J/22 TUNING GUIDE

Updated following the 2024 World Championship in Annapolis, this guide incorporates the setups and techniques used by the top finishers. It covers rig setup, sail trim, and crew placement to help you get the most out of your North J/22 sails.

What You'll Need

Before getting started, have the following tools on hand:

• Loos PT-1 Pro Model wire tension gauge (~$100, available from sailing suppliers): This is the standard tool for measuring rigging tension. All tension references in this guide use the PT-1's scale.

• Tape measure and permanent marker or tape: For measuring forestay length and marking the mast centerline position.

• Calipers (optional but helpful): For measuring turnbuckle positions in millimeters so you can reproduce your settings precisely.

Boat Preparation

The suggestions below are for the M-7 mainsail, which performs best with the angled step (a forward-raked mast position designed to add power and improve pointing), and the Big Foot Jib.



1. Pull your jib halyard down alongside the mast and tension it so the halyard shackle is just even with the top of the gooseneck band (the fitting at the base of the mast where the boom pivots). Cleat the halyard at this point. Next, swing the jib halyard out to the forestay and pull it snug alongside the forestay. Place a mark (either with a piece of tape or a permanent marker) on the forestay at the very bottom of the halyard shackle. Measure from this point (which represents the top of your band) down to the junction of your template and bow plate.

For the angled step, hull numbers prior to 1460, and the M-7 main, this measurement should be 4’ 11”.

For the angled step, hull numbers 1460 or after, and the M-7 main, this measurement should be 5’ 1/8”



2. To aid in centering the mast laterally in the boat, place a pencil mark 8’ back from the stem fitting at the shear (the hull-deck intersection) on each side. Then hoist a tape measure on the jib halyard and measure to these pencil marks. Adjust the upper shroud lengths correspondingly on each side of the boat until the mast is centered.

3. Tension the uppers (upper shrouds — the diagonal wires from the deck chainplates to near the masthead) to 250 lbs (26 on the PT-1 gauge) with very loose lowers (lower shrouds — the wires that connect to the mast at spreader height). This setting, calibrated for 10 knots of breeze, is your “base” number. Check that the mast is straight.

4. Tension the lowers so the mast is straight laterally when sighting up the slot at the back of the mast. The lowers “base” number should be at or close to 5 on the newer black PT-1 Loos Pro Model gauge. It’s important to set the lowers while sailing upwind to ensure they are equal (same amount of sag on both tacks).

5. Re-measure the side to side position of the mast to ensure that it is still centered. If you have calibrated turnbuckles, record the respective numbers. With open body turnbuckles, using calipers is helpful for repeatability. Measure the distance between studs and write down the corresponding numbers in millimeters.

6. Check that you have developed the proper pre-bend in the mast by pulling the main halyard taught to the gooseneck. The distance between the back of the mast and the main halyard at the spreaders for the M-7/angled step should be close to 1".

7. Check your forestay tension without any tension on the backstay and with the rig still tensioned to your base settings. The forestay tension should be close to 6-7 on the PT-1 gauge.

8. Check that your backstay is the proper length. Sometimes on older boats, and especially with the increased rake of the M-7/angled step, the backstay may be too long and "bottom out" too early, not allowing enough backstay tension to be applied in heavier winds. If this problem exists, the backstay may need to be shortened a few inches at the top.

Rig Adjustment On Shore

We suggest you start each day by setting your rig close to the base numbers (or do this at the end of the previous day's sailing). Before we leave the boat after sailing, we always reset the rig to our base caliper numbers.

UPPERS: 250 lbs (26 PT-1)

LOWERS: 5 PT-1 (Sight sag while sailing)

Rig Adjustment on the Water Adjustment Shroud Tension: The Visual Method

This visual method is our suggested way to set your shroud tension for all crew weights and in all wave and breeze conditions. We feel that it is not only a relatively simple technique to use, but also the most accurate way to achieve proper and consistent rig setup in the J/22.

