

Julian's Skiff Tips

From the Santa Barbara Skiff Clinic - May 2001

As some of you may know, I have just spent the last month traveling around the world and was presently surprised to see 29er sailing just about everywhere. But during the last stage of the trip, across the top of Canada and down the west coast of the USA, I spent considerable amount of time talking to and addressing 29er sailors and what follows is the gist of those sessions, all rolled into one.

Note: More photos coming!

Rig tensions

On the new Loos Gauge the numbers that keep on coming back again and again, measuring the FORESTAY are that in light winds you should be around 17-18 (about 80kgs/180lbs), medium winds you should up that to 20-21 (about 110kgs/240lbs) and when it get fresher then up around 23-24(135kgs/300lbs).

Again these are all measuring the Forestay tension.

If you go firmer than these numbers then you risk the possibility of making your rig to wooden, having it so strung up that it becomes completely immobile and it would then have no gust response.

To lose and you will suffer too much forestay sag and your jib will simply blow you sideways rather than drive you forwards.

Rake

For all intents and purposes rake is totally dependant on forestay length, the forestay tolerance has been $\frac{1}{2}$ since Garda and we had trouble getting people to measure there. Though I am not the measurer, I would be stunned if it was not checked at Kingston and I urge everyone to check the rule and then check there boats to make sure they comply. Mast do compress, if you have broken a section then it your responsibility to make sure the boat is still legal after it has been fixed. Just don't do to Kingston or come to Sydney with out checking that measurement.

But WRT rake, with only 14mm of play, it virtually has no bearing on performance, it will move the hounds about 25mm which in the scheme of things is irrelevant, it move 4-5 times that distance with bow up or bow down trim, so just make sure it measures and then get on with sailing the boat.

Bridle Height

(Mainsheet) It should be as high as possible, the height we use is approx. 810mm (32"). The reason is that this will bring the boom the closest it can to the center line and will also stop the boom being dragged over the center line by a over enthusiastic crew both of which maximize the amount of power you can generate without putting a brake on when you least need it.

Main and Jib sheet tensions

If there was one thing I said move than anything else over the 2 weeks in NA it was pull the sheet on.

Setting the jib sheet. The 29er has a short luff/leach and long foot with a reasonable amount of roach in the leach.

First, the tack of the jib has to be pin into the forestay fitting, don't go adding lines or shackles.

Second, go sailing before the start and adjust your jib luff tension so that you have eased it so there is just the hint of scalloping between the jib buckles, then tighten the jib halyard (the wire bit) about 15mm tighter from that position. Once you have found that spot, mark it on the back of the mast and not that this is the right position for that strength of breeze.

If you are sailing in lumpy water with waves then you may only pull the halyard another 5-10mm if at all because a loose luff will keep the camber forward and give you extra drive. If you are sailing in dead flat water then you will pull it hard because this will flatten the luff and make the entry low drag.

Thirdly, in light air you should be in the top hole of the clew board, medium air in the middle and you normally would not get to the bottom hole until its blowing the "oysters of the rocks" (this is skiffy speak for real fresh, very strong wind). Again in lumpy water you would delay the moving out of the top hole.

Now you are in a position to set your jib sheet tension. The way this should be judged is that both the upper and lower jib tufts should break together, if it has been set perfectly. For those not fully ofay with this concept then send your skipper to leeward, get him to place his head above the outer leeward grab rail and looking up the jib leach should run basically straight up from the clew and be inline with the outer tip of the spreader as it passes that point and then simply ach in to the head.

This will be (in most cases) substantial tighter than where most crews are setting their jibs. The problem with all skiffs is that they like to run, they feel great when you crack them off a few degrees but in terms of getting to the top mark, all you do if you crack them off is you end up bearing further and further away, you end up chasing your tail. By sheeting the jib in harder, you will set it correctly but you will also force your self to sail higher (and possibly slower through the water) but you will get to the top mark sooner and in a more disciplined manner.

And lastly, unless it is really fluky and you are an absolute genius then just set the jib sheet and don't play it. The hardest thing in a 29er is that they move quite quickly and things change very fast. You need something to remain constant so that the poor skipper has something to steer to, some reference so that he can keep the boat pointing in the right direction most of the time.

Mainsheet tension

Look up! Both going upwind and downwind the absolute determinate of mainsail twist is the upper leach ribbon. If you are sailing up wind and the upper leach ribbon dose not occasionally (10-20% of the time) want to flick around to the leeward side then you are too loose and I bet that is the case of 90% of you. Sure if it is spending 50->% of the time glued to the leeward side then you have stalled the upper main and you should ease it a bit. You need to set vang (see below) to set the twist so that the lower main is in but upper main is set by vang and mainsheet so look up.

Down wind, with the kite up, then the general rule if you are running lose is the main should be over the $\frac{1}{4}$. That the leeward aft corner of the boat.

