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TUNE YOUR SAILS FOR OUTRIGHT SPEED

Congratulations on your purchase of North J/22 sails and thank you for choosing North. We have been building J/22 sails since this boat's inception. Our goal is to provide our customers with fast, easy to use sails that are the most durable money can buy.

This guide for the J/22 has been developed through extensive testing, tuning, and practical racing experience by some of the top sailors in the country. New changes in the class and developments in sailcloth and sail design technology continue to bring about improvements in the J/22's performance, and North Sails is an important part of these innovations.

While we can't guarantee you immediate victory on the racecourse by following this guide, we can assure you that you'll be taking a big step in the right direction!

Please feel free to call on us if you ever have any questions about setting up, trimming, or sailing your J/22. We are always here to help.

Good sailing!

Boat Preparation

The suggestions below are for our latest M-7 mainsail, which performs best with the angled step. If you have the SC-2 main or a flat step (the NB-1 main), please contact us and we'll gladly help you with your tuning.

In preparing your boat for sailing, first step the mast and connect the forestay. Then:

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. 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. Be sure to adjust the lower shrouds as well, maintaining a straight mast (sighted up the back of the mast).

3. Tension the uppers to 250 lbs for the M-7 and angled step. This setting (for 10-12 knots of breeze) is your uppers tension "base" number.

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.

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.

6. Check that you have developed the proper pre-bend in the mast (positive bend) 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

(by the numbers base setting)

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).

UPPERS: 250 lbs **LOWERS:** 5 PT-1

For **lighter winds**, you need to loosen your rig tension to allow for more headstay sag, which will create a more powerful jib.

The lightest wind settings should be 145 lbs on the uppers and very loose on the lowers (the PT-1 will not register).

In these extremely light conditions, the forestay should be loose as well, just barely registering on the PT-1 gauge.

In **heavier winds** (above 19 knots), much more tension is needed to maintain proper forestay sag and mast bend.

In the 19-20 knot breeze range, the upper shrouds should be tensioned to 450 lbs and the lowers to 14 on the PT-1.

The headstay should be nearly 16 on the PT-1.

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 “wobble” (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. Only in these very breezy conditions will the mast become 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 (almost straight) in 20 knots and up.



Sight the sag in the mast by sighting up the back of the mast when sailing upwind.

Rig Adjustment on the Water

ADJUSTING 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



1”-3/4” of sag to leeward indicated proper lower shroud tension

Finally, for those who still feel most comfortable “with the numbers” we offer the following charts for rig tension.

J/22 RIG SETTINGS			
M-7 MAINSAIL WITH ANGLED STEP (USING PT-1 LOOS GAUGE)			
Note that the lowers are given in numbers, not pounds, since the gauge doesn't have pound conversions this low.			
BREEZE	UPPERS		LOWERS
Knots	Tension		Number
21+		550	18
19-20		450	14
17-18		390	12
15-16		310	10
13-14		300	8
10-12		250	5
7-9		220	4
4-6		195	N/A
0-3		145	N/A

Will Crump, former sailmaker and perennial J/22 Champion comments on this visual technique:

"I just wanted to pass you a note telling you how much I've learned in using your rig-tune approach on the J/22. I have had great success over the years in the J/22, but your system and methods have enabled me to approach the process of setting the boat up with a more relaxed nature that has empowered me to focus more on sailing than "wondering" about rig settings. I haven't been a full-time sailor for a few years now, and I really only have the time to do literally two or three regattas a year. I was really impressed and surprised at how easy it was to get back into the swing of it in following your rig tuning. I know that a few years ago I wouldn't have had the guts to follow someone else's lead on something like the rig, and I have always been a "by the numbers" type, but I really felt that watching and keying off of the leeward shrouds and mid-mast sag when sailing upwind were just the right way to do it because the results were so profound and the visual checks so positive."



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 "awkwardly flat," with 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.

Once the boat is sailing comfortably, begin the forestay length check by gently letting go of the helm and allowing the boat to go where it likes. If the forestay length is correct, the boat should drive straight for 3-5 seconds and then turn down. Repeat this test several times to confirm the results.

If, after performing this check several times, you find that the boat consistently turns up instead of down, you should shorten your forestay two full turns and then perform the check again. If the boat now goes straight but doesn't ever turn down, you're very close to the right length, so shorten the forestay another full turn and perform the check again. If the boat starts turning down sooner than 3-5 seconds after you let go of the tiller, lengthen the forestay by one or two turns and perform the test again. Through trial and error, you'll be able to get the correct forestay length.

So using this method, you can either verify that your forestay length set on land is correct or make adjustments to it based on how the boat drives when you

let go of the helm. Once the boat drives as described above, pin the forestay and tape it. You will not need to change it again for any conditions that you sail in.

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

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.

