Tension Gauge Conversion Chart

Tuning Guide - Etchells

Introduction

The following tuning guide is meant to be a good starting point in setting up your boat. Depending on your total crew weight, wind strength, sailing style and sea conditions, you may have to alter your rig slightly. As you read this, write down any questions you might have, and we will be happy to discuss them with you in more detail.

We are trying to achieve a rig set up that is fast in all conditions: upwind, reaching and running. Your new North sails are designed around this "all purpose" philosophy.

Rig Set Up

Spreader angle

Before stepping your mast make sure your spreaders are the same length by measuring from the shrouds perpendicular to the side of the mast. The spreaders should be fixed in place straight out or slightly swept forward. Also, place 2 tape marks on the spreaders 1' 6 ¼" and 1' 9 ¾" from the side of the mast. These are used to reference jib sheet tension.

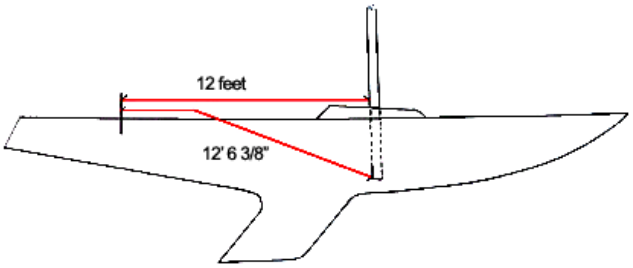
Mast Position

The mast step position controls the pre-bend. Having the correct amount of pre-bend translates on the correct forestay sag, and therefore superior speed. The pre-bend is mainly generated by the offset position on your mast partner, and the alignment of the mast step and the hounds. Since in most boats the mast partners distance from the transom varies, to get the pre-bend right, you have to first to locate the partner position on your own boat.

This is what we recommend:

1. Make a mark on the center line of the aft deck, 12 feet from the aft edge of the mast partner. Normally we add a thin aft partner block (1/4 inch) for the standard upwind setting. The measurement should include this block.

2.From this mark on the aft deck measure 12' 6 3/8" to the intersection of the aft face of the mast and make new mark on the mast step "I" beam. This is now your new baseline mast step position, for winds between 6 to 9 knots.



Mast Step Chart

0 to 5 knots - aft 1/4"
6 to 9 kts - neutral
10 to 14 kts - forward 1/4"
15 to 20 kts - forward 1/2"
20 kts and above - forward 3/4"

Mast rake

Once the mast is stepped, lay your forestay taught against the front of the mast, and mark the forestay at the point that corresponds to the upper edge of the black band on the mast at the gooseneck. Hook the forestay back on and lengthen the headstay until it measures 46" from the corresponding mark at the forestay to the deck " (46 ½" should be used for newer boats with keel further aft). Before attaching the backstay, make a similar black band reference mark on the backstay. Remember, that the measurements you are taking correspond to the top of the gooseneck band. In some conditions a headstay setting of 47" has proven fast. If you change your headstay, please realize that you need to re-locate your mast step position.

Upper & lower shroud position and tension

The upper and lower shrouds affect the mast differently. The tension on the uppers affects the fore and aft bend. Tight uppers (30 on Loos gage) will make the mast stiffer fore and aft, and loose uppers (22) will make the mast softer. The lowers affect the amount of middle mast sag (side bend). Having the right amount of middle mast sag is crucial to proper mainsail shape and helm balance.

Think of the middle mast sag as similar to how the headstay sag effects the jib. More middle mast sag in light air powers up the mainsail, and less sag in heavy air helps de-power the mainsail. When you first set your boat up, you want to start out with your uppers tensioned at 25 on the Loos tension gage Model B. The lowers should be set very loose with 8" of horizontal slop. Once you have tightened your uppers to 25, use your jib halyard to center your mast in the boat, checking side to side, before you continue with the tuning. When checking shroud tension, pull sufficient tension on the backstay to remove slack in the headstay. Final adjustment of the lowers should be made while sailing by judging the degree of mast sag.

