

## RIG TUNING - SINGLE SPREADER FRACTIONAL RIG

(with aft-swept spreaders, permanent backstay(s), no running backstays.)

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### 1. Fore and Aft Tune

#### 1.1 Mast Rake

\* Mast rake is determined by forestay length. Rake affects helm balance - raking the mast increases weather helm.

\* As a starting point, use the designed rake on the sailplan (ask the boat designer, not the mastmaker). If no information is available, start at 1:30. (eg 50 cm rake on a 15m mast). To measure rake, tension the backstay approximately 60%, then check rake with a weight attached to the main halyard. (Boat must be floating level when you do this!). Adjust forestay as necessary to obtain the desired angle.

#### 1.2 Mast Bend

\* Check that the mast is upright athwartships in the boat. Use the main halyard to measure from the masthead to the chainplate each side. Adjust upper (cap) shrouds to get identical readings each side (but use minimal tension in the shrouds).

\* A certain amount of pre-set mast bend is desirable, to stabilise the middle part of the mast and thus minimise rig pump in a seaway.

\* Ensure the lower shrouds are slack. Induce the required amount of prebend in the mast by tensioning the backstay. (Make a note of the amount of prebend by using the main halyard tensioned down to the foot of the mast, and measuring the amount of bend at the spreaders). Tension the cap shrouds equally, a few turns at a time, until the fore and aft bend starts to increase. Check that the mast is still straight athwartships.

\* Now tighten the lowers in the same manner as the caps, until the fore and aft bend starts to decrease. At this stage the caps should be tighter than the lowers.

\* Release the tension in the backstay, check that you are happy with fore and aft and sideways deflections.

\* (Once the rig is set up as described here, tensioning the backstay whilst sailing will affect the curve in the upper part of the mast only, as the area around the spreaders is fixed by the opposing forces of the shrouds).

### 2. Transverse Tune

\* Go sailing! Set full sail to windward in smooth water in light winds (10-15 degrees heel to windward).

Tension the backstay just sufficiently to straighten the forestay.

\* If the leeward shrouds are slack, tighten them, but **NO MORE THAN TWO TURNS AT A TIME**. Go on the opposite tack and do likewise, then tack again and check if the lee shrouds are still slack. If so, repeat the operation. **DO NOT OVERTIGHTEN** the lee shrouds, as you may bend the boat or break the mast when you tack!

\* Back at the dock, check that the mast is still straight athwartships.