Set your rig tension so that the leeward upper shroud just starts to appear slack – not sloppy, but just not taught. Start out close to the upper shroud tension suggested in the chart below for your best guess of the present wind velocity. When sailing upwind under proper sail trim, watch the leeward upper shroud, and if it has a great deal of "wiggle" (more than a ½" back and forth), tighten both sides equally until the leeward upper is again just starting to go slack. If the breeze lightens, or you start out too tight (no wiggle at all), back off both uppers equally until a slight wiggle just appears.

The lower shroud tension is checked by sighting up the slot in the back of the mast (lay your head on the windward side of the mainsail facing forward and looking up the mast groove). There should be a slight sag (approximately ½" to 1 ½") to leeward at the spreaders in all conditions except very breezy ones (20 knots and above) when heavy boom vang tension is used. In breezy conditions the mast should be almost straight. Never, in any condition, should the mast bow to windward at the spreaders! You'll have the most sag in very light air and the least sag (straight) in 20 knots and up.

Adjusting Forestay Length

Although the forestay length set on shore for your boat's hull number is generally correct, you can also check to make sure on the water that it's as accurate as possible. Doing this is easiest in 6-8 knots of breeze with a crew of maximum J/22 class weight. In this wind strength, the crew should be all just hiking, and the boat should be nearly flat, with only about 3–4 degrees of heel. Make sure your shroud tension is right, and your sails are set up and trimmed correctly

for the wind speed. The backstay and other sail-depowering controls should not be needed in these conditions.

Follow these steps:

1. With the boat sailing comfortably upwind, gently release the helm completely and watch what the boat does. Do this several times to confirm the result.

2. Correct result: The boat goes straight for 3–5 seconds, then slowly turns downwind. You're done — pin and tape the forestay.

3. Boat turns upwind (too much rake): Shorten forestay two full turns and repeat the test.

4. Boat goes straight but never turns down: Close — shorten one more full turn and repeat.

5. Boat turns down in less than 3 seconds (too little rake): Lengthen forestay one or two turns and repeat.

Once you achieve the result in step 2, pin the forestay and tape it.

Upwind Sail Trim

Once you have the rig set up properly, you can now concentrate on trimming your North J/22 sails for maximum boat speed. At this point, it's critical to mark your shrouds, sheets, tracks, halyards, outhaul, and backstay. Keep accurate records of these settings (fast or slow), the conditions you're sailing in, and what the other boats are doing differently. It's essential to be able to duplicate settings from race to race and to know how your boat was set up when you were going fast.

The Mainsail

MAINSHEET

Trim the mainsheet hard enough to make the top batten parallel to the boom. You can check this by sighting from underneath the boom on a lateral plane. Once you've accelerated and you want to point higher, trim harder to cock the top batten slightly to windward. We generally recommend sailing with the top leech telltale stalling 75% of the time. In flat water, you can trim harder, but in light air and choppy water, you'll need to ease the mainsheet (there should be no vang) to twist off the top of the main so that the top batten is eased open about 10 degrees from parallel.

Trim your mainsheet so that the upper batten is parallel to the boom for 75% of your sailing.



TRAVELER

In light to moderate air, keep the traveler car (the sliding track that controls the boom's lateral position and therefore the mainsail's angle of attack) to windward so the boom is close to centerline. When you have the traveler to weather, be sure to ease the mainsheet until the top batten is twisted off considerably (15 degrees past parallel). This can be most effectively achieved by pulling the traveler to windward until the car is within 2" of the windward cockpit seat.

As the breeze increases, gradually drop the traveler to reduce helm while at the same time trimming the mainsheet. In heavy winds (above 15 knots), leave the traveler on centerline and play the mainsheet constantly to maintain helm balance. Also, tension the vang quite hard to control leech tension.



Position the traveler just below the weather seat in light winds to help keep the boom close to centerline.

