VICKERS
RC SAILING

V12 Set Up Guide

Welcome to the Set Up Guide for the V12 Vickers Designed International One Metre RC Yacht. This guide outlines the recommended set up details for the V12 to assist with a quick set up and tune to help achieve optimum performance for your regular racing. Good luck! Enjoy your sailing!

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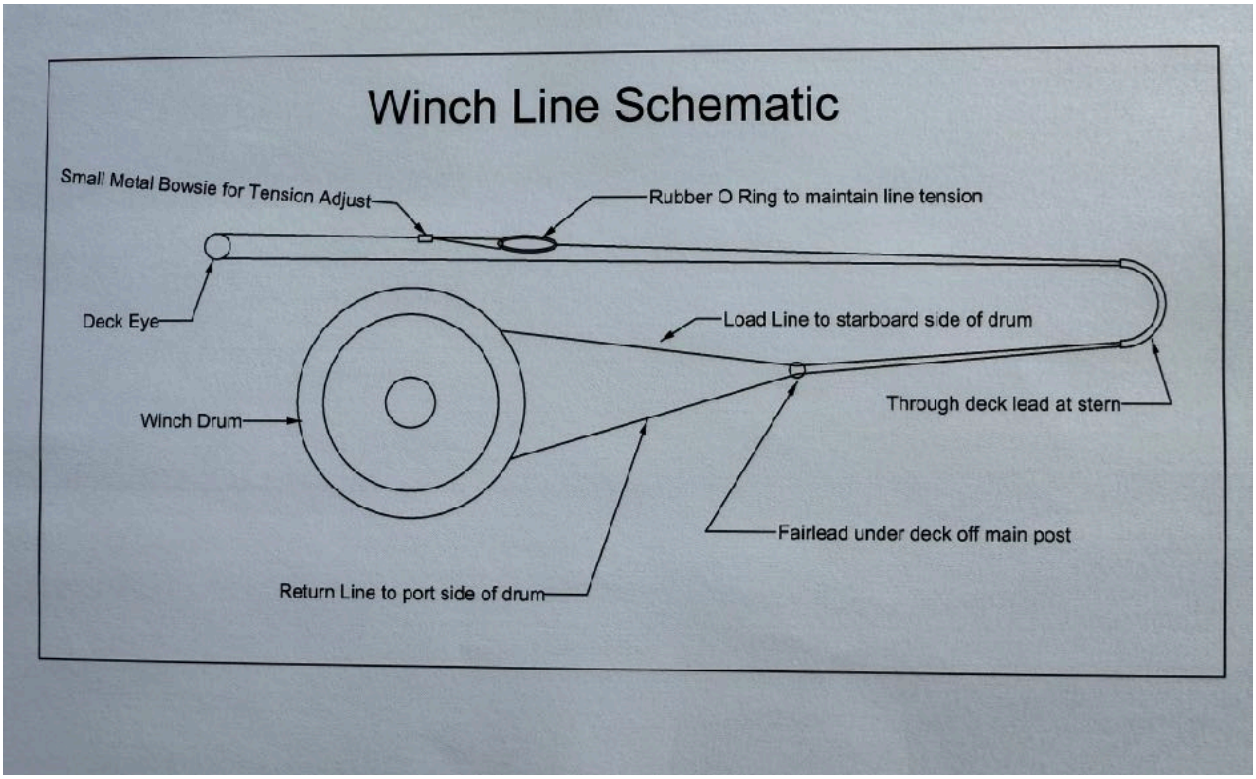
V12 Hull Set Up

Hopefully your V12 package has turned up safe and well. All Bubblewrap can be removed, and the bulb can be removed from the base board with a craft knife. Hold the knife blade flat along the base board and cut the electrical ties as low as possible.
The general assembly of the V12 should be quite straight forward for those who are familiar with the IOM.

Keel Installation- Locate the fin into the bulb and fasten with the M4 Cap screw provided, then insert the fin to the hull and secure with the M3 screw provided. No need to over tighten.

Rudder Installation- Insert the rudder into the boat, and slide the tiller arm down over the shaft. Tighten the cap screw onto the shaft. Check that is swinging freely. You may want to space the rudder down from the hull with a temporary piece of paper to prevent binding on the hull when the rudder is off centre.
Drop in your rudder servo with the spline forward, and secure with the M3 screws provided. Slide the steering push rod into your desired hole on the servo horn. Usually you would use the furthest hole from the spline to achieve lots of throw. Only instal the horn onto the servo once your electrics are fired up and centred which may come a bit later. The steering push rod has been left over length where it connects to the servo horn and may need shortening or detailing depending on the servo horn. The thickness of the horns these days seem to vary.
A sticky back dacron sticker will needed to cover and water tight this hatch once ready to sail. A digital servo is recommended for more accurate centering. About 5-8 kg torque.

