

NECSC Sailing Clinic

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Stamford, CT

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Section 1 - Introduction

Sail Controls

Tuning Guide

Set Up

Balance

Gear Changing

Section 2 - Sail Trim

Sail fast and point

Most important for good speed and height upwind is to find the right balance through good trimming and concentrated steering. Right balance is equivalent to the right rudder pressure. You achieve this by trimming the main and backstay and in stronger winds by pointing to reduce the pressure on the sailplane. I often sail with the jib slightly luffing. In flat water a stronger rudder pressure can be allowed as choppy seas require an almost neutral rudder to facilitate easy steering. The rudder easily turns into a brake. Start by sheeting your main to the proper mark then trim the backstay for right balance. If extra power is needed the jib may be trimmed fuller.

Main

The top batten is then parallel to the boom and the top tell tail flies 60-70% of the time.

- In very light wind the top tell tail shall be visible as much as possible. The top batten will then point leeward.

If you have an old and soft mast the main may get overbend wrinkles from the clew to the mast when the backstay is pulled very hard. These can be reduced by tightening the cunningham. However, it is better to have a well balanced boat than a good looking main.

Backstay

The backstay is only used to stabilize the headstay in light wind

If you manage to steer more into the wind without losing speed less backstay tension is needed. Consequently, the backstay has to be pulled harder in choppy conditions as more active steering is required then.

Cunningham.

The Cunningham affects the camber position. In light winds the mast is relatively straight and therefore the main has enough draft forward without using cunningham tension. The camber position is moved backwards as soon as the backstay bends the mast and short horizontal wrinkles are seen at the luff. Pull the

Cunningham until the wrinkles disappear. I'd rather pull Cunningham too hard than the opposite.

Outhaul

The outhaul should be tensioned according to power need. Maximum when you cannot hold the boat flat.

Jib

The jib Cunningham is pulled harder when the wind increases. To avoid the foot resting too much on the deck in strong winds and to make sure that there is no gap between deck and skirt in light winds the jib is hoisted to different heights

Sheet and barberhauler effect the shape of the jib in a way that it is often necessary to adjust both at the same time

Spreader Reference

The jib is sheeted to 5 units outside the spreader in 0-2 m/s and it is sheeted to 2-3 units outside in 3-5 m/s. It is then gradually opened to be 9-10 units outside in winds above 10 m/s.

The main sails from North have a window allowing you to see the distance between the jib and the spreader having your head on the windward side of the sail. It is always better to sail with a too open jib slot than a too closed one, which can be very stopping.

Foot Camber

The jib is sheeted 2 units outside the rail in 0-2 m/s wind (let us call that -2 units). The foot is sheeted to 3 in 3-6 m/s and in 7 m/s and above it is sheeted to 5.

A fuller jib is needed in choppy conditions a flatter one is better on a flat sea.

Jib Cunningham

The jib Cunningham is always pulled just enough to remove the sag between the luff buttons.

Headstay sag

Headstay sag is set by the backstay and is hard to control without changing the balance of the boat.

However, a very flat jib (too little sag) is often an indication that the backstay should be eased.

Section 3 - Downwind Trim

Mast Rake

The mast shall be pushed as much forward as possible downwind. Let the backstay out and pull the mastbend inducer to keep the mast forward. The headstay will be loose and allow the jib to be spinnaker like. When the apparent wind is 70 degrees from behind or more the backstay is tightened to give 10-15 cm sag.

Main

The main shall have much draft and the chamber position should be close to the centre of the cord. This is achieved by letting cunningham and outhaul loose. The vang is adjusted such that the top batten is parallel to the boom. Let the boom out to 90 degrees with the wind from the stern. With a wind angle sheet such that the top tell tail flies but is slightly irritated.

Jib

The full length of the whisker pole shall be used and cunningham shall be loose to create clear bows between the luff buttons

Sailing angles

In very light conditions a shy wind angle is necessary to make the jib fly. In other conditions angles between 0-20 degrees form a dead run give the same VMG and you can let tactical decisions decide the angle. If you have options chose the one closest to the mark.

Section 4 - How to Point, Foot, and Shift Gears

By Greg Fisher, June 7, 2002

Greg Fisher is a wizard of small-boat speed, and in this column, first published in *SW* 1998, he tells us how to master one of the most difficult facets of sailboat racing.

Subtle gear changing is what truly separates those with just adequate boatspeed from those who always seem to be a click quicker and higher. While most of the fleet starts the race with a similar setup, created with the help of a tuning guide or by following standard principles, the fast boats are constantly making additional adjustments. When conditions suddenly change—a puff hits, or powerboat waves arrive—these sailors shift gears smoothly. Before we dive into the subtleties of their sail adjustments, let's take a look at how you might create a basic pre-race setup.

Step 1:

Set the depth

Try to memorize the depth that feels about right in 10 knots of breeze. Then set your mast bend and headstay sag to replicate that shape, using it as your starting point in other velocities. Another method is to increase mast bend until you just begin to see slight wrinkles (called inversion wrinkles) running from the clew of the mainsail to the lower quarter of the mast. For the jib, decrease headstay sag until you are just able to make the telltales on both sides of the sail fly easily. Any tighter, and the steering groove will become too narrow.

Step 2:

Set the draft position

For most boats, the main draft should be positioned nearly halfway back. Pulling the cunningham tighter pulls the draft forward, while easing it allows the draft to move aft. Use the jib halyard or jib cunningham to position the fullness in the jib. The draft should be slightly farther forward than in the main, usually about 35 percent, or roughly one-third, of the way back.

