

# Setting Up and Sailing the I-20

by John Spargo

## Mast Rake:

In order to set proper shroud tension and rake, the order in which to proceed is as follows:

1. Attach a measuring tape to the main halyard, hoist and lock the halyard ball into the latch. Hoist the jib and latch it at a middle position, push on a shroud to apply tension to the jib luff wire and then measure to the intersection of the deck at the transom. The measurement you want is 28' 4". If your measurement is not correct, latch the jib halyard in whichever position achieves this rake. Make the shrouds snug when the mast is raked in this manner.
2. In heavy air you may choose to increase the rake, if necessary, so that the rake measurement is 28' 2".
3. Make certain when you measure rake that the mast is not bending.

## Mast Bend:

Most new mains require a fair amount of mast bend to set right. After setting the rake as described above, tighten the backstay until the measuring tape shows 27' 11". This is a good starting point for bend. Generally in medium airs when you sheet the boom to the center of the boat, tighten the backstay until the upper batten is 12" to 18" off the backstay. Trimming harder tightens the leech as does easing the backstay. In no event sail with the leech closer than 12" to the backstay at the top batten.

## Other Mast Adjustments:

Your spreaders should be 17" long when measured from the mast to the shroud and should be angled so as not to deflect the shroud forward or aft of a straight line from tang to chain plate.

## Definitions and Adjustments:

**Camber** – the depth of a sail. Specifically, it is the ratio of the depth to the breadth of a cord of a sail.

For example, if a sail has a maximum depth of one foot on a cord ten feet long, the camber would be said to be 1 to 10, or 1/10. Decrease camber (flatten the sail) by tightening the cunningham, tightening the vang, tightening the backstay, tightening the outhaul.

**P.O.C (Postion of Camber)** – the fore and aft location of the maximum depth in a sail. Move camber forward by tightening the cunningham, loosening the backstay, loosening the vang.

**Twist** – the difference in the angle of the sail to the centerline of the boat measured at the boom compared to the angle of the sail to the centerline of the boat measured at greater heights above the deck. Increase twist by sheeting looser, tightening the backstay, tightening the cunningham, tightening the outhaul.

## Sail Shapes to Windward:

| Wind                    | Flat Water   | Rough Water  |
|-------------------------|--|--|
| <i>Light</i><br>0 – 6   | <b>Traveler:</b> 15" to Windward → Center<br><b>Camber:</b> Flat<br><b>P.O.C.:</b> 50% → 40%<br><b>Twist:</b> Maximum → Moderate               | Same as Flat Water   |
| <i>Medium</i><br>7 – 14 | <b>Traveler:</b> Center<br><b>Camber:</b> Full → Flattening Some<br><b>P.O.C.:</b> 40% → 30%<br><b>Twist:</b> Moderate                         | Center<br>Full<br>40%<br>Moderate → Increasing Slightly        |
| <i>Heavy</i><br>15 – 30 | <b>Traveler:</b> 6" → Full Out<br><b>Camber:</b> Flattening → Flat<br><b>P.O.C.:</b> 30% → 25%<br><b>Twist:</b> Moderate → Increasing Slightly | Center → Half Out<br>Full<br>40% → 30%<br>Increasing → Maximum |

## Sail Shape to Leeward:

|   |   |
|---|---|
| <i>All Wind Conditions</i><br><i>All Sea Conditions</i> | <b>Traveler:</b> Not of great consequence<br><b>Camber:</b> Maximum<br><b>P.O.C.:</b> 50%<br><b>Twist:</b> Moderate |
|---|---|

## Sail Adjustments:

Jib: 0 - 6

Attach sheets to the center hole (or one up from center) of the clewboard.

Tension luff only barely enough to almost, but not quite, eliminate horizontal wrinkles.

Jib car in line with board slot.

Sheet tension: sheet until the third batten from the top is parallel to the centerline of the boat. The second batten will be pointing outboard.

Jib: 7 - 14

Attach sheets to the center hole (or one up from center) of the clewboard.

Tension luff to eliminate horizontal wrinkles.

Jib car in line with board slot.

Sheet tension: sheet until the second batten from the top is parallel to the centerline of the boat.

Jib: 15 - 30

Attach sheets to the hole one up or two up from center of the clewboard.

Tension luff to eliminate horizontal wrinkles.

Jib car 15" to 16" off centerline in rough water, but eased out as necessary to avoid backwinding the main if you are in smooth water and have eased the main traveler.

Sheet tension: sheet until the third batten from the top is parallel to the centerline of the boat.

Main: 0 - 6

Sheet tension: Sight top batten parallel to centerline of boat, or about 12" to 18" off backstay.

Traveler carried 14" to windward at 0 mph, to center at 6 mph.

Vang slack.

Very soft Cunningham tension.

Outhaul in 1 1/2" from black band.

Main: 7 - 14

Sheet Tension: More firm. Sighting top batten, maintain it 12" off backstay.

Traveler on centerline.

Firm boom vang tension.

Cunningham eliminate horizontal wrinkles.

Outhaul 3/4" in from black band.

Main 15 - 30

Sheet Tension: Very firm. Top batten 18" off backstay.

Traveler on center to all the way out in big puffs.

Very firm vang.

Very firm Cunningham.

Outhaul to black band.

## Shifting Gears

There are three elements that must be optimized to result in the best speed made good to windward: Speed, Pointing, and Low Leeway. You can maximize two of the three by sacrificing the third.

### When each element must be maximized:

**Speed:**

- 1) After the start.
- 2) After completing a tack, especially under a lee bow.
- 3) After hitting a large wave.

**Pointing:**

- 1) When someone tacks on your lee bow.
- 2) After you have acquired speed after tacking on a lee bow.

**Low Leeway:**

- 1) Light Air.
- 2) Heavy Air.

| <b>Gears</b>        | <b>Traveler</b>        | <b>Camber</b> | <b>P.O.C.</b> | <b>Twist</b> |
|---------------------|------------------------|---------------|---------------|--------------|
| <i>Acceleration</i> | Center                 | Full          | 35%           | Maximum      |
| <i>Speed</i>        | Center to Slightly Out | Moderate      | 40%           | Normal       |
| <i>Pointing</i>     | Center or to Windward  | Flat          | 50%           | Very Little  |
| <i>Low Leeway</i>   | Center or to Leeward   | Flat          | 35%           | Moderate     |

## **Bilgeboards and Balance**

- 1) **Upwind** – the leeward board should be all the way down. It should not be necessary to bring the board up to reduce weather helm in strong air, since the degree of helm should be controlled by other means. The windward board should, of course, be up at all times.
- 2) **Downwind** – the leeward board should be 25-50% down. The windward board should, of course, be up.
- 3) **Balance:**

**Fore and Aft:** It is important to avoid sailing with the transom buried. With a heavier skipper and a lighter crew it is easy to have the balance too far aft. As a result, attention must be paid to keeping your weight forward if at all possible. As the air increases or in larger waves, it can be beneficial to adjust your weight further aft. As the air decreases or in smaller waves, it is beneficial to adjust your weight further forward.

**Laterally:** Regardless of the point of sailing, the I-20 should *normally* be heeled such that the leeward board is vertical in the water. This occurs when the lower edge of the rubrail is at the water surface. Decrease heel in gusts or when attempting to initiate planing, and increase heel in lulls or when attempting to cross through a large wave. Note that this is exactly opposite to what is easy to achieve!