Winch Installation- The winch tray is cut for an RMG or Red Ant Stinger winch. Other brands may fit also. Install the winch with the M3 screws. It may take some jiggling to get into position and possibly the need to squash the wiring a bit flatter underneath to allow room.
For your winch line, cut an over length piece of line and thread the ends in through the exit tubes at the back end of the boat and pick up the ends inside the hull. Thread both lines through the fairlead that protrudes off the mainsheet post. Be careful not to cross them. Attach the ends of the lines to the winch drum, one to the top groove, one to the bottom. Give each line about 4-5 turns on the drum in opposite directions and instal the drum while pulling the slack from the lines above deck. The most outboard line can be your load line and this will also be the most outward line above deck. You may like to temporarily apply some tabs of masking tape each side of the drum to hold the lines captive for when they might go slack and want to fall off. Set up and terminate the ends of the line above deck as per the diagram, threading through the deck eye and using a rubber O ring to keep tension. Its a nice idea to add a small metal bowtie to the return line for tension adjustment as the line shrinks.
Once you are happy with the set up, be sure to remove drum before powering up the winch. You may need to follow the winch set up guide to set travel on your winch but in short, set your transmitter to maximum in position so the winch comes to maximum possible in position, then reinstall the winch drum with the O ring wound as far aft along the deck as possible. You will be able to make the main and jib sheet to suit this position and ease out from there.
A dab of silicon sealant can be knifed into the exit tubes for water proofing. Leave it overnight to cure before running the winch again.



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Sheets- The threading of the main and jib sheet may be seen in the pictures. The mainsheet will start at the winch line and thread through the same deck eye as the winch line before leading back through the main post. The boom band should be aft of the post.
The jib sheet starts at the winch line and threads through the outboard foredeck hoop and then through the centreline hoop on the foredeck. Forward one for A Rig, middle for B and aft for C. I like to use the next closest hoop as a leader. Sheet in your winch to your “max. in”position and establish your sheet lengths from there. Make the lines as long as you can get away with, since dyneema line shrinks over time.
Battery- You should velcro the battery onto the stand below the main hatch. I like to use a 2 cell 7.4 volt Lipo around 1800mha.
Receiver- Your receiver can velcro under the deck just aft of the main hatch.
Hatch Application- When attaching the plastic hatch for sailing, place it in position and press the rim down with one finger and slide around the hatch until the entire hatch sits flush on the deck. Check that it is properly down. Be sure to preserve the fibreglass rim of the deck hatch, since scratching with a screw driver or similar will damage its water tight integrity.
Your **mainsheet post** is adjustable in height. You can remove it and tighten the nut against the O ring to increase the friction.
The **mast ram** adjusts by turning the plastic wheel.
The forward most eye on the foredeck is for your A rig jib swivel attachment. The 2nd one back is for B rig and 3rd for C rig.

Floatation
Your hull corrector weight which incidentally will be done last of all once you know the finished weight of the boat, should be split into 2 main pieces. They should be placed either side of the centre case as far forward as they can go against the keel frame. You will need to remove the winch to access this and glue them in. Silicone can be a good option here for attaching. I like to have a separate fine tune piece just forward of the battery of about 30gm.

