# Flying Scot Tuning Guide

For any question you may have on tuning your Flying Scot for speed, contact our expert:

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# NORTH SAILS

## Flying Scot Tuning Guide

**Introduction to tuning, trimming and racing your Flying Scot**

Congratulations on your purchase of North Flying Scot sails. We have worked hard to design and produce the fastest sails available. We are confident you will find superior speed over all conditions. Our sails are designed to be fast, easy to handle and trim.

If you have any questions or problems, please do not hesitate to call. We are anxious to help you go faster and win races! Thanks for joining the North Team. Good luck and good sailing!

## Boat Preparation

### MAST AND SHROUD TENSION

#### The Loose Rig

To measure the aft rake of your mast, hoist a tape measure on the main halyard and hold it tight at the intersection of the transom and the rear deck. This measurement (without your jib up), should be 28' 4" to 28' 5 1/2". On our boat we have placed a channel adjuster above the deck at the joint of the forestay and the wire attached to the toggle. This allows us to quickly adjust the rake and lengthen the forestay if necessary.
To measure the "slop" of the rig, you need to measure the forward rake of the mast. With the tape still hoisted, push the mast forward until the shrouds restrict it. The difference between this forward measurement and the aft measurement should be approximately 2-3".

#### The Tight Rig

The tight rig tuning is only functional with the jib cut for this tuning. A Loose Rig, or even a Snug jib put on a tight rig will be too flat, especially in medium winds.
First, drop your shrouds as low as possible in your channel adjusters. This should put the very bottom of the swage fork on your shrouds just barely above the actual chain plate that exits the hull. Raise the mast; hook your jib halyard to your bow plate (and perhaps tie your spinnaker halyard on the bow plate as well as a safety). Tighten the jib halyard until tensioned close to the suggested tension of 240lbs. We use a 3/8" socket wrench in the halyard box to crank the rig up tight enough. The standard aluminum cranks will break if used. It may be a trial and error process until you've reached the proper rig and tension. However, once achieved, you will not have to readjust the rig again! We suggest setting your rig up with the rig tension between 220 and 250 pounds. If less than 220, too much headstay sag will develop in medium winds, if more than 250; the mast may be pushed out of column in heavier winds.

The rake measurement, measured with a tape hooked on the main halyard to the joint of the transom on the back deck, should be very close to 28'4"- 28'5". Farther forward than 28'5 1/2" will result in too "light" of a helm and the need to heel the boat more to keep in balanced. More rake than 28'3" will create too much weather helm.

*Hook your jib tack shackle around the forestay*

#### Snug Rig Jib

The Snug Rig jib will tune very similar to the Tight Rig, using the same methods and tools above.

The rake measurement should still set very close to the 28' 4"-28' 5". The rig tension will be considerably less then the tight rig, however. Set the rig to 80-110 lbs measured on the forestay.

When hooking your jib up at the tack, be sure to hook the shackle around the forestay. This will position the tack of the jib closer to centerline when sailing upwind on port tack.

## NO MORE TOGGLE

It is no longer necessary to use the toggle to set your rake, jib luff tension or slop in the rig. In fact, you will never ever need to look at it again; your forestay will take the entire rig load while your jib halyard will simply adjust cloth tension.

*Proper main trim with the upper batten parallel to the boom. 75% of your sailing your main should look like this.*

## RUDDER BLADE

In the past we have indicated in our Tuning Guides that the angle of the rudder blade to the rudder head should be set so the blade is much closer to parallel to the rudder head than comes stock from the factory. This has meant moving the blade and redrilling the rudder blade hole.
We have found that this change is not necessary and in some cases has perhaps contributed to rudder blade bending due to increased leverage on the blade.
Instead we feel confidant that setting the rudder blade angle similar to what come stock from the factory (the forward lower tip is approximately 5" aft of a straight line tangent to the forward edge of the rudder blade and parallel to the forward edge of the rudder head) increases the strength of the rudder blade without compromising speed or pointing ability.