There is absolutly no truth in the rumor that if you ease the main you will break the mast, you can safely ease it out $\frac{1}{2}$ way (to the stays).

But what I would urge everyone to do is tie a knot in the mainsheet so that the boom can never hit the shrouds, that is one way to lever the mast out of the boat. Spectacular but expensive!

Last but not least, jib sheet angle

Put the pin in the center of the three adjusting holes and leave it there. Any possible gain will be out weighted by the hassle and uncertainly of fiddling!

Mainsail Downhaul

(Otherwise know as Cunningham) On a 29er (and a 49er) because the main sail is fully battened, the downhaul becomes a extremely effective flattening tool because if you think about the line of the load of the downhaul as it is applied, it will run up through the mast sock and then up through the sail some distance aft of the mast. Why, because the shortest distance between two points is a straight line and with any mainsheet or vang tension that will be behind the mast, plus with full length batten it will move even further behind the mast so when you pull on the downhaul you can and will "bowstring" the mast. A bit like the string on a bow, the tension line will increase the bend.

So you should be looking at Downhaul to flatten the over all camber in the sail but

particularly in the upper sections of the sail where the mast is smaller (diameter) and also less supported.

One exception to the rule is in very light winds where the initial application of downhaul will in fact induce camber low down but this is because it will clean up the lower main rather than anything else and this is a good thing as long as it is used sparingly.

In flat water and steady wind you will use downhaul earlier and more of it than in lumpy water or wind, this is because it does flatten the whole sail and if you want drive rather than low drag then, again use it sparingly. Good idea to put a set of numbers down the side of the mast so that you can repeat settings from one beat to another. But of course you need to pull the mainsail up to the same point each time.

Vang (Kicker)

29er vang is very effective, it is very powerful and holds the boom very rigidly. As a general rule Vang will also flatten the whole sail because it pulls down on the leach and that pulls the mast head aft which bends the mast. But it does it by driving the ram upwards and forwards so the ram also bends the lower mast forward and therefore will flatten the lower main first.

The way I set it up is to sail up wind without it until I find my comfortable position (mainsheet tension) and then I snug the vang up so that when I ease the main sheet the boom moves out rather than up (so to speak).

As the wind freshens then more and more vang, as it backs off, less and less vang.

My trick so that I know how much vang I have got on is to run the tail end of the vang (down where the 2:1 block attaches) back up through the exit block on the boom and then back along the boom. At a point somewhere above the ratchet block, I tie it to a piece of shockcord (bungy) and then the shockcord to the back of the boom.

So as I pull the vang on the knot moves forward, and again use one of the Ronstan number scales against the knot, you can work out how much vang you have got on.

And again, steadier the wind and flatter the water, more vang sooner so the whole sail works as a single foil. In rough water and or wind you want the sail to twist more so you need to use it more sparingly.

And the old "skiffy" rule, when the going gets really tough, oysters off the rocks material, then if you don't ease it you will simply fall over.

Two last things, both with the vang and with the downhaul, it's a good idea to ease them down wind, not because you will break the mast (neither will) but because easing both controls will allow the sail to bag back up again and if you want speed that's a good idea and WRT the vang, getting some of it off before you bear away will allow you to do that corner with more grace and style and speed, more aplomb than if you do not. Don't let it go too far or you will lose the upper leach and that will make it very tough in the gybe.

And if you happen to capsize with a lot of vang on, and you are very enthusiastic getting the boat back up, you can break the mast. Very simply water is 1000s of times denser than air and that amount of pressure has to go somewhere.

Outhaul

29er has no overlapping jib, therefore there are no taboos about having to have the main strapped tight all the time.

If you are lacking pressure then easing the outhaul up wind so that you have say 100-150mm (4"-6") of camber off the boom is a good thing.

As the wind increases and you start to get over pressed, then sure, bring it back on, but it's all good horse power (kw) low down and it's all good stuff.

Two sail reaching 200mm (8") camber is great, even 3 sail broad reaching 150-200mm is going to help.

Obviously if it is fresh then set and forget, you should have better things to do, like keeping the boat upright!

Body stance in the boat

Now I am going to get personal, when we went sailing out of San Francisco Yacht Club, it was quite fresh, the seas, all in all quite challenging.

29ers are light but highly powered, but light means that if they hit a wave the wrong way or are trimmed (boat wise) and plug into the back of a wave they will stop. A youngish girl who was normally a skipper but was crewing in this instance, whose name was Molly and whose surname I won't go into details, was just fantastic, she was moving forward and aft, in-tune with the waves and punching this boat over the difficult seas to the point that even though there was not much of her, they were going upwind higher and at the same sort of speed as their heavier rivals.

So what do I mean? Going to get a bit technical now. A 29er with a 140kg (308 lbs) crew on board plus the boat sails foils spars and the rest of the paraphernalia weighs in at around 230-235 kgs ((500-520 lbs). Its design to float a static weight when it hits its mark of about 180kgs (400 lbs) so when the boat is stationary it sinks about 12-20mm ($1/2 - 3/4$ ") further into the water than it should.

