

## **IOM Tuning Ideas – Sail it like you stole it!**

I finally had a little time to follow up on Brig's suggestion to outline how I tune my IOM. Other than looking at sail shape and trying to make sure that the jib and main work together, everything else on this list is stuff I learned from other IOM sailors – in particular Mike and Brig. I have also shamelessly adopted (stolen?) tuning measurements from Graham Bantock.

So, here is how I start tuning - the steps are listed in order. After once through, I look at it all again and then test sail. Depending on how it is sailing (i.e lee helm, excessive weather helm, etc.) I retune it to get better balance. Then I try to sail next to other boats to see how my boat compares on speed and point. I also compare the look of my rigs and sails to the other boats and then decide to tweak it or not.

The goal for me on the windward leg is to get the boat to sail close-hauled with just a little bit of weather helm. I am looking for the boat to sail hands-off for several seconds before it starts to pinch and slow down. This seems to be the fastest upwind balance. As for downwind, minimizing the need for correcting the direction is important since the rudder acts like a brake. This balance is more difficult to fix at the lake since it has a lot to do with relative boom angles on the run.

Here are the tuning steps I use – along with some comments on why it is being adjusted. The various measurements for all these points are listed in the table below.

### **Main tune:**

- Mast rake set for wind condition
  - Set at vertical for the top of A, and rake back in lighter winds to a max of 3 to 4 degrees of rake in the lightest breeze. In lighter winds, you need to avoid lee helm, so adding rake will fix the balance. In B and C, there should be some rake to keep the boat balanced.
- Flat/round sail shape
  - In general, in both really light winds (<5) and in heavier winds (11+), I want the sails flatter than when the winds are moderate (5-10).
  - Set the foot depth to match the wind (see table)
  - Set halyard tension
    - In under 10kts, a few little wrinkles in the luff are ideal. This helps keep the sail a bit more full for added power. Above 10, I try to keep just enough halyard tension to keep the luff smooth. Adding more tension will put a vertical crease in the sail near the luff. This is slow and really hard on the sail. Brig likes to err on the side of more wrinkles rather than fewer. A softer entry on the luff is fast and easier to sail in the groove.

- Look at draft position
  - The maximum draft should be around 40% to 50% of the way from the mast to the leach. Draft is controlled by a combination of backstay, outhaul and halyard tension. For the sails we use, the built-in camber really helps keep the max draft where it belongs.
- Twist (vang)
  - This setting is critical. I have finally learned that a ½ turn on the vang is all it takes to make a huge difference in speed and pointing ability. No more 1-2 turn adjustments for me! I now make small adjustments and then sail a bit before making another small adjustment.
  - Setting the correct twist depends on both wind and water conditions. A good starting point is to set the top batten to be parallel with the boom. I lay the boat on its side which will approximate the sail shape when sailing. Once in the wind, the sails will be more full and have more twist than what I see when working on its side. Waving the boat back and forth with the bow down will give a much better preview of what will happen when sailing.
  - Never hook the leach to windward (too little twist). In rougher water conditions and/or higher wind conditions, more twist will help boat speed.
- Mast shape - curve and mast ram use
  - The backstay will cause the mast to arc backwards. The more spreader sweep in the rig, the greater the curve will be. The mast ram will help straighten out the mast and add headstay tension. In light winds, I am shooting for a very straight mast and use no backstay tension – just take out the slack. In higher winds where there is more backstay tension, take care not to use too much mast ram and end up with an “S” shaped mast. In top of A and above, a curved mast is good and will help flatten the sails.
- Set the close hauled boom angle (see table and notes below)

#### **Jib tune:**

- Flat/round sail shape
  - I set the jib shape to mirror the shape in the main.
  - Set foot depth (see table)
  - Set halyard tension – the same thoughts as in setting the main halyard
- Set twist / slot
  - Adjusting the topping lift to get the twist to match the main. When looking at the leaches from behind the boat, the curves should be as similar as possible. Getting this right really makes a difference in boat speed and the ability to sail high.
- Set boom angle close hauled (see table)

The table below is Bantock's recommended measurements for the IOMs he builds. Some boats may benefit from using slightly different boom angles or sail camber, and experimenting will help figure that out. Since Brig uses these settings, it is probably safe to assume that we should at least start out here. All measurements are in mm.

Rig	Wind	Mast Rake (degrees)	Main Boom to Centerline Gap	Jib Boom to Mast Gap	Mainsail foot camber	Jib foot camber
A	0-5	2	10	55	20	20
A	6-10	1	10	55	25	30
A	11+	0	20	55	20	20
B	<20	2	10	50	20	25
B	>20	2	20	50	20	20
C	<30	4	20	50	20	20
C	>30	4	30	50	20	15

*Notes: When sailing in waves, the main boom should be 5-10mm further out and both sails need about 5mm more camber.*

*An important point on the main boom gap measurement is that this are the correct only if the sheet post is 200mm back from the gooseneck. If, for example, the post is 240mm from the gooseneck, then apply the ratio to get the gap measurement. So, with a post at 240, then the gap in lower A is  $10\text{mm} \times 240/200$ , which is 12mm.*

Happy sailing,  
Eric