



*One Design*

For any question you may have on tuning your J/22 for speed, contact our J/22 expert listed below:

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# J/22 Tuning Guide

# NORTH SAILS

## J/22 Tuning Guide

Congratulations on your purchase of North J/22 sails and thank you for choosing us to build your sails. We have been building J/22 sails since the boat's inception with the goal of providing our customer with fast, easy to use, and the most durable sails money can buy.

This guide for the J/22 has been developed through extensive testing, tuning and practical racing experience throughout the years by some of the top sailors in the country. New changes in the class and developments in sailcloth and design technology continue to bring about improvements in the performance of the J/22.

While we cannot guarantee immediate victory by following this guide, we can assure you that you will be taking a big step in the right direction!

Please feel free to call on us if you ever have any questions about the setting up, trimming or sailing your J/22. We're glad to help!

### Good Sailing!

## Boat Preparation

These suggestions are for our latest **NB-1** mainsail which performs best with the angled step. If you have the SC-2 main, or a flat step, please contact us and we gladly help you with your tuning.

### STEP THE MAST AND CONNECT THE FORESTAY:

**1.** Pull your jib halyard down alongside the mast and tension it so your halyard shackle is just even with the top of your

gooseneck band. Cleat your halyard at this point.

Then swing the jib halyard out to the forestay and pull it snug alongside the forestay. Please a mark (either 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 stemplate and bow plate.

For the Angled step, boats built before hull number 1500 and the NB-1 Main this number should be **4' 11"**.

For the Angled step, and boats built after number 1500 and the NB-1 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 on each side. Hoist a tape measure on the jib halyard and measure to the pencil marks previously marked on your shear (the hull-deck intersection) on each side

of the boat. Adjust the upper shroud lengths correspondingly from side to side until the mast is centered in the boat. 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 NB-1/ angled step. This is your so-called "base" numbers for 10-12 Knots of breeze.

**4.** Tension the lowers so the mast is straight laterally when sighting up the slot at the back of the mast. At base you should be close or 5 on the newer black PT-1 Loos Pro Model Gauge.

**5.** Again, these suggested numbers would be considered your **base settings** (see the chart in this guide for suggested basic starter settings.)

**6.** Re-measure the side to side position of the mast to ensure it is centered. If you have calibrated turnbuckles, record the respective numbers.

**7.** 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 NB-1/angled step should be close to 1".

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

**9.** Check that your backstay is the proper length. Sometimes on older boats, and especially with the increased rake of the NB-1/angled step, the backstay may be too long and "bottom out" too early,

not allowing enough backstay tension to be applied in heavier winds. It may be necessary to shorten the backstay a few inches at the top.

### Rig Adjustment on Shore *by the numbers base setting*

**1.** We suggest to start each day (or even end the day by resetting your rig) close to the appropriate base settings base settings.

**NB-1:** uppers 250 lbs, lowers 5 PT-1

**2.** For **lighter winds** it will be necessary to loosen your rig tension in order to allow for more headstay sag which will result in a more powerful jib.

▶ The lightest wind readings should be 145 lbs on the uppers and **very** loose on the lowers (the PT-1 will not register). The forestay should be loose as well, just barely registering on the PT-1 gauge.

**3.** In **heavier winds** above 19 mph, much more tension is necessary in order to maintain proper forestay sag and mast bend.

▶ 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.

### Visual Shroud Tension Setting

**Upper shroud tension: "Loose leeward upper"**

This visual technique is the suggested and most accurate method to set the shroud tension for all crew weights, in all wave conditions and in all breezes.

Set your rig tension in all conditions so that the leeward upper shroud will just start to appear slack...not sloppy, but also just not taught.

Start out close to the **upper shroud tension** suggested in the charts below based on your best guess for 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 1/2" 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 the slight wiggle just appears. Again this guide works for all crew weights, in all wave conditions and all breezes.