This is no problem because as soon as the boat gets any way on it can easily dynamically support the extra weight, well before planning.

So in light winds when there is not much wind about it is important to understand that you have to optimize the boat for those conditions. If you sit in the boat where you normally would sit in normal conditions then you will sink the transom, so go forward young man (or girl). If you look where we supply the non skid on the gunwale it goes well in-front of the shroud and so should you.

There is no reason why the crew should not sit on the mast partner or even in-front of the jib track in light airs.

God was very nice to sailors and gave them ears and eyes, if you see or hear the bubbles or wake from the transom then you are too far aft. Very simply indubitable rule.

You can push the bow down 100-180mm (4-7") without significant drag increase in light wind and low hull speeds, the boat has been designed to do this and sail well like this, for those who read my father's pontifications this is what he calls the 4th mode.

The reason it works is that the increase in drag from pushing the bow further down is greatly outweighed by the reduction in drag from a reduction in surface area and reduction in form drag from having a transom driven to deeply down.

Obviously as the wind picks up, you come aft, but the crew can quite feasibly still be in front of the shrouds up to 10 knts. And then as the boat moves faster and faster the further aft you move.

This holds for upwind as well as downwind and as you tend to move faster downwind, you will be moving further aft, downwind for a given wind speed than you will be upwind.

To say that X immersion of the bow is correct is obviously an impossible statement because it will depend so much on hull speed but the boat floating on its marks would have the toe of the stem immersed 40-45mm ($1\frac{1}{2} - 1\frac{3}{4}$ ") and the transom submerged 12mm ($\frac{1}{2}$ ") at 5-6 knts.

So back to Molly, what Molly was doing was moving her body weight to lift and lower the bow as it came to each of the waves and also pump the mainsheet to work the boat over each wave. In these conditions there was plenty of wind and plenty of speed so there was absolutely no risk of the transom ever sinking in. In flat water she and her skipper would have been $\frac{1}{2}$ the way back along the boat and planning hard upwind. But because the water was lumpy, the excess drag from the bow plunging down and into a wave or from it rising to high and the boat seeming to "stall" was overcome by Molly moving her weight to smooth out the rises and falls and keeping them in sync with the wave frequency.

This is another thing that sailing fast boats throw at you, if you move slowing across waves then there is plenty of time for the water to react with the boat and the boat naturally contours with the waves. 29ers and more so 49ers move way too fast for the water to have anywhere enough time to sync in and in most cases go right out of sync which results in

the nose plunging into the wave face ahead.

You have to use your weight and the sails to get the boat back into sync and once you have developed a good technique then it will enhance your slow boat sailing also.

Heel

29ers are not round boats they are effectively a long shaped wedge with hard corners. Those hard corners aft are what allows you to drive the boat very hard in a lot of wind and enjoy those screaming rides at speeds that you did not think were possible but they do have their drawbacks.

In light air, you need to get them out of the water so you move forward and lift them out.

Once you start moving a bit faster and you are back in the boat then you can lift them out so you must KEEP THE BOAT FLAT!

And Flat is FLAT, +/- 5 degrees is acceptable, +/- 10 degrees is only just tolerable but by the time you get to 15 degrees then the reason you are at the back of the fleet is very obvious.

The good guys will sail the boat upwind and down wind with the boat within +/- 5 degrees all the time and most of the time if they are heeled it's to windward and not to leeward.

There are some reasons for this but without getting too technical, they are:-

#1 The boat is designed to be most efficient in one mode and that is upright.

#2 When you heel a roundish boat, bit like if you heel a round ball, nothing much happens but as you heel a 29er type wedge then as you heel it more and more you screw the water line and the centers of buoyancy so that they form more and more of a curve and it is in that direction of that curve that the boat wants to travel.

Going upwind if you heel the boat to leeward then the boat wants to round up. Heel it to windward then it wants to bear away.

The reason the good guys heel their boats to windward upwind is so that they use the hull to neutralize the windward heel that you should get if the boat is properly in balance and also it makes the boat crab to windward and makes the crew want to trim the mainsheet in further.

But most importantly, when a gust hits the boat, by the time the crew has eased the sheets and swung right out the boat will have moved from heeled to windward to bolt upright which is the very best position for the boat to be in and exploit the gust to the maximum capacity.

Downwind, it's spooky to heel the boat to windward and you have to have a great rapport between the crew and the skipper but because you now have a spinnaker hanging out the front, it makes the boat want to bear away and therefore gain depth, but it will load up the tiller and make the helm very sensitive.

If you are trying to make a wing mark and need height, you are better off heeling the boat to leeward.

Only time that heeling to boat excessively to leeward works is if you need to gravity fill the sails in light air.

Julian Bethwaite

See you out on the water :o)