

Mast Tuning as part of a Winning Program

One design sailing is a fantastic sport. There are many elements to a winning program. My observation is that sailors sometimes look for a “silver bullet” reason. There are no silver bullets. A successful program is built on several levels.

1. Boat handling: This takes practice, which ideally should be a separate activity from racing. Good tacks, gybes & mark roundings can add one or more boat lengths many times during a race. It can mean the difference between being at the top of the fleet where there are lanes with clean air or being stuck back in the pack where each mistake makes things worse.
2. Boat speed
 - a. Bottom is fair and clean.
 - b. Sails are in good condition and properly trimmed.
 - c. Rig is properly tuned for the conditions. The focus of this article.
3. Strategy: How do you plan to sail the race based on your understanding of wind and tide relative to the race course. One common strategy for our fleet is to go left for the Meisner's lift when sailing in a SW sea breeze. This means starting near the pin end of the line and holding your lane until you get far enough left so that you can tack for the port tack lift.
4. Starting: Consistently good starts are essential. You don't need to “win” the start every time. This is high risk. However, you do need to get off the line in the front row with a lane that you can hold for two to three minutes in a direction that allows you to sail towards the favoured side of course consistent with your strategy.
5. Tactics: How you deal with nearby boats. When you lose clean air, how do you respond? Strategy trumps tactics. Continuing with the previous example, if you cannot hold your lane in a SW sea breeze, you may need to tack to gain clean air. Nevertheless, going left is still the right thing to do so as soon as you are up to speed and have a lane, tack back to starboard so that you can get left for the Meisner's lift.
6. Winning behaviour and attitude
 - a. Get to the course early to understand conditions and tune the rig and sails.
 - b. Understand the rules & SI's
 - c. Don't take undue risks and communicate with other boats nearby.

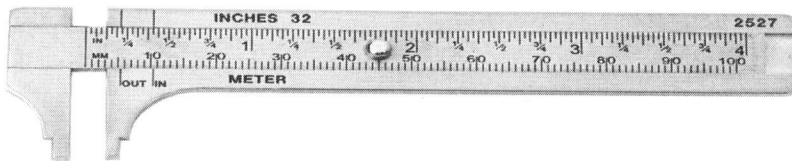
Rig tuning

The North Tuning Guide has recommended settings. These are the best settings if you do not plan to tune your rig for every race. However, the top boats in any class will be tuning their rigs based on conditions. Here are the steps for tuning your Bluenose rig.

1. **Make sure that your mast is centered.** This should be done at the dock or mooring on a calm day. Use a good quality bucket with a rounded handle that will not distort under load. Fill it $\frac{1}{3}$ to $\frac{1}{2}$ with water and tie the jib halyard to the middle of the handle. Tape the halyard to the middle of the handle so that it will not move back and forth. Place small marks on both sides of the rail a bit forward of the upper shrouds, equidistant from the forestay attachment on the bow. Adjust the upper shrouds, so that the mast is

centered by using the partially filled bucket as a gauge. Then use the Loos gauge to set the tension to 12, which is what I use as a base setting for 6 - 8 knots of breeze. The mast should remain centered as you set the uppers to 12 on the Loos. The lowers should be quite loose while you do this. This is your base setting. Record your numbers. If you have calibrated turnbuckles, you can read it from the turnbuckles. If not, buy a set of calipers. See the photo for the set that I use, which you can buy at Home Depot. Measure the distance between the ends of the bolts of the turnbuckles on each side. They will almost always be slightly different. Write these numbers on the deck and record them in your notebook (or WetNotes). If you race with your calipers, it is a quick and easy way to reset your rig to base, even under sail between races.

2. Make sure that your forestay is the correct length. Start with the recommended length in the tuning guide. My experience is that the optimum length will always be a bit different. The objective is to have a bit of weather helm in 6 - 8 knots of breeze. When sailing to windward in the groove you should have to pull the tiller slightly to windward to keep the boat in the groove. Get a number for the forestay as well. If you have a turnbuckle, use



your calipers as you did for the uppers. If you have a forestay that goes down through a sheave and fastens to the mast step, measure the distance from the bottom of the swage to the deck. Record this number in your notebook as well. Once you get the right length, it is not an everyday adjustment in Bluenoses. However, knowing your number will help you get your boat up

to speed in the early season.

3. Race day tuning. Your leeward upper shroud should have a bit of slack when going to windward, not firm and not flopping around. On the assumption that there is more than 8 knots of breeze, tighten the uppers an equal number of turns on each side. Then tighten the lowers so that the mast is in column on both tacks. When you sight up the mast from the gooseneck the mast should look straight until you get to the hounds (where the top of the uppers and forestay attach to the mast). This should all be done before the start. In breeze above 10 - 12 knots the top of your mast above the hounds will fall off slightly. If it falls off too much, or unequally, you should check the tension on your jumpers before the next race day. If conditions change, you may want to retune your mast between races. For every two turns on the uppers, change the lowers by one turn. You can always recheck the lowers by sighting up the mast, but this should not be necessary if you tuned properly before the race.

4. Blocking the mast at the partners. This is a very important adjustment on a Bluenose because the masts are so flexible. In anything less than 8 - 10 knots of breeze, main sheet tension will tighten the forestay even with a slack back stay. It is very important to have forestay sag in light air because it provides power in these conditions. Make sure you know where neutral is on your rig. It is the position of the mast at the partners without any chocks. In very light air, say 2 - 6 knots, insert two to three $\frac{1}{4}$ " chocks aft of the mast so that the mast is pushed forward at the partners. This will allow you to trim the main sheet without removing the forestay sag. As the breeze picks up, remove chocks until you have the entire crew on the windward rail when the mast should be at neutral. Each boat is a bit different, based on crew weight. A guide for your boat may be 2 - 6 knots: 3 chocks aft ; 6 - 9 knots: 2 chocks aft, 9 - 12 knots: 1 chock aft. You will need to test what the optimum is for your boat and crew. At 12 knots, you should be sailing with the mast at neutral. As the breeze picks up and you begin to depower, say at 14 knots, you place a chock forward of the mast to push the mast aft at the partners to depower the jib. At 16 - 18 knots, the top end of the range for our class, you may have two $\frac{1}{4}$ " chocks forward of the mast, tightening the forestay even more.

I hope that this article provides enough detail for sailors in our class to tune their rigs based on conditions. I cannot emphasize enough that each boat is a bit different and you will need to experiment to fine tune for your boat. If there is enough interest, we can go through the process on a Sunday morning early next season on another member's boat. If you have any follow-up questions, do not hesitate to email me at henrydemone@gmail.com.