



**ETCHELLS RIG SET UP FOR PC-M/PC+/BF MAIN, DC270/GM
JIBS,
.5oz VMG, FULL RADIAL and .5oz/.75oz BIRADIAL
SPINNAKERS**

Jan 2008

1. **MAST STEP**

5.360mtrs measured from the transom/deck intersection to the aft edge of the sail groove where the mast sits in the step. Run the tape the shortest route along the aft deck to one side of the console down to the step. This setting is "Base".

If you have an adjustable mast step move it 15mm aft of standard in light airs and 10mm forward of the base in fresh winds. Step position and chocks combine to control your lower mast bend. You may need to "fine tune" between the two to achieve the desired shape at the bottom mainsail stripe for the conditions you are sailing in. *See 3. below.*

2. **SPREADERS**

Lock off in epoxy so no 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.

3. **RAKE**

Disconnect 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 1.17mtrs measured from the black band mark down to the deck following the forestay.



4. **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.

Set the cap tension up as follows: Measures taken with chocks out and backstay tension just taking forestay up to be straight.

True Wind Speed	Loos Model B	Loos Model PT-2	Chain Plate Hole	Mast Step
0 to 8	15	13	Front	-15mm
9 to 12	21	17	2 nd (BF front)	Base
13 to 18	26	21	2 nd	+5mm
19 Plus	30	24	2 nd	+10mm

5. **LOWERS**

Place in 4th hole from the front on chain plates with 15 (old) / 13 (new) on tension gauge, sighting the sail track to be straight (no sideways bend-fore and aft bend is OK).

LOOS Tension Gauge Setting:

TWS	Model B	Model PT-2	Chain Plate Hole
0 to 8	3 full turns off from "9 to 12" setting	same	3 rd
9 to 12	5	7	4 th (BF 3 rd)
13 to 18	15	13	4 th
19 Plus	23	19	4 th

6. **MAST CHOCKING, OUTHAUL AND VANG**

Mast chocking is affected by mast step position. Chocking has a direct affect on both mainsail depth in the bottom half of your mainsail and forestay sag. The more you chock in front of the mast the tighter your forestay becomes (minimum forestay sag) and when you chock behind the mast you induce forestay sag.

TWS	
0 to 6	Chock behind mast. Ease foot tension in 40mm from black band. No vang
7 to 11	No chocks, mast allowed to "float". Ease tension in 30mm from black band. No vang
12 to 14	Firm chock in front of mast. Foot in 15mm from black band. Firm vang
15 Plus	Hard chock in front of mast, foot maximum out. Hard vang

NOTE: Check chocking for desired sectional shape of mainsail at bottom speed stripe. If you adjust your mast step the chocking will have to be revised accordingly. As wind increases if mainsail is too deep at mid and bottom strip use firm vang tension to induce bend in bottom half of mast.



7. MAINSAIL SET UP:

FLOATING TACK:

Note: When rigging the mainsail the luff boltrope at the tack eye is designed to feed down into the mast track. Attach the luff/cunningham tension rope to the tack eye. Note the gooseneck tack fitting is not used and can be cut off if you wish.

OUTHAUL:

Clew in from black band: See point 6

LUFF TENSION:

Check luff rope near tack is fed down into track below the feeder.

- *Light* - no tension, wrinkles up luff
- *Med* - just remove wrinkles
- *Fresh* - firm tension.

8. MAINSHEET AND BACKSTAY

These are to be worked together and you need to be sensitive to your boats balance affected by sail shape and leech twist rather than fixed settings. We have noted since changing to the new “long batten” rule for best performance the mainsail is being trimmed firmer than the previous short batten mainsail.

Guidelines are:

Top batten angle relative to the boom:

(Sight from under the centre of boom on the windward side).

- *Light* - 3 degrees above boom
- *Med* - 1 degree above boom
- *Fresh* - 3 degrees below boom.



9. SECTIONAL SHAPES OF SAIL:

TOP STRIPE:

- *Light* - aim for even arc
- *Med* - draft 50% with firm leech
- *Fresh* - draft 45% aft, flat sectional shape with twisted leech.

MID STRIPE:

- *Light* - even arc/twisted leech
- *Med* - draft 48% aft, firm leech
- *Fresh* - draft 45% aft/twisted leech.

TRAVELLER FROM CENTRE: (*Note: boom will fly lower than traveller position*)

	TRAVELLER	BOOM
PC/PC+		
➤ <i>Light</i>	100mm above centre	40mm above centre
➤ <i>Med</i>	50 above centre	on centre
➤ <i>Fresh</i>	on centre	70mm below centre
BF		
➤ <i>Light</i>	70mm above centre	40mm above centre
➤ <i>Med</i>	20 above centre	on centre
➤ <i>Fresh</i>	50 below centre	70mm below centre

The BF mainsail is required to be a more tightly sheeted mainsail, and hence the traveller car position will always be lower than the PC range.

JIB SET UP:

	FLAT WATER	ROUGH WATER
LM2	0 – 13 true	0 – 15 true
GM	10 – and above	13 – and above

LUFF TENSION:

- *Light* - soft, just forming wrinkles off tabs
- *Med* - just remove wrinkles
- *Fresh* - firm, remove all wrinkles.

Warning - Do not over tension luff when running down wind with backstay off as when you turn upwind the rig load shall be taken by the jib rather than the forestay. This will damage your sail. Answer: have a pre determined halyard mark.

The principle controls over jib shape are forestay sag, fore and aft car, luff and sheet tension.