OUTHAUL

You can use the outhaul for power in the bottom of the mainsail because outhaul tension primarily adjusts the shape in the main's lower third. A looser outhaul increases lower leech "hook" and adds fullness. This can aid pointing ability as well as increasing power. A tighter outhaul flattens the lower sections of the main, which helps to minimize windward helm and reduce drag. Remember that in flat water and light winds a flatter sail is fast, whereas in chop a slightly fuller sail is needed to give the necessary punch.

A good guide for tensioning the outhaul is the distance between the side of the boom and the middle of the shelf foot seam (a seam that runs from the tack to the clew of the main). In heavy winds, the outhaul should be tensioned tightly so that the shelf is completely closed, and this seam is right alongside the boom. In medium winds, the outhaul should be tight enough so that this seam is about 1" off the side of the boom. In choppy conditions or when power is needed, ease the outhaul so that this seam is 1 3/4" off the boom's side. Never have the outhaul any looser, except while sailing downwind, when it can be eased so that the shelf is nearly all the way open. The shelf foot seam will then be about 3" off the side of the boom.



Determine outhaul tension by measuring the distance between the shelf foot seam and the side of the boom.

BACKSTAY

The backstay affects several different areas of sail trim and should never be overlooked as a power control. Pulling on the backstay does two things to the sail plan. First, it bends the mast by pulling on the tip, which opens the main leech and flattens the upper two-thirds of the sail. Second, it makes the headstay tighter, which flattens the upper entry of the jib and eases its leech, thus increasing pointing ability and reducing heel. Because pulling on the backstay has a large effect on main leech tension, whenever you adjust the backstay you should check your mainsheet trim and vang tension. Assume minimum tension when the backstay blocks are at rest and maximum tension when the blocks are about 1’ above the deck.

The backstay turnbuckles should be adjusted according to conditions. Ease the turnbuckles in light air so the backstay has no tension and the backstay blocks ride just below the connector plate. Shock cord can be used to help the blocks ease all the way. As the breeze increases, tighten the backstay turnbuckles in relation to the uppers and lowers. Every time you increase rig tension, you should also put turns on the backstay turnbuckles. Remember that, just like shroud tension, the backstay turnbuckles cannot be changed after the preparatory signal.



CUNNINGHAM

The main cunningham (a line attached to the luff of the sail just above the tack, used to pull the draft forward or aft) is used to position the draft of the sail. Aim to keep the maximum draft point close to 50% back in the sail (sighting from luff to leech). In up to 10 knots of breeze, you need very little cunningham. In 11-12 knots, use just enough cunningham to remove many of the wrinkles in the main. And as winds rise above 12 knots, progressively tighten the cunningham to remove all the sail's wrinkles (a smooth luff) and maintain proper draft position in the top of the sail.

VANG

The boom vang (a tackle running from the boom to the base of the mast that controls boom height and therefore leech tension) should be slack until about 12 knots of breeze when you must start depowering. From there, it should be pulled on snug until you want to start easing the mainsheet because the boat is overpowered. In that case, pull the vang hard (you should see the boom bending). More on boom vang tension is given in the Heavy Air Techniques section below.

UPWIND SAIL TRIM QUICK-REFERENCE

Control	0–8 kts (Light)	8–15 kts (Medium)	15–20 kts (Heavy)	20+ kts (Survival)
Mainsheet	Top batten 10° open; no vang	Top batten parallel to boom; telltale stalling 75%	Play constantly to maintain balance	Ease aggressively; vang on hard
Traveler	To windward (within 2" of weather seat)	Gradually drop to reduce helm	Centerline	Centerline
Outhaul	Seam 1¾" off boom	Seam 1" off boom	Tight	Tight — shelf fully closed
Backstay	Off / slack	Gradually add as breeze builds	On hard (blocks ~1' off deck)	On hard
Cunningham	Off / very little	Just enough to remove wrinkles at 11–12 kts	Smooth luff; progressively tighten	Max — fully smooth luff
Vang	Slack	Slack until 12 kts; then snug	Hard (boom bending visibly)	Very hard
Jib Lead	Standard position	Standard position	Up to 2 holes aft of standard	Up to 2 holes aft of standard

