

Once you learn competitive speed, it's a whole new sport

Few sailboat racers ever experience the best of sailboat racing — top speed around the whole course. Their lack of competitive speed hinders their enjoyment and their results. We would like to help you understand how to achieve this level of competition, and experience the best our sport has to offer. Let's start with developing your upwind speed.

Bill Shore with Randy Shore

You must start with bringing your competitive speed with you to regattas. You cannot develop competitive speed once the starting gun is fired and you cannot focus on understanding it while worrying about holding your lane, windshifts and tactics on the course. This is one of the most basic principles that I reinforce when coaching Olympic, Americas Cup and one design class campaigns; You must bring your speed with you, and you must race with the speed you bring.

Critical speed adjustments

Developing upwind speed is not a mystical experience nor is it as difficult as many want you to believe. In fact, in one design racing only a few critical adjustments for upwind boat speed need attention. When I am coaching, I work on the critical adjustments in their order of importance and impact:

- § jib sheet trim
- § main sheet trim
- § mast bend
- § forestay sag

The technique I've found that works the best in learning to acquire competitive speed through mastering these critical adjustments is to work with two or three sailboats and a coach boat. The sailboats should be set up to the sailmaker's tuning guide with all fixed adjustments (shrouds, mast step and other items that cannot be changed during a race) and tuning adjustments (mast blocks, traveler, outhaul, etc. that can be changed during the race) initially set identically for speed testing. Only the elements that can be changed during a race should be adjusted once the speed training begins. The coach should have a keen eye for sail shapes.

The sailboats set off on one tack upwind, speed racing each other. The skippers and crews need to be fine tuning the sail adjustments continually to develop better speed over the other boats. One boat will eventually show superior speed. That boat's crew will have done the best job with the critical adjustments, those of jib trim, main trim, mast bend and forestay sag.

The coach must be able to evaluate the critical adjustments of the faster crew and communicate the differences between boats. The fast crew is often the first to *adjust* to changing wind speeds and/or sea surface conditions as *all four* critical adjustments must be changed **every** time the conditions change. In one day of testing at a quality venue with steady wind and conditions all the crews will develop nearly the same speed ability.

Benchmarking sail trim

The key to learning really fast sail trim is "benchmarking". The coach and crew must develop benchmarks for communication and, later, for record keeping. You should start keeping a diary of

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venue conditions so that you have a database of information for future years. For every wind/sea condition, there is a perfect trim. These benchmarks **must** be perfect **all** the time in order to achieve proper sail trim. That's the first step in finding your **whole course top speed**.

What do I mean by benchmarking? I like to benchmark jib trim by looking at where the upper leech would touch the spreader if the leech were extended aft. This critical adjustment is the most important one for most sloops with backstays. The result is that trimming the jib in a Lightning is a full-time job. The maximum range of the jib adjustment relative to its benchmark on the spreader is from 4" outside the end of the spreader to 4" inside the end of the spreader. It helps to have a strip 1/2" to 3/4" wide of a contrasting color adhesive tape positioned 2" inside the outer tip of the spreader. This will help define the location of the benchmarking trim in most wind/sea conditions.

Benchmarking the spreader is very common on all boats that race from the Olympic 470 Class to the new Americas Cup Class boats. Jib trim is the most important contributor to the goal of **top speed** in many one design boats. Over the last 15 years of coaching at the highest level, I have noticed that by far, the most frequent sail trim mistakes are made in jib trim through the jib sheet. Every lull, puff, wave, shift, and rig tweak has a direct effect on how the jib is trimmed. Crew members should be calling out those lulls, puffs, waves as a "friendly little reminder" to check the benchmark and re-adjust the jib sheet.

It is helpful to have some recommended starting points for benchmarking the jib trim. But remember, the three boat testing is intended to refine where the sails should actually be trimmed and how to develop your team's eye toward sail trim in different sea conditions. I must stress that these are **just starting points**.

Benchmarks for jib trim:

drifting conditions	4" outside spreader
5 knots	0" (or at spreader)
10 knots	2" inside spreader
all three crew hiking	4" inside spreader
overpowered	2" inside spreader
main luffing 50% time	0" (or at spreader)
survival conditions	4" outside.

The best benchmark for mainsail trim is lining up the top batten (on a vertical plane) relative to the boom. For example, on a Lightning, trim the mainsheet so the upper batten is lined up parallel with the boom. Ask a crew member to sight up from under the boom and describe the relative position to the boom. Keep communication consistent by using terms such as "10 degrees out" to say the aft end of the upper batten is pointing 10 degrees to leeward of the boom, or, "parallel" to say the batten is parallel to the boom, or, "5 degrees in" to say the batten is 5 degrees to windward of the boom (note that you **never** want the top batten pointing in). Practicing benchmark communication is very important for consistency in mainsail trim for top speed and record keeping for future reference.

Here are some *starting points* for main trim.

Benchmarks for main trim:

drifting conditions	15 degrees out
5 knots	10 degrees out
10 knots	5 degrees out
all crew hiking	0 to 5 degrees out
over powered	5 to 15 degrees out

Dramatically changing sail shape

Mast bend and forestay sag are the third and fourth elements on the critical adjustment sail trim list. Mast bend and forestay sag are dependent for the most part upon the position of the mast blocks, the forestay length (or jib wire tension) and backstay tension, and to a lesser degree, the main sheet tension. These controls are interdependent. Because of this interdependency, they are complex enough to address in a separate article. We will talk further in a future article about rig tuning and how they affect headstay sag and mastbend to assist you in achieving your competitive speed upwind.

Fine-tuning your competitive speed advantage

Until then, we encourage you to go out with several other boats and a coach boat and spend some time adjusting your sail trim for maximum speed. The confidence you gain from this exercise will pay dividends in the regattas you attend this spring. Stop by and talk to us about your experiences. We look forward to helping your programs become faster.

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Bill Shore has carved out a career in engineering, sailmaking (with more than 20 national and international champion titles to his name), and now he enjoys coaching World champions, Olympic medalists and America Cup teams.