Mast blocks

The function of the mast blocks is to adjust the bend in the mast for the conditions. Combined with the backstay and mainsheet tension, the mast blocks will control the bend of the mast and sag of the headstay, which helps the main and jib achieve a fast sail shape for the wind strength. When blocks are added in front of the mast, (step block raised) the bend is taken out, stiffening the mast for heavier air. This will have a great influence in decreasing your headstay sag. As the blocks are taken out from the front of the mast, (step block lowered) the mast is allowed to bend which moves the draft aft in the main, and adds to headstay sag. The added low bend in the mast, allows the top of the main to become fuller. The net affect is to power up the main and jib, increasing helm.

If the mainsail looks too flat, or the headstay looks too loose, producing excessive weather helm, the mast should be moved back at the partners Or if not possible (because mast is always back at partners), then the mast step should be moved forward. If the mainsail looks full (round in the lower front area) and the headstay is too tight, move the mast forward at the partners or move the step aft.

Backstay

The backstay controls the mainsail shape, the amount of twist in the mainsail and the amount of headstay sag you will have.

Before attaching the backstay, make a similar black band reference mark as you did on the forestay. After you have the backstay attached, measure down from the black band reference mark and make marks from 48" to 56". Those marks should describe the full range of backstay that will be played; the 48" mark is for very heavy winds and the 56" mark for super light conditions. The measurements in the table below provide a rough range of backstay adjustment for different wind velocities

Jib Settings

Jib lead

The measurement for an average lead position is 8' 6 ½" from headstay at the deck to the middle of the jib car. To add power to the jib the lead can be moved forward as much as ¾". Remember though, the lead position will have to be adjusted with any jib halyard changes. We have found that when the jib lead is set properly, the foot sets very flat.

Jib twist and sheet tension

We sail with two black bands on the spreaders as described in the "Rig set up" section. Measuring from the side of the mast along the spreader to the inside band should be 1' 6 ¼". The outside band measures 1' 9 ¾" from the mast to the band. Using these bands allows the leech of the jib to be adjusted while looking through the spreader window of the mainsail, and increases sheet tension accuracy for different conditions. In light air, the leech of the jib should fall just inside the outside band. As the breeze builds the sheet tension will get tighter, up to the point where the leech of the jib is at the inside band. As the breeze and sea conditions build, the sheet will be adjusted to keep the leech between the bands. In 18+ knots the leech will line up with the middle of the outside band. In huge puffs you may want to be even further out to help keep the boat in control.

On all our jibs we have placed a leech tell tale between the two top battens. This leech tell tale, will help determine the correct sheet tension. For best performance, the leech tale should be on the verge of stalling at all times.

Jib halyard tension

We have a jib halyard with 2 balls at 1" increments. Together with the jib halyard fine tune we get plenty of adjustability as the breeze increases and decreases. As a starting point the jib halyard should be adjusted with the tack of the jib about 3" from the deck. In light to medium winds adjust the halyard so wrinkles are barely visable at each tab.

For fine-tuning adjustments of luff tension on the jib the adjusting the tack is recommended. Completely releasing the tack control will quickly add power to the sail for acceleration out of tacks.

In light to medium conditions, for maximum power, the jib luff should have very little tension and some scallops should be noticed.

In breezy conditions, tension the luff quite hard to depower and hold the draft forward.

Our latest North Sails jibs are made standard with "dual set of tabs" for added wind range and versatility. Using the long tabs will add fullness and allow for a tighter headstay in choppy conditions. Generally we use the long tabs in winds below 12-15 knots. As a general rule, if you are not pulling on the backstay to depower, it is probably faster to use the long tabs.

Special note on the top batten pocket for your North Sails Etchells jib

Your jib comes with both a long and a short top batten and the pockets for these are mounted back to back near the head of the sail. Using in the long top batten can increase the effective wind range of your jib and also give the sail a longer life when it gets older.