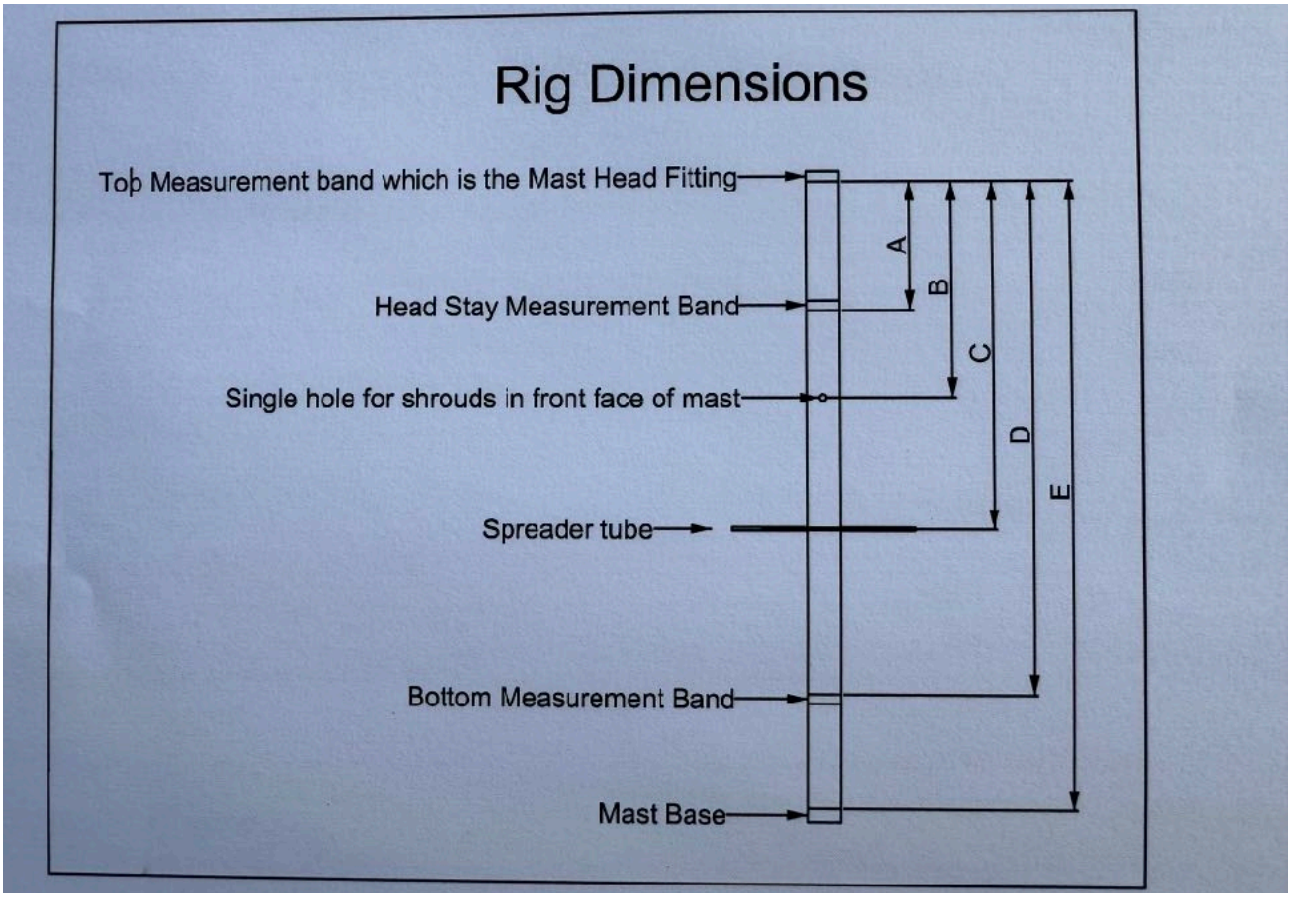
With corrector weight attached in the hull, the 4kg yacht ready to sail should float with the transom corner kissing the water surface or maybe 1mm submerged. The waterline forward should be about 30mm back from the aft edge of the bumper.

This should complete the basic set up of the hull.

Rig Set Up

Mast Pre Bend
The recommended pre bend for the A Rig should be 12mm over the top 800mm.
The recommended pre bend for the B Rig should be 7mm over the top 600mm.
The recommended pre bend for the C Rig is none.
The amount of bend is a measurement from the mast head to a projected straight line of the bottom unbent part of the mast.

Firm side stays and a flat spreader angle will keep the mast reverse bending in the middle and therefore increase forestay tension as you will increase backstay tension to counter this reverse bend. Increased forestay tension also adds weight to the jib boom at the clew end and will reduce the amount that the clew can lift and depower the jib in a gust.
Softer side stay tension can decrease forestay tension. This will allow the jib boom clew end to lift and depower more easily.
Exactly how much this happens is up to the skipper, but if it releases too easily, the boat will round up and not sail correctly. This would only happen if things are not right with the mast prebend and general set up. Lift the jib boom regularly with your finger and learn to monitor its weight.



