

NJ Sails - DF65 A+ Sail Setup.

1st September, 2025

Note:

The information presented here should work for all DF65 boats but exact settings and measurements must be treated as generic. Unfortunately, boats and rigs can be different. Therefore, your boat may need slightly modified measurements to get it balanced and make it fast. It is suggested that the measurements presented here are used as a starting point for further refinement by the sailor.

To aid understanding of the terminology used, please refer to Image 18 which shows the Head, Tack, Clew and position of luff ties 1, 2 and 3.

Materials required

It is recommended to use a mix of 80 lbs and 50 lbs braid in place of the manufacturer's supplied line e.g.:



Image 1

Thinner braid can be used if preferred (e.g. 35 lbs or 20 lbs) and will be strong enough when new. However, service life of thin line may be short due to chafing and sharp edges, hence the recommendation to go slightly heavier than may be ultimately necessary.

Always apply supa glue (or similar) to each knot, especially when the knot is not a braid specific knot, e.g. on a bowline or reef knot, otherwise the knot will fail under load. Research the Palomar knot and Uni knot, use them where you can. They are braid specific and mostly secure under load even without supa glue.

One of the biggest variables in the rig setup is due to how the mast is constructed from its component parts by the owner. To help make my setup more applicable to your boat consider constructing your mast in the same way as I do, which is.....:

Glue in most parts, i.e. mast joiner tube and the bottom mast extension piece, but not the mast head and crane.

Before bonding the two-piece mast tubes together check to determine if the tubes are straight, normally they are slightly bent so do not worry if yours are. A good way to check and mark the direction of the bend is to roll the tubes on a flat horizontal surface holding the one end of the tube down as it is slowly rolled. The bend will become apparent when

the end of the tube not held down lifts up off the surface as it is rolled. Mark the top of the tube when the bend is in the upward direction.

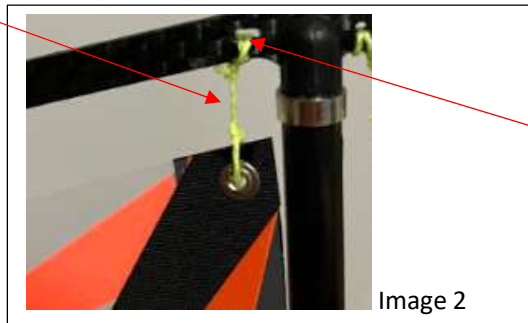
Glue the two mast tubes (and the mast joiner insert) together using 5-minute araldite. As the glue goes off hold the two sections straight in both x and y axis so that the mast is straight and with the marks indicating the direction of the bend aligned in the upward orientation. This is more easily achieved by using a straight piece of right-angle section (RAS) of metal. Place and hold the mast into the corner of the RAS until the glue is set, being careful not to let the mast stick to the RAS. Do not put the metal end reinforcing rings on until after the mast tubes are glued and set. Leaving the rings off makes it easier to achieve a very straight mast.

Glue the carbon fibre crane into the plastic mast head insert so it forms one piece. This can then be pushed into the top of the mast tubes and left unglued. The crane is vulnerable to breakage and if glued in, a broken mast crane will result in the whole mast being scrapped. So leave the mast head unglued to enable broken cranes to be replaced. When inserting the crane, make sure the crane aligns with the back of the mast, i.e. the marks indicating the upward orientation of the tube bend, this assures that any bend in the mast tubes is held in the fore/aft alignment with the boat when sailing.

Rigging the sails onto the spars:

1. Rigging up the mainsail:

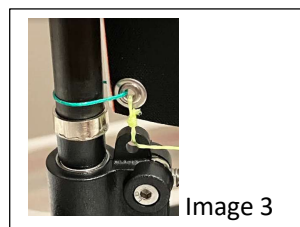
Start by securing the mainsail to the masthead crane with 80 lbs braid. Use knots that you are familiar with but make sure there is only one line (no loop) between the sail and the crane, to allow the sail to swivel freely. Tie the sail at the back of the slot in the crane.



Tie close to the back slot, here.

