

## RS100 Tuning guide

(Nick Peters / April 2010)

### 1. Rig concept: Upwind.

In common with many unstayed rigs the RS100 is very versatile in terms of both power and responsiveness. Where the RS100 (and also the RS300) vary is in the operation of the Gnav/kicker: Apart from controlling the leech as normal, it also bends the mast more, progressively flattening the sail: Think of it as doing these 2 functions equally effectively, **but as it is easily the most effective mast bend / sail flattening control, this is how you should think of it primarily**: As you tension the Gnav/kicker, so the rig progressively flattens, and progressively reduces power.

Two other key controls help you to mesh required leech tension (or degree of twist) with your mast bend and gnav/kicker tension. These are the mainsheet (used mainly in the light and hopefully self-explanatory) and the Cunningham (crucial to blading out the top of the leech in breeze). Try playing with the Cunningham – eased right off the leech rounds up with the fullness further aft - and that's power and pointing when you need it. Pulled on hard (and in good wind do not be afraid to really heave), fullness will pull forward and towards the top of the sail it will flatten and open the leech, thus depowering the rig. The leech will even go “floppy” with extreme tension – so understand the “cunno” and make it your friend!

The boltrope of the sail is elasticated to assist easing up the track more easily when released – but what will also help is lubricating the track , and when sailing, easing the sheet (or tacking) so the luff panel flaps, reducing friction momentarily in the track:

A further, but very minor, control on mast bend and leech shape is the spreader length – for the bigger guys longer spreaders help support the mast (primarily sideways) which in turn supports the leech – thus powering up slightly.

***The secret to getting the best out of the RS100 rigs is to understand the versatility and being practiced at “changing gear”.***

### 2. Control set-up:

**1. Main halyard:** It is absolutely essential to ensure the sail is hoisted fully and stays there: Tie the halyard to the sail with a “knot on a Knot” as per the manual, and pull it really hard before ensuring it is located firmly in the cleat.

**2. The mainsheet bridle:** Holding it vertically, 400mm, also vertically, from top of rudder turret to apex of bridle: the bridle is just fwd of the rudder turret, so sight in line from tape measure to apex of bridle. The other way is to pull the bridle fwd on the centreline of the boat and apex of bridle (not the block) should come to 60mm aft of the non-slip edge: then the knots should be

positioned 430mm from the point at which the bridle goes through the transom flange.

Another check here is that the bridle block should align with the cockpit floor/sidetank corner when in use and lying against the knot.

**Conceptually the bridle has to be flat enough for the block to travel out to the knots all the time, thus giving you a consistent inner most sheeting angle. Much narrower and the rig will feel stalled, and wider and you will struggle for height in the light –medium wind strengths**

**3. Cunningham:** This should be rigged for maximum travel: When the sail is fully hoisted the cunningham block should be adjacent to (even slight pulled into!) the cringle. When maxed-out (certainly on 10.2) it will still be right down to the boom.

**4. Gnav/Kicker:** Again rigged for maximum travel: Set up the lines so the blocks are up by the roller when the sail still has 6-9 inches to hoist: Thus the final hoist will slightly bend the mast – that is fine as you will use more mast bend than this even in the lightest of wind. It makes the most of the travel – which (certainly on the 10.2) will be needed in full.

**5. Mast gate control / Rake:** The RS100 was designed to use a different “range” of settings for the 10.2 and the 8.4: The 8.4 is effectively the “stiffer” rig (less leverage and load put onto it generally), and was designed to be set up with a little more rake: So 8.4 sailors should use the aft 2/3rds of the range, and the 10.2 sailors the fwd 2/3rds of the range: Generally more rake appears better in the breeze and less in the light, but remember it is not quite so important with a flexible rig like the RS100, and you have to get under the boom! For example, as I am fairly un-flexible these days, I never rig aft of the middle setting when on the 10.2, as one bad tack getting stuck under the boom on maximum kicker can easily end in a capsized!

