be massive turbulence.

**The less turbulence, the less drag and the faster you will go.**

As the breeze builds and you go faster, your crew weight will be able to move further back in the boat.



29er Coaching Manual - Section 1 - Rig Settings  
**QUICK REFERENCE FOR SETTINGS FOR DIFFERENT  
 BREEZE STRENGTHS**

<b>Light Air</b> 2-8 knots or 1-4 m/s	<b>Rig Tension</b>	18-19 on forestay
	<b>Jib Luff Tension</b>	Quite soft, with the cloth just behind the luff tape not stretched tight.
	<b>Clew Outhaul</b>	If it is very light, the outhaul should be quite firm 6-7cm or 2-3 inches. If the water is bumpy and as the breeze increases, increase the fullness of the lower main to 15-18cm or 6-7
	<b>Boom Vang</b>	No tension
	<b>Cunningham</b>	No tension
	<b>Jib car position</b>	In very light air, set the jib car pin in the outer hole. As the breeze increases, move it to the middle hole.
	<b>Jib clew position</b>	Very light, lower most hole. As the breeze increases, move it to the middle hole.
	<b>Fore and aft trim</b>	Bow down so that the stern is just skimming the water. As the breeze increases, move aft in the boat being always aware that the wake should be "clean".

29er Coaching Manual - Section 1 - Rig Settings

<p><b>Medium Air</b> 8-15 knots or 4-7 m/s</p>	<p><b>Rig Tension</b></p>	<p>19-21 on forestay</p>
	<p><b>Jib Luff Tension</b></p>	<p>Firm, with no wrinkles along the luff wire</p>
	<p><b>Clew Outhaul</b></p>	<p>At the lower end of this breeze range, set the outhaul at around 15-18cm or 6-7 inches. As the breeze increases, flatten the lower main to 6-7cm or 2-3 inches of depth.</p>
	<p><b>Boom Vang</b></p>	<p>Vang should be firm so that it isn't loose when the mainsheet is sheeted on.</p>
	<p><b>Cunningham</b></p>	<p>None or slight tension, just enough to ease wrinkles.</p>
	<p><b>Jib car position</b></p>	<p>Middle hole</p>
	<p><b>Jib clew position</b></p>	<p>Middle hole</p>
	<p><b>Fore and aft trim</b></p>	<p>Bow in the water 3-5cm or 1-2 inches, keep wake at stern "clean". Move aft when planing downwind.</p>

29er Coaching Manual - Section 1 - Rig Settings

<b>Heavy Air</b> +15 knots or +7 m/s	<b>Rig Tension</b>	21-24 on forestay
	<b>Jib Luff Tension</b>	Before leaving the shore, tension the cloth so that there is a slight bubble behind the luff wire.
	<b>Clew Outhaul</b>	Keep the lower main as flat as possible with less than 6-7cm or 2-3 inches of depth.
	<b>Boom Vang</b>	In 15-20 knots, the vang should be very firm. If the breeze increases, or the boat becomes uncontrollable, ease the vang and allow the main to twist.
	<b>Cunningham</b>	Very firm tension, do not ease downwind
	<b>Jib car position</b>	Middle hole If the breeze increases, move it to the outer hole.
	<b>Jib clew position</b>	Middle hole. If the breeze increases, move it to the lowest hole.
	<b>Fore and aft trim</b>	As you will be planing the whole time, keep the bow out and your weight aft.

<b>Very Strong Wind</b>	<b>Boom Vang</b>	Slightly eased, so that main twists off at head.
	<b>Centerboard</b>	Raised approx. 15cm or 6 inches
	<b>Jib Car Setting</b>	Outer hole
	<b>Jib clew position</b>	Lowest hole
	<b>Jibsheet Tension</b>	Slightly eased so that jib twists off at head