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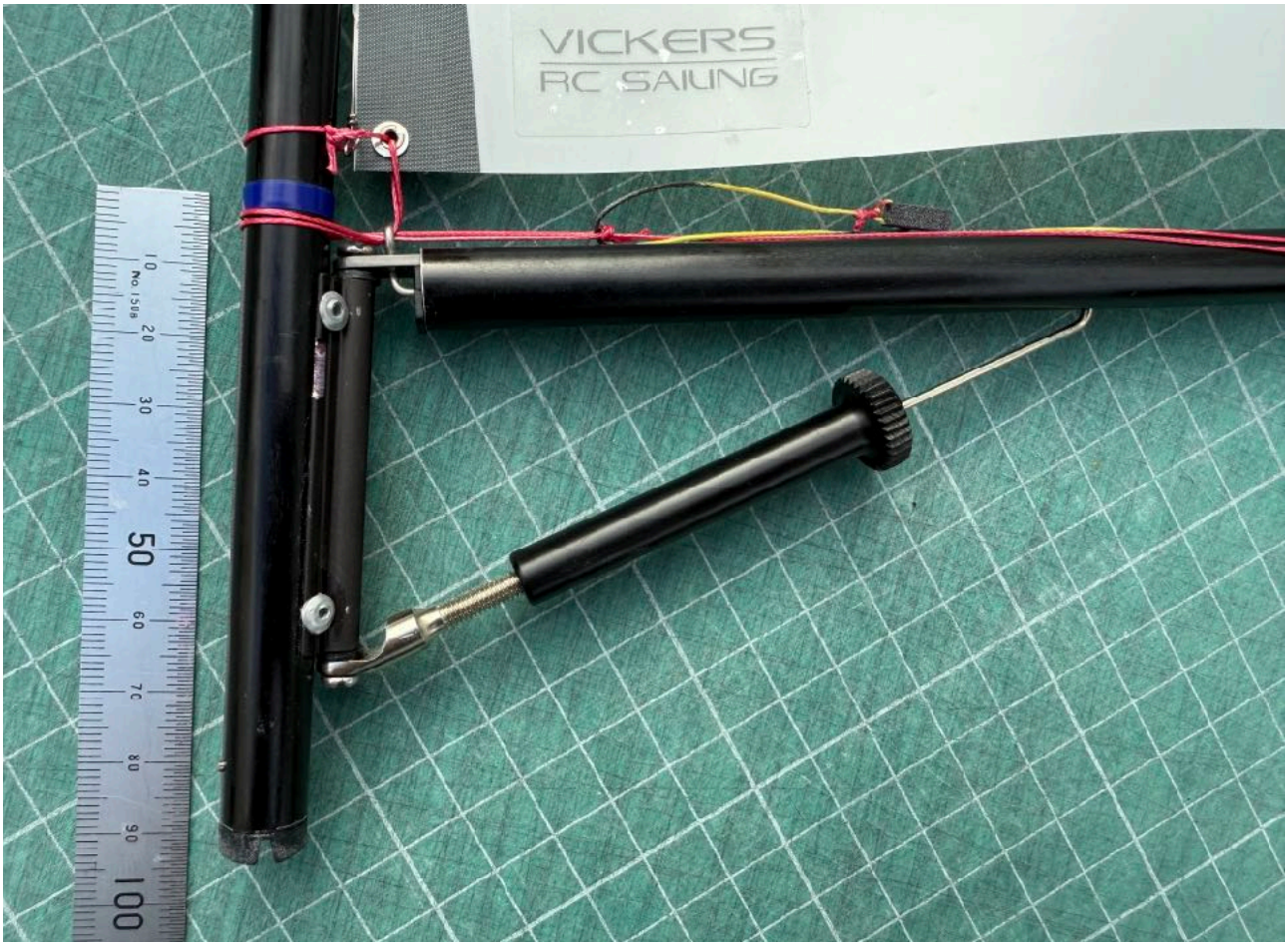
V12 Rig Geometry	A Rig	B Rig	C Rig
A	220	160	120
B	380	370	350
C	1020	800	None
D	1600	1180	880
E	1683	1263	963
Spreader Length	48	40	None
Measurements in mm.			

Mast Base- A Mast Plug for the base of the mast can be bought with the V12. It needs to be glued and/or pinned, into the base of the mast precisely square to the pre bend of the mast. This keeps the pre bend exactly on the centreline plane of the yacht which is critical for the mainsail set up from tack to tack. Special attention here is valuable.

Gooseneck- The mast gate of the V12 is 11mm wide to provide a neat fit against the mast. A standard Bantock gooseneck is exactly this width and should be dealt to with a file in the required area to sit inside of the mast gate when in position. File this rebate before attaching it to the mast. See Picture. You can make the raw aluminium black again with cunning use of a vivid marker. For standard Bantock Gooseneck you can attach it 10mm below the bottom measurement point. (Top of the Band). If you file the gooseneck about 8mm down from the top, to about 18mm or so, you should be able to reduce the width of the gooseneck in the correct area of the mast gate.



