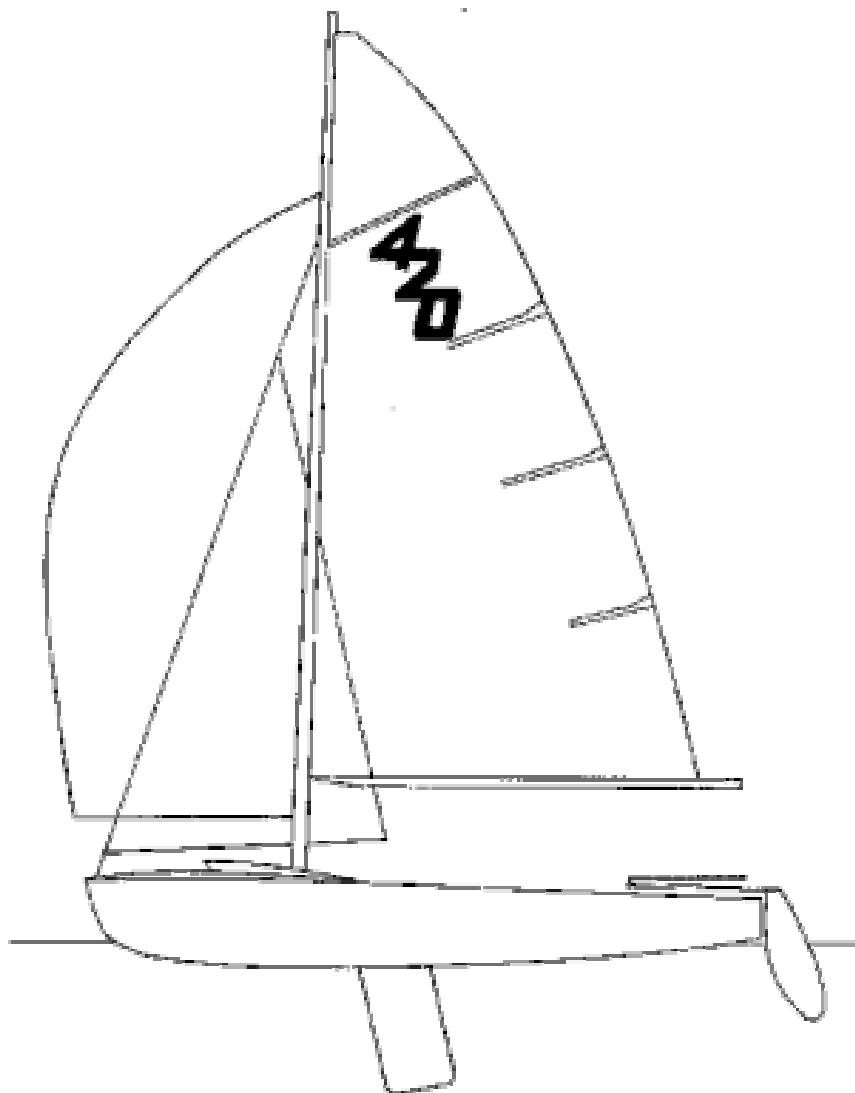


# 420 TRIMMING NOTES



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## TONI TIO Sails.

### 420 Sail trim and tuning guide

*How to get the best out of your new Toni Tió 420 sails with a little help from the experts.*

#### MAST STEP.

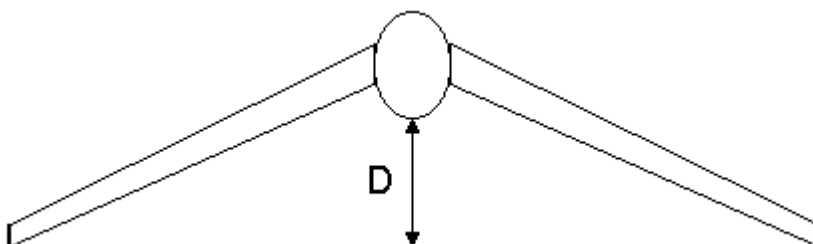
The first consideration is the positioning of the mast step. This should be between 2m 83 cm and 2m 88 cm from the stern, depending on wind conditions. In strong winds the base of the mast is moved forward, so as to move the sail centre of effort ahead, thus relieving weather helm. In case you should give lee helm, the mast step should be moved towards the back of the adjustment. Lowering the centreboard will also assist in producing a fine light and balanced helm at the tiller.

#### SPREADERS

There are two variable to take into account, the length and the aperture or deflection. The length is measured from the side wall of the mast to the shroud. The deflection is measured from an imaginary line joining the shrouds to the after end of the mast.

The length is normally determined by the weight of the crew, shorter for light crew, longer for heavier crew. Short spreaders will more readily allow the mast to bend sideways than long ones, causing the upper part of the main sail to open up 45 cm for a light crew, and 50 cm for a heavy crew. A good length for the spreaders is 48 cm.

The deflection of the spreaders controls the mast curvature. This bend should follow the luff shape of the mainsail. The deflection should be between 15-17 for a Proctor and Superspar mast (see drawing below the distance "D").