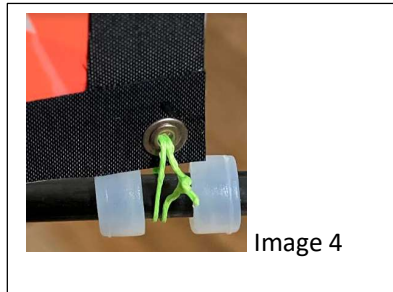
Also refer to image 8

The height of the sail is important. Set the sail as low as possible on the mast, allowing just enough space at the tack attachment point to allow the sail luff to be tensioned without running out of cunningham adjustment. Like the yellow line in image 3:



Tie the cunningham bowsie as shown in the DF rigging manual using 50 lbs braid.

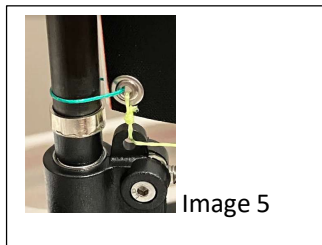
Attach the clew of the sail to the boom with a double loop of 50 lbs braid and a reef knot. Before application of supa glue, the length of the loop can be easily adjusted simply by pulling on the loop (place a needle or similar object between the knotted loop, just the one strand with the knot in it, and the boom, and pull on it gentle to make the knot slip a little. Be careful not to crush the sail.) to make it longer, or pulling on the ends of the line (to make the knot slip a little) to make it shorter. Set the length of the loop so that the bottom of the sail does not contact the rubber stoppers, as shown in Image 4:



Once the length is set, apply supa glue to permanently set the knot and prevent it slipping, then cut the ends suitably short. For added security, consider tying overhand stopper knots in each end of the braid hard up against the reef knot prior to gluing it.

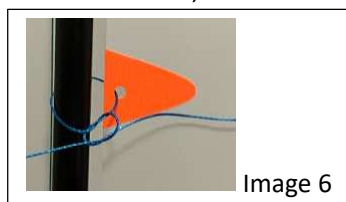
Next step is to make the luff ties.

Firstly, tie the tack close to the mast using one loop of 50 lbs braid and a reef knot, the gap between the sail and the mast should be approximately 1 mm. This is shown in image 5 as the green tie:



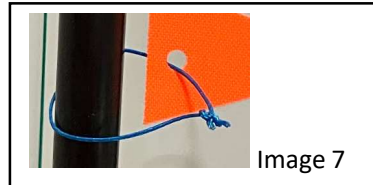
The tack tie can be set permanently with supa glue and the ends cut off.

Then for luff tie 1, use a loop of 50 lbs braid to make the luff tie, but this time leave the knot loose, unglued and ends uncut, as shown in image 6:



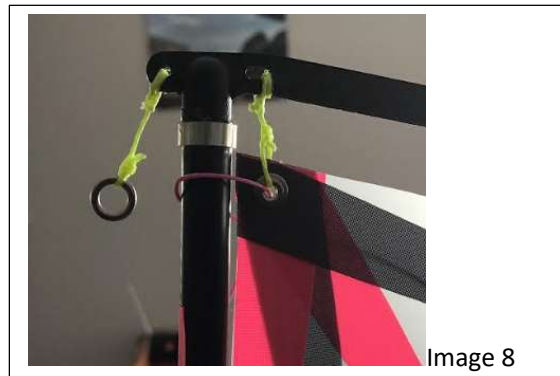
Do the same for luff tie 2 which will be somewhere near the mast join on the A+ rig.

Luff tie 3 and the head of the sail should have luff ties set very loose, too loose to have any effect on the sail. They are not required for performance but are required to satisfy Class Rules. Tie them very loose so that there is no risk of the luff tie taking any tension, as shown in Image 7.



2. Rigging up the jib:

Make sure there is a metal ring tied to the hole in the mast head meant for the jib attachment:



Similar to the mainsail attachment, the ring needs to be attached to the mast by one strand of braid so that it can swivel easily. The distance between the ring and the hole in the crane should be close to 15 mm. To stop the lines moving, chafing, and ultimately breaking, apply supa glue to the braid running through the holes in the masthead fitting so that the braid is glued to the mast crane.

Tie 300 mm of 80 lbs braid to the jib luff wire using a Uni knot, (Image 9).

Tie 300 mm of 50 lbs braid to the jib head ring using a Uni knot, (Image 10).

