



## **North Sails Day Sailer Tuning Guide**

The following measurements are those we have found to be the fastest setting for your new North sails. However, we urge you to experiment because you may find slightly different setting will mean even better boat speed for you and your particular boat. If you have any questions or problems, please don't hesitate to call. We are always anxious to help you go faster and win races.

### **MAKE RAKE AND SHROUD TENSION**

To measure the aft rake of your mast, hoist a tape measure on your main halyard and hold it tight at the intersection of the transom and rear deck. This measurement, without your jib up and your rig set "snug" (no play in any shroud or forestay), should be 24' 11" to 25' 1". Then hoist your jib and pull the rig forward through either a magic box, a block and tackle, or using the forestay (as a bow and arrow effect) until you achieve a 25' 1" to 25' 2" measurement at the transom. With this rig tension (approximately 150 lbs on the shrouds) the leeward shroud should not go slack until the wind velocity is approximately 10 mph. This may require more rig tension than you are used to carrying, but this tension is important in keeping the jib luff sag down to a minimum for maximum speed and pointing capability.

National Champ Dave Keran sets his rig tension very tight solely with the forestay tension. His rake is set at 25' 1" with the forestay tensioned to 200-210 lbs. The shrouds will be accordingly 300-320 lbs. They do not use the jib halyard to tension the rig at all...in fact it is used only to tension the cloth on the luff of the jib. The rake and rig tension are set and not altered at any time....making for a very simple, yet effective tuning setup.

## **MAST STEP AND SPREADER TUNE**

After the mast is setup at the proper rake and rig tension there should be approximately 1" of positive prebend in the mast. This can be sighted by holding the main halyard at the gooseneck and determining the distance between the halyard and the back of the mast at the spreaders.

When sailing upwind in a 10 to 12 mph breeze you should see just a hint of diagonal overbend wrinkles in your main which will appear below the spreaders and aim back towards the clew of the main. These overbend wrinkles are important to show us that the mast bend/mainsail shape is matched together perfectly. These wrinkles are just an indicator and should barely show in these conditions. In heavier winds, above 15 mph, the diagonal wrinkles should be more definite. In winds above 20 mph, the wrinkles should be definite enough to give them the name "speed wrinkles."

To achieve this type of mast bend, careful adjustment to the mast step and spreaders is necessary. Mast bend can be divided up into three sections with each being separately adjusted.

The top section or the one above the hounds (where the shrouds and forestay attach to the mast) is solely dependent on the relative bendiness of the mast and is really not capable of being adjusted. Some masts are bendier up top while other masts are stiffer. Your North main will readily adapt to either mast bend through controlled cloth stretch.

The mast bend in the middle third is controlled through spreader length and sweep. Spreader length is adjusted to side bend of the mast and it is important to check the relative sideways straightness when sailing upwind in an 8 mph breeze. Simply look up the luff tunnel of the mast along the luff of the main facing forward. If the mast is bending to leeward at the spreaders, your spreaders should be shorter. If the mast is bowing to windward, the spreaders should be longer. Ideally, we want to see a perfectly straight mast from side to side or a very slight amount of bend to weather. We suggest cutting your spreaders off no more than 1/2" at the time because it really doesn't take much to make a major change in mast bend. As a rough starting point, many Day Sailer masts setup with 21 1/2" spreaders.

The spreader sweep fore and aft adjusts fore and aft mast bend. If your main is too flat in light winds (even showing overbend wrinkles above the spreaders) cock your spreaders slightly farther forward. You can tape battens, pennies, etc., under the back edge of the spreader so they will be held farther forward. Adjust the sweep forward so that overbend wrinkles are just barely visible above the spreaders when sailing upwind in a 10 mph breeze. If the spreaders are too far forward (the tips too far apart), the leech of the mainsail will hook to windward and the mainsail will be too deep.

The lower third of the mast bend is controlled by moving the bottom of the mast forward or aft on the keelson. By moving the bottom of the mast forward, the lower third of the mast will be stiffer. By moving the bottom of the mast aft, the lower third of the mast will be bendier. Again, after setting up your rake and spreaders, you can adjust the lower third of your mast bend so that these overbend wrinkles are just evident in the 8 to 10 mph breezes. As a base starting point we'd suggest setting the butt of the mast 11'1/2" measuring from the inside of the transom forward to the aft face of the mast along the floor of the boat.

We can offer another guide that may help you position your spreaders very close initially. Pull your spinnaker halyard down to the chainplate to help determine the proper spreader "poke" and "cant". Feed it around behind the spreader. Pull the halyard very tight and is just touching the chainplate where the shroud attaches. There will be a gap between the halyard and the spreader at this point of approximately 1/2". The spreader should extend out past the taut spinnaker halyard approximately 3 1/2". While these numbers are not the perfect answer for every boat they should help you get close initially.

Shaping your mainsail correctly through mastbend is important for excellent upwind performance. We realize that this is sometimes difficult to achieve due to the different mast sections, shroud placements, etc. in the Day Sailer class. Therefore, we urge you to consult us so that we may help you out with the correct mastbend control.

Overbend wrinkles in the lower section of the main are a good indication of proper prebend and mast bend setup.