THE JIB

Proper jib trim upwind has one of the greatest effects on speed and pointing. Usually, the biggest mistake most J/22 sailors make is over trimming the jib sheet. This sheet is normally trimmed so that the middle batten is straight aft parallel to the boat's centerline. In light wind and/or sloppy conditions, ease the jib sheet so that the middle batten is angled outboard 10-15 degrees. Also, in breezy conditions, ease the sheet for more twist in the leech. The jib leech telltale (the small ribbon of yarn attached to the back edge of the jib that shows airflow) should be flying but just about to start stalling. In the bigger breeze, however, this telltale will be less likely to stall because the jib is eased. Note that trimming the jib harder for short periods of time (where the middle batten is slightly hooked to windward of parallel to the centerline) is only effective in "ideal" boat-speed conditions (medium winds and flat water) because it narrows your steering "groove."

To maximize pointing ability, we suggest cross-sheeting (routing the jib sheet to the windward winch rather than the leeward one, allowing a more inboard angle) to the weather winch and using the larger Harken 009 ratchet blocks if possible. These blocks will allow maximum inboard positioning for the jib sheet lead.

The J/22 is very sensitive to jib halyard tension, which controls how far forward or aft the draft sits in the jib — too loose moves the draft aft and makes the sail baggy. For light and medium breeze conditions, the jib halyard should be set so that slight "crow's feet" wrinkles emanate from the snaps, with no scallops between the snaps. As the breeze increases, these wrinkles will become less visible as the halyard tension increases, and they should disappear at about the same time you are halfway into the backstay. As the wind continues to increase, use more jib halyard tension. To get maximum tension for survival conditions (winds above 20–25 knots,

when boat control takes priority over boat speed), turn the boat downwind and let the backstay off. The middle crew should then pull the jib halyard as hard as possible.

The starting jib lead position (called the “standard position”) for the M-7 main/ angled step and rake of 4’ 11” should be where the block on the car (not the pin, but the actual block sheave attachment point) is directly in line with the mast and the shroud chainplates (the metal fittings bolted to the deck where the shrouds attach). In heavier breezes (above 15 knots), move the lead aft to help depower the boat and widen the steering groove. The farthest aft the lead should ever be moved is three holes aft of the standard position.

A good way to check your jib lead position is to trim the jib in so that the mid-leech batten is sheeted correctly and the halyard is properly set for the breeze condition. In that case, the foot of the jib near where the “Big Foot” sticker is (about 18” back from the tack) should be just inside the toe rail. You should either be able to see the shadow of the toe rail through the jib foot or the jib foot should be pressed against the rail. If the shadow of the toe rail isn’t visible through the jib foot, the car is too far back and should be moved forward a hole. If the jib is on top of or outside the toe rail, the car is too far forward and should be moved back a hole.

We suggest drilling extra holes in your lead tracks so that finer tuning of the leads is possible.

Downwind Sail Trim

THE SPINNAKER

Maintain an eased luff tension in light winds The general rule of spinnaker sheet trim is to allow 8-10” of curl in the luff of the spinnaker.

The spinnaker has two lower corners called clews — the leeward clew is controlled by the sheet, and the windward clew is controlled by the guy. The outboard end of the pole should be even vertically with the free-floating (leeward) clew, and the guy should be continuously adjusted so that the pole remains perpendicular to the apparent wind.

Pole height has a big effect on spinnaker performance. An effective and easily visible guide is to position your pole so that the center seam of the spinnaker (the vertical seam running from the head to the middle of the foot) is parallel to the mast. This generally occurs when the clews of the spinnaker are at the same height.

Also be careful not to pull the pole too far aft, which over-flattens the spinnaker.

