



Etchell's Rig Tuning Guide

December 2011

We recognize that Etchell's vary slightly from boat to boat and rig to rig. The following approach to tuning takes into account your customized equipment and address's your rigs pre-bend.

Following are 4 easy steps to set your Etchell's up to establish your "BASE" positions for your mast step, rake, cap and lower tensions. You will see on page 6 the attached quick tuning chart that the base position is for 6–9 TWS. Set your boat up to the "BASE" then apply our average wind range settings (yellow). Then from here we recommend if necessary you customize and develop your own settings in the boxes provided (orange).

We recommend that you return your boat to "BASE" settings after each days sailing, reducing the chance of losing track of your fast rig settings. Fill in the cap and lower turn buckle calibrations to aid in returning to BASE setting. These settings have been developed with the following sails;

PC-A, Mainsail for Australian conditions.
LM2L, LM2, LM2H, GM6.5 and GM-S Jibs.
VMG and Full Radial spinnakers.

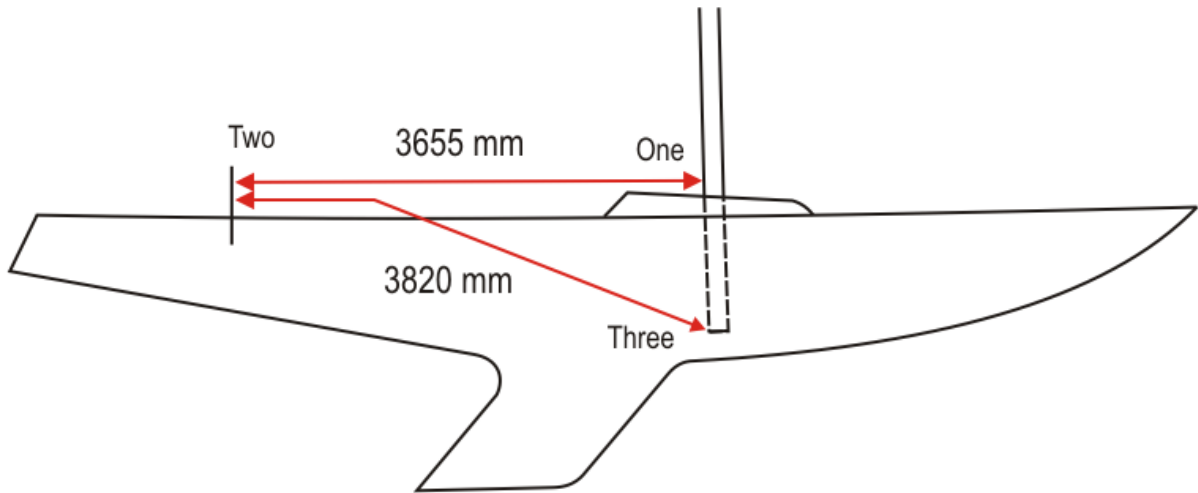
SPREADERS

Lock off in epoxy to prevent movement. The wire passing through each spreader tip to be located 35mm aft measured from a straight-line square across the front edge of the mast. Also, place 2 tape marks on the spreaders 490mm and 540mm from the side of the mast. These are used to reference jib sheet tension.

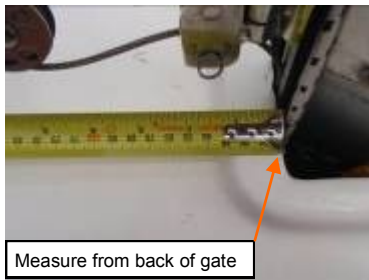
MAST STEP

The mast step position controls the pre-bend. Setting up with the correct amount of pre-bend is the platform to control both mainsail and jib shape. Pre-bend relates to forestay sag, being the principle control over the jib sectional shape and your steering groove. The pre-bend is governed by the relationship between the offset position on your mast partner, the alignment of the mast step and your spreader angles, a variable you cannot tune on the water. By working back from the mast partners we eliminate building variables reproducing a consistent pre-bend in your mast to marry the mainsail luff curve. Moving the mast step changes the amount the spreader engages or disengages on the caps. By moving the mast step aft the pre-bend is increased and conversely moving the mast step forward reduces the pre-bend. This is an important step in matching your mainsail luff curve with your mast bend. This can be customized in the in the orange mast step box.

1. Measuring from the aft edge of the mast partner, measure aft along the centerline of the deck 3655mm and make a mark.
2. From this mark on the aft deck measure 3820mm to the intersection of the aft face of the mast and mark the mast step "I" beam. This is now your "BASE" mast step position, for winds between 6 to 9 knots.



