

ENTERPRISE TUNING GUIDE

Written By Philip Kirk

Introduction

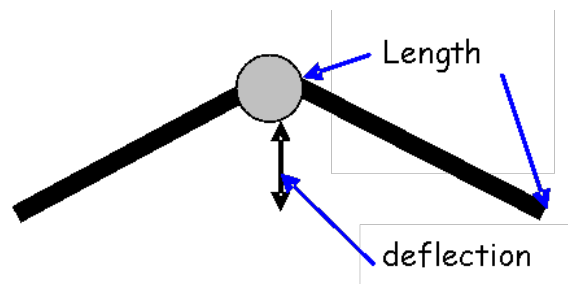
There is little difference in speed between correctly tuned Enterprises but small changes from the optimum settings can slow you down or make the boat harder to handle. So to improve your boat's performance follow the settings in this guide. Slight differences between hulls, sails, the position of fittings or the weight of the helm and crew will require modifications to these settings however these should put you in the ball park.



Spreader Settings

Spreader length is measured from the side of the mast to the shroud.

Spreader deflection is measured from the back of the mast to a straight line between the shrouds where they pass through the spreaders (See diagram. A jib stick can be used to form the straight line).



In general for flatter sails aim for a spreader deflection of 160-165mm and try 170-180mm+ for older or fuller sails.

The specific measurements recommended by each sail maker are given in the table. Click on the sail makers name to go to the sail makers tuning guide or Enterprise sails page.

Mast	Superspar		Proctor	
	Length	Deflection	Length	Deflection
North Sails	410mm	162mm**	410mm	175mm**
Pinnell and Bax	410mm	165mm	413mm	160mm
Speed Sails	410mm	177mm	420mm	171mm

Note **deflections for North Sails should result in zero fore and aft mast bend.

Mast Rake and Rig Tension

A mast rake of 21'2" (6,452 mm) at a rig tension of 400 lbs gives the best compromise of upwind and down wind speed. The mast foot should be as far forward as the class rules allow. Measure 2689 mm from the aft face of the transom to the back of the mast.

With the jib hoisted and rigging tensioned to 400 lbs, fix a tape measure to the main halyard and hoist it until the tape measures 18'6" (5,640 mm) at the top of the black band just above the gooseneck. Cleat the halyard and extend the tape back to the back edge of the transom and measure the rake. Rig tension should be measured at the shroud with a rig tension gauge.

For frail boats or in light winds use a lower rig tension of 300 lbs -350 lbs. There will be no loss of speed below a force 4.

Rig Checks

Ensure the Mast is Upright

With the measuring tape still hoisted up the mast and cleated check that the mast is upright by measuring the distance to the deck next to each shroud. If the measurements are different adjust the shroud pins until the measurements are the same. Re-check the mast rake after any changes.

Pre-bend

Once you have achieved these settings hold the halyard tight against the back of the mast at the gooseneck. This will help you see the level of mast pre bend at the height of the spreaders. This should be about 1/2"/4" with the exception of North Sails settings where there should be no mast prebend.

Sideways Bend

If you sight up the back of the mast and find that it bends to either side you may have a bent mast or an uneven mast step. Slow boats often have bent masts. An uneven mast step will bend a normally straight mast whilst a permanent bend can be detected by sighting up the mast when the rig is slack. The bend caused by an uneven mast step can be rectified by placing a piece of plastic card under the foot of the mast on the side where it is bowing. Experiment until it is cured.

Hull, Fittings and Foils

Hull Weight

The minimum hull weight (including up to a maximum of 4.5kg of corrector weights) should be no less than 94kg. The bottom of the hull should be smooth and free of chips or scratches. Fill screw heads on the keel band for even more speed.

Centreboard Case Slot Gasket

A Mylar or sail cloth slot gasket can be fitted to reduce turbulence around the centreboard. A worn gasket will reduce your speed.

Jib Fairleads

The class rules allow the jib fairleads to be a minimum of 595mm from the centreline. This is measured to the inside surface of the fairlead. The fore and aft position of the fairlead should be set so the angle of the jib sheet bisects the clew. If you extend the line of the sheet to the luff of the sail it should cross at a point 1680mm from the tack.

The Kicker

The kicker should be attached to the boom 530mm from the inboard end of the boom. This will ensure that the mast bends correctly as the kicker is tensioned. A 16:1 cascade system is commonly used for the kicker.

Foils

Ensure that your foils are smooth and free of chips and scratches. The leading edge on both foils should be rounded whilst the trailing edges should come to a sharp edge. The leading edge of the rudder and centreboard should be vertical when fully down. If the rudder is raked back the helm will feel heavy whilst a forward rake will make the boat feel twitchy.

Jib Sticks

A boat is allowed to carry two jib sticks when racing. For running it is best to use the longest allowed by the class rules, 1328mm, and for reaching the shortest allowed 1256mm. These measurements are taken between the bearing surfaces on the pole ends fittings. Note it is likely that from 2009 a flyaway jib pole system will be permitted. See the “flyaway jib stick” article on this website.

Traveller

The lower mainsheet block should be fixed to the traveller track on the centreline of the boat. In the past adjustable travellers were fitted on older boats before modern powerful kickers were introduced.

Hopefully this guide has given your boat a turn of speed or made it handle better than before. Wherever you sail your Enterprise I hope you get as much enjoyment out of it as I have.



Sailing is all about having fun. Good cascade kicker system too.