The most important trimming technique in light air is to concentrate on good communication between the helmsman and the spinnaker trimmer. The goal is to sail as low as possible while still maintaining good pressure on the kite. An easy way to monitor this is to assess the tension on the sheet. It’s important not to sail too high, which translates into longer distances, but also don’t sail too low or you’ll sacrifice boat speed.

The windward twing (a control line that pulls the spinnaker sheet down toward the deck to limit the sheet angle and keep the sail stable) should always be all the way down. When sailing downwind in light air, the leeward twing is completely released. In very heavy air, pull the leeward twing on about 2’ away from the deck (so the sheet is just clearing the boom) to help keep the spinnaker under control. It is critical to make sure that the leeward twing is off during the set. If it isn’t, the spinnaker will fill prematurely and can cause the boat to create weather helm and round up.

THE MAINSAIL

Ease the mainsheet until a luff appears and then trim slightly to create more apparent wind. Dead downwind the boom will be out to the shrouds. Set the vang in light to moderate air so the top batten is just open (pointed outboard) from parallel to the boom. The cunningham, backstay, and outhaul should all be eased for maximum power downwind.

THE JIB

The jib should be down on a downwind leg except in survival conditions when the concern is that you won't be able to get enough tension back on the halyard at the leeward mark. If this is the case, leaving the jib up and very eased, almost luffing, is not going to slow the boat.

CREW PLACEMENT UPWIND

In light air going upwind, the crew should be as far forward as possible (forward weight reduces drag by lifting the stern and helps the bow track cleanly through small chop), with the farthest-forward person just behind the shrouds. An aft weight shift by the crew of almost a foot will help the boat steer through waves and big puffs. The skipper should sit forward of the traveler bar and as close to the jib trimmer as possible. In big breeze, the crew will be shoulder to shoulder with the farthest-forward person about a foot back from the shroud base.

DOWNWIND

Downwind in light air, the crew should again be as far forward as possible, with the farthest-forward person just behind the shroud base. In large waves and in big breeze, everyone should be behind the companionway to keep the bow out of the water. It's also important downwind in heavy air to position the crew to the edges of the boat so as to keep it from rocking side to side.

SAIL CARE

Proper care will significantly extend the life of your sails.

MAINSAIL

It is not necessary to remove the battens from the main when storing it. Be sure to roll the sail up parallel to the battens (down the leech) to avoid putting a permanent twist in the battens. Be sure to wash the sail off with fresh water when it gets salty and dry thoroughly before storing.

JIB

When rolling the jib keep the battens perpendicular to the leech. Pay special attention to the battens and batten pockets for wear and tear. Since this sail is manufactured from firmer Dacron, problems can arise due to mishandling. Like the main, wash the sail off with fresh water when it gets wet with sail water.

SPINNAKER

The best thing you can do to prolong the life of your spinnaker is to always store it clean and dry. When the sail gets wet in salt water, wash the sail off and dry it thoroughly. Fold your spinnaker to store it if possible.

TUNING MATRIX

J/22 Tuning Matrix					
Wind	**Turns on Uppers**	**Turns on Lowers**	**Tension (PT1)**	**Upper Turns from Base**	**Lower Turns from Base**
0-5 “drifter”	-1	-0.5	20:0	-2	-1
Light (2 in boat) 5-8kts	-1	-0.5	23:0	-1	-.05
BASE 8-10kts	250 lbs	5 on PT-1	26:5	BASE	BASE
Fully hiked 10-12kts	2	1	32:18	2	1
Pulling on backstay 12-14kts	2	1	36:25	4	2
Overpowered 14-16kts	1	1	38:30	5	3
Backstay on hard 16-20kts	1	1	39:34	6	4
Main luffing 20+kts	1	1	40:37	7	5

*uppers:lowers

** This is for open body turnbuckles. If single stud turnbuckles, then double the turns in this chart.