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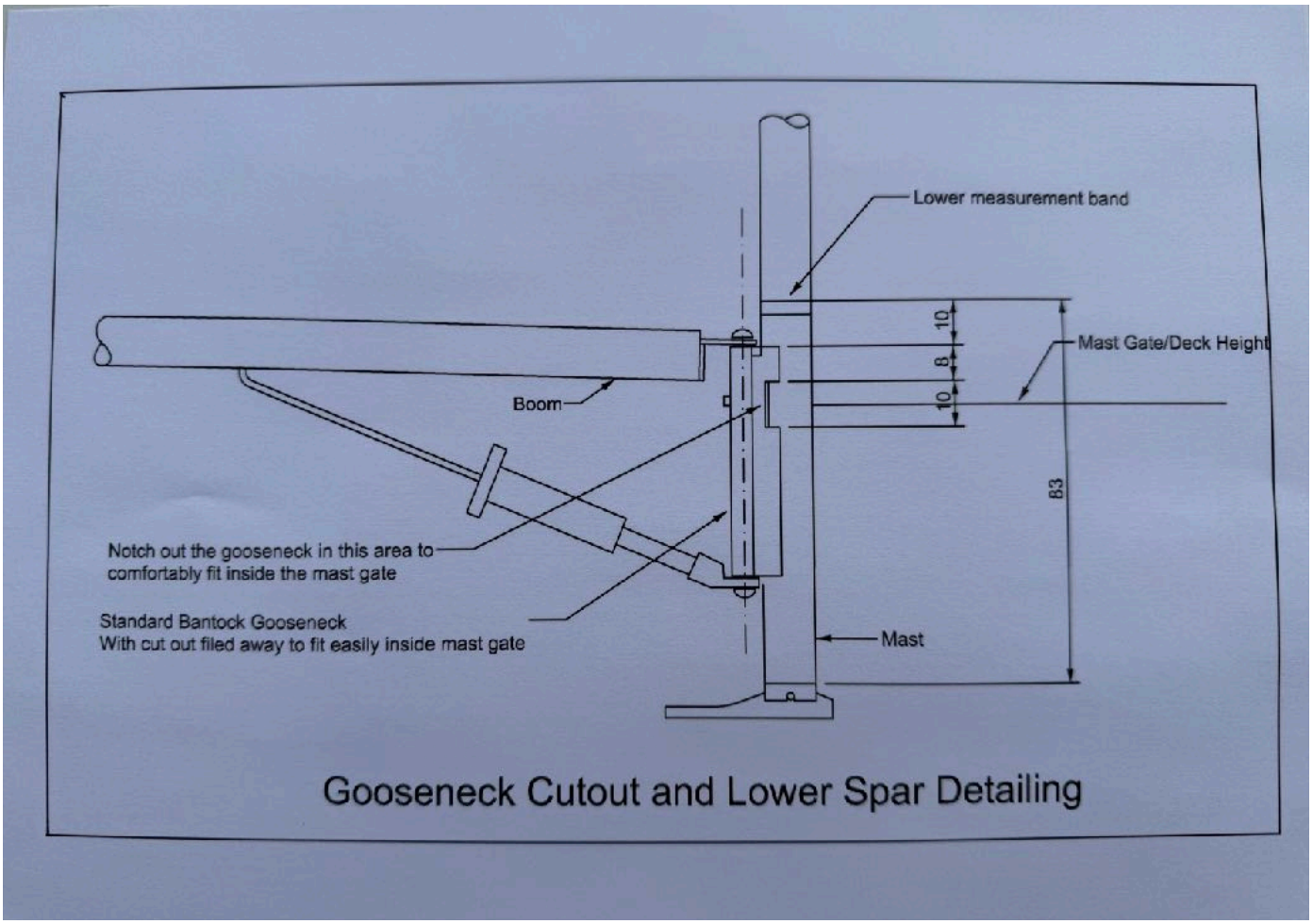

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Spreaders- The Spreaders need to be rigid. I like to make them from stainless or brass tube with 1.5mm inside diameter and with a 1.5mm stainless rod connecting them through the mast and glued into one of the spreaders so they are removable. They may need some angle backwards although I mine have ended up virtually straight. Use the following method to find an appropriate spreader angle.
Set up the rig in the boat as if ready for sailing, with the mast centred nicely and with max. side stay tension. Site down the mast on both tacks to ensure it is centred.
Adjust ram and backstay so the mast suits the mainsail as best you can. There may well be a flat spot in the middle of the mast at the spreaders, so carefully bend the spreaders aft until the flat spot looks uniform.

Sidestays should hook into a single hole in the front of the mast. I use 105lb monofilament wire with a tightish bend of about 1mm radius and a 30mm tail. They hook straight into the hole in the mast. It is good to hold them captive with a piece of tape so they dont cross over.