Tie 250 mm of 50 lbs braid to the jib tack eyelet, using a non-slipping loop knot of some kind. I use a bowline with supa glue, which has proven to be reliable enough. Make sure the loop is short, only as long as it needs to be to move freely and not squeeze the sail into the tack eyelet. (Image 11).

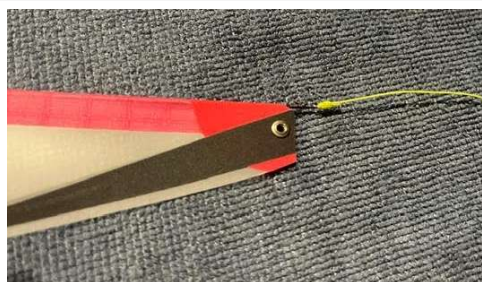




Image 11

Connect the 80 lbs braid at the top of the jib luff wire to the metal ring using a bowsie. Do not tie the stopper knot or cut the line to length yet. I use the micro metal type bowsie for this (as pictured), but the Joysway plastic ones are fine if that is what you have and they are a lot easier to adjust. To set the height of the jib without cutting the line or tying the stopper knot I wrap the uncut end around the mast crane multiple times to stop it slipping. This allows the length to be set accurately later in the rigging process.

Slide the jib boom counterweight through the bottom eye in the jib luff wire and into it's normal position in the jib boom.

Connect the 50 lbs braid tied to the ring (image 10) using another bowsie through the head of the jib, again not tying the knot or cutting the end off.

Thread the jib boom uphaul as normal, through the ring and behind the other two lines. So, the 80lbs braid is frontmost, the 50 lbs in the middle and the jib uphaul sits rearmost through the ring.

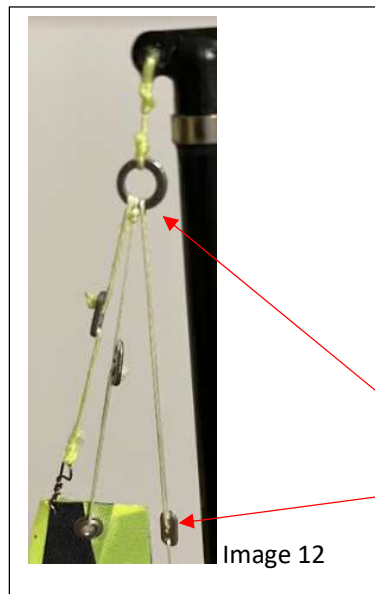


Image 12

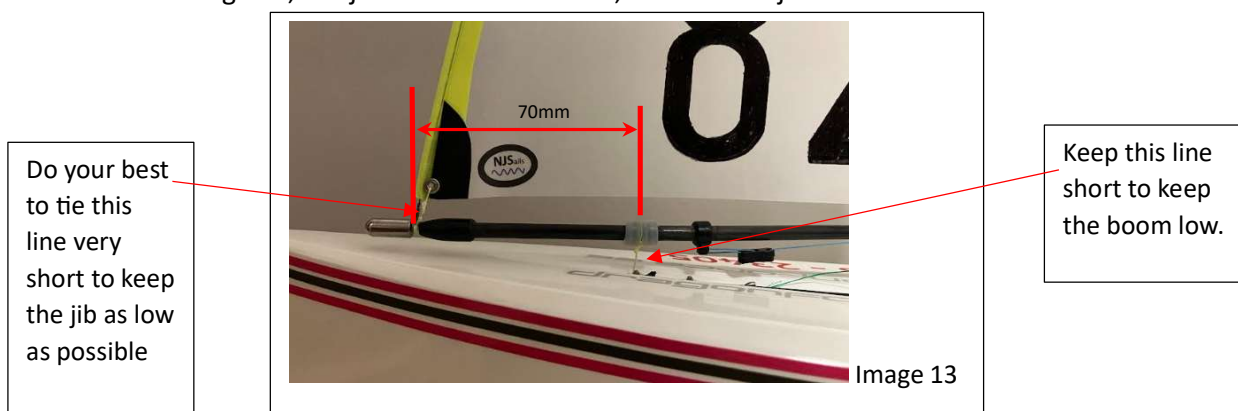
This image shows the stopper knots tied and ends cut, but yours should not be at this point in time.