Step 3:

Set the twist

To set the leech tension for the main, sight from under the boom and set the sheet so that the chord of the top batten is parallel to the boom. For the jib leech, set the sheet so that the last 6 inches of the middle of the leech (a mid-leech batten helps here) are parallel to the centerline of the boat. Easing the sheets allows the outboard end of the battens to fall away, increasing twist. Trimming the sheets does the opposite, decreasing twist.

Step 4:

Set the angle of attack

If you drop the tiller, the boat should continue to track straight, or slowly head up into the wind. Any more helm than that means excessive rudder drag. If the boat has excessive windward helm, ease the traveler to until the helm is balanced. This four-step process for setting your sails is only a starting point. It's still a great idea to line up with someone you know is fast before the race to see if you are "on the money." If you're faster, great! If you're off the pace, just ask your crew, "Are we lacking speed or pointing ability?"

Solving Pointing Problems

An inability to hold a lane or position close to other boats can really destroy a tactical game plan. Pointing problems are not so much indicated by the angle that the boat seems to be sailing relative to the boats around us, but more by the fact that the boat is actually sliding to leeward.

Trying to pinch to maintain height can be the crux of the problem. The old adage, "foot, then point," says a lot. A boat needs to go fast before the underwater foils can develop enough lift to hold their position in the water. To regain pointing ability, ease the sails out, bear off slightly, and get back up to speed. Once up to top speed, re-trim to your starting point trim and reevaluate your pointing problem. If the problem persists, check your sail trim.

When sail trim is the cause of the problem, it's usually the main, not the jib. The upper leech of the main provides most of your pointing ability. Be sure to trim the main so the upper batten is at least parallel to the boom. If you need more pointing ability, try trimming the main tighter. You can hook the upper batten as much as 15 degrees to weather for short periods. Avoid the temptation to overtrim the jib to help pointing ability. Hooking the jib leech will choke the slot between the main

and jib, stalling the entire sailplan. The jib should never have less twist than described in the "basic setup."

Only after you've decided to trim the main harder should you try to pinch the boat. In this mode, the weather telltales on the jib will be stalled. In big puffs, the luff of the jib can break as much as 8 inches back. This "super pinch" mode can only be held for short bursts and in flat water. Once the boat starts to slow down, be sure to ease the sails out, regain your speed, then start the process again.

While it may seem natural to let the boat heel more when trying to point, fight the urge. Keeping the boat flat will help maintain a balanced helm and maximize the efficiency of your underwater foils. Still not pointing? Either your rig is too loose, resulting in too much headstay sag (i.e., the jib is too full) and sometimes too much mast bend, which makes the leech too open, or the luff tension on either sail is too tight (the draft is too far forward).

Solving Footing Problems

What if your pointing is fine, but your straight-line speed is lacking? The simplest fix is easing the sails. More open leeches on both sails will help the boat sail lower and faster in a straight line. Sometimes, however, this results in a pointing problem. If so, first check your helm balance. Weather helm can seriously hinder the boat's ability to go fast. Instead of easing sheets, it's often better to find a way to ease helm. First, try to sail the boat more level. If you can't keep the boat flat, induce more mast bend to flatten the main. The next step is to ease the traveler until the helm is balanced. Finally, tighten the outhaul, tension the cunningham/jib halyard to pull the draft forward and open the leeches of both sails.

Gear Shifting: Puff On!

We've got you going with good speed and good height. Then what happens? The wind velocity changes and it's time to shift gears. First, let's look at some of the automatic trimming change that should happen as soon as a puff hits. 1. Ease the main, and sometimes the jib 2. Steer up to "feather" the boat 3. Re-trim sails.

Since a puff typically lifts you, due to a change in the apparent windspeed, you need to ease sheets and head up as it hits. Be sure to let the boat climb up into the wind and steer toward the upper end of your groove with the jib luff actually breaking. In flat water, all that may be required is a quick ease of the mainsheet. But in chop, it may be necessary to ease the jib as well.

If the puff packs some real velocity, more adjustment may be necessary. If you can't hold the boat down, and there's still too much helm, try the following, one at a time, until the helm is balanced. 1. Ease the traveler 2. Bend the mast (vang tension, backstay tension, etc.) 3. Tension the cunningham on both main and jib.

Gear Shift: Into a Lull

For the same reason that puffs are lifts, lulls usually appear as headers. In a lull, it's important that you bear off as smoothly as possible. Make sure the boat remains flat and resist the temptation to add heel to maintain "feel" in the helm.

Ease the main so the top batten angles outboard from parallel to the boom. Leave the jib trimmed initially until the bow is pulled down to the lower end of your groove with both telltales streaming aft. At that point, the jib should be eased so the leeward telltale doesn't stall.

Here's how to maintain speed in a lull. 1. Ease the main 2. Allow the boat to heel to weather, creating lee helm, to steer the boat down 3. Ease the jib 4. Level the boat 5. Pull the traveler up (if the boom is below centerline).

If the lull is long-lived, you may need to take additional steps to maintain speed.

1). Straighten the mast and induce luff sag in the jib

2.) Ease main and jib cunninghams to maintain correct draft position.

The smoother you shift gears the faster you'll be, so practice until it's automatic. Heck, manual transmissions went out years ago!