Forestay height should be as high on the mast as possible (close to the band), and the backstay crane kept as short as practical. This helps achieve maximum forestay tension. You can add two more holes below this for more rake options 6mm apart each for A Rig. One extra hole for the B Rig also 6mm below the first. No extra holes for the C Rig.

Mast Rake- No Rake measurement number is given here. Just a method to achieve it.
For A Rig, if we set it up in the boat with the forestay plugged into the top hole (rake forward position) we can then set the forestay length so that the mast sets up nicely for sailing with the mast ram fully wound in, or there about. You can find this by using a wire hook and lashing at the top of the jib which can be adjusted until the final length is found. I have then made a custom hook at the correct length which looks nice, but is not necessary. This establishes the forward rake position for A Rig and the forestay can then be plugged into the lower holes for middle and aft rake positions when desired.
With 6mm of distance per hole, we are throwing the rake around quite significantly. Forward for light air, Middle for moderate and Bottom hole rake aft for strong winds.
Do a similar process for the B Rig, and set this up for sailing with the hook in the top hole, and the mast ram extended about 1mm. You then can drop the forestay to the lower hole for more rake in upper end of the B rig conditions.
C Rig should be set up with as much rake as the mast gate will allow. More is better.
Changing the mast rake during race day can be a significant undertaking since it means a complete rig re-tune, so setting up for the forecast of the day may be a good option for many sailors. No need to get too paranoid about the rake, as long as she feels dialled in.

Main Boom- A round section is shown in the picture which is more flexible than the rectangular Bantock one. This is personal preference but I like to be a bit flexi and light weight.
The boom sheet band should be aft of the post and lead aft for the sail relationship geometry to be correct for downwind in comparison to the jib.
I like to use a jackstay on the main luff. The jackstay should attach on the mast head swivel and can be tensioned at the bottom if desired, and this would be standard practice. I have gone for no tensioner, only a Cunningham adjustment on the sail. The luff tension adjusts at the bottom via the line and bowsie system along the boom as seen in the picture. This self releases when the boom eases out.

Jib Boom- Jib booms can be Bantock superlight sections. If you can get away with no holes drilled, it can reduce fatigue and risk of breaking. I hook the jib sheet onto the sliding ball set up that can hopefully be seen in the picture. It requires no holes.

