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11 May 1976

NOTES ON SETTING UP AND SAILING FARR ONE TONNERS

These notes are intended as an initial guide to sailing FARR boats. Fine tuning, good sails and efficient crew work must still be added for optimum performance!

Any suggestions or comments that skippers or crew might like to make to add to these notes, or our fund of knowledge on the boats in general, would be welcomed by our office.

1. MAST TUNING

1.1 STAY TENSIONS

When the mast step and deck hole are in position according to the measurements on the construction drawing the mast will stand with less rake than shown on the sail plan before rigging is tensioned. The mast should then be bent back at the top by tensioning the cap shrouds (not the backstay) until the forestay intersection point is in the position shown on the sail plan. With the mast in this position the forestay should be just taking weight but still be capable of sagging about 50 mm (2 inches) with a little load on it, to allow sufficient sag to give fullness in headsails in light weather. The forward bend produced in the lower part of the mast at this stage is designed to offset spinnaker pole loads and hold the mainsail flatter than on a straight mast in light conditions. The lower shrouds should then be set up so that they are not quite as tight as the cap shrouds. The actual tension may vary depending on the amount of pre-bend there is in the mast. The right tension can only be arrived at through sailing and the principle is that while there is no mast-head backstay load on the mast, the mast should be standing virtually straight (transversely) between the deck and the forestay point. When backstay load is then applied to bend the mast fore and aft further while sailing, a significant amount of sidebend should also appear and when the mast-head backstay is wound fully down, the side bend should be in the region of 30% of the fore and aft bend.

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1.2 USE OF BACK STAY

The backstay is used for both bending the mast to flatten the mainsail and also to tension the forestay and reduce forestay sag, thereby flattening the headsail.

(a) SAILING TO WINDWARD

The aft set of the side stays automatically controls the forestay sag to a certain extent and the backstay is used as an added control rather than a total control. Because of this, generally in conditions up to about 10 knots apparent wind strength very little backstay load is required. Above 10 knots apparent wind speed, backstay tension should be applied progressively as the wind strength increases and the boat becomes overpowered. As the backstay tension is increased the mainsheet will also generally have to be pulled in harder and if the backstay is eased, so too will the mainsheet to keep the correct amount of twist in the leech of the mainsail. Generally when a change is made to reduce sail, such as reefing the mainsail or changing to a smaller headsail, the backstay would then be eased off initially and then retightened as the wind strength increases. However, at this stage the backstay would not be eased off completely but only sufficiently to give power from both the headsail and the mainsail.

(b) REACHING

Generally much less backstay tension would be used reaching, particularly in light conditions so that the headsails and mainsail can be made as full as possible.

(c) RUNNING

Care should be taken not to sail downwind in very strong conditions with any great amount of backstay tension applied, as spinnaker loads at the forestay intersection point will tend to increase the amount of mast bend. However, in strong conditions enough backstay load should be applied to take a certain amount of load off the sidestays although the sidestays should be capable of taking the full load of the rig.

2. SETTING OF SAILS

2.1 HEADSAILS

(a) SHEETING ANGLE

In general, headsails should be sheeted on much wider sheeting angles than would normally be used on mast head rigs and should generally be considerably flatter (particularly in the leech area) than headsails for masthead rigs. In flat water conditions sailing on the wind, it would appear that the No. 1 genoas should be sheeted so that their effective sheeting position would be approximately 300 mm (12 inches) inside the deck edge. Similarly, No. 2 genoa approximately 230 mm (9 inches) inside the deck edge and the No. 3 headsail approximately 150 mm (6 inches) inside the deck edge. It would appear that whenever there is any amount of sea or "chop" or when the headsail is at the top end of its useful range, (i.e. maximum wind strength it would be carried in), then the effective sheeting position of the headsail should be shifted out to the deck edge. The headsails should be then sheeted fairly hard to flatten them and allow reasonable pointing. It would be generally expected that the boat should point slightly lower than heavy displacement mast head rig types but extra boat speed attained by doing this seems more important than higher pointing ability.

(b) LEECH TENSION

The best guide for the sheeting of the leech of headsails is the position of the leech in relation to the end of the spreaders. The light No. 1 headsail should normally be sheeted well clear of the spreaders, probably about 150 - 200 mm (6 to 8 inches), the No. 1 heavy headsail should be 80 - 150 mm (3 to 6 inches) clear of the spreaders; and the No. 2 headsail, whose leech will be forward of the spreaders should be sheeted so that if the shape of the sail were extended back to the spreaders, it would about coincide with the end of the spreaders. In strong conditions all headsails should be sheeted somewhat freer in the leech. Any excessive hook in the leech of headsails seems very detrimental with such a large mainsail behind the headsail and so an absolute minimum amount of hook should be used to just remove leech flutter.

