

# J/22 TUNING GUIDE



# **J/22**

The Quantum Sail Design Group is always looking for ways to give sailors an edge. And a competitive edge is more important than ever in the increasingly competitive J/22 Class. Precise tuning of the rig is a critical performance ingredient. It's also important to be able to reproduce your settings when you find something that works. Here we offer tuning tips that can set you apart from the competition.

***IN ADDITION TO PRECISION TUNING TIPS, OUR J/22 GUIDE OFFERS INFORMATION ON:***

***RIG TUNING***

***SAIL SETTINGS AND TRIMMING***

***SHROUD TENSION***

***RIG PLACEMENT***

***BOAT PREPARATION***



# RIG TUNING

The information in this guide will help you achieve the greatest performance from your J/22 so that you get the best possible experience in all conditions. We'll also explain the process behind tuning your boat and why it's important to the overall performance.

There are two benefits to tuning your rig to the right spot. First, it produces weather helm so that boat feels fast, and, second, tuning makes the boat easier to control to maintain speed through changing conditions. It's all about balance between forward speed and power in the sails.

## MARKING THE HEADSTAY

With the mast down and the headstay attached at the top, lay the headstay down the front of the mast and put a mark on the headstay at the top of the black band at the boom. This mark makes it easy to measure and check the headstay length. This is an important step, so try to be precise in your measurement.

Before stepping your mast, there are a few things you need to do:

- Due to the amount of rake you are carrying, we suggest using the angled mast plate. (The flat mast plate puts a lot of tension on the front pin and may cause some cracking around the deck.)
- Clean and lubricate all turnbuckles so they last longer and are easy to adjust.
- Check the distance from the top of the crane head to the spreader tips, and make sure they are equal lengths on the shrouds.

Now stand the mast in the boat. Nothing will make a more drastic difference in performance than not having the mast in the center of the boat. Check to make sure the mast is centered by measuring along the side of the boat from the tack horn to the approximate area of the crane head (top of the mast), and then make a mark on the toe rail. Duplicate

the recorded measurement on the other side of the boat and make a mark. Center the mast using the marks on the toe rail.

Now that you have the mast up and centered, it's time to adjust your headstay. The mark on your headstay and the intersection of the headstay tang at the deck should be between 4'11½" and 5'1". (Due to the difference in keel shapes and placements, it's important to remember that the optimum headstay length may vary from boat to boat.) Fine-tune this length by experimenting. When sailing in 5 knots of wind, you should be able to keep the boat almost flat without getting any lee helm. If you have lee helm or no weather helm, increase the rake or headstay length in ½" increments until the boat has some weather helm.

Other things to take into account when setting your headstay length:

- Wind strength in your sailing area. In general, the lighter the wind, the more rake you will need.
- Lakes or flat-water areas. If you sail in relatively flat water, you can use a little less shroud tension, which will increase headstay sag and help your pointing.
- Bays or areas with chop from waves or powerboat wake. In constant waves, the luff of the jib as well as the whole rig may pump if the rig is too loose. You may need to increase the rig tension to dampen the effect of the waves on the rig.
- Crew weight. Weight will have some effect on the rig tension. When sailing a lot lighter than the 605 maximum weight rule, you may want to increase the rig tension. This increase will start to depower the rig earlier and help smaller crews sail the boat flatter before starting to apply backstay.
- Jib clew height. If you increase the rake of the mast by making the headstay longer, the jib clew will get lower. This in turn will move the jib block forward. There comes a point at which the jib clew gets too low to sheet, and you cannot get the proper jib lead. The result is the leech being to open, which hurts your pointing. The height of the jib clew is important, so be sure to check it.



# RIG SETTINGS

## LOOS MODEL A

<i><b>TWS</b></i>	<i><b>UPPERS</b></i>	<i><b>TURNS</b></i>	<i><b>LOWERS</b></i>	<i><b>TURNS</b></i>	<i><b>HEADSTAY NUMBER</b></i>
0 to 4	23	+ 1	20	+ 1/2	4
5 to 9	30	+ 1	24	+ 1/2	6
10 to 13	35	+ 1	27	+ 1/2	9
14 to 16	39	+ 1	32	+ 1/2	15
17 to 18	41	+ 1	35	+ 1/2	19
18 to 25	44	+ 1	42	+ 1	23