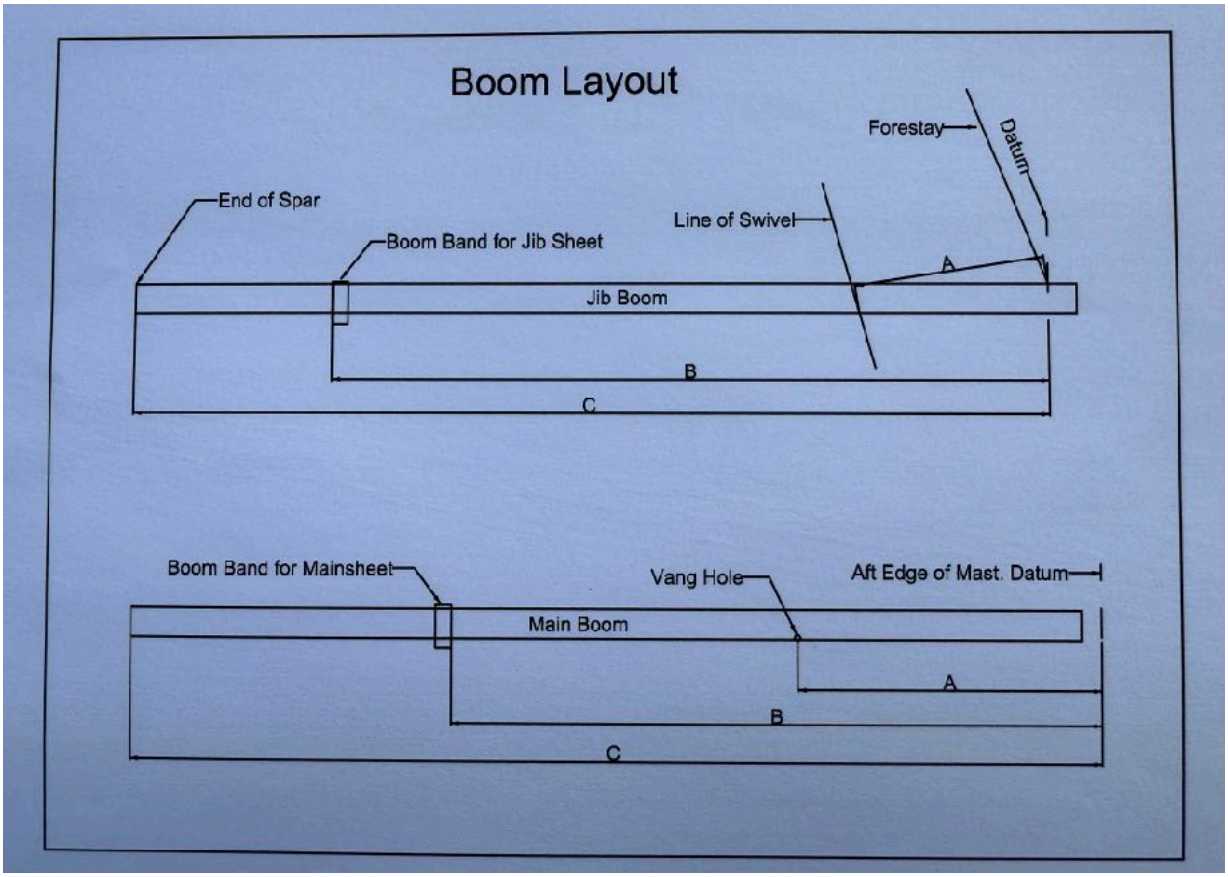

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Table 14

	Suggested Boom Layout		
	A	**B**	**C**
A Jib Boom	75	295	385
B Jib Boom	60	290	346
C Jib Boom	56	302	302
A Main Boom	110	217	362
B Main Boom	110	215	350
C Main Boom	110	213	320

Note- When installing the rig into the boat, lean the mast back and locate the mast butt onto the step 1st, then bring the mast forward into the mast gate. Preservation of the mast gate is important.

Raceday Set Up and Trim

The following Sheeting Measurements for booms are measured from the edge of the boom to centreline. So for mainsail it is to the centre of the post, and to centreline of mast for the jib.
The main twist is from the middle batten to the backstay and measured when the sail is relaxed. This mainsail twist measurement is difficult to get accurate and may vary boat to boat with sail shape and boom flexibility etc. so common sense is needed. If the boat has weather helm, ease the vang and vice versa. Adjust until the boat feels balanced. Vang is your critical boat balance tool. In smooth air, the boat should sail pretty much thumbs free.
The jib twist is measured at the top seam leech to topping lift.

Baseline Sheet Settings for Sailing
The measurements below will ensure a good relationship between the sails, and we can do minor adjustments from these baseline measurements for other conditions.
These baseline measurements are a solid start point and could be used quite successfully for all conditions, just don't be afraid to ease the sheets when the wind is up.

Mid Range Sailing- The Baseline Settings in the below Data are "maximum in" positions for your general mid range sailing upwind when the boat is powered up and approaching or at full heel and with flat water. Dont be shy to ease sheets from your "max. In" position as the wind increases. In fact a 4mm ease of the sheets from here should be a common upwind position. The B rig might rarely be all the way in at this baseline position, since the wind and waves are often up.
Same applies for the C Rig, but always bring the sheets all the way in when setting up these measurements.

Luff tension should be just enough to take the out the slack, not necessarily under any real tension

Baseline Settings	Main Boom	Main Twist	Main Foot	Jib Boom	Jib Twist	Jib Foot
A Rig	8mm	60mm	15mm	60mm	45mm	30mm
B Rig	10mm	70mm	15mm	60mm	35mm	25mm
C Rig	14mm	70mm	15mm	67mm	30	15mm

Light Air- Between the wind range of slightly heeled to 3/4 heel, we need to bring the mainsheet in. Just like we do on a full size boat to power up the main leech and heel the yacht. Bring the mainsheet in to 0mm instead of 8mm, or anywhere in between. Your main twist will change to about 45mm. As the wind gets to the lower end of this range, make sure the jib is not choked. 60mm and 45mm twist should still be good. Sail luffs should be soft and as loose as you can get away with. Increase jib foot round to 35-40mm.

Super light Air- Same as light air settings but keep the jib open to 65 - 70mm on the sheet when the wind gets to drifting conditions. Also we need to ease our sails (on the radio) in the very light

air. Maybe up to 30mm or so in the super light air when the boat is very slow and fully upright. Luffs loose and jib foot round keep at 35-40mm.

Fresh Breeze- Tighten jib foot to 10-20mm and tension the luffs slightly. Ease out the sheets on the radio to reduce sideways force (leeway) and allow the boat to spring forward to overcome drag off the rig and sails. Depends on conditions but you can ease up to 40mm when in extreme gusts or conditions.