In light to moderate air, keep the **traveler car** 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.

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.

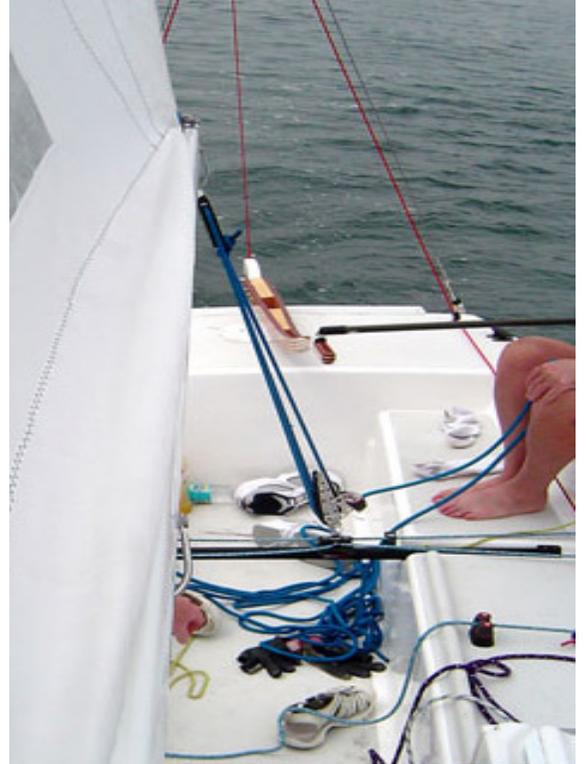
A good guide for tensioning the outhaul is the distance between the side of the boom and the middle of the shelf foot seam (a seam that runs from the tack to the clew of the main). In heavy winds, the outhaul should be tensioned tightly so that the shelf is completely closed and this seam is right alongside 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.



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



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



Determine outhaul tension based on the distance of the shelf seam from the side of the boom.

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. Using the following guide, assume minimum tension when the backstay blocks are at rest and maximum tension when the blocks are about 1' above the deck.

BACKSTAY TENSION	
0-6 knots	Min
7-10	1/4
11-14	1/2
15-18	3/4
19+	Max

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. A small piece of shock cord can be used to help hold the blocks up closer to the connector. This cord is attached from the deck through a block on the connector plate and then back to backstay bridle blocks. As the breeze increases, tighten the backstay turnbuckles in relation to the uppers and lowers to allow for maximum adjustment. Remember that, just like shroud tension, the backstay turnbuckles cannot be changed after the preparatory signal.



Maintain an eased luff tension in light winds.

The **main cunningham** 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.

The boom vang should be slack until about 12 knots of breeze when you have to 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.

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



Like the main, be conscious of not over tensioning the jib halyard. However, never allow the jib halyard to be eased enough that there are scallops between the snaps. There should be slight wrinkles off each snap but they should not be extreme.

breezy conditions, ease the sheet for more twist in the leech. Generally speaking, the jib leech telltale 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 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. 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 and less visible as the halyard tension is increased, and they should disappear at about the same time you are halfway into the backstay. As the wind continues to increase, use more and more jib halyard tension. To get maximum tension for survival conditions, 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. 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 actually 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 on the leads is possible.

Downwind Sail Trim

THE SPINNAKER

The general rule of **spinnaker sheet** trim is to allow 8-10" of curl in the luff of the spinnaker.

The outboard end of the pole should be even vertically with the free-floating clew, and the guy (windward clew) 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** 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.

Grew Placement

UPWIND

In light air going upwind, the crew should be as far forward as possible, 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.



Maintain an eased luff tension in light winds.

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 in order 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

Your North Sails are constructed out of the best materials on the market today. Before we made your sails we tested many different fabrics from the best suppliers in the world.

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 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 firm finished 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.

For more information on sail care contact North One Design. Thanks again for choosing North J/22 sails.

Tension Gauge Conversion Chart

Over the past few year Loos Co. has introduced it's new style PT-1, 2 and 3 professional tension gauges to the market. Since many of us are replacing our older model A and B gauges with these new models we are posting the following conversion chart for your convenience.

MODEL A	MODEL PT-1		
	3/32	1/8	5/32
5	6		
10	9		
15	12	14	
20	16	16	
25	20	19	
28	23	21	
30		22	
35		27	25
38		30	28
40		33	30
42			33
44			36
45			38
46			39
47			40

Model B	Model PT-2		PT-3	
	3/16	7/32	1/4	9/32
10	11			
15	13			
18	15			
20	16	18		
22	18	20		
24	19	22		
26	21	24		
28	23	25		
30	25	27	25	
32	27	29	27	
34	29	31	29	
		33	31	
		36	33	6
		37	36	7
			37	9
				10
				11
				12
				14
				16
				18
				20
				25