(c) LUFF TENSION

In light conditions the luff should be slack enough to just (or nearly) produce tiny horizontal wrinkles in the luff of the headsail. As the wind strength increases, more luff tension should be applied, (either by increasing haliard tension, or if the sail is at full hoist by applying tension on the cunningham control) to hold the draft of the sail forward in the correct position and also to free the leech in the upper part of the sail in strong winds.

2.2 SETTING OF MAINSAIL

This can probably best be covered in two sections : firstly when carrying full mainsail and secondly when the mainsail is reefed. It does however, at all times seem to be extremely important to ease the main traveller to leeward as early as possible and thus widen out the sheeting angle of the mainsail. It must be remembered that the mainsail is producing probably the largest proportion of the total rig power and it always must be used at the widest possible sheeting angle consistant with reasonably high pointing ability to produce good forward drive rather than heeling force.

(a) FULL MAINSAIL

Generally in light weather it is necessary to sheet the mainsail so that the boom is close to the centre line to reduce backwinding from the headsail. The mainsail however, should be sheeted very free in the leech with plenty of twist to keep the upper part of the mainsail (where there is no effect from the headsails) from stalling. In very light conditions, this would normally require the traveller to be pulled 600 - 900 mm (2 to 3 feet) to windward of the centre line and the main sheet eased so that boom then falls to leeward of the centre line. The bottom of the mainsail when sailing to windward should normally be set quite flat with the greatest amount of power being in the area between the spreaders and forestay attachment position. Naturally, when reaching, the foot of the mainsail would be let in to increase sail power. As the wind increases the traveller would be eased out to leeward quite quickly and the mainsheet tension increased to control the leech. As the boat becomes overpowered the backstay tension would be applied to flatten the mainsail (and headsail). At all times, the mainsail should be eased down far enough so that a small amount of backwinding is experienced. The mainsail should be sheeted if possible so that the amount of backwinding is slight but is even throughout that part of the mainsail behind the headsail.

(b) WHEN REEFED

When the mainsail is reefed, the rig effectively becomes a low aspect mast-head rig although there is still greater control over the mainsail through mast bend. In this situation, the mainsail is generally sheeted quite hard down the leech to stand the leech up with the traveller dropped well to leeward so that when the boat is comfortable there is again an even amount of backwinding just visible. But when the traveller is eased in a puff, there would generally be more backwinding in the lower part of the mainsail than the upper part. The traveller should be eased 450 mm (18 inches) or more to leeward when two or more reefs are in the main and it is quite acceptable for the traveller to be eased down up to 1 m (3 feet) in puffs. If there is a lot of weather-helm experienced, it is more than likely to be caused by the traveller being too close to the centreline. This would be particularly true if the boat tends to round up into the wind during puffs. Another cause could be excessive heel angle. (See Section 4)

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2.3 REACHING WITH SPINNAKERS AND HEADSAILS

Firstly spinnakers should always be flown so that the head of the sail is approximately 450 mm (18 inches) away from the mast. As these boats are very easily driven it is often surprising how much faster they go with smaller headsails or spinnakers than one would normally think would be required and the boat speed should be watched very intently as wind speed increases or apparent wind angle swings forward and as soon as the speed is seen to drop at all below what has been found to be the previous maximum speed, it would be advisable to change to a smaller headsail or spinnaker. Reefing the mainsail is extremely important when reaching, particularly when headsail reaching and to a lesser extent when carrying spinnakers. Particularly in harder conditions, the mainsail can be reefed quite early to reduce weather helm and while the boat often appears to be sailing too upright, it is generally sailing faster. If the mainsail is ever flogging for any period of time, it should be obvious that it needs either a great deal of reefing or a smaller sail in front of it. Whenever possible, the headsail should be sheeted right out onto the deck edge and generally outside the life lines. When sailing on a reach with either a spinnaker or headsail set, the mainsail will normally need a very large amount of twist and so should not be vanged extremely tightly. Once again the aim should be to produce an even backwind all the way up the sail when backwinding does occur. Normally when insufficient power is being obtained the mainsail should be set with little or no backwinding on a reach. The use of wool tufts on the leech of the mainsail will be invaluable in setting a mainsail in these conditions.