**6. The shrouds – or “rig tension”:** Although the shrouds are primarily for keeping the rig in column downwind with the kite – it definitely does add some support via the windward shroud: Key point here is that the windward shroud is almost always in some tension sailing upwind, whereas the leeward one is really waving around in the breeze. Thus, to date it looks better to have less tension in the light, more in the light/medium and less or same again in a breeze. Tension is in real terms negligible, but at most will pre-bend the mast by up to 25mm – without the sail hoisted with 10.2, and less on the 8.4 sail: Adjust the holes in the chain plate for the different mast rakes as per the table below.

**7. Outhaul:** Both sails are fairly full, with plenty of luff round, so the outhaul is generally tighter than say a Laser sailor might be used to: also the gnav arm restricts it anyway – so a maximum of 6-7 ins off the boom is all that is ever needed, and mostly a lot less:

Wind	Mainsheet	kicker	Cunningham	Outhaul	Mastgate	Shrouds
<b>1-4 knots</b>	Outboard of bridle knots	15% - enough to take out luff round	Zero	3-4 ins off the boom at midpoint	8.4 – mark 6  10.2 – mark 4	8.4 – hole 3  10.2 – hole 2
<b>5-9 knots</b>	Taking leech tension on sheet – vertical above bridle knots	15-40% - enough to hold tightish leech if eased sheet	Only enough to remove the wrinkles for the cameras!	5-6 inches – we are after max power here.	8.4 – mark 4-5  10.2 – mark 3	8.4 – hole 3  10.2 – hole 3
<b>10-14 knots</b>	Outboard of the bridle knots – play it vigorously	60-85%. Ease it offwind	40-70%. If you overcook it you will lose pointing.	2-4 inches – a chop will need power	8.4 – mark 4  10.2 – mark 2-3	8.4 – hole 4  10.2 – hole 3
<b>15-20 knots</b>	Transom corner or further outboard – play it vigorously	100% - get it flat.	80-95%. Leave some in reserve – lets not lose the leech altogether.	2-3 inches – some power low down will help.	8.4 – mark 5-6  10.2 – mark 3-4	8.4 – hole 4  10.2 – hole 3
<b>20+ knots</b>	Well outboard all the time – keep the boat moving.	90% - ease it a bit to make it more forgiving – cunno will keep flat	100%+ - head could go floppy in the gusts! Only use bottom half of the sail!	1-2 inches – you can pretty much heave on it!	8.4 – mark 7  10.2 – mark 4-5	8.4 – hole 4  10.2 – hole 4

**The above table is really for guidance only. I would urge you to work at understanding the concept of the rig design as detailed above, and then think about your own individual settings**

**8. The centreboard:** generally speaking it should stay all the way down, all the time: In a breeze upwind it may help to raise it a few degrees, and downwind in the real light gains possible may be made by raising it 30-50% to aid soaking – definitely only sub 5-6 knots of breeze.

### 3. Rig concept - Downwind

There will be times when the tactical decision is to leave the kite in the chute – and at these times all those of you with previous single hander experience will be fine – and I will not aim to cover all those eventualities here, but a quick reminder about the cunning – ease loads, and don't over kick – too flat is not too fast on a white sail reach:

But downwind of course is really about the kite!! And it always helps to understand what's going on: The leech of the kite does twist and that should as far as possible be emulated by the leech of the mainsail: **and that means ease the kicker – loads and loads:** that will then allow you to sheet in a bit and help to open the slot between kite and main. A tight leech will knock you over, whilst stopping the kite really working properly!

Another key point to remember is the power to weight ratio of this boat is right up there – it will respond to “heating it up”, apparent wind thus creeping fwd which again is why the main will want to be sheeted in a bit – it will be quick, but you might need to hike out! Just remember – when you go for the drop, ease the mainsail – as it will very quickly load up again as you slow down:

A final point about the kite halyard – it should be no more than 16metres long and when the kite is stowed the halyard take-up block should end up (under good tension from healthy shockcord) half-way between the back of the centreboard casing and the cheekblock attached to the deck.

Good RS100 sailing!