## MAINSHEET TRIM

The mainsail should be trimmed so that the upper batten is parallel to the boom (sighted from under the boom, looking up the sail.) In lighter winds or when sailing in a great deal of chop where power is needed, it is helpful to ease the mainsheet so that the upper batten is angled outboard from parallel to the boom approximately 5 degrees.

In drifting conditions when the boom is hanging on the leech of the main and hooking the upper batten, it is best to set the upper batten parallel to the centerline of the boat. Only in drifting conditions should you trim the mainsail this way, as this will place the boom approximately two feet off the centerline of the boat.

In very heavy winds and with the help of pulling on the boomvang, set the mainsheet tension so that the upper batten is again angled outboard approximately 5 degrees from parallel to the boom. It is important in winds above 15 mph to apply some tension so that the mast will bend correctly to sufficiently flatten out the sail for these conditions.

The mainsail is very important in helping steer the Day Sailer upwind. The skipper should always hold his mainsheet and be ready to ease it out quickly when he feels an increase in his weather helm (i.e. load on the helm acts as a brake.) When the boat is tracking well and the helm is balanced, the skipper should slowly trim the mainsail back in.

## **CUNNINGHAM AND JIB CLOTH TENSION**

Pull the Cunningham on your main and the jib cloth tension just tight enough to barely remove horizontal wrinkles. It is best to leave just a hint of horizontal wrinkles on the mainsail and slight “crow’s feet” off the snaps of your jib so that you know the luff tension on both sails is not too tight.

## **OUTHAUL**

Pull the outhaul so that the bolt rope on the foot is just standing up straight in all conditions except in very heavy winds when overpowered. In these conditions pull the outhaul nearly to the band. . Ease the outhaul 2” to 3” when sailing downwind.

## **BOOMVANG**

Downwind trim the vang hard enough to keep the boom and the leech supported on the mainsail. Use the guide of setting the upper batten parallel to the boom. When the boomvang is trimmed correctly, the telltale should fly straight off the leech at the upper batten. We feel that in the Day Sailer class there is a tendency for the boomvang to be pulled too hard when sailing downwind. This will over tighten the leech up top and due to the side bend of the mast, over flatten the mainsail.

As mentioned earlier, upwind in heavy air the boomvang is set hard enough to resist upward movement of the boom to adjust the upper batten to ease no more than 5 to 10 degrees past parallel to the boom. The mainsheet, in these conditions simply acts as a traveler and allows the boom to move mostly sideways and outbound.

## **JIB TRIM**

Trim the jib sheet so that upper leech of the jib is angled outboard about approximately 10 degrees in most conditions. In very flat water and medium winds you may be able to trim the sheet slightly tighter. In light lumpy conditions trim the sheet looser so the middle of the leech is slightly open as well.

## **JIB LEAD**

Set your jib fore and aft so that the tell-tales break nearly even from top to the bottom on the jib as you luff the boat slowly into the wind. If the upper telltale breaks first, move the jib lead slightly aft. If you were to err one way or the other, you should make the top of the jib break slightly ahead of the bottom.

A good starting point is set the lead jib block 9’3 ½” aft from the jib luff wire measured around the cutty.

In heavy winds, it is helpful to move the lead aft 2” to 3” so that the top of the jib does break early flattening out the upper section of the jib and therefore helping to de-power the boat.

Most Day Sailer skippers have fitted their boats with inhaul lines to help pull the jib leads inboard for proper upwind performance. These lines, added to the top of the cutty, will pull the jib sheet inboard to a point where the sheet if extended would cross the cutty 16" from the centerline. This is not the sheave position on the block, but where the sheet would strike the fiberglass if extended on.

In breezy conditions we suggest moving your leads outboard (and aft) 1-1 ½". If very light, and especially choppy conditions move your lead outboard 2" to 18" off centerline. Be sure to ease the sheet in these conditions.

**Dave Keran, Day Sailer National Champion, describes his method and set-up of using his inhaulers below. Thanks Dave!!**

*"The barberhaulers exit from through-deck bullseyes on the vertical face on the aft end of the cuddy. The exits are about 8" from centerline and lines cross to the other side of the boat from where they exit. We sail with the barberhauler block positioning the jibsheet 12" off centerline which means the block is 20" from the bullseye. I believe that the position of the bullseye (both fore and aft and laterally) and the length of the barberhauler line are important in getting the right trim on the jib. If the lines exit forward, on the top of the cuddy, they cause the jib to cup into the main when closehauled and the shape becomes less than optimal. Secondly if jib is pulled down to the cuddy either by a short line or to a track with a block I think the leach gets too tight. By allowing the barberhauler block to float I feel the jib is properly tensioned on the leach and the foot."*

### **SPINNAKER TRIM**

Sail your Day Sailer spinnaker with a 6" to 12" curl in the luff. Careful concentration is necessary. Use short 2" eases and trims on the sheet to keep the spinnaker trimmed correctly. Keep the clews even at all times through adjustments to your topping lift. In some conditions, it is sometimes difficult to see the leeward clew behind the mainsail so you can use another guide where you adjust your pole height to keep center vertical seem parallel to the mast.

We wish you good luck and fast sailing!

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