



BG Sails and Design IOM Mast Layout

Updated May 2020

This guide is designed to be used in conjunction with our Rig Tuning Guide for best performance with many sections cross referenced.

Our base IOM Mast Layout below should be looked at in two sections for marking out before prebend and fittings are applied, drilled and fastened.

Overall Length and Measurement Bands

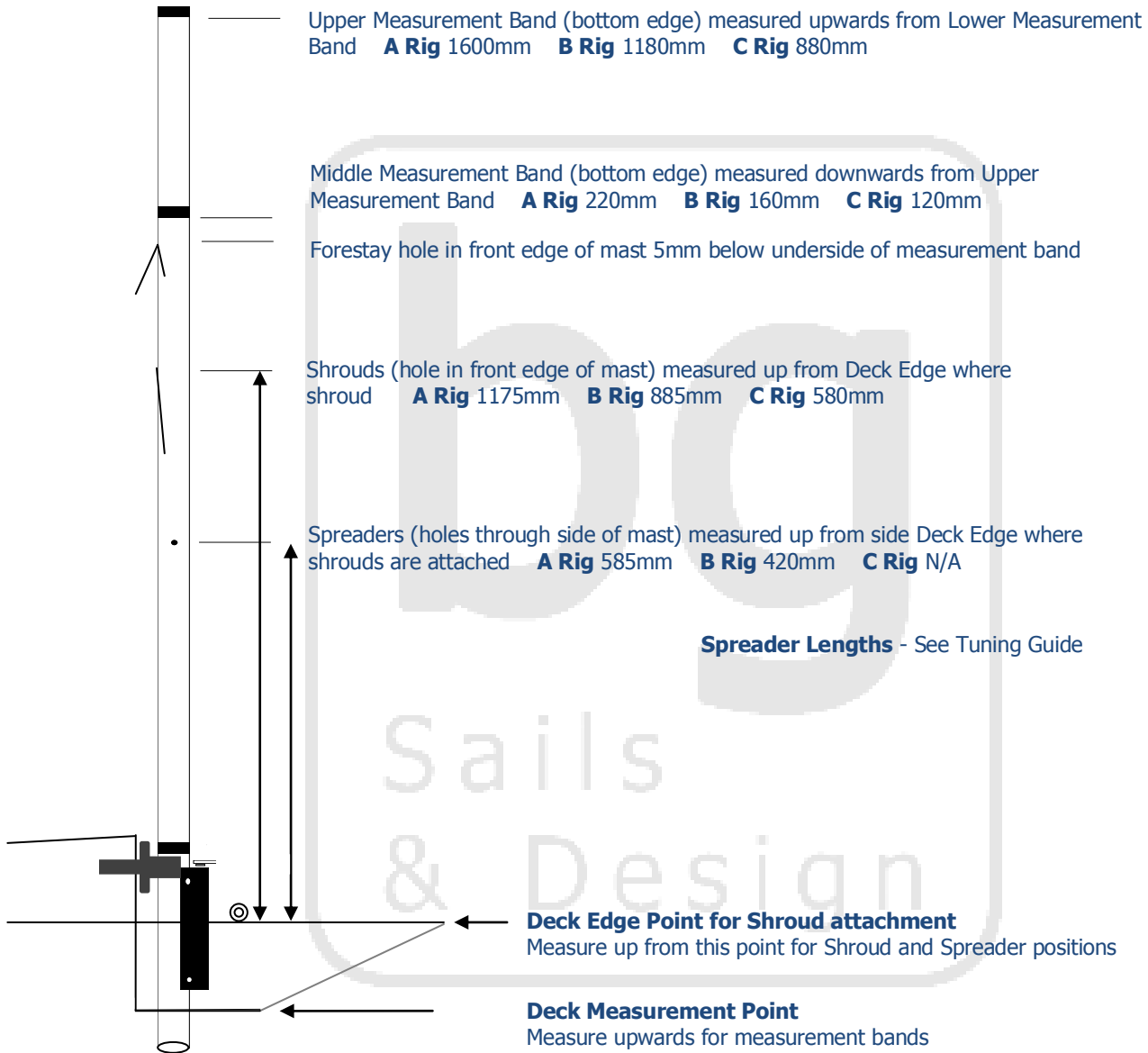
- The first thing to determine is your gooseneck to be used and the height it will be set from the Deck Measurement Point to operate within the mast well or cockpit without fouling. General practice is to get this as low as possible.
- With the gooseneck height settled, project forward the top edge of the main boom height on to the mast and measure up 1mm. This point will now be the upper edge of your lower measurement band. This can not be lower to the Deck Measurement Point than 60mm.
- Now measuring from the upper edge of the lowest measurement band, mark out and place your upper band point. This will be where your mast is cut, with your mast plug inserted to form the mast measurement band. (refer to diagram)
- Now measure downwards to mark your middle measurement band from the underside of the top band. The middle band uses the underside as its measured point.
- The Forestay take off point (hole) will be 5mm below the bottom of the middle measurement band.

Shroud and Spreader positions

- These positions are now measured upwards from the Deck Edge Point adjacent the shroud attachment points, **NOT** the Deck Measurement Point.
- Shrouds are hung from a hook or similar through the front face of the mast (**NOT** the side)
- Spreaders are on a 1/16" pin through the sides of the mast, allowing for any aft bend for alignment.