The boom uphaul (lift line) is run through the ring at the top, with the bowsie also at the top

Now tie the jib clew to the jib boom in exactly the same way as the main clew is tied to the main boom, see image 4.

Note, it is assumed that the jib boom tie down length is set as short as it can be, somewhere between 48 and 50 mm is OK, but no more. The jib boom must be kept

nice and low to the deck as per image 13. Ideally, the tack tie should be shorter than it is in image 13, the jib should be held low, close to the jib boom.



Now it is time to set the lengths of the two lines that hold the jib up. Set them so that when the bowsie is halfway between the two ends of the braid, refer to image 12. The mast rake should be 950 mm measured from the deck to the backstay attachment point in the jib crane. This is measured with some reasonable tension in the rig, similar to what you would use when sailing. The point of measurement on the back deck for purposes of mast rake determination, is the point on the horizontal deck just to one side of the backstay hook, as far back in the boat as possible, at the transom.

Base setup:

It is now time to start tuning the rig for sailing! 😊

This base setup is a starting point, which will need to be adjusted for the conditions on the day of racing. Achieving a good base will enable the boat to be tuned quickly and easily to a fast setup for any racing day.

This is my base for the DF65:

Most importantly, we need to get the mainsail ties set with backstay tension applied, remembering that the knots in the two ties that need to be set are still loose and adjustable.

Check that the mast foot slide is set in your normal racing position, which I find is somewhere near the middle of its adjustment for the DF65 (see image 14), (the DF95 is different). Setting further back will produce a stiffer mast and higher forestay tension for a specific amount of mast bend. Conversely, setting the slider forward produces a setup with looser forestay tension for the same mast bend.

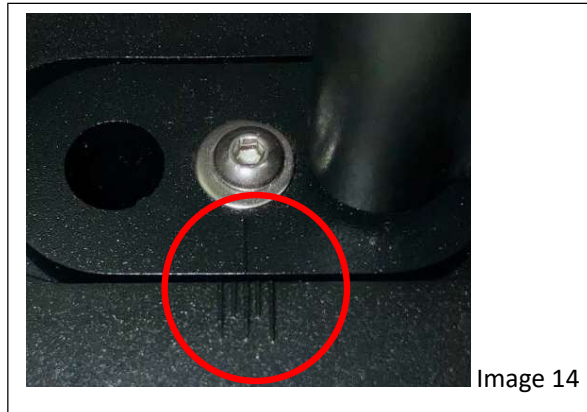


Image 14

Mast stiffness can vary a lot so the optimum mast foot slider position will be different for each boat, as such you may need to try a few different positions to find what works best for your boat. Start in the middle and work out in either direction from there. If this search for the optimum position is problematic then don't stress, just set the mast adjuster in the middle, it will be close to ideal.

Next, take any slack out of the mainsail luff with the cunningham. The cunningham is not to be tight or under tension, it just needs to remove any baggy slack from the luff of the main.

Then set a generous amount of depth in the mainsail foot by sliding the clew adjustment rubber rings in toward the mast. Exact depth is not important at this stage but it should be ample at around 35 mm measured at the mainsheet attachment point.

Set the mainsheet adjustment (winch) to your typical upwind setting. The image below shows about 5 mm of mainsheet between the boom and the metal eye in the bridle.

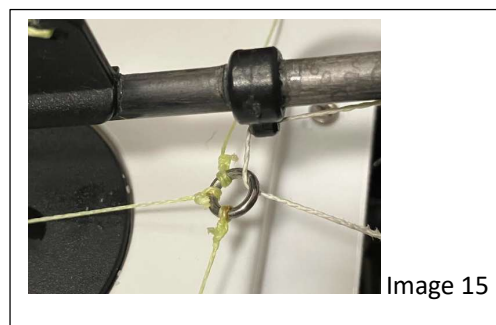


Image 15

Make sure the bridle adjustment is not tight (holding the metal ring close to the deck). The bridle should always be set as high as practical, so the metal eye of the bridle hits the mainsheet slider on the boom just before the main comes to centerline (as the mainsheet is pulled in). A good guide for bridle adjustment is that when the rig is off the boat, pull the bridle eye forward along the deck and it should sit in the centre of the boat and over the very back of the recess for the keel fin slot, as shown in image 16:



Image 16

The length of the bridle fore/aft restraint line needs to be set so that the metal ring is held between the two bridle deck eyes (looking from above) when the metal ring is pulled directly upward, (as in image 17). Bridle setup is important, as your boat will be slow if it is set too low, too far back or too far forward.