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 looking up the mast groove- see picture). There should be a slight sag ( approx 1"-3/4") to

leeward at the spreaders in all conditions except very breezy conditions (15mph and above), when heavy boom vang tension is used. Only in these conditions will the mast almost become straight. Never, in any conditions should the mast bow to windward at the spreaders!!

We feel that this guide is not only a relatively simple system but also, the most accurate method to achieve proper and consistent rig setup in the J/22.



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



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

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

"Dear Greg,

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.

Thanks for teaching me something else about a boat I've loved for years.

Will"

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

J/22 RIG SETTINGS				
NB-1 MAINSAIL WITH ANGLED STEP ( USING PT-1 LOOS GAUGE)				
Note that the lowers are based on numbers, not pounds since the gauge won't read that 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	Base	250	Base	5
7-9		220		4
4-6		195		N/a
0-3		145		N/a

## Sail Trim

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

## 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 have accelerated and you want to point higher, trim harder to cock the top batten slightly to windward. Generally, we 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 will 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.

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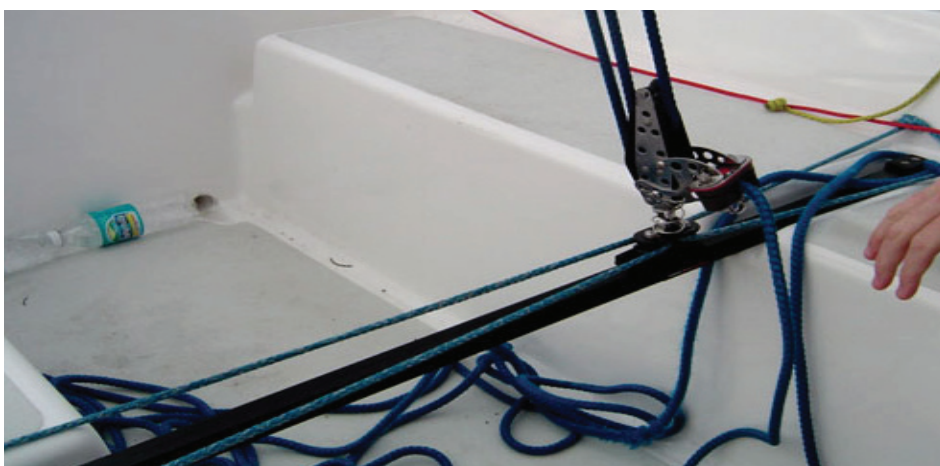
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*Trim your mainsheet so that the upper batten is parallel to the boom for 75% of your sailing.*

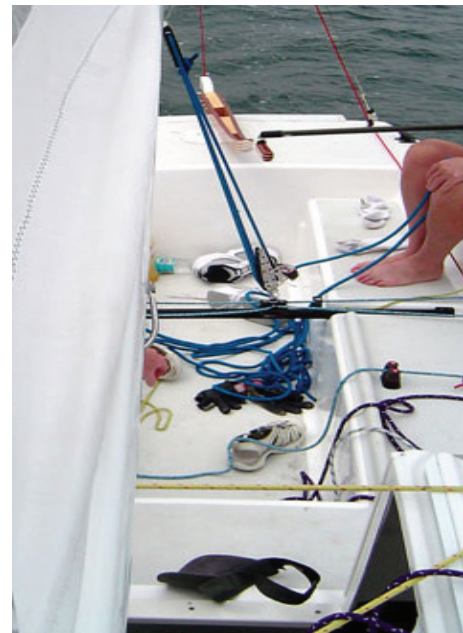
In light to moderate air, keep the traveler car to windward so the boom is close to centerline. When you have the traveler to weather be sure to ease the mainsheet until the top batten is twisted off considerably (15 degrees past parallel). This can be most effectively achieved by pulling the traveler to windward where 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 trim the mainsheet. In very heavy winds (above 15mph), the traveler is left on centerline and the mainsheet played constantly to maintain helm balance. In these conditions the Vang is tensioned quite hard to control leech tension. (See heavy air technique).