We suggest always using the short top batten in your jib and then when the winds gets up to the top of the range of the sail or when the sail gets a little older add the full length top batten and sail with both in place. Any questions, please give us a call.

Spinnaker Settings

Rig setup while running - Getting the mast raked as far forward as possible is critical to downwind speed. Take out all the blocks in front of the mast (completely lower the step block) after you get the spinnaker up. Ease the backstay off until the mast just rest on the front of the partners. The tip of the mast has moved through several feet, and the entire mast is now angling forward in the boat. To keep the mast from jumping around, it is common to have a separate piece of line attached to your jib tack shackle with a clip at the other end. Lower the jib to the deck, and attach the clip to the jib halyard shackle on the jib head. Pull the jib halyard tight.

Keep the inboard end of the pole approximately 30" above the gooseneck band. Under 8 knots of wind, the pole angle should be about 2 - 4" lower at the outboard end. In 8 - 13 knots of breeze the pole should be about parallel to the water. In over 13 knots, the pole should be raised as much as 6 additional inches at the outboard end.

Care of Your Sails

Always store your sails away from the sun and make sure they are clean and completely dry. Be sure that you always "roll " your upwind sails. This will help then last longer and remain wrinkle free. If you have any questions or comments about our Etchells Tuning Guide, don't hesitate to contact us anytime.

Good luck on the water!

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Etchells On the Water Tuning Guide

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Tension Gauge Conversion Chart

Tuning Guides - Etchells On the Water

Wind Speed	Light 0-5	Light-Medium 6-9	Medium 10-14	Medium-Heavy 15-20
Upper Tension	Base	Tighten 3 turns	Tighten 6 turns	Tighten 9 turns
Turnbuckle	2.7	2.9	3.2	3.6
Lower Tension	Base	Tighten 4 turns	Tighten 8 turns	Tighten 12 turns
Turnbuckle	2.4	2.6	2.9	3.3
Mast Sag	7/8 in	3/4 in	3/8 in	Zero sag
Mast Blocks	Level 1	Neutral	Level 2	Level 3
Mast Step	Aft 1/4 inch	Neutral	Forward 1/4	Forward 1/4
Backstay	Snug	Snug	Add 2 inches	Add 4 inches

Mast Block Positions:
Level 1: mast pushed forward with one 1/4 inch block behind mast
Level 2: mast neutral but locked in place
Level 3: mast pushed back with block in front of mast (1/4 gap beteween mast and aft partner)
Level 4: mast fully pushed back with block fully up (no gap between mast and aft partner)

Upper and lower shroud position and tension

Wind Speed	0-6	7-11	12-18	19+
Uppers Tension	20 tension hole #2	23 tension hole #2	27 tension hole #2	30 tension hole #6
Lowers Tension	1" sag	1/2" sag	straight mast (No sag)	Mast will sag above spreader

"Hole number" refers to the chainplate position the the shrouds should be attached to, counting from the front. The lowers should always be in the fourth hole aft on the chainplates. Tension is measured with the Loos Tension gauge Model B.
See Tension Gauge Conversion Chart

Mast Position in the partners (measured forward from the back end of the mast partner)

True Wind Speed (knots)	0-5	6-9	10-15	16+
Mast position at the partners	1/2" block behind mast	Mast blocked 1/4" from back of partner	Mast blocked 1/4" from back of partner	Mast aft against partner
Mast Step	Base	Base	1/4" forward base	1/2" forward base

Mainsail Settings

Wind Speed (knots)	0-6	7-11	12-16	17-19	20+
Traveler	+10"	+5"	Center	-2"	-6"
Backstay	56-54"	56-54"	54-52"	52-50"	49-48"
Top batten angle	Open 3 degrees, tell tales stalling 50% of the time	Parallel to close 3 degrees, top tell tale stalled 30%	Parallel to close 3 degrees, top tell flying all the time	Parallel to close 3 degrees	Open 3-6 degrees
Outhaul	1" from band	1" from band	Maximum	Maximum	Maximum

Main Cunningham: Cunningham should not be used untill 15 knots or more

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