Analyse the conditions you are sailing in. If the wind is steady and laminar flow you will get away with sailing higher mode with a tighter main leech than in a shifty turbulent wind flow. A tight main leech in shifty turbulent wind will make the boat grouchy and weather helmed, so ease the vang to neutralise the helm, keeping the jib loaded to allowing better acceleration and kinder response to headers.

I hope this set up guide has been useful and assists you to reach your V12 potential swiftly.
You should find the V12 to be a forgiving and easy yacht to sail and therefor be able to manage different venues, winds and conditions well.
Enjoy your sailing and dont over think when in the heat of the battle. There are many elements to yacht racing so try to keep a “big picture” focus. Get in space. Sail fast. Anticipate wind and fleet as best you can. Be Patient. My few last words of wisdom 😬

All the best with your set up and sailing

Regards
Ian Vickers

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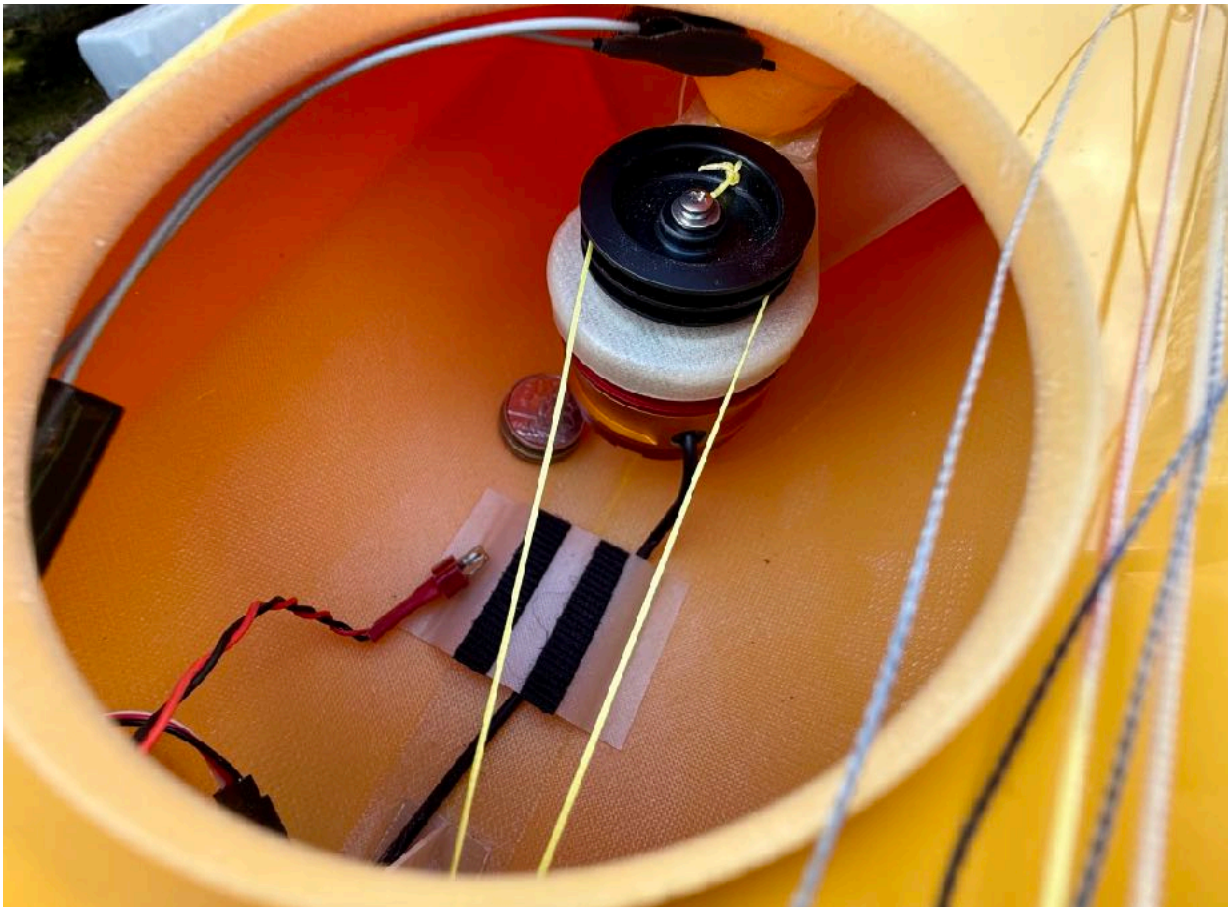

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