*When you want focus more on pointing, over-trim the main slightly, and for short periods of time.*

*When accelerating in first gear, ease your mainsheet and/or vang so the upper batten will be angled outboard slightly from parallel to the boom. Only in this trim will the top telltale consistently flow off the top batten (though its not in this picture!). In all other sail trim positions the top telltale may appear stalled behind the back of the leech.*

## Sail Trim

### MAIN SHEET TRIM

The main 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, it is helpful to ease the mainsheet slightly so the upper batten is angled out approximately 5°. In drifting conditions, when the boom is hanging on the leech and hooking the upper batten, set the upper batten parallel to centerline of the boat. Only in drifting conditions should the main be trimmed this way, as this will place the boom approximately 2' (61 cm) off from centerline.

In very heavy winds, with the help of the boom vang, set the mainsheet tension so the upper batten is again angled outboard approximately 5° from parallel to the boom. It is important, in winds above 15 mph, to apply heavy boom vang tension so the mast and boom will bend correctly to sufficiently flatten the sail. When proper vang tension is applied it is not unusual that the boom be deflected from the straight line nearly 3 to 4" (7.6 to 10.2 cm) in heavy breezes. This heavy boom vang tension will help make playing the main much easier, as the sheet will not have quite as much strain as it does in even moderate winds.

**Note: Make sure when rounding the windward mark that the boom vang is eased off so more strain is not applied to the mast and boom!**

### MAIN SAIL STEERS THE FLYING SCOT

The mainsail is very important in steering the Scot. The skipper should always hold his mainsheet and be ready to ease it 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 again, and the helm is balanced, he should slowly trim the mainsail back in.

*Note: Double check that your mainsheet swivel cleat is angled properly for easy release in a puff. It is dangerous, and slow, to have to use your foot to kick the sheet free from the cleat to release it!*

### CUNNINGHAM/MAIN HALYARD TENSION

Pull the Cunningham just tight enough to leave a hint of horizontal wrinkles off the lower one-third luff of the sail. With the North Flying Scot main, it is better to err towards being too loose than being too tight. Of course, in a breeze it will require much more Cunningham tension to smooth the sail, but there should still be a hint of horizontal wrinkles.
It is important to start with the proper main halyard tension at the dock. There is a definite tendency to over-tension the halyard and pull all the wrinkles from the luff before any Cunningham is applied. This is especially important to avoid in lighter winds.

### BOOM VANG

Downwind, trim the vang just hard enough to keep the boom down and the leech supported on the main. Still use the guide of setting the upper batten being set slightly out from parallel to the boom. When the boom vang is trimmed correctly on a beam to broad reach, the telltale should fly straight off the leech at the upper batten. There is a tendency for the boom vang to be pulled on too hard when sailing downwind, especially in light winds. This will over-tighten the upper leech and, due to the side bend of the mast, over flatten the mainsail. However, it is also easy to "under-vang" in heavier winds downwind and loose valuable power from the top of the main. Be conscious of your top telltale.

As previously mentioned, upwind in heavy air, the vang is set hard enough to restrict the upward movement of the boom to just allow the upper batten to ease no more than 5° to 10° past parallel to the boom. In these conditions, as mentioned, the mainsheet simply acts as a traveler and allows the boom to move mostly sideways and outboard. With each wind velocity the vang tension applied depends primarily on crew weight. Lighter weight crews will tension the vang earlier due to becoming overpowered earlier, while heavier crews might not need boom vang tension until much heavier winds.

*Proper luff tension will show wrinkles along the luff.*

## OUTHAUL

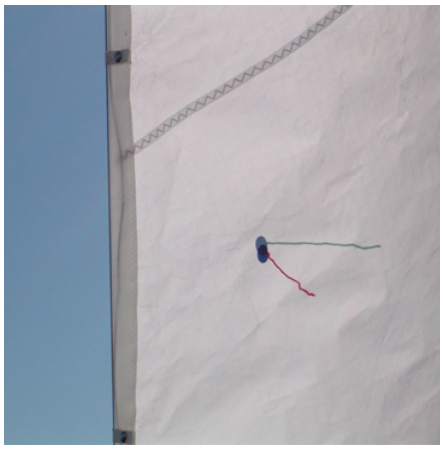
Your North mainsail is constructed with a shelf foot so it is possible to make the lower half of the main deeper when sailing downwind. Usually the outhaul is tight enough upwind so that there will be only a 1 1/2" to 2" (3.8 cm to 5.1 cm) gap between the side of the boom and the shelf-foot seam in the middle of the foot. In heavy winds, pull the outhaul tighter to close the shelf and flatten the main. In extremely heavy winds, above 18 mph, the outhaul should be tight enough so there is a hard crease from the tack to the clew. In lighter winds or choppy seas, ease the outhaul until the gap between the side of the boom and the shelf seam is 2". When going downwind, ease the outhaul (if there is time and opportunity) until the gap is a full 3-4".