2.4 VERY STRONG RUNNING CONDITIONS

(a) SPINNAKER

The spinnaker should be set up with the pole well back and the sheet of the spinnaker leading through a snatch block on the gunwale well forward of the mast to hold the leech tight. This will reduce or eliminate any rolling effect whether or not a shooter is being carried and make the boat a lot easier to control. The sail can be sheeted in so that the leech is quite tight to the point where the leech clew is in fact quite a bit below the luff clew.

(b) MAINSAIL

The mainsail should still be set up with a certain amount of twist but not to the point where the angle of a line drawn between the leech and the luff to the centre line of the boat is greater than 90 degrees. The boom should not be allowed to rest against the side stays as in a strong gust, or when the boom flies out against the stay, the boom may be broken.

(c) SHOOTER

We have had surprising success with setting shooters forward of large mainsails. We have generally had our shooters cut 900 - 1200 mm (3 to 4 feet) short on the luffs with very low clews so that they can be set on a 1 metre (3 foot) tack pennant and sheeted to the end of the boom to get them outboard as far as possible and to set as low as possible below the boom. With a large luff hollow and a large amount of ease in the haliard, the upper part of the shooter will then set outside the leech of the mainsail while the lower part of the shooter can catch as much wind as possible flowing under the boom. Shooters need to be trimmed as constantly as spinnakers.

3. SEQUENCE OF SAIL CHANGES (SAILING TO WINDWARD)

	APPARENT WIND SPEED
The normal sequence would be expected to be:	
(a) change from light No. 1 genoa to heavy No. 1	6 - 10 knots
(b) change to No. 2 genoa	14 - 18 knots
(c) during this period the flattening reef or leech cunningham would be used to varying degrees to match the mainsail to the headsail and the amount of power required at any time.	
(d) first reef in the mainsail	18 - 22 knots
(e) second reef in mainsail	22 - 25 knots
(f) reef No. 2 genoa	26 - 29 knots
(g) change to No. 3 headsail	28 - 31 knots
(h) put third reef in mainsail	33 - 35 knots
(i) reef No. 3 headsail	38 - 42 knots
(j) change to storm jib	45 - 50 knots
(k) change to storm trisail	55 - 60 knots
(l) try storm trisail by itself	65 - 70 knots
(m) go home!!	

The wind strength at which changes need to be made will vary greatly, depending on sea conditions at the time.

4. HEEL ANGLE AND HELM CONDITIONS

Generally the boat likes being sailed without too much heel angle and I would consider that upwind a 20 degree maximum angle should be adhered to. Reaching, it will often be found that changing to a smaller headsail or spinnaker and reducing the heel angle significantly even down to 12 to 15 degrees will produce much greater boat speed. It would generally appear better to be conservative with headsails and spinnakers on reaches. The boats seem to like being sailed with very little or neutral helm and mainsheet traveller position can easily be adjusted to help this. In our experience, maximum upwind boat speed is attained with virtually no weight on the helm. The boat can then be very easily steered through waves and this can increase boat speed in a seaway considerably. As the boat drops into a sea, the helm is pushed down and as the boat comes back up out of the trough, helm should be pulled up to pull it away up the face of the wave. This motion can be quite definite and still be surprisingly effective. At times in a big sea it seems an advantage to sit inboard over the helm to do this more effectively, rather than use a tiller extension.

5. TACKING DOWNWIND

In extremely light conditions and flat water we have found great advantages in tacking downwind as long as the angle of course to wind direction is quite large, sometimes in the region of 40 - 50 degrees. With a light displacement boat and its consequent quick accelleration it is possible to build up a very high boat speed and therefore quite high apparent wind speed in very light conditions. The effective boat speed in the direction of the wind can be built up so that it is in fact higher than the true windspeed. As the wind increases the tacking angle can be reduced to the stage where the angle is just large enough to get flow across the spinnaker (rather than onto the spinnaker) in winds of about 4 knots (true). In light winds and very sloppy seas, it seems often advantageous to tack downwind in breezes up to about 6 to 8 knots true windspeed. The right angle to sail on is a big enough angle to the wind direction to make the spinnaker set and get windflow across it.

I think it is also worth investigating the advantages or disadvantages of tacking downwind in all other conditions, particularly in flat water as there may be very slight gains in some conditions up to about 20 knots true wind.