



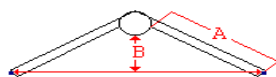
4 TUNING GUIDE

Speed Sails have put together this tuning guide to help you set your boat up close to its ideal settings. These settings should be regarded as a starting point for fine tuning as individual boats and crews may need to alter them slightly for best performance. When you have your boat set up, remember to mark everything so that the settings can be reproduced quickly.

Spreader Settings

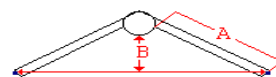
The two measurements for spreader settings are length and deflection. Spreader length controls the sideways stiffness of the mast and is taken by measuring the side wall of the mast to the shroud. We recommend sailing with 470mm spreaders although very heavy crews may wish to increase this to 480mm to keep the rig powered up in breezier conditions. Spreader Deflection is measured by putting a straight edge from shroud to shroud and then measuring from the mast to this edge. This measurement is not critical as it is only a guide to getting the correct pre-bend which we check again later.

Superspar



A=470mm
B=160mm

Proctor Kappa



A=470mm
B=155mm

Rig Tension

Rig tension is measured on the shroud and varies with wind strength. Start off with **400lbs** in all light winds (30 on the Superspar tension gauge) and increase up to **470lbs** (32 on Super Spars gauge) in heavier winds to prevent excessive luff sag.

Mast Rake

Mast rake is measured from the top of the mast to the top of the transom. To do this hoist the jib with **400lbs** and no chocks. Attach a long measuring tape to the main halyard and hoist to measure 16'1" to the top of the black band at the gooseneck. Cleat the halyard and swing the tape around to measure the distance to the top of the transom. This is the mast rake. In 15 knots and under we recommend sailing with a rake of **19'10¹/₂" – 19'11³/₄"**. Above 15 knots we recommend raking back to about **19'8¹/₂" - 19'9"** but measured with **470lbs**.

Chocks

The masts neutral position is where the mast sits with full rig tension on but no forces acting upon the sails.

0-5 knots: 0 Chocks when crew sitting to leeward. This allows the bottom of the mast to bend, flattening the bottom of the mainsail and reducing the tension in the leech.

5-10 knots: 1 Chock to fill the gap when mast is in neutral position. Crew sitting to windward or high wiring.

10-18 knots: When the crew is flat out trapezing, putting in a second chock will help to maintain the desired pre-bend.

18+ knots: 1 Chock. When you are really overpowered, removing the 2nd chock again allows the mast to bend, opening the leech and de-powering the sail.

Centreboard

In sub-trapezing the board should be angled forward. As you get to flat wiring (almost planing upwind) the leading edge of the board should be vertical. As it gets windier the board can be raked further back. In flat water you may raise it up to 3" on the handle. In rough seas it can be lifted up to 6" to help you steer around the waves.

Mainsail

Top Batten: Push in gently in light air. As the wind builds you should push it in more to remove the vertical creases from the batten pocket (it should be in quite firmly).

Outhaul: This should be pulled out tight almost all the time upwind and should only be eased up to 1" in moderate breezes when it is very choppy. Downwind the outhaul can be eased 1¹/₂ – 2".

Kicker: Until you are overpowered and have to ease the main upwind, the kicker should only have the slack taken up as mainsheet tension will control the leech profile. Above this wind strength you should ensure there is enough tension to keep the top tell-tale flying approximately 80% of the time.

Cunningham: In 18+ knots you can gradually apply cunningham to de-power the sail and remove some of the horizontal creases on the luff.

Jib

Sheet Tension: The jib sheet is used to control the jib leech and slot shape. Generally the slot should be kept parallel all the way up which is achieved with a combination of jib sheet tension and barber hauler. If it is light and choppy you may need to ease it more to give more twist to keep you going through the waves.

Jib Cunningham: This should be tightened sufficiently to remove the creases from the luff of the sail. More tension is required as it gets windier.

Barberhauler

Windspeed	Amount of Barberhauler
0-6 knots	None
6-18knots	Pull in 2-3" when jib sheet is tight
18+ knots	Ease it off as you get more overpowered

Spinnaker

The head of the spinnaker is flown 2-3" from the mast. This is done by tying a stopper knot on the spinnaker halyard.

Setting the pole height is very important as it controls the shape of the sail. It should be set to keep both of the clews level. The only exception is on occasions when the wind drops very light and the pole should be lowered to encourage the spinnaker to set.

I hope this guide has covered most of the points regarding 420 tuning and sail setting. If you have any further queries, please do not hesitate to contact Speed Sails.

Windspeed	0-5 Knots	5-10 Knots	10-18 Knots	18+ Knots
Mast Rake	19' 11 ³ / ₄ "	19' 11"	19' 10 ¹ / ₂ "	19' 9" / 19' 8"
Chocks	0	1 Neutral Position	2 Straighter than neutral	1 Back to neutral
Centreboard	Angled Forward	Leading Edge Vertical	Lift as you start planing	Raised – not more than 6"
Kicker	Slack	Take up slack	Begin to Apply	Pull Hard
Cunningham	None	None	Begin to Apply	Pull Hard
Barberhauler	None	2-3"	2-3" Ease as overpowered	No Barbers
Rig Tension	30	30	31	32