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

Use the **outhaul** for balance. Outhaul tension adjusts the shape primarily in the lower 1/3 of the mainsail. A looser outhaul increases lower leech "hook" while adding fullness. This can aid pointing ability and increase power. A tighter outhaul flattens the lower sections of the main, which helps to minimize your windward helm and reduce drag. Remember that in flat water and light winds, a flatter sail is fast and in chop, a slightly fuller sail is needed for the necessary punch.



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

A good guide for tensioning the outhaul is the distance of the middle of the shelf foot seam (a seam that runs from the tack to the clew of the main) from the side of the boom. In heavy winds, the outhaul should be tensioned tightly so that the shelf is completely closed and this seam is tight alongside the boom. In medium winds, the outhaul should be tight enough that the seam is about 1" off the side of the boom.

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In choppy conditions or when power is needed ease the outhaul so that the seam is 1 3/4" off the side of the boom...never any looser except when sailing downwind when the outhaul can be eased so that the shelf is nearly all the way open...the seam will be about 3" off the side of the boom.

**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. Secondly, it makes the headstay tighter, which flattens the upper entry of the jib and eases its leech, thus increasing pointing ability and reducing heel. Since 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 at 2' above the deck.

BACKSTAY TENSION	
WIND (Knots)	BACKSTAY TENSION
0-6	min
7-10	1/4
11-14	1/2
15-18	3/4
19+	max

The **backstay turnbuckles** should be adjusted according to conditions. The turnbuckles should be eased in light air, so the backstay has no tension and the backstay blocks ride just below the connector plate. Use a small piece of

shock cord (which is attached from the deck through a block on the connector plate and the back to backstay bridle blocks) to help hold the blocks up closer to the connector in light air. As the breeze increases, tighten the backstay turnbuckles in relation to the uppers and lowers to allow for maximum adjustment. Remember, just like shroud tension the backstay turnbuckles cannot be changed after the preparatory signal.

The **main cunningham** is used to position the draft of the sail. Your goal should be to keep the maximum draft point close to 50% back in the sail (sighting from luff to leech). We use very little cunningham up to 10 knots, just enough to remove many of the wrinkles in 11-12 knots, and progressively tighter in higher winds (above 12knots) to remove all of the wrinkles (smooth luff) and maintain proper draft position in the top of the sail.



*Maintain an eased luff tension in light winds.*

### JIB

Proper jib trim upwind has one of the biggest affects on speed and pointing. Usually, the biggest mistake most J/22 sailors make is over trimming the jib sheet. A good, very basic guide is that the skirt of the jib near the middle should just barely be touching the toe rail near the gunwhale 40% of the time. This position will dictate proper jib leech shaping as well. Trimming harder ( where the middle batten is slightly hooked to windward of parallel to centerline) is only effective in "ideal" boat speed conditions and narrows your steering "groove".

To maximize pointing ability we suggest cross-sheeting to the weather winch and the use of the larger Harken 009 Ratchet blocks if possible which will allow maximum inboard positioning for the lead position.

As a starting **jib lead** position for the NB-1 main/angled step and rake of 4' 11", the lead will be positioned where the actual block on the car (not the pin, but the true block sheave attachment position) is directly outboard of the shroud chainplates.

In heavier breezes above 12-15mph, move the lead aft to help de-power the boat and widen the steering groove. However, the farthest aft the lead is ever moved is 3 holes aft of the standard positions dictated above.

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

Trim the **jib sheet** so that in "boat speed" conditions the middle batten is straight aft parallel with the centerline of the boat.

In light wind and/or sloppy conditions, ease the jib sheet so the middle batten is angled outboard 10-15 degrees. Also in breezy conditions, ease the sheet for more twist in the leech.

Only in medium winds and relatively flat water will the jib ever be trimmed so that the middle batten is just slightly hooked to windward...and for only short periods of time.