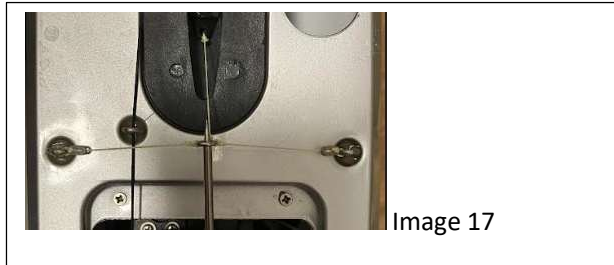
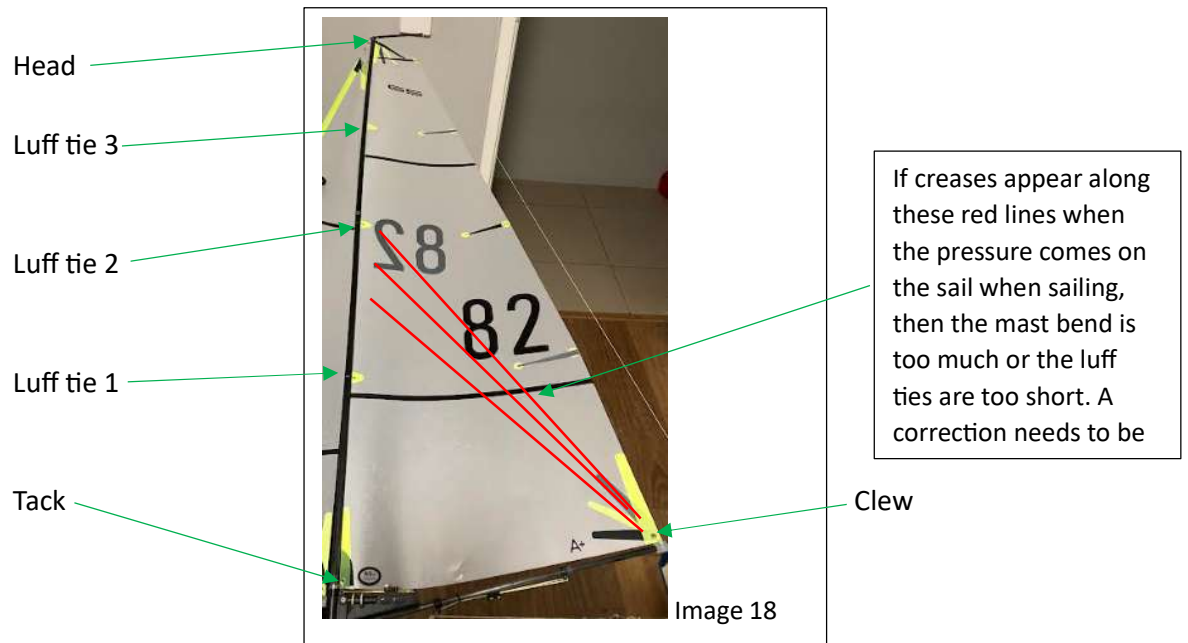


Image 17

Now pick up the boat by the keel and hold it horizontally, refer to image 18. Tension the backstay until the curve in the mast is matching (as closely as you can make out) the curve in the mainsail luff. This should be close to the rig tension you like to sail with. I recommend a reasonably tight jib luff when racing.

If the rig seems really loose and the mast very bendy, then slide the mast step slider back a bit and try again. Conversely, if the rig seems very tight, to get the required mast bend to match the mainsail luff set the slider further forward to soften the rig. (It's much easier to move the mast step slider with the back stay loose, then retightened afterwards.)