*Judge outhaul tension by the relationship of the shelf seam to the side of the boom.*

## JIB LUFF TENSION

As wind velocity changes, it is necessary to change the luff tension on your jib (such as the Cunningham on the main). Simply crank your jib up tight enough to barely leave a hint of wrinkles along the luff. These will appear as "crow's feet" off each snap. Never leave the halyard tension loose enough so that there is "sag" between each snap, but only crank the halyard so tight that the crow's feet are removed in heavy winds when overpowered. There is no need to adjust the lashing at the head of your jib if you use the above suggestions.

*Proper jib luff tension will show slight "crow's feet" off snap. The luff wire should only begin to tension in very heavy winds.*



*Set your weather jib sheet so that the clew of the jib falls directly over the middle of the seat. Notice the tape on the cockpit seat back.*

## JIB LEAD POSITION

In most conditions, keep the leads maximum forward on the tracks. In heavy winds and when overpowered, move the leads all the way aft on the tracks.

## JIB SHEET TRIM: WINDWARD SHEET TRIM

Proper leeward and windward jib sheet tensions are important for top upwind performance in the Flying Scot. In Light and Moderate winds, the windward sheet is tensioned upwind in order to pull the clew of the jib to windward of the jib lead track. This will help narrow the slot (since the Scot's jib slot is normally too wide) and make the lower sections of the jib more powerful.

To set up the trim for upwind sailing pull the leeward sheet until the foot of the jib is just smooth and not curled. The foot should be relatively flat and not baggy, but not so flat that the very bottom of the sail begins to curl up. Next pull in the windward sheet until the clew of the jib falls directly over the middle of the seat. On our boat we actually place a tape mark in the middle of the seat to make it easier to eyeball the position of the clew.

With the weather sheet trimmed the jib foot will become much fuller which will increase the boat's power and ability to accelerate. Once the boat is up to top speed pull the leeward sheet again until the foot is flatter and the upper batten is angled straight back nearly parallel to the center line of the boat.

When hitting chop or sailing into a lull, ease only the leeward sheet so that the top batten angles outboard 15 to 20

degrees. When back up to speed, pull the leeward sheet back in until the top batten is nearly straight back. Throughout this acceleration process the weather sheet is never eased unless the boat is sailing in very light, nearly drifting conditions or very heavy winds (see below). In this condition the boat will be nearly "close reached" around the course and the weather sheet, therefore will not be applied.

We have found that in heavy winds and when the boat is overpowered the windward sheet will be well eased and at times all the way off. This is necessary because as the mainsheet is eased, you will need to help maintain an open slot between the jib and the main. Also this allows the leech of the jib to open up and be more forgiving, both in terms of heel and steering.

## ATTACHING JIB SHEETS

It is best to tie the jib sheet onto the jib with an overhand know so that the knot is 6" away from the clew of the jib. This is important so that when windward sheeting pull from the windward sheet is primarily across instead of directly down. With the knot 6" away from the clew the windward sheet attaches to the jib lower and therefore pulls more sideways.
If you are sailing with 2:1 sheets, the blocks should be tied about 6" from the clew of the jib.

## CENTERBOARD

Keep the board all the way down when sailing upwind in all conditions. In heavier winds you may find that the helm balances even better when the board is rolled back from the bottom of the hump 1" to 2".
In very heavy, near survival ,winds lower your board only to where the rollers are just touching the flat at the bottom of the hump.

Downwind remember to pull the board up to match the helm balance. On a reach it is not unusual for the board to be as high as 3/4 of the way up when it is breezy. Remember that the only goal is to balance the helm when sailing off the wind and pulling the board up until the boat will almost sail itself when nearly flat will greatly help to improve the boat's speed.