FORESTAY SAG:

Is determined by mainsail set up through backstay, mainsheet tension and mast chocking. It is important to have a mainsail/ jib combination that match each other. If you want more forestay sag, in light air chock behind the mast. General rule is if crew weight is off the side and / or you are stalling (spinning) the leeward jib tell tales, remove front chocks and chock behind the mast as you need horsepower.



LEECH BATTENS:

Can be used as a guide for sheet trim and car position for leech twist set up.

- *Light* - lower batten parallel to centreline of boat with soft trim.
- *Medium* - middle batten parallel to centreline with firm trim.
- *Fresh* - middle batten parallel to centreline with medium trim.

SPREADER MARKS FOR LEECH TWIST TRIM:

A spreader trim mark is a good guide for the jib trimmer. Put a "mark" on the underside of each spreader 48cm and 53cm from the side (not centre) of the mast.

The jib leech will range from the inboard mark for firm trim in flat water to the outboard mark in light airs bumpy water. Your mainsail is fitted with a spreader window to assist in jib trim. The following are sighted parallel to the centre line so you must relate to your view angle through the spreader window.

- *Light* - outboard mark (plus 25mm in drifting conditions)
- *Medium* - inboard mark flat water. 1/2 way offshore conditions.
- *Fresh* - 1/2 way flat water, outboard mark offshore.

TELL TAILS:

Should be used in conjunction with the batten check to optimise the sail shape.

Three sets of tell tails are located evenly up the luff.

- *Light* - all stream aft, with top stalling occasionally
- *Medium* - all stream aft.
- *Fresh* - all lift evenly. (*Note: when the helmsman steers the boat high in the groove (feathers the boat to windward) the tell tails should lift 15-20 degrees, however, remain parallel to one another.*)

JIB CAR:

As a guide medium air sheeting angle would pass through the clew and intersect the luff 40% the way up. The car will range fore and aft off this setting from light to fresh air. The car position is fine tuned in relationship to leech twist (see "LEECH BATTENS" and "SPREADER MARKS").

NOTE RE CAR POSITION: Please note that we have raised the clew on the GM jib approx 20mm to allow for extra rake if required. This will require a car position further aft than previously used.

JIB TAB SELECTION:

The **DC270** jib is supplied with two sets of luff tabs, towards the top of the sail (short and long), and removable top batten. Long tabs make the sail deeper off the luff while short tabs provide a flatter section. The short top batten will make the sail rounder in the head. The aim is to give your jibs more range in a variety of wind and water conditions. Water conditions and crew weight may affect the tab selection guide below:

When the **DC270** is new and in its design wind range use the long tabs. As the sail ages it will set deeper in the head where using the short tabs will compensate. We recommend using the long tabs and short top batten in the first 8-10 races with the **DC270** and then the short tabs and long batten for all but light and bumpy conditions.

GM jibs are supplied with two sets of luff tabs and removable top batten. The long tabs and short batten are for when you are caught under the jibs ideal wind range (below 10knots) and for bumpy conditions offshore.



SPINNAKERS:

The **VMG** is a small minimum head girth sail of flat design that requires less wind to fill it. Its ideal wind range is 0 to 11 true setting with low pole topping lift and forward when sailing down range. Do not carry leeward barber hauler.

The **.5BR** is a maximum head girth sail of fuller design for pressure running flown with pole aft and raised topping lift. Ideal wind range 7 to 20 true. Due to .5oz cloth tear strength, we do not recommend carrying in fresh conditions, and offer a 3/4oz sail for up to 25+ knots. Do not use leeward barber hauler.

The **FULL RADIAL** is a true All Purpose (AP) design for all conditions.

10. SAIL CARE - WARNING TO SKIPPERS AND CREW:

A word of caution regarding the resinated sailcloth we use in both Etchells working sails and spinnakers. You may have noticed over recent seasons Etchells cloths are becoming stiffer in finish with the aim of reducing cloth stretch.

The successful stretch reduction is helping us build faster sails that hold their design shape longer, however this reduced the tear strength in the cloth.

In working sails, mishandling a resinated sail may result in cuts or perforations. Generally these tears are not structural and can be easily patched with stickyback sail material.

To prevent such tears, care should be taken (especially with new sails before the resin has softened) to roll the sails, never fold or crease such as under crews feet or pull around spars, fittings or decking. When rolling, if folds appear do not pull them out, instead unroll and float them out of the cloth.

Like all other sails, avoid flogging. Sometimes, such as starting, this is unavoidable, but in between races you should definitely drop your sails instead of letting them flap. It's a good idea to break new sails in for a few hours before using them in racing conditions.

Resinated spinnaker cloth is most prone to tearing whilst new prior to the resin "softening". A small tear can easily develop into a major one if the sail is loaded. When hoisting, please ensure the mainsheet is only eased half way so the spinnaker is not pinned between the spreader/rigging and mast. Ensure the spinnaker halyard is placed in front of the cap stay/spreader and tape all sharp edges and fittings.

We hope this information gives you a better understanding of your sail, and keeps your North sail faster, longer.

If you require any further assistance in tuning your E22, call Julian or myself at the loft.

Good Sailing!

Cocko

Michael Coxon

North Sails Australia Pty Ltd

12 Polo Avenue NSW 2103

PO BOX 511 NSW 1660

MONA VALE, AUSTRALIA

Ph: +61 2 9997 5966

Fax: +61 2 9997 4805

Email: office@au.northsails.com