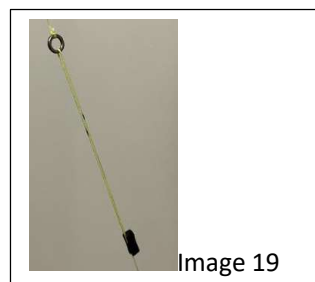
The sail should sit in line behind the mast. Now set the luff ties. Set luff tie 1 so that when the sail is gently pulled away from the mast, the gap between the edge of the sail and the back of the mast is close to 2.5 mm. Then set luff tie 2 so that when the sail is gently pulled away from the mast, the gap between the edge of the sail and the back of the mast is close to 4 mm. As mentioned above, luff tie 3 can be set very loose so that it does nothing. Do not glue, and cut the luff ties yet.



Now test the tie lengths as follows. Set the vang so the main has only a small amount of (but some) twist. The main leach must not be under tension from the vang at this point. Hold the keel and fairly vigorously but carefully (so as not to hit anything in the vicinity) wave the boat and sails through the air. Watch the shape in the main and make sure no wrinkles (inversion in the curve of the main) occurs between the clew and the luff of the main at mid height. That is, along the red lines in image 18. If it does occur then firstly double check to make sure there is not too much rig tension on the backstay. If there is, loosen it a bit and check again. If there is not then loosen the luff ties a little and try again. It should be possible to reach a point where no wrinkles (commonly called overbend creases, or starvation creases) occur in the main when there is pressure on it from the air.

Note: if when sailing you observe creases running from the clew to the mid luff, then your mast is too bent. Do something to straighten it e.g. loosen the backstay, vang or both, consider moving the mast step slider back a little bit.

When happy with the luff tie lengths, glue the knot to make it permanent and cut the ends short. Mark black dots on your backstay adjuster so that backstay setting can be repeated consistently. It is sensible to apply calibration marks to everything you can so that settings can be reproduced, refer to image 19.



Now the rig is ready for fine setup:

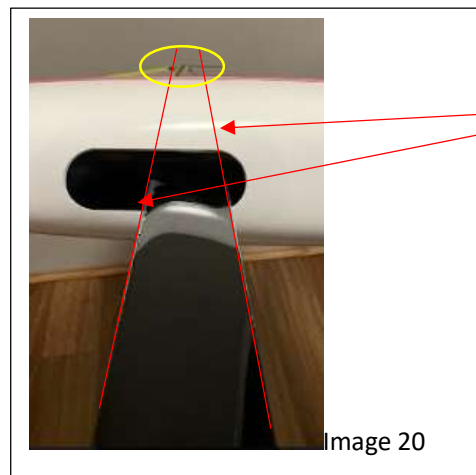
3. Setting the main controls:

When adjusting the sail controls for racing, it can be done in many different ways. This is my way which I hope is helpful.

Set the depth of the mainsail and the depth in the jib foot to 30mm measured at about 1/3rd from the front of the sail. Less depth is set if it is a windier day, down to 15 mm minimum when it is on the limit for the A+ rig.

Then set the backstay tension to the calibration marks.

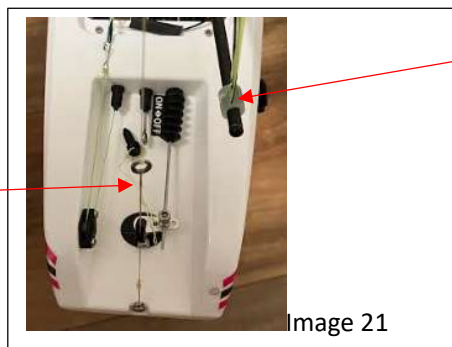
Check the mast rake with rig tension on. It should measure 950 mm from the back corner of the deck next to the backstay hook, up to the backstay attachment hole in the masthead crane. Sight from the bottom of the keel, along the keel and up to the masthead. The masthead should sit somewhere near the middle of the keel (image 20).



Look along the red lines (which are aligned with the front and back edges of the keel) to make sure the masthead falls in between the two, best to be somewhere near the front as in the yellow circle.