## SPINNAKER TRIM

Always sail your North spinnaker with a 6" to 12" curl in the luff. Careful concentration is necessary. Use short, smooth, in and out motions on the sheet to keep the spinnaker trimmed correctly. Try to keep from jerking the sheet when the spinnaker begins to collapse! Keep the clews even at all times through adjustments to your topping lift (pole). In some conditions it is difficult to see the leeward clew behind the mainsail, so you can use another guide, which is to adjust the pole height so that the center vertical seam in the spinnaker is parallel to the mast. We suggest easing the halyard so that the head of the spinnaker is 6" off the mast.


*Trim your spinnaker so that there is 6-12" of curl in the luff and the pole height sets the centerseam of the spinnaker parallel to the mast.*

When running, in nearly all conditions, we suggest sitting fairly far aft in the Flying Scot. It is not unusual for the skipper to be up against the aft side of the cockpit with his crew just in front of him, especially when windy.

## SHIM YOUR BOARD

On Scot's older than 5 years it may be helpful to shim the centerboard and trunk for top upwind speed. When sailing through chop an unshimmed board can slop around and become quite inefficient. By gluing fiberglass battens or applying thickened epoxy to the inside of the trunk where the bottom meets the inside of the trunk, the board can be shimmed tightly so that sideways slop will be minimized when the board is fully lowered.

## CREW WEIGHT

While the Flying Scot will perform with an extremely wide range of crew weights, we suggest trying to sail with as close to 360 to 450 lb. as possible.

### STEERING THE SNUG AND TIGHT RIG JIBS

In light to medium winds, these jibs will steer just similar to the loose rig style jib. When pointing high, allow the weather telltale to stall, but never sail lower than the leeward telltale on the luff of the jib- streaming straight aft. When accelerating, both telltales should be straight aft.

However, in breeze, when the boat is overpowered, it will be unusual, unless sailing through very large waves, that the weather telltale will not show a stall. In fact, in very breezy conditions, the luff of the jib will actually be breaking as far back as 12 inches. With the tight rig jib the groove is quite wide and when trying to accelerate, both telltales will nearly be straight aft, and when sailing in point mode and when trying to depower, again, the luff of the jib will be actually breaking.

*When steering in the upper ranges of the "groove" don't be afraid to allow the windward telltale, and at times even the luff of the jib, break.*

## Sail Care

Your North Sails are constructed out of the best materials on the market today. We make sure of this by testing every roll of cloth we use. Through proper care and maintenance your sails will give you the performance you have come to expect from a North sail.

The most important factor for a long life for your sails is to watch them for signs of wear and tear in high load and chafe areas. Be sure to wash the sails off with fresh water and dry the sails thoroughly before storing. A dry, mild climate is best. Excessive heat can cause problems with the sails due to the possibility of shrinkage. It is best to roll the mainsail and jib.

### MAINSAIL

When hoisting and lowering the sail try to minimize the amount of creasing or wrinkling of the sail. Every time the sail gains a crease the cloth breaks down that much faster. Always have someone contain the leech and luff during these procedures. The battens can be left in the sail without any problems. Be sure to roll the sail down the leech so that the battens will not twist. This could cause damage to the battens.

### JIB

When rolling the jib keep the battens perpendicular to the leech. Pay special attention to the battens and batten pockets for wear and tear.

### SPINNAKER

The spinnaker is fairly straightforward. Be sure to repair all tears and pulled stitches. Folding the sail when storing is best.

## Contact North Sails

At North Sails we are constantly striving to make our products better. If you have any comments on this tuning guide and how it could be improved for your purposes we'd love to hear from you.

For tuning information and complete details on how to setup your Flying Scot sails contact the North Flying Scot experts listed on the cover of this guide.

## NORTH SAILS ONE DESIGN
## QUALITY CONTROL CHECK

**Flying Scot**

| MAINSAIL | | JIB | | SPINNAKER | |
|---|---|---|---|---|---|
| Corners | | Corners | | Corners | |
| Cunningham | | Battens | | Numbers | |
| Royalty (signed) | | Blue stripe (top batten) | | Royalty (signed) | |
| Numbers | | Telltales | | North Logo | |
| Battens | | Leech telltales | | Bag | |
| Leech Telltales | | Wire | | | |
| Insignia | | Luff tabs | | | |
| North Logo | | Royalty (signed) | | | |
| Bag | | North Logo | | | |
| | | Bag | | | |

Checked by: _____

Date: _____ / _____ / _____