# *Tuning Guide for CS30*

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The following are guidelines outlining general points to keep in mind when racing your CS30. This information will help you get optimal performance from your boat, your North sails, and give you a starting point to develop your own set of data:

## Mast Tuning

There is no question that the CS30 goes best with rake of 8-10" as a good starting point. Ensure that the mast is straight athwartships by measuring with the main halyard from toerail to toerail, then securely block the mast so that it cannot move from side to side. Be aware that you may have to asymmetrically block the mast from side to side to keep the mast in column as the deck collar may not be exactly in the centre of the boat.

Tension the upper shrouds so no appreciable difference of tension is felt in 12-14 knots apparent. This is to ensure that the forestay does not sag in the medium/heavy air because of the mast tip falling off to leeward. The lower shroud should be tight enough to prevent the mast from 'S'-ing or sagging off to leeward at the spreaders. 1" to 1.5" of pre-bend is optimal for the CS30 dacron main. This pre-bend is achieved with rig tension and mast choking at deck level to produce a smooth even bend between gooseneck and masthead.

We highly recommend a backstay adjuster (the hydraulic type is the fastest and simplest). The backstay adjuster serves two functions: 1) to control the amount of sag in the forestay; and 2) to control mast bend and therefore mainsail shape.

## Sail Tuning

a) Light Air 0-5 Knots Apparent

Hopefully, you have decided to buy a well matched light and heavy #1 combination thereby providing you with the optimal shapes for the very wide wind range of 0-20 knots apparent where a #1 genoa will be carried. In light air it is important to prevent stalling of the airflow past the sails. At the same time you have to generate some power with the genoa to promote speed through the water, which in turn allows the keel to become efficient enough to prevent leeway. The genoa should be made quite full with the top twisted off away from the spreader so as not to close the slot or stall the airflow. The sail should be kept 8 to 12" away from the spreader, especially if there is wave action to contend with. Minimum halyard tension and a slack backstay (causing the forestay to sag) to induce a full powerful shape with a rounded entry is ideal. Power to achieve speed through the water is the goal here, do not try to pinch the boat; rather ease off a couple of degrees to build up speed. When this is accomplished then it is possible to flatten the sail by tightening the backstay to allow the boat to point a little higher.

The main leech should be kept very open or twisted. This is difficult to do in very light air as you should not bend the mast with the backstay because that tends to make the genoa too flat. Instead, try to keep the traveller slightly to weather and then ease the sheet considerably to allow the top batten to twist well away (approx. 5 degrees) from the boat's centreline.

b) Medium Air 6-14 Knots Apparent

As the wind increases past 5 knots apparent the main leech twist can be taken out since the air is able to maintain its flow around the deeper curve. The backstay, the genoa halyard, and the sheet should be tensioned to generally flatten the sail and increase the pointing potential. In winds of 6-10 knots apparent, the light #1 should be kept approximately 3-7" off the spreader. The sail trimmer should be constantly watching for changes in the wind speed and correspondingly adjusting the backstay tension, halyard tension and sheet. Remember that with everything else constant, a change in backstay tension (e.g. increasing forestay tension) causes the sail to be drawn in towards the spreader. Consequently the sheet must be eased to keep the sail in the same position relative to the spreader.

We have found that CS30's can point upwind quite well but pinching is very slow, especially in lighter conditions. The main leech should be tensioned with the sheet so that the tickler at the top batten is just showing airflow. At this point the footshelf should be taken out with the outhaul to take out some of the backwind that should now be developing in the main.

It is best to change from the light #1 to the heavy #1 at approximately 12-14 knots apparent. The decision depends partly on the sea conditions as well as the wind strength. The lumpier the sea, the longer you should keep the light #1 up to provide necessary power. In flat water conditions, however, it is best to change to the heavy #1 a littler earlier to help the pointing ability. Again, the heavy #1 can be kept within 3" of the spreader and the forestay tensioned to provide maximum pointing. As the wind speed approaches 14-18 knots apparent the CS30 will begin to heel past 25 degrees. There is no question that excessive heeling is an enemy of speed in a CS30 and should be prevented at all costs. This is done by flattening the main and twisting the leech. This is accomplished by bending the mast using the baby stay, and at the same time tensioning the cunningham which keeps the draft forward of the mainsail, and using the flattening reef to take out the footshelf and flatten the bottom of the sail. This allows the leech to twist off as much as necessary to keep the boat from heeling more than approximately 22 degrees. If you develop more than 2-3 degrees of weather helm, e.g. about 1/8 of a turn of the wheel, that is the sign it is time to begin flattening the mainsail as described above.

c) Heavy Air 15 Knots Apparent and Up

As the wind increases past 15 knots apparent, you should have made the main flatter and the leech more open, and the genoa as flat as possible to provide pointing ability. Now it is important to correctly steer the boat through the puffs, that is, by allowing the boat to point up into the puffs before they force the boat past 15 degrees of heel. As the puff passes it is then important to lay the boat off a couple of degrees to maintain the speed achieved during the puff.

