

## RS400 Tuning Guide

### Upwind Sea

	Jib sheet	Mainsheet	Kicker	Rig tension	Outhaul	Cunningham	Mast Rake	Spreader angle
Very light	Very little tension – top of leech open	Leave top of leech open	None	200lb	Tight but no “ridge”	None	6m98	Length 415mm, deflection 135mm
Light	More tension top of leech still open	More tension top of leech still open	None	350lb	Tight but no “ridge”	None	6m98	Same
Moderate	More tension – tightish leech	More tension – tightish leech	Take up slack	350lb	Tight	None	6m98	Same
Windy	As hard as crew can pull	Play it lots – never in the cleat!	Some	350lb	Very tight	Balance kicker	6m98	Same
Very windy	As hard as crew <u>and</u> helm can pull together	Play it lots – never in the cleat!	Loads	As little as 150lb	Swing on it!	Loads	6m93	Same

These wind strengths are defined by upwind state:

Very light = drifting

Light = crew not on sidedeck yet

Moderate = crew on sidedeck or hiking

Windy = flat out hiking & spilling wind

Very windy = struggling to stay upright in gusts

I have purposely defined the wind strengths this way rather than in knots so the guide is applicable to all e.g. if you are lardy you move to the windy setting in more wind than a light crew or less experienced then move to the very windy settings earlier...

The guides are in priority order i.e. adjustments on the left are most important. However, even more important than any of the crap written here is how you sail the boat e.g. sailing flat, minimising rudder use, smooth boathandling, effective starting skills, boat trim, tactics etc. So don't get too hung up on your settings, they only make a minor difference, the best thing you can do is practice against good quality competition i.e. come and do the RS Circuit!

In terms of tuning, you should notice that the most important settings are what you do on the water – sheet tension, kicker etc – rather than on-shore settings (mast rake etc).

It may surprise you that **jib sheet tension** is the most important setting despite it being the smallest sail. Upwind, most of the airflow that the main receives comes from the jib – so if the jib is set wrong the main will also be working inefficiently. A sharp crew is key!

The RS400 likes lots of **mainsheet tension** – much more than in other boats, so that you are actually pulling it in quite hard in moderate winds. The mainsail shape needs to mirror the jib shape so air flows smoothly between the them.

The **kicker** is only used in windy weather because it depowers the rig so you only need it when you're overpowered (remember though if you're light, “windy” for you could mean a force 3). You do need to take up the slack in moderate winds though so your leech stays powered during tacks and when ducking boats. When very

windy, use as much kicker as you can pull on until your bottom batten starts to invert (you are then overbending your mast) and let some off until the batten falls into shape again.

Using kicker pulls the draft back on your mainsail creating a nasty shape so you need to use **cunningham** to balance this up. Cunningham also bends the top of the mast so helps depower you some more.

We set-up the **mast ram** for a straight mast (straight up to spreaders with the main up and 350lb of rig tension) until it gets windy. We then wind the mast forward to depower the rig. Our goal is that the boat should be perfectly balanced in the lulls i.e. fully hiked, main right in, boat flat. We then need to spill wind in the gusts. If we are overpowered in the lulls, we wind the mast more. If you run out of mast to wind, it is now “very windy” and you need to rake the mast back more! If the mast is straight and you are still underpowered in the lulls, it is now “moderate” and you need to drop kicker off etc.

We drop the **rig tension** off in drifters as this opens up the top of the jib leech. Try it on shore one day standing behind the jib and you will see the very noticeable effect. We also drop it off when its howling, the jib luff then goes slack. This allows you to bend the mast more with more kicker which tightens back up the jib luff, flattens the main & drops your mast rake back more. You will point lower so it a last resort, especially inland.

Our on-shore rig set up is set for 24+ stone. The top lighter crews sail with a slightly less powered rig with **spreader deflection** of 150mm.

We always sail with the **jib cars** right back, sailing with them forward creates a too full jib, though opinion varies on this.

**Mast foot position** seems to make very little difference. We sail with our at the front because the boat feels balanced at this position and it gives a bit more downwind speed. If you are light, mast foot at the back is probably preferable because it leaves your more scope for pre-bending the mast through mast ram when it is windy.

Consider bringing the board a little way up if you find you are struggling to control the boat when it is very windy. The RS400 is a wonderfully designed boat, it should feel balanced upwind in anything up to 40 knots! If it feels wrong, there is something wrong with your rig setup or are you are not playing the main enough!

Key to making these settings work for you is “changing gears” – it is very rare that a days sailing or even 1 beat or all in 1 condition. So you will need to be constantly changing your settings, of course prioritising the most important changes i.e. sheet tension & kicker. We make at least 5 adjustments of each of these up every beat & run, often more.

For Inland sailing, change these setting to reflect the need for more height upwind. Many look for height by pinching, the fast way to do it is set your sails so your boat want to point high. Changes we make are move up to 400lb of rig tension (not great for your boat so we only do this at big events!), tighter leeches (i.e. more jib & mainsheet tension, more kicker) & flatter sails (more outhaul) with flatter luff entry (more rig tension & less inhaul on mainsail)

*Downwind*

	<b>Strategy</b>	<b>Mainsheet</b>	<b>Centreboard</b>	<b>Kicker</b>	<b>Outhaul</b>	<b>Cunningham</b>
Very light	Run downwind, no spinnaker (go to pub!)	Long way out	Long way up	None	2/3 way off	None
Light	Go deep	More tension top of leech still open	1/3 up in gusts	Take up slack	Same	None
Moderate	Go deep	More tension – tightish leech	Down	A little, open leech	Same	None
Windy	High in lulls, low & planning in gusts	Play it lots – never in the cleat!	Down	Some, open leech	Same	None
Very windy	Plane fast!	Play it lots – never in the cleat!	Down	Bit more, open leech	Same, but adjusting it is a low priority!	Same, but adjusting it is a low priority!

Most important of all downwind is **kite setting** but there are no tuning settings for it, technique is key....the crew simply needs to be watching & playing it all the time & there needs to be lots of chat between helm & crew to keep the boat sailing at the right angle.

What is the **right angle**?

Not an exact science, best learnt through practice against other boats so you can judge what works.

Some pointers - in light/moderate airs look to go deep in the gusts (as low as you can go with kite still pulling) and higher in the lulls to get to the next gust.

When windy you are looking to plane as much as possible so go high in the lulls to get to the gusts; in the gusts, go as low as possible whilst still planning so maximising your time in the gusts & planing.

When very windy, you can plane all the time – you are now looking to plane as fast as possible so not looking to go deep whilst planning. You should be aiming for the fastest possible plane i.e. as high as possible but with kite still setting comfortably and the bowsprit pulled to windward.

We always sail with the **bowsprit** pulled all the way to windward unless of course it isn't a run or there is a strong tactical reason to get high e.g. sail for new wind, roll a pack of boats etc.

We do not change the **rig tension** downwind