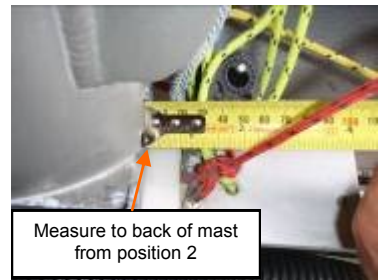
One



Two



Three



MAST STEP CHART

0 to 5 TWS	Base
6 to 9 (BASE)	Base
10 to 14	forward 5mm
15 to 20	forward 5mm
20 +	forward 10mm

RAKE

BASE rake setting - Disconnect the forestay above deck and swing it into the mast and mark the top of the gooseneck black bands onto the forestay. Reconnect the forestay and set the rake up at a distance of 1195mm measured from the black band mark down to the deck following the forestay. From BASE, in light airs we increase the forestay length by up to 20mm being 1215mm, subject to your boats balance.

Step 1



Step 2.A



Step 2.B



RAKE DEVELOPMENTS

In recent times we have seen a trend back towards adjusting rake for conditions. The basic rule is a longer forestay in light airs to induce weather helm/feel and carry a shorter forestay as the wind increases, this will reduce weather helm. If you wish to experiment with this variable we suggest trying base + 20mm in light and base -10mm in fresh conditions.

RAKE CHART

TWS	RAKE LENGTH
0 - 5	1215mm
6 - 9 (BASE)	1195mm
10 - 14	1195mm
15-20	1195 to 1185mm
20 +	1185mm

CAPS (For Dyform Wire)

Check mast is square in boat by measuring from chain plate to chain plate with the jib halyard or tape measure from hounds. Place the cap in chain plate hole 2 (from the bow). Set the cap tension up using the following steps to achieve "BASE" being 6 to 9TWS: Remove chocks, set forestay tension to #10 on the PT-2 (Loos Gauge).

Mast chocks down



Forestay on #10 (PT-2)



Set the BASE cap tension at #18 (PT-2)



CAP CHART

TWS	CAP TENSION
0 - 5	15, Hole #2
6 - 9 (BASE)	17, Hole #2
10 - 14	19, Hole #2
15-20	21, Hole #2
20 +	24, Hole #2

LOWERS

To establish the 6 to 9 TWS “BASE” lower tension place the lower in 4th hole from the front of chain plates. Adjust each lower to read ten on the Loos gauge sighting the mast track is straight. Then take three turns off to establish the 6 to 9 TWS “BASE” measurement.

Lowers 10 Loos Gauge



Lowers 10 Loos Gauge

Minus three turns off



- Three Turns off

The lowers affect the amount of mid mast sag (side bend). Controlling sag is crucial to setting up mainsail shape and affects helm/balance. Think of the mid sag being similar to how the head stay sag affects the jib. More middle mast sag in light air powers up the mainsail, and less sag in heavy air helps de-power the mainsail. Final adjustment of the lowers should be made while sailing by eyeing up the mast and judging the amount of mid mast sag in millimeters. Please note that in fresh conditions the mid mast shall be straight or slightly to windward of a straight line when sighting up the mast track.

LOWER TENSION CHART

TWS	LOOS	LOWERS
0 - 5	No reading	18mm sag, hole #4
6 - 9 (BASE)	No reading	15mm sag, hole #4
10 - 14	14	5mm, sag hole #4
15-20	20	Straight no sag, hole #4
20 +	24	5mm to windward, hole #4



One Design

North Etchells Quick Tuning Chart

Wind Speed (TWS)	Caps Loos gauge		Caps (turns from base)		Caps Turnbuckle number		Lower (turns from base)		Lowers Turnbuckle number		Mast Blocks	Mast Step	Rake mm
	Port	Stb	Port	Stb	Port	Stb	Port	Stb	Port	Stb			
0 - 8	15		- 2		Port=	Stb=	- 3		Port=	Stb=	Position 1	3820mm	1215
8 - 12 (Base)	18		BASE		Port=	Stb=	10 on Loos - 3 turns		Port=	Stb=	Position 2 (Neutral)	3820mm	1195
12 - 16	20		+ 2		Port=	Stb=	+ 4		Port=	Stb=	Position 2 (Neutral)	Forward 5mm	1185
16 - 20	22		+ 4		Port=	Stb=	+ 7		Port=	Stb=	Position 3	Forward 5mm	1185
20 - 25	24		+ 6		Port=	Stb=	+ 11		Port=	Stb=	Position 4	Forward 10mm	1185

 = Average boat settings
 = Your boat

KEY:
 Turns based on Brologa V2

Mast Block Positions:

- Position 1 – mast pre-bent forward with one 6mm block behind mast
- Position 2 - mast neutral with front chock in to stop mast pumping
- Position 3 – mast pushed back with block in front of mast (6mm gap between mast and aft partner)
- Position 4 – mast fully pushed back with block fully up (no gap between mast and aft partner)