Class Tuning Guides

How to Win in a Lightning

This tuning guide was written to help you get the most performance out of your Lightning. Quantum (Shore) Sails has been involved with the Lightning class for over 30 years. Our sails have claimed 4 World Championships and 10 North American Championships. Quantum's commitment to the class and to its sailors sets us apart from our competition. By following this guide, we believe that your Lightning sailing will be simpler, you'll be more successful, and most of all, you will have more fun.

The measurements and the settings included in this guide are ones that we have found to be the fastest for the Lightning. We would like to remind you that this is just a guide, not the law. Since crew, wind and sailing conditions vary, you may find that slightly different settings are best for you. We suggest you try our recommendations and modify them to settings that you feel work for your boat and crew.

After Stepping the Mast

Mast Butt Placement

In the newer models of Nickels and Allen boats (post 1985), the mast butt should be in the maximum forward position in the mast step. Mast butt placement is measured from the front of the centerboard pin to the aft edge of the mast at the bottom. This measurement should be 21 7/16". Mast butt placement for some of the other Lightning builders.

Lippincott	20 3/4"
Carson	20 3/4"
Nickels	21 7/16"
Allen (pre 11100)	20 3/4"
Allen (post 11100)	21 7/16"
Nickels & Holman	20 3/4"
Mueller	20 3/4"

Shroud Tension

Uppers should be tensioned to 250 lbs. Lowers should be tensioned to 120 lbs. This should be done with the backstay disconnected and with the mast blocks removed. Using a Loos model A tension gauge, the uppers should measure 29 and the lowers should measure 13.

Headstay Length

To measure headstay length with the mast up, we measure a short segment of the headstay at the bow. Simply unhook the headstay from the stemplate and run it down the front edge of the mast. Mark the point where the top of mast band intersects with the headstay with a piece of tape. Be sure to align the top of the tape with the top of the mast band. Reattach the headstay. Remove all slack from the headstay by pushing aft just above the mark. Now measure from the top of the headstay mark to the forward most edge of the deck at the bow. This measurement should be 44 1/2".

Now your rig is set up in the neutral position.

Some Allen boats may vary. Therefore, a rake measurement is needed to determine the proper headstay length. The rake is determined by running a tape up the main halyard to the top and measuring to the top center of the transom. Moderate tension should be put on the tape in order to take the slack out of the headstay. This measurement should be 26'3".

Headstay Lengths

Lippincott	43 1/2"
Carson	43 1/2"
Nickels	44 1/2"
Allen (pre 11100)	42 1/2"
Allen (post 11100)	44"
Nickels & Holman	42 1/2"
Mueller	43 1/2"

Fine Tuning the Rig

Mark the neutral position, fore and aft, of the mast in the mast gate. To do this, mark the side of the mast, approximately in the center, we suggest using a white piece of tape with a conspicuous dark line drawn vertically. Place a mark on the deck that corresponds with the mark on the mast. This mark on your deck is your neutral line. Measure 7/8", 1 1/4" and 1 1/2" forward of the neutral mark and place a mark at each. These marks will be used to measure pre-bend in your mast.

Dry Run

In order to achieve proper lower shroud tension on the water, we suggest that you conduct a dry run of the following pre-bend settings in the parking lot. This will allow you to get to a desired lower tension by only counting the number turns that have been taken off from the neutral

setting. This should be done with the backstay disconnected.

First, block the mast to 7/8" and measure the shroud tensions. The tension of the uppers should have dropped slightly and the tension of the lowers should have increased to about 250 lbs. No adjustment is needed for this setting.

Next, block the mast to 1 1/4". The tension of the uppers should have dropped slightly from the last setting and the tension of the lowers should have increased substantially. Count the number of turns that it takes to get the tension of the lowers back to 250 lbs. Record this number in the chart below so that you can duplicate it out on the water.

Finally, block the mast to 1 1/2". The tension of the uppers should continue to drop. The tension of the lowers will again increase substantially. Count the number of turns it takes to get the tension of the lowers back to 200 lbs. Record this number below.

Mast Pre-Bend and Lower Shroud Tension

Wind Speed	Pre-bend	Lower Tension
0-to-5	1.5	200
6-to-20	1.25	250
20+	0.875	250

Yellow is the base setting

Sail Trim

Jib Trim

Your new jib is equipped with a jib leech telltale located at the top batten. It acts as an extension of the leech to gauge jib trim off the spreader. When the telltale stalls it indicates the degree that your jib is over-trimmed.

In light air, the jib is trimmed so the leech telltale is streaming 90-100% of the time and curling behind the sail less than 10% of the time.

