



A guide to setting up and tuning your RS800

This tuning guide is a culmination and consolidation of various tuning guides and intelligence gathered over the years since the RS800 was first raced in anger in 1999. Most of the content is attributable to Mike Lennon, Pete Barton and Spod Olive. Notes in blue added by Tom Morris in March 2023.

Although one-design, the RS800 has evolved subtly over the years, the most notable recent evolution being the introduction of the 'square top' mainsail. Whilst not providing a notable gain in performance, it does require a slightly different approach.



Old style 'pin head' mainsail



New style 'square top' mainsail

Initial set-up and tuning guide

Note:-

Main shroud tension & rake is measured with upper and lower shrouds slack and sails down

Lower shroud tension is measured with main shroud tension on, but uppers slack and sails down

Upper shroud tension is measured with main and lower shroud tension on, but sails down

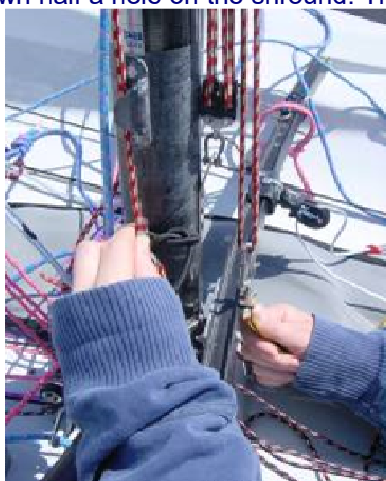
Rake/ Rig Tension

To measure rake:

- Attach a tape measure to the jib halyard.
- Tighten the halyard until the measurement to the jib track is a round number e.g. 1m exactly.
- Then measure to the bottom of bow deck lip and take the difference of the two measurements. (This is an easier and more exact method than hoisting the halyard to the top)

Rake: 66-67cm is a good general setting (This is 'upright')

'Raked' setting - if breezy (say about 19kn+). I would drop the shrouds 0.5 hole and move forestay up 2-3 holes to give me 69-70cm rake and around the same 23L / 140kg tension. (TM: We sail on one rake setting of 67cm, but above 18 knots move down half a hole on the shroud. This effectively increased rake but also increases rig tension)



Measuring Rig Tension:



Rig Tension: Using a *Loos PT-1M* (Fig.1) on the forestay a **23** reading is a good general setting
 Using a *Spinlock Rig-Sense* gauge (Fig.2) this is **140kg**
 (This should equate to around 30 (Loos) / 220kg on the main shrouds)
 (TM: We sail 24 on forestay and 32 on shrouds)



Fig.1



Fig.2

Note: When first setting up this will require some trial and error, so you will need to move forestay and shroud pins until you achieve this.

Summary settings table - Below is one for my boat, it shows how the relative positions of the settings change as the wind varies (but note: shroud, forestay & lowers lengths will differ between boats so the shroud, forestay and lowers settings below are only an indication; you need to check your own boat).

I suggest you produce something like this then laminate it and tape it to your rack bar:

RS800	0-7kn	8-14kn	15-18kn	19-24kn	25kn+
Shroud	5.5	5.5	5.5	6	6
Forestay	6.5	6.5	6.5	3.5	3.5
Lowers	5	5.5	5	5	4.5
Jib Tack	3/4	3/4	5	6	7
Jib Track	3	2/3/4	4	5	6
*Uppers	14	14	14	14	17

Red shows relative change between wind bands only - exact settings may vary between boats

0-7kn = drift/trundle
 8-14kn = underpowered
 15-18kn = fully powered
 19-24kn = overpowered
 *5kn+ = survival!

- 'Round' numbers are the higher column of holes on chain plate, '0.5' numbers are the lower column (counted from the top downwards) – see Fig.3
- On bow chainplate use front holes for forestay and back holes for jib tack.

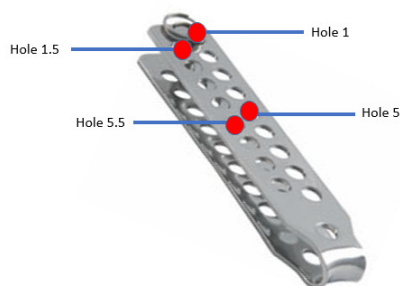


Fig.3

Note: Forestay position affects available jib tack holes e.g. when forestay is 6.5 jib tack holes 6&7 are unavailable, when forestay is 3.5 jib tack holes 3&4 are unavailable, so some compromise may be necessary. (TM: we use the lower jib tack holes, between 2 and 4).

Lowern - these may be different on each side! Below is a guide to Lowers setting (with rig tension on but uppers off):-

0-7kn	8-14kn	15-18kn	19-24kn	25kn+
Just tight (pull / push mast just a little to get them on)	Tight (7 Loos)	Just tight (pull / push mast just a little to get them on)	Some slack	Some more slack

Note: raking the shrouds will have a slackening effect on the lowers so this needs to be taken account (as can be seen in the summary table). When the main shrouds haven't moved, the increments of the lowers' settings between each wind band column is 0.5 holes at a time.

Uppers - Uppers are a dark art! If they are too slack or too tight then you are depowering. Somewhere in the middle, maybe around 14L (65kg), you are at max power.

Slacken to 12L (58kg) if gusty for rig good response, The slacker they are the more you will lose a high pointing mode, but you may still achieve a competitive VMG to windward sailing low fast angles.