## Heavy Air Techniques

Since the J/22 has a jib, not an overlapping genoa, and a high aspect mainsail with a long traveler, it is easier to de-power than most one-design boats. If it is blowing over 12 knots, you will find this is the time to start to de-power. There are several areas that will help you to keep the boat on its feet.

### BOOM VANG

At the higher wind range, we vang-sheet. Make sure that your boat has the maximum purchase on the vang, 8:1. The additional purchase, combined with the leverage from the person pulling is more than enough to get the proper amount of vang tension. This vang tension helps bend the mast down low, which flattens the lower sections of the main and allows you to play the mainsheet in strong puffs while maintaining leech tension. If you were to ease the mainsheet without proper vang tension, the main would luff with no leech tension and you would not be able to effectively point the boat upwind. When the vang is tensioned properly, the boom will show nearly 2-3" of bend. That is fast!!



*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.*

### MAINSHEET

To keep the boat from heeling too much you will need to ease the main sheet in order to keep the boat upright. Be sure to quickly re-trim when the puff abates!

### JIB LEAD

Be sure to move your lead aft a maximum of 3 holes from your standard position. If you still find it is still very hard to keep the boat tracking upwind well, ease the jib sheet more as described below.

### JIB SHEET TRIM TECHNIQUE

Even though you are actively playing the main to balance the helm, when big puffs hit you will need to ease the jib sheet as much as 6". This will open the main-jib slot and keep the bow from getting blown to leeward. To achieve best results, try to have the skipper and jib trimmer adjust the sails in unison. Efficient teamwork here will mean huge gains in puffy, breezy conditions.

### CREW PLACEMENT

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. When sailing downwind in large waves and in a big breeze, you will have everyone behind the companionway in order to keep the bow out of the water.

### DOWNWIND SAIL TRIM

The general rule of trim is to allow 8-10" of curl in the luff of the spinnaker. The outboard end of the pole should be even 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 is important and has a big effect on the spinnaker. An effective, and easily visible guide, is to position your pole so that the centerseam of the spinnaker

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(the vertical seam running from the head to the middle of the foot) parallel to the mast.



*Maintain an eased luff tension in light winds.*

### Light Air Techniques

The most important area in light air is to concentrate on good communication between helmsman and spinnaker trimmer. The goal is to sail as low as possible while still maintaining good pressure on the spinnaker. An easy way to measure this is communicating the tension on the sheet. The important thing is not to sail too high with translates into longer distances, consequently do not sail too low thus sacrificing boat speed.

Be careful not to pull the pole too far aft, which over flattens the spinnaker.

### MAINSAIL

Ease the sheet until a luff appears, 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 downwind power.

### TWINGS

The windward twing should always be all the way down. It is critical to make sure the leeward twing is off during the set. If it is not, the spinnaker will fill prematurely, and can cause the boat to create weather helm and round up.

When sailing downwind in light air, the leeward twing is completely released. In very heavy air, pull the leeward twing on 2' away from the deck ( and so the sheet is just clearing the boom) to help keep the spinnaker under control.

### 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 (and it will!) 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.

### Contact North Sails

At North Sails we are constantly striving to make our products better. If you have any comments on this tuning guide and how it could be improved for your purposes we'd love to hear from you. Please give us a call or drop us a line. Our phone numbers and e-mail addresses are listed on the cover of this guide.

### Good Sailing!

## 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

### NORTH SAILS ONE DESIGN QUALITY CONTROL CHECK

J/22

MAINSAIL		JIB		SPINNAKER	
Corners		Corners		Corners	
Cunningham		Battens		Numbers (one side)	
Tack Slug		Luff Hanks		Country Code (one side)	
Leech Cord		Cunningham		Royalty	
Royalty		Telltals		North Logo	
Numbers		Leech telltals		Bag	
Country Code		Foot Chord			
Battens		Royalty			
Leech Telltals		North Logo			
Insignia		Bag			
North Logo					
Bag					

Checked by: \_\_\_\_\_

Date: \_\_\_\_ / \_\_\_\_ / \_\_\_\_