Note: our A.P. Jib is generally easy to trim but in light and spotty conditions, as with all jibs, it requires constant trimming to keep the leech telltale streaming. In this condition, the top batten should be anywhere between the tip of the spreader and 4" outboard. You'll find the lighter it gets the further outboard you will need to go to keep the leech telltale streaming. This will keep you powered up and going fast!

In medium air, the leech telltale should be streaming 85% of the time and the top batten should be a maximum of 4" inboard of the spreader tip.

In heavy air, the top batten should be outside the spreader tip except for the lulls. As the wind

increases over 20 mph, the top batten should get further and further from the spreader-up to 4"- and the leech telltale should be streaming 90-100% of the time.

Jib Lead Position

The placement of the jib lead is found by measuring the distance from the forward edge of the bow, straight over the splash rail to the jib track. The lead is set properly when the luff telltales break evenly from top to bottom.

Note: We have found it fast to have the top telltale break just before the other telltales.

Wind Speed	0-to-15 mph	15-to-20 mph	20+ mph
Lead Positon	96-to-98	98-to-100	100+

Jib Wire/Halyard

Your jib wire adjustment is best described by comparing the tension on the wire to the tension of the headstay . In all conditions, the jib wire should be tensioned so the headstay just becomes slack inside the jib snaps.

Jib Cloth/Jib Cunningham

This control is relatively easy to adjust and is effective in moving the draft placement in the jib. In light to moderate winds, 90% of the wrinkles around the snaps should be removed. When the wind is consistently 15 mph and above, all the wrinkles should be removed.

Mainsail Trim

Mainsheet

In most conditions, the mainsheet should be pulled tight enough so the top batten is parallel to the boom on a vertical plane (this can be checked by sighting directly up the sail from under the boom). The exception to this rule is in high winds when the upper leech needs to twist off to depower the sail plan.

Bridle

The boom should be on centerline up to 13 mph and then dropped to leeward in 1-2" intervals as the breeze builds until the bridle is all the way to leeward. In smooth water the bridle does not have to be dropped as soon as it does in choppy conditions.

Note: The more the boom is off center, the easier the boat will be to steer but your pointing

ability will suffer.

Bridle height (from the deck) should be set for the desired main leech tension. The objective is to get the mainsheet between 1" and 1/2" from being two blocked, at a desired sail trim. This extra sheeting capability will allow the main to be over trimmed at critical times.

Another sail trim indicator is the top telltale located at the end of the top batten. In light air the top telltale should stall about 40% of the time, and in medium air it should stall a maximum of 60%. In breeze above 16 mph, the top telltale should be streaming most of the time because the backstay has most likely been pulled on to depower the main.

Backstay

In light wind, the backstay should be pulled on slightly to stabilize the rig and to prevent too much jib sag. When the wind picks up, the backstay should be the first control used to depower and relieve weather helm. In smooth water, you will pull the backstay more than you will ease the bridle to leeward. When it is choppy, the bridle will be dropped to leeward earlier to keep the boat driving through the waves.

The backstay tensions the headstay/jibwire when it is pulled on. In heavy winds, a tight headstay is desirable because it will flatten the jib making a faster heavy air shape.

Main Cunningham

This control is relatively easy to adjust and is effective in moving the draft placement in the main. In light to moderate winds, 90% of the wrinkles in the luff should be removed. When the wind is consistently 15 mph and above, all the wrinkles should be removed.

Outhaul The Quantum A.P. Mainsail is designed vertically-straight so the outhaul has more effect over the shape of the entire sail. In most conditions, the outhaul is adjusted so that the shelf foot is just taken out while going upwind. In light air, the bottom half of the sail should be flat (which is why we put in so much prebend). This keeps the jib slot open and reduces backwind. In medium breeze, ease the outhaul slightly if you are looking for more power. As the wind increases, pull the outhaul towards the end of the boom but be aware. Because of the design of the sail, it is possible to over-tighten the outhaul.

Boom Vang

Upwind in windy conditions, the vang should be tight so that when a puff hits, the main can be eased without losing leech tension. Otherwise, just remove the slack from the vang while sailing upwind.

Leech Line

The leech line should be completely slack until the leech starts to flutter. Tension the leech line until the fluttering stops. Remember to ease it off as the breeze drops or your leech will hook.

Downwind Sailing

To make the most of your down wind legs, remember to power-up your sails. To remind yourself, practice this phrase-"centerboard, cunningham, backstay, outhaul, boomvang." Change or ease these adjust these adjustments appropriately.

By reminding yourself of these settings, you will be conscious of them. As a general rule of thumb, the vang setting should allow the top batten to be parallel to the boom when sailing downwind in most conditions.

The Quantum Newport Lightning Team is confident that with your new set of Quantum sails and these tuning suggestions, you will find new speed! If you have questions, please contact us by phone or e-mail. We are happy to talk about Lightning sailing any time.

Good Luck and Happy Sailing!

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