

RS200 Tuning Guide – Ian Pickard – 28th June 2002

What makes the RS200 so popular and such a great boat to sail and race? There are many answers to this including the very active RS Class Association, the competitive racing at club and circuit level, the good build quality and layout of the boat and its second-hand value. For me one of the great attractions is the one-design nature of the class which leads to close racing in big fleets without the need to constantly upgrade and update the boat.

The RS200 is not a “tweaky” boat, so a reasonable set-up will give good boatspeed. The competitive crew weight ranges from about 18 to 23 stone, and the appropriate set-up will depend on your all-up weight. I’ve broken this guide down into **static set-up** – what you adjust ashore before racing – and **dynamic set-up** – what you can adjust while racing. Small differences in the set-up will not have a huge affect on boatspeed so, once you’re happy with the basic tune of your boat, spend as much time on the water as you can with a regular crew – ideally with a training partner in a second boat.

Static set-up – what to adjust ashore before racing

What are you trying to achieve with the static set-up of the boat? Two things – controllable power and balance. Power is a compromise between propelling the boat through the water as quickly as possible while retaining control in windier conditions – the most powered-up boat in the fleet is no use if you’re sat on an up-turned hull with the rig under the water! Balance is when the rig, hull and foils are working in harmony to drive the boat straight ahead. If your boat’s not balanced, you will have to use the rudder to fight the natural tendency of the boat to luff or bear away – this will slow you down because using the rudder creates drag. My preferred approach to static set-up is to find what works in your “ideal” conditions – when both helm and crew are fully hiked upwind, but you’re not spilling too much wind – and then work out what adjustments are necessary in lighter or stronger winds.

Both power and balance are controlled through a combination of mast rake, spreaders, rig tension and mast foot position. All these controls are interrelated and cannot be adjusted in isolation. In some classes you can adjust the position of one or both of the foils but, apart from making sure your rudder goes all the way down, this is not an option in the RS200. Hence to achieve balance, you have to move the rig forwards and backwards in the boat.

Mast Rake – measured with the jib hoisted and rig tension on, by attaching a long tape measure to the main halyard, pulling it to the top of the mast and measuring the distance to the top of the rudder pedestal. Mast rake has a huge effect on the balance of the boat, as it moves the power applied to the hull by the rig fore and aft. It also controls the balance between upwind and downwind speed – more rake gives better upwind speed and vice-versa. The “fast numbers” currently in use are between 21’ 7” (6579mm) and 21’ 8” (6604mm) in “ideal” conditions, increasing to about 21’ 9” (6629mm) in light winds and reducing to about 21’ 6” (6554mm) in heavier conditions.

Spreaders – adjustable for both deflection and length, controlling fore/aft and sideways mast bend respectively, measured as shown in the diagram. In very basic terms the deflection controls the upwind power and the length controls the downwind power. The spreaders are the key static control of the power in the rig. Lighter crews use spreader lengths in the range 370-380mm and deflections of 135-150mm; heavier crews use lengths in the range 385-405mm and deflections of 120-130mm. In the search for power, some heavier crews have tried more extreme settings but these are not recommended. Longer spreaders have been found to bend the middle of the mast to leeward upwind, closing the slot between the main and jib which badly affects speed and pointing. Less deflection makes the main too full upwind which also closes the slot, but more significantly reduces the mast’s ability to resist

the loads imposed by the spinnaker, potentially leading to a broken mast. Those new to the class are often worried that this recommended spreader set-up means that the mast is inverted (i.e. bends backwards at the spreaders) with the rig tension on but the mainsail down. This is correct, as the mast is fairly flexible, so needs to start inverted to resist the load from the full length battens and the kicker.

Rig Tension – measured at about shoulder height on the shrouds using a SuperSpars rig tension gauge. Rig tension has two effects: it controls the shape and fullness of the jib by applying luff tension, and it controls mast bend through the forces applied by the shrouds to the spreaders. Too little tension lets the jib luff sag aft and to leeward which affects pointing, and it lets the mast bend too much as the spreaders can't take affect. Too much rig tension makes the boat feel "numb" – the boat doesn't provide enough feedback to the helm – as the rig is too rigid and cannot respond to the affect of gusts and waves. In "ideal" conditions, the standard rig tension in use is 27-28 on the gauge (320/340lbs, 146/155kg). Less tension is used in lighter conditions – on average about 24 (270lbs, 123kg), with some dropping as low as 22 (240lbs, 109kg). I leave the tension at about 28 for the heavy stuff – some lighter teams reduce the tension to de-power the rig by letting the mast bend; a few of the heavier teams increase the tension to 30 (400lbs, 182kg).

Mast Foot Position – adjusted only if the above settings do not give a balanced boat. How can you tell if you're boat is balanced? In conditions at or just below your "ideal", sail upwind with the sails trimmed and the boat flat – difficult to judge from inside the boat, so ask someone to sail/motor behind you to let you know when you're sailing flat. If the boat is balanced there should be little or no pull from the tiller extension. With the mast foot in its standard position at the back of the track, you may find that the tiller extension is pulling quite hard – the boat wants to luff-up. To overcome this you need to move the rig forward in the boat – one hole forward usually cures the problem; two holes forward at most. The bad news is that this will affect the mast rake, etc. so you will have to check and re-adjust your other static settings.

Two other settings should be adjusted ashore. Firstly the tension on the jib luff can be altered by untying the thin line at the tack. In light wind/flat water conditions, you should have very little tension on the jib luff (i.e. horizontal creases are okay) or you will not be able to point upwind. In stronger wind/waves, more tension should be applied to keep the boat driving through the gusts and over the waves. Secondly the position of the jib fairleads should be adjusted to ensure the leech of the jib follows the luff of the main to give the proper slot shape. The fairlead position depends on the length of the shackle you use at the tack of the jib – all the way back for a long shackle and one hole forward for a short one.

