

Three SS22 Skippers on Rig Tuning

From Andrew on Parking Space

Both the inner fore stay and back stay are played with often on Parking Space. I throw the back stay away to maximum sag on most downwind legs. This probably leads to negative rake in the rig. The fore stay looks floppy on the downwind legs.

Upwind I vary the tension depending on the wind strength. We do not have a #1 head sail so if it's light, we use our #2 with an appreciable amount of head sail sag to compensate for lack of drive of the smaller sail (especially if the water is not smooth).

I suspect parking space's mast is a little more flexible than many. Because of this I have cut my mainsail fuller than most (you'll note it's not a fully battened main either). I have the adjustment of 10:1 (probably could be more) on the foredeck for the crew up there to play with (keeps them from falling asleep). They also manage the vang and Cunningham.

If it's fresh to strong, we pull the inner fore stay on as hard as we can then control mast bend with the back stay. A bent mast gives a flat main. If it's moderate to light the inner fore stay has just enough tension to not be floppy.

If you're curious about rig dimensions I'd be looking at fore stay length as this regulates your mast rake. I have lengthened mine a few times since I've owned the boat. But I've no idea what it actually is as I do this stuff by feel. I suspect my mast head is about 25-30cm aft of the mast step.

Cap-shrouds and D2s on Parking space are only firm. I used to have them set quite tight but I think all this did was bend the boat as the leeward shrouds were still floppy on a breezy day upwind. So I have them set so that the rig does not sag into the slot, but not as tight as you'd imagine. Our boats are old after all.

One other thing I'd mention here is luff tension on old sails. Until we got around to making our current sails, all the sails on the boat were hand-me-downs. One thing you need to do with old rags is carry more luff (halyard/Cunningham) tension than with new sails. This is because the leach of a sail stretches (which moves the draft aft) as it gets older and stretching the luff similarly helps compensate for this. A floppy leach (and aft draft) is a bad thing. I see boats with old sails racing with saggy luffs on windy days. On light days, not so much of a worry. In +12 knts start to get the luff tension happening if your sails are old.

On Parking Space we set the inner forestay at the start (just like picking to correct head sail). If the conditions change we make the call to tighten it at the end of the down wind while the rig is slack. You can get tiny blocks and 4mm spectra that can take enough load to pull the fittings out of your deck, so more than enough for an inner fore stay adjustment. Ronstan do small blocks that are good for +400kg. I think we have 4:1 with a doubling block to give us 8:1? It's not a huge amount but if you never adjust it against a tight back stay or main sheet (remember the main sheet also tightens the rig/fore stay), you'll be ok with that.

As i said in the other email. If you leave the adjustment on the fore deck you can have the fore decky handle it. The less lines you have coming back into the cockpit the more inclined you are to actually sail the boat and not feel constantly drawn to tweaking the rig. Cunningham, vang and inner fore stay are all at the mast on my boat. Besides the more you give the fore decky to do, the less likely they are to disengage and forget they are sailing (which is when that opposite tack boat you didn't see becomes a problem)

From Bruce on Wildfire

The mast should have a little bit of rake & of course be vertical laterally.

The inners are tightened first then the uppers to make the mast straight. The side stays should be quite tight when the boat is in the pen. The forestay length is adjusted to make the mast have a little rake & the backstay is used to tighten the forestay so it is nice & tight upwind & can be slackened when reaching & running. The forestay should be tight upwind especially in moderate - strong winds. A slack forestay is a disaster as the luff of the jib sags off & the boat won't point.

It is quite easy really. Adjust the forestay length so the mast has about a mast width of rake. Just sight the mast side on from 50m away. Do this with a small amount of backstay tension just so you know the forestay has a little tension. You should only bend the mast to about a mast width at the top otherwise you may punch the mast through the bottom of the boat or break it. They are very stiff masts. Gauge this by looking up the mast from the mast step.

You need lots of mechanical advantage to be able to adjust the baby stay whilst sailing. This is a bit difficult to achieve. It can be done with multiple pulley drops...have a look at Wildfire. It took me a lot of experimentation but it does work.

From Mike who used to be on Raconteur

1. There is no specification for forestay tension on an SS22. In an ideal world the forestay would be straight, with no sag under any conditions, which is generally impossible to achieve.

Any sag will affect the shape of the headsail, the sail maker will have assumed that there will be a certain amount of sag when the sail is designed - that assumption will be based on experience.

The tension in the forestay on an SS22 is set, and can be adjusted, by varying the tension in the backstay - tightening the backstay tries to pull the mast forward and thus increases tension in the forestay.

This can be very useful. When the forestay sags it tends to make the headsail deeper. This in turn makes the headsail more powerful, but not able to point as well.

So by careful adjustment of the backstay it is possible to adjust the power in the headsail to suit varying wind conditions.

This adjustment is very subtle and a way of learning how best to do it is to lie on the foredeck, whilst fully trimmed on the wind, looking up the sail and get someone else to adjust the backstay. You should be able to see the depth of the sail change.

So backstay on de-powers, backstay off powers up. So generally - tight backstay in heavy wind and looser in light winds.

This may also affect the pointing ability of the boat as well as how easy it is for the helmsman to keep it "in the groove" but that's a whole other topic!

2. The baby, or inner forestay tension also has no set specification - on many boats it is easily adjustable while sailing.

Apart from just helping keep the rig stable and prevent possible "pumping" of the mast under certain conditions, it's main role is very similar to the backstay but this time affecting the mainsail.

Tightening the inner forestay will bend the mast forwards in the middle which could be thought of as inducing "negative sag". As with the headsail/backstay arrangement, this alters the depth of the main. Tightening the inner forestay and bending the mast forwards will reduce the depth of the main and de-power it. It will also reduce the amount of backwinding of the luff of the main when it is eased off to cope with heavy wind whilst sailing to windward.

Of course backstay tension in conjunction with inner forestay tension will also affect mast bend.

As Bruce said (I think) - mast rake's major effect is on boat balance i.e. how much weather helm you like going upwind.

Raking the mast moves the centre of effort of the sails with respect to the centre of effort of the keel. If the COE of the sails is behind the COE of the keel then the boat will tend to head into the wind if you take your hand off the tiller while going up wind. And visa versa.

I increased the rake on Raconteur as there was hardly any weather helm. How much weather helm you should have is yet another story! Generally enough to weather helm to require some pressure on the tiller which helps pointing but not so much that the rudder drag slows the boat

So - what I would do is

Set up the boat with very little baby stay and full backstay and sail upwind correctly trimmed for the conditions and notice how much weather helm you have. You really need the boat to be fully powered up with 12+knots of breeze.

If you want more or less then adjust the length of the forestay - hopefully there is a turnbuckle. Longer forestay, more weather helm.

Weather helm is also greatly affected by angle of heel so you need to trim the boat for optimum heel - maybe somewhere around 20 deg.

The bend in the mast is usually measured at the point where the babystay is attached. You may be able to use a spare halyard to form a straight line between the mast head and mast base. One section width (width of the mast from front to back) is the MAXIMUM you should go for on a new rig. Old rigs? Who knows!!

With no easy adjustment of the babystay I would have it just taut unless your mainsail is always far too full in which case some permanent mast bend may be a good idea.