Tightening these to 17L (82kg) is one solution if you want pointing (or rig support if honking) e.g. for flat water and steady wind. (TM: we sail with 15 loos all the time, this works well alongside increase rig tension by going down half a hole of the shrouds above 18 knots).

Note - uppers are limited by class rules to 5:1 purchase, which is a very fine adjustment and varies with different lowers settings; you therefore need to calibrate very precisely and check frequently.

Spreadern – The Class Rules state the following limits:-

- Lower spreaders: length 450-470mm / *deflection >140mm
- Upper spreaders: length 355-365mm

On the lower spreaders particularly, max length and minimum deflection will give the most power. (TM: we have sailed off 150mm deflection on lower spreaders the last 3 years). It's worth checking on older boats that deflection hasn't increased past 160mm as we've found this over bends the mid mast).

**The latest Selden rigs have fixed spreaders, which means that it is not possible to alter the spreader deflection.*

Jib Tack - this controls sheeting angle and moves down as wind increases (TM: We sail much lower on tack. Generally 8 (2 up from bottom) to 6 (4 up). But we couple this with sheeting harder and sailing further out of track.

Jib Clew – In anything other than survival conditions attach the sheet to the centre hole on the clew board

Jib Track Counted from the centre outwards

- 2/3/4 for 8-14 knots depending on gusts, shifts and waves i.e. if gusty, shifty and wavy go wide to 4
- If flat water & steady wind, go narrow, maybe to 2, for a high pointing mode. (TM: We sail on 4 from 0-18 knots then out to 5. But run more sheet tension than most).
- **Generally go progressively wider as wind increases.** Wider in a breeze is not only faster but also easier to sail. If the boat 'staggers' go wider. Wider will also makes the boat more forgiving and less prone to stall or 'trip up' out of the tacks.

Jib Halyard - use like a Cunningham (Downhaul) - pull it very tight when windy.

Note: After you bend mast on the water by applying mainsail Cunningham (Downhaul) & Kicker (Vang) you may need to pull Jib Halyard again when windy.

On the water

Kicker / Vang- In light airs and up to the point that you are nearly twin trapezing just take the slack out (too much kicker in light winds is slow)

As the wind increases beyond this, pull it progressively tighter until it is **very tight**. (TM: above 20 knots we then back off the kicker a little to let the sail twist and keep the boom nearer the center line).

Tip: Mark the kicker with tape at 10cm to provide an easy visual reference for quick and accurate adjustment.

Cunningham / downhaul- rig up an 8:1 continuous system. The 8:1 will give you the necessary purchase when it is windy and with the 8:1 you will need it continuous to avoid running out.

Keep it slack until you are twin trapezing.

As the wind increases beyond this and you get overpowered and having to play the main, pull on progressively tighter until it is very tight. (TM: Generally we are on maximum downhaul by 16/17 knots)

Outhaul - Generally reasonably tight. The lowers can affect the depth of the main as much as the outhaul. When overpowered pull tight.

Centreboard - When you are heavily overpowered on the racecourse you have 2 choices; let the sails flog or raise the centreboard. Raising the centreboard progressively as you get overpowered will enable you too keep the sails sheeted longer. This will be faster, easier to sail and ultimately you can also point higher by achieving more speed and control.

Complete, laminate and tape to boat:

RS800	0-7kn	8-14kn	15-18kn	19-24kn	25kn+
Shroud					
Forestay					
Lowers					
Jib Tack	3/4	3/4	5	6	7
Jib Track	3	2/3/4	4	5	6
*Uppers	14	14	14	14	17

*Square top main

Weight equalisation system

Measuring the racks

Weight equalisation is one of the great attractions of the RS800 allowing everyone to race on an equal basis. If you attend an RS800 circuit event or Championship, both helm & crew will be required to weigh in. In order to work out your rack settings you will be required to lie on a plank which measures your combined helm and crew **righting moment**. You will then be weighed to determine your combined helm and crew **weight**. These figures are then applied to a settings table where your rack setting and the number of corrector leads to be carried will be determined.

The official rack settings table document can be found on the class website <http://uk.rs800.org/> under 'Class Rules' entitled 'RS800 crew weights'

Virtual Plank

If you are club racing or taking part in open, non-RS events and therefore do not have access to the official class plank and scales, you can use the '**Virtual Plank**', which has a link from the class website or directly at the following url: <http://www.virtualplank.com/rs800/>

Simply enter individual helm and crew heights and weights and it will calculate your approximate rack and lead setting. *Please note that this is just a guide and if you attend an event, you will still be required to weigh in and apply those settings given to you on the day.*

*Note: The rack numbers start at **pin 1** (there is no zero setting) which is 4mm out from no pins.*

As you pull the racks out the inner holes will appear in the outer hole. You just need to count these one by one until you arrived at the setting number that you have been given. Alternatively you can measure the distance from the inner most end of the inner rack bar to the inner most end of the outer rack bar. Each hole represents an increment of

(Just for reference as an example, rack position 6 will have 2 holes showing on the inner bar)

Leads

These are held on a rail in the centre of the boat, which takes up to 4 leads (or 5 with optional extended rail).

For very wide rack settings, interim or 'Granny Bars' are available (Fig.4). These are extra bars that fit onto the racks between the hull and outer rack bar and provide an additional step on the way out. Fitting these counts as the equivalent of 1 corrector lead.



Fig.4