## LOOS MODEL PT1

<i><b>TWS</b></i>	<i><b>UPPERS</b></i>	<i><b>TURNS</b></i>	<i><b>LOWERS</b></i>	<i><b>TURNS</b></i>	<i><b>HEADSTAY NUMBER</b></i>
0 to 4	15	+ 1	11	+ 1/2	3
5 to 9	20	+ 1	15	+ 1/2	5
10 to 13	25	+ 1	19	+ 1/2	8
14 to 16	28	+ 1	21	+ 1/2	10
17 to 18	31	+ 1	25	+ 1/2	13
18 to 25	33	+ 1	30	+ 1	17



# RIG SETTINGS

Rig tension numbers are calculated with the small Loos Tension gauge. When you have the appropriate rig tension, always check your headstay target number. This is an important step. The headstay target number will match the proper headstay sag to the jib for the given wind condition. These target numbers are based on a headstay length of 4'11½". Less headstay length will result in a tighter headstay, so the shroud tension must be eased accordingly. More headstay length will result in less headstay tension, so more shroud tension must be used to hit the headstay target number. This change is caused by the amount of rake you carry. Shroud placement on the mast and the chainplates becomes more vertical; the rig is more in line, and the shroud tension is not as quickly transmitted to the headstay.

Always set the rig tension for the lightest wind you expect for the race. Keep records of shroud tensions as well as sheet leads, backstay, and outhaul. These records should help you duplicate your setting from race to race.

Easing off the rig to the lowest setting at the end of the day is great for the longevity of the boat. It not only takes the strain off the boat, but it also helps you to know exactly where the rig is set when you arrive at the boat the next morning.



# MAINSAIL TRIM

## 0-5 KNOTS

Your boat needs all the power you can find. Pull up the traveler to about 2" from the windward seats. Ease the mainsheet until the boom is on the centerline. Ease your outhaul so the shelf opens up about halfway. Sighting up from the boom, the top batten will be twisted off to leeward or opened about 5°. Make sure the boom vang is loose and backstay is at the top of the "Y." When trimmed properly, the top batten telltale will fly about 60 percent of the time with the lower telltales flowing all the time.

## 6-8 KNOTS

As the wind begins to increase, flatten the mainsail and remove some of the twist. Start by adding some mainsheet until the top batten is parallel to the boom. With the additional mainsheet tension, the boom should be a little above the centerline. Drop down the traveler another 2" or so to keep the boom centered. Slowly increase outhaul by about 1/2". When trimmed properly, the top telltale will fly about 30 percent of the time with the lower telltales flowing all the time.

## 8-12 KNOTS

By now you should have the traveler about 2" high or on the centerline. Apply enough mainsheet to keep the top batten parallel to the boom. The top telltale will fly only about 15 percent of the time. By this time, you may also be pulling on some backstay. This will open up the leech and add some twist. You will have to constantly change the sheet tension as you change the backstay tension.

At this wind speed, start to vang sheet the mainsail (You are going to use the boom vang to take the place of the traveler.). Once the mainsail is trimmed, apply enough vang tension to equal the mainsheet. As the wind increases, the vang tension will increase so that when the mainsheet is eased, the boom doesn't rise and get too much twist. Too much twist in this condition will hurt your pointing.

## 12+ KNOTS

You are now starting to play the backstay and full-on vang sheeting. The vang has now become the traveler. Be careful not to overtrim the main. With about 1/2" backstay on and the main trimmed in the boom, you will be about 8" below centerline. Play the backstay aggressively in the puffs to prevent the boat from heeling and getting excessive weather helm. The trick at this wind speed is to pull backstay on before the puffs and let it off in or before you the light spots.

# JIB TRIM

To find the proper jib lead position, head up slowly and watch the jib luff and telltales. If the top starts to luff first, move the jib car forward. Ideally you are trying to get all the telltales to luff at the same time or the top telltale to break a little sooner than the bottom. With the luff breaking evenly, sheet tension should be enough that the middle batten parallel to the centerline. The leech telltale on the top batten should be flowing all the time.

Too much sheet tension will stall the top, cause backwind in the mainsail, and clog the slot between the main and jib. With the jib being so tall and skinny, the leech has a tendency to open up and start to depower as soon as the jib sheet is eased.

## **LIGHT AIR (0-8 KNOTS)**

In light air, keep the jib sheet eased almost to the toe rail and an eye on the top leech telltale. Also watch for small scallops between the jib hanks. The lack of luff tension should keep the draft aft and help pointing. With the backstay off, the headstay sag should give you a wide grove to steer to.