Dynamic set-up – adjustments to make while racing

Now you're happy with the static set-up, it's time to work out what to adjust while sailing and how these adjustments will affect the handling and performance of the boat. The main controls are the sheets (obviously!), the kicker, the outhaul, the cunningham, the centreboard and the trim:

Sheets – upwind the jib should be kept in tight at all times, except in extremely strong winds when it may have to be eased during big gusts to avoid a capsize. 2:1 jib sheets can help in these conditions as they make it easier for the crew to uncleat the jib as a gust hits. The RS200 mainsheet needs to be worked quite hard upwind to get the best from the boat. The main should be eased for every gust and wave to keep the boat flat and driving hard – due to the relatively short centreboard, the boat simply slides to leeward if allowed to heel. I prefer to sail without a mainsheet cleat to encourage me to work hard. Smaller/lighter helms are permitted to add an extra purchase to the mainsheet to reduce the sheet loads.

Downwind the spinnaker is the key to speed and control and must be appropriately sheeted at all times – with the luff just about to collapse. In light wind the main and jib should be adjusted for speed and power – it is more important to correctly sheet the jib downwind in the RS200 than in some other classes, as the spinnaker is proportionally quite small so the power of all three sails is important. As the wind increases to marginal planing conditions, we have found that it pays to slightly over-sheet the jib downwind, so it becomes correctly sheeted when the apparent wind moves forward during planing – this leaves the crew to concentrate on the spinnaker. As the wind increases further and you become overpowered, various steps can be taken to retain control. The adjustments to the sail controls are explained below. When overpowered, you should still aim to hoist the spinnaker – it stabilises the boat downwind and it's almost impossible to gybe without it. The crew must keep the spinnaker correctly sheeted at all times – too tight and you'll capsize, but let it flog and you'll lose all control! The helm should be prepared to ease a lot of mainsheet and bear away hard in the gusts to keep the boat flat and under control. If you're really overpowered, letting the jib flap also helps.

Kicker – the most important control in the boat. Upwind the kicker has a huge affect on power and pointing ability. The best indicator of correct kicker tension upwind is when the second leech telltale down on the mainsail is flying about half the time – even then, you should tend towards too much tension on flat water to maximise your pointing. As the wind strength increases, you should continue to apply more kicker tension to control the power in the main – pulling it on during a gust and easing slightly afterwards. The only exceptions to this are in very light wind, when just enough kicker should be used to flick the battens during a tack, and in big waves where the kicker can be eased a little to help the boat drive through the waves. The recently permitted increase in kicker purchase to 16:1 should enable all teams to adjust the kicker upwind.

On a run the kicker should be eased right off in lighter conditions – the less the kicker tension, the lower you can sail towards the mark. In marginal planing conditions some more tension is required to control the power in the main and promote planing. As the wind increases further, on both a run and reach the kicker should again be eased to spill wind from the top of the sail and keep the end of the boom out of the water to avoid a broach.

Outhaul – pretty simple! Until you're overpowered, upwind the foot of the sail should just be in contact with the boom and downwind the outhaul should be completely eased. When you're really overpowered upwind and downwind, keep it pulled tight.

Cunningham – there are two schools of thought on use of the cunningham. Steve Dunn and I advise it's use only as a last resort to reduce upwind power in survival conditions – otherwise it has too great an effect on your pointing ability. However, others recommend its routine use to control the position of maximum depth in the mainsail at one third back and one third up. All I can suggest is that you try both and stick to what suits your sailing. There is one time that the cunningham is invaluable. When you're overpowered on a reach, pull it on as hard as you can to de-power the mainsail by opening the top of the leech.

Centreboard – again, two schools of thought. In light winds on flat water some teams raise the centreboard downwind. The logic is that you can point up to keep the spinnaker full, but the boat will skid sideways making faster downwind progress. I've found that you need to put it down again to gybe and feel that this unsettles the boat, losing all you've gained. Hence I leave mine down all the time.

Trim – as I said above, flat is fast. It's critical to adjust the sails and your position to keep the boat flat at all times. In light conditions, it's important to get the weight forward to lift the flat areas near the stern out of the water to reduce drag. Upwind the helm should have a leg either side of the thwart and the crew should be forward in the cockpit or against the shroud. Downwind the crew should be against the windward shroud and the helm on the leeward

side of the thwart. As the wind increases, you can move to a more neutral position upwind – one either side of the thwart. In waves, you may find that you need to move back slightly (still one either side of the thwart) to avoid burying the bow and filling up. In marginal planing conditions and above downwind, I find that I need to helm from windward to maintain control. Depending on your weight and the wind strength, the crew sits on either the thwart or side-deck, moving further aft as the wind increases. In really wild conditions, the helm will be right at the transom with the crew trying to sit on their lap, to keep the bow out of the water! The last word on trim relates to use of the rudder. As I said above, every time you steer with the rudder you slow the boat down. Hence you should try to use trim to steer the boat – trim to leeward to luff and to windward to bear away. If your boat is well balanced, the RS200 is easily steered with trim, even through tacks and gybes. Don't be embarrassed to try rudderless sailing – it'll teach you a lot about using trim to sail the boat fast.

Summary

I hope that this helps you to achieve a reasonably fast set-up for your RS200. It is only a guide, but should help you get "in the zone". Once you're there, the key to speed is practice. If you'd like more information or assistance in setting up and sailing your RS200, join the RS Class Association and come along to one of the regular coaching days. Also, being a friendly fleet, you'll find that advice and tips are always freely offered at events ... and appropriate point to thank everyone who offered assistance when I joined the fleet, not least my long-suffering crew Laurie Dunn!