## RIG TENSION

You can expect that with little or no halyard tension on the jib, the luff will fall away to leeward causing loss of windward performance and will close the jib leech.

| WINDSPEED   | RIG TENSION      | SUPERSPAR GAUGE |
|-------------|------------------|-----------------|
| 0-6 knots   | 123 Kg. 270 lbs. | 24              |
| 6-10 knots  | 136 Kg. 300 lbs. | 26              |
| 10-20 knots | 155 Kg. 340 lbs. | 28              |
| 20 +        | 136 Kg. 300 lbs. | 26              |

## CHOCKS

The chocks allow for variable control of mast bend depending on sailing conditions. This is crucial for controlling the amount of power in the rig.

In light airs and a flat sea, no chocks are needed. In this way the mainsail will present a better profile to the wind without closure of the leech.

With stronger winds, one or two chocks of 15 mm should be used to prevent the mainsail stalling when using the kicking strap, however if the luff of the mainsail is too full shocks will have to be removed.

| WINDSPEED   | CHOCKS |
|-------------|--------|
| 0-6 Knots   | 0      |
| 6-10 Knots  | 2      |
| 10-14 Knots | 2-3    |
| 14-20 Knots | 1-2    |
| 20 + Knots  | 1      |

## MAST RAKE

The mast rake is set with the chocks in place and the jib tension adjusted for the conditions prevailing. The tape measure is attached to the main halyard and hoisted to the upper point of where the mainsail is permitted to be set, the measurement of the sail is to the top centre of the transom.

| WINDSPEED   | MEASUREMENT |
|-------------|-------------|
| 0-10 knots  | 6,06 m.     |
| 10-18 Knots | 6,03 m.     |
| 18 + knots  | 5,97m.      |

Please note that with greater mast rake it will be necessary to adjust the shrouds to compensate and avoid slackening of the forestay.

## MAINSAIL ADJUSTMENT

**CUNNINGHAM** This should be loose in light airs, disregarding slight horizontal creases, as the wind force increases it should gradually be tightened, moving the air flow forwards and flattening the leech. This effect will also reduce the heeling moment.

**FOOT TENSION** Increased tension will flatten the bower part of the sail. It should be fairly tight with flat sea conditions and slacker with waves and so increase the power of the mainsail. Off the wind it should be quite loose.

**KICKING STRAP** In a 420, with its mainsheet arrangement attached to a fixed stop, the kicker acquires great importance, it provides the only means by which the mainsail leech can be adjusted. It should be progressively tightened to prevent excessive leech opening. One should remember to fit the shocks if needed before tightening the kicking strap.

**TOP BATTEN** With our type of sail it is advisable to have an adjustable top batten of firm characteristics. Lightly adjusted in light airs and more firm in stronger winds.

## JIB

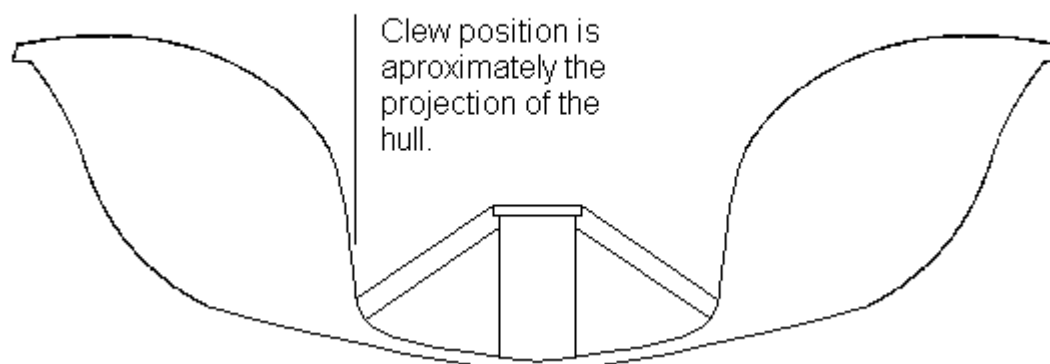
First adjustment is the height of the jib. The most effective way is to set the rake and rig tensions required for the conditions prevailing and then place the boat on its side. Take up on the jib sheets and adjust the jib height so that the foot lightly touches the deck, tension the sail cloth so that the creases are removed. In view of the fact that the fairleads are fixed, the only other adjustment possible is by increasing or reducing the mast rake. With greater rake it will be important to raise the jib somewhat higher, or bower, with less rake and so prevent excessive opening of the jib itself.

**BARBER HAUL** As the fairleads cannot be closer than 1.250 mm, the jib remains quite open. In order to control this, pulling on the leeward jib sheet can only do it. To pull the sheet too hard will not improve the performance.

Indications of excessive barber hauling are backwinding of the mainsail and, looking from the lee side, the position of the wind flow over the jib. For best adjustment it is best to have tuning sessions with another boat and make note of adjustments and the result.

A rigging adjustment will have to make bearing in mind the wind and sea conditions prevailing or expected, depending on your point of view and perhaps your faith on the forecast.

The jib's windboard sheet position: see drawing below (this is for a Nautivela boat).



We hope that these instructions will prove effective for you to obtain maximum speed and enjoyment of your TONI TIO sails. If you will have any doubt don't hesitate to contact us.

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