As wind strength increases, add to the halyard tension so you see only small wrinkles. Keep in mind that the increased halyard tension will also tighten the leech, so you may need to ease the sheet as you change the halyard.

## **MEDIUM AIR (8-12 KNOTS)**

Sheet tension is critical to pointing. Too little, and the top opens up, hurting your pointing. Too much, and the helm starts to feel neutral. To find your maximum trim setting, slowly trim the jib as you are sailing upwind. As the jib trim increases, the helmsman will feel the helm go dead or neutral. Towards the top end of this wind range, you will start to move the jib lead back about  $\frac{1}{2}$  -  $\frac{3}{4}$ ."

This will open the leech and start the depowering process.

## **HEAVY AIR (12-18 KNOTS)**

You are now starting to depower the jib. Move the jib leads aft another  $\frac{1}{2}$ ", and increase halyard tension so the luff is smooth. As you start to move into the middle to upper ranges of this section, you will have the backstay around  $\frac{1}{4}$ "- $\frac{1}{2}$ ". This will tighten the headstay and make the jib flatter. The jib trimmer and the helmsman must work in unison to trim and ease with the puffs.

When the puff hits, the helmsman will ease the mainsheet to keep the boat flat. This may cause the mainsail to backwind or the entire sail to luff. If this happens, the jib trimmer should ease the jib out 1-3", or until the mainsail starts working again. Easing the jib sheet will twist off the leech and open up the slot between the main and the jib. As the puff ends, you can power up the sails again by trimming back in.

# CREW PLACEMENT

Though this tuning guide progresses in wind speed increments, you should also consider where the crew weight is positioned.

**0-5 KNOTS:** The helmsman should always try to sit to windward, even if it is on the seat. His or her weight should be in front of the traveler and as far forward as possible. This keeps the helmsman in the best place to look at the jib telltales, mainsail trim, and waves.

The jib trimmer should be on the low side or in the companionway hole as far forward as possible. Depending on your individual crew sizes, the jib trimmer may need to sit all the way out on the leeward side, where he or she has a better view of the jib and the competition on the low side.

If possible, the foredeck should be in the middle of the boat. This keeps his or her eyes looking up the course and able to better call the puffs.

**6-10 KNOTS:** The helmsman should be on the high side with the bowman sitting by the shrouds against the cabin side. From there, the bowman can move his weight in and out with very little movement. The jib trimmer can now slowly move into the center of the boat, making sure to stay as far forward as possible.

**10-15 KNOTS:** All crew should be on the high side. The bowman should be moving aft next to the middleman. The middleman should be even with the winch, keeping the jib sheet in hand and the handle in the winch. This makes it easier and faster to fine-tune the jib sheet.

If the boat has enough power, have the crew always sit with your legs out over the side of the boat. This will put the weight further outboard while opening up the view for the helmsman.



## CHANGES TO THE STOCK BOAT:

- Shorten the backstay to accommodate the longer headstay length, though not all boats will need to make this adjustment. South African boats come with a backstay that is adjustable at the top of the “Y.” The top of the backstay above the two legs has a loop similar to most stock US boats. The tops of the legs connect to an “O” ring, while the bottom of the legs pin directly to the backstay chainplates on the transom. The top of the backstay connects to the legs using a short piece of spectra line.
- Upgrade your sheets and halyards. The newer high-tech lines have lower stretch, and, in most cases, don’t absorb any water. This is especially helpful with spinnaker sheets. West Marine has supplied a chart of their recommendations. This will help you match the best and lightest lines with the intended job.
- Move the backstay control line forward. we prefer to put it just forward of where the driver sits. This allows the jib trimmer to reach it in case my hands are full.
- Increase the boom vang purchase from the 4-to-1 to the 8-to-1 allowed by class rules. The additional power will help even the smallest bowman get enough tension.
- Install winch handle pockets on the port and starboard sides of the companionway. This will help the jib trimmer reach them easier while hiking.
- Add foot braces to the edge of the seats. A small strip of teak or plastic screwed to the inside top edge of the seat will give the helmsman and crew better footing when the boat heels over.
- Shorten all lines to minimum lengths.

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At Quantum Sails, we test and tinker with our J/22 sails year-round in order to improve their speed, durability, and ease of use. We do our best to share what we learn with all J/22 sailors. If you have questions about our sails or tuning procedures, or if you’ve found something that works better, please contact your local Quantum Sails loft. Have fun sailing, and we hope to see you out enjoying your J/22.