Our experience has been that you should change from a heavy #1 to a full hoist max size #3 at around 19 knots apparent in flat water but hold on to the heavy #1 to approximately 22 knots apparent when wave conditions dictate the need for power. Your decision as to when to change sails depends not only on your wind speed but on sea conditions and the crew's ability (trim and weight) to keep the boat at or below 25 degrees of heel.

The choppier the sea, the longer the bigger genoa be kept up. From 13 knots apparent and up, the flattening reef should be put into the mainsail to take away the footshelf and flatten the bottom part of the sail. Naturally, the mast should be bent as much as necessary to keep the sail flat and the leech open. As the wind speed approaches 19 knots apparent, you should begin to ease the traveller to leeward and/or twist off the top section of the sail to prevent excessive heel. Always keep as much weight as possible on the weather rail. Only one person should be moving around the deck to adjust the various controls. If possible, learn to steer your boat from the weather side. This not only keeps weight to weather but also allows you to see puffs and wave conditions before they hit the boat. Do not hesitate to reef the mainsail when the boat feels over-powered. Boats like the CS30 often go faster in heavy air with less sail area than might feel optimum.

## Spinnakers

The CS30 is a relatively fast boat downwind, especially in lighter air. Its relative weakness is close-reaching to beam-reaching in heavy air. Consequently we would favour a heavy, smaller girth Tri-Radial as your second spinnaker (obviously we recommend a 3/4 oz. True-Radial as a first choice of spinnaker).

If your budget can afford a third spinnaker then the obvious choice would be a 1/2 oz. True-Radial to help overall light air performance and maintain a shallow gybe angle when sailing downwind.

When close reaching with the spinnaker, ensure that the boat does not heel excessively (which can cause broaching) by doing the following:

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1. Keep the boat under the rig; down in the puffs; up the lulls. The trimmer must keep the spinnaker on the edge of breaking at all times. As a puff hits, ease the sheet slightly; this keeps the spinnaker in front of the boat and eases the helm allowing the helmsman to steer away from the wind and maintain good attached flow over the rudder.
2. Constantly play the main; a good trimmer will feel the build-up of helm loads and ease the main to the point of flogging when a gust necessitates it. Remember to play the vang; this is the quickest way to ease the helm in a puff and also the most effective. Do not be afraid to put a reef in the mainsail to help you control the boat.
3. Do not keep the spinnaker pole overly low, raise the pole end of the spinnaker to free the leeches. Square the pole back as far as possible for the given apparent wind angle, this used in conjunction with sheet ease keeps the spinnaker centred in front of the boat as much as possible.

In winds of 4-20+ knots apparent we have found that a mylar staysail of approximately 90% LP produces 1/4 to 1/2 knot of extra speed with little problem. We highly recommend this sail as an addition to your basic inventory. For beam-reaching the mylar staysail should be tacked approximately 4-5 ft. behind the forestay. As the apparent wind moves aft and the sail comes behind the mainsail, then simply move the tack to the toerail to achieve maximum exposure to the airflow.

Most boats are difficult to control dead down-wind at winds of 20+ knots apparent, especially in a following sea. Try to pull both clews of the spinnaker down as much as possible by keeping the guy and the sheet lead amidships. The object is to keep the spinnaker in front of the boat. If you allow it to oscillate from side to side it will tend to pull the boat one way or the other, initiating the infamous death roll. The CS30 does show particular tendencies to this behaviour, but it is good advice whenever sailing downwind in heavy air.

We hope this will help you maximize the potential that we have designed into your sails. In addition, we recommend developing your own data relating to specific wind and water conditions for onboard reference.

We have worked hard to develop sails that are both compatible with the CS30 characteristics and easy to handle in a wide range of conditions.

If you would like further information on sails, tuning or trim for your CS30, please do not hesitate to contact North Sails Fogh Ltd. We are committed to building the fastest, easiest to handle and most durable sails available and enjoy helping you in any way possible.