Mast Layout Diagram



Prebend

Before drilling for any fittings, the last job should be applying prebend to your mast. This is done so that the upper section of your mast has a gentle curve that bends forward, starting at a point down from the top. Care should be taken to ensure no hard points (kinks) are formed along the section as these are hard to correct out in the tuning stage without harming performance.



Before bending, your blank tube should be sighted from the top and any inherent 'set' in the spar aligned with the direction of bend fore and aft.

A Rig – a gentle bend starting from the top finishing 600mm down should have a deflection of approximately 12 – 14mm

B Rig – a gentle bend starting from the top finishing 400mm down should have a deflection of approximately 7 – 9mm

C Rig – will not require prebend but any inherent bend should be aligned fore and aft

The above are specified for our preferred 11mm mast section of choice by PG Modelisme in France that have by far the best stiffness to weight ratio without the prebend relaxing over time, giving repeated consistent performance.

Boom Sections

Main Booms

For all main booms we use the same 11mm PG Modelisme sections as our masts. Economically ideal when using off cut sections, light in weight, low windage and importantly low drag when hitting the water as opposed to box section booms.

Jib Booms

The X7 Easton 2512 lightweight section is preferred for the **A Rig** which is stiffer than readily available lightweight kit versions giving a more consistent forestay tension through gusty conditions.

For the **B Rig** and **C Rig** booms, the PG mast sections are used as per the main booms and reasons above. Light sections and rigging allows for a lighter counterweight to lift the boom on a run, in turn, keeping weight off the bow when pressed.

Kicker/Vang attachment point

This is, in tandem with the correct boom section flex, an important part of the rig setup working with the mast's response to a gust. A slight flex in boom at a high wind point at the back end will allow just the right amount of opening of the mainsail leech. Just another one of those little things, that helps the full rig to work in unison.

Preferred distance back from the aft side of the mast to take off point on the underside of the Main Boom is 110mm for **All Rigs**

Differing Mast well and Cockpit Designs

The above dimensions are calculated for use with modern style deck well arrangements but are also suited for designs with an open cockpit with an allowance of 25 – 32mm for depth below the Deck Edge and a Raised Mast Ram within a moderate height foredeck placed near to the lower mast bend.



Flat Deck Designs

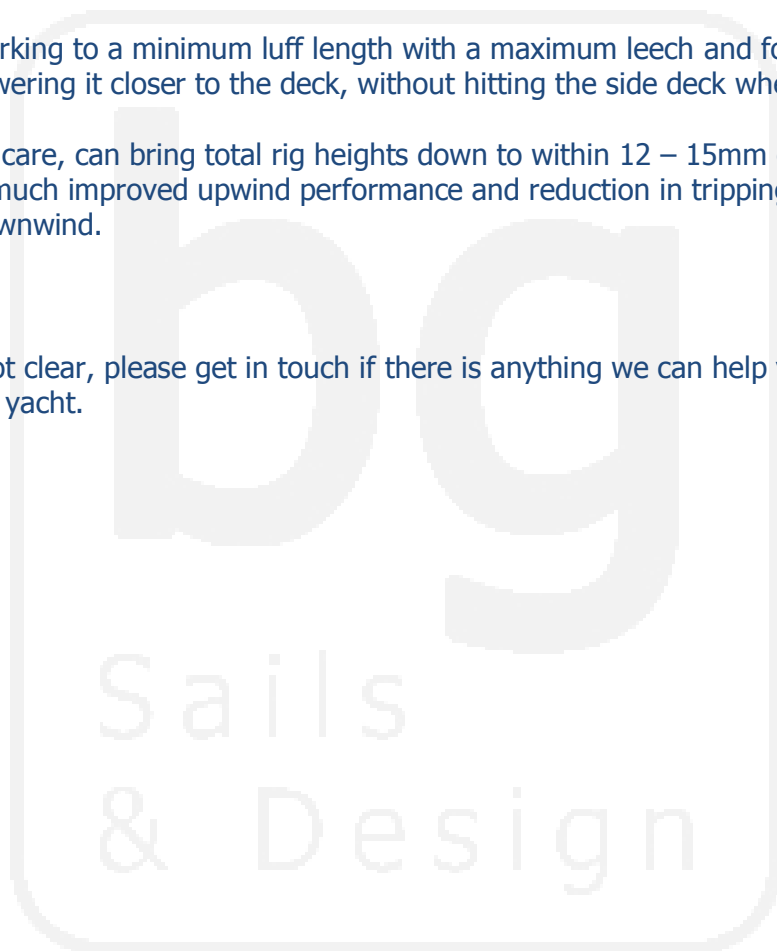
For flat decked older designs the same base measurements of shroud and spreader heights have shown to work well.

Some extra benefit can be found through careful minimisation of sail tolerances on the mainsail leeches and at the luff (in accordance with WS sail measurement definitions) with use of a low profile gooseneck to have the lower measurement band at absolute minimum of 60mm.

For the Jibs, working to a minimum luff length with a maximum leech and foot length can also assist in lowering it closer to the deck, without hitting the side deck when running.

The above with care, can bring total rig heights down to within 12 – 15mm of current designs with a much improved upwind performance and reduction in tripping over (nosediving) downwind.

If anything is not clear, please get in touch if there is anything we can help you with to get more from your yacht.



Cheers
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