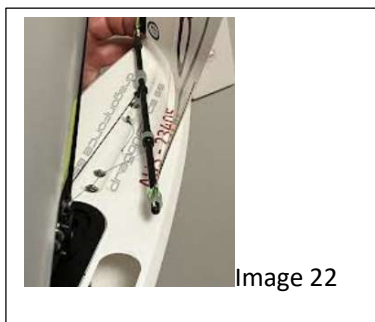
Set the winch position to fully in, making sure the mainsheet or jib sheet do not pull taut while doing so. With the winch set to fully in, set the mainsheet to have 5 mm of line between the bridle eye and boom slider, refer to image 15. This should set the main boom end in a position approximately above the middle of the raised back deck on either side of the boat, as image 21. Check the position is equal on both sides (either tack).

Align the backstay with the middle of the boat to align and standardize your viewpoint

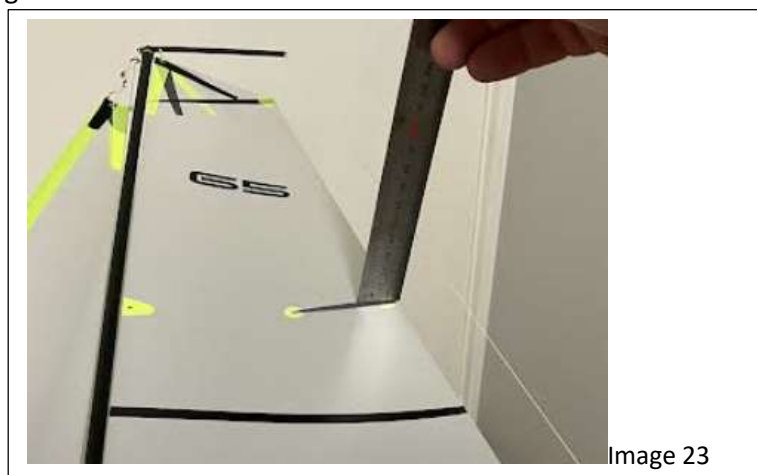


When your viewpoint is aligned, check the boom position with the main pulled in fully. It should be close to here as a first try (base) position.

Set the jib boom position to just inside the shearline (gunwale edge), as image 22.

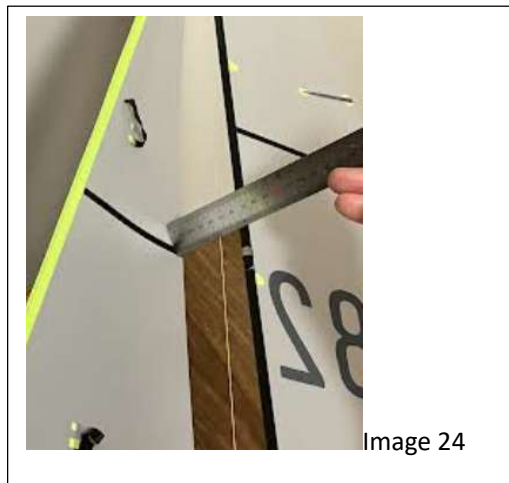


Then set the mainsail vang, typically the mainsail twist will be approx. 45 mm when measured between the backstay and the second batten down from the head. The measurement is taken with the boat set on it's side but without distorting the sail shape, as in Image 23.



A useful method of setting the vang to help get it very nearly correct, very quickly with rig tension on is to back off the front vang locking wheel so the vang is unlocked. Then make sure the vang is set completely off, no mainsail leach tension at all, then wind on the vang using the back adjuster wheel until the leach of the main is just taut, all the twist is removed and the back edge of the sail has just become tight between the outboard end of the boom and the mast head. The main leach should not be so tight as the sail inverts and the leach falls away, but you should just feel the adjuster wheel tighten up as the leach becomes fully tight. This is a reference point so be careful to get it right, it is the point where the leach just becomes tight, zero twist. Then, with that reference found, wind the vang off using the back adjuster wheel turn it at least a $\frac{1}{2}$ turn in the "vang off" direction, or as much as a $\frac{3}{4}$ turn but no more. Then lock the vang in position with the front locking wheel. This should set the vang to within $\frac{1}{4}$ of a turn of its optimum setting when racing. The optimum setting will need to be determined by going for a sail but this initial setting needs to be close to optimum and this is the best way I have found to achieve that.

Then set the jib boom uphaul to provide ample twist in the jib leach. Measure from the boom uphaul line to the jib leach at the mid height (approx.) of the jib. This should be close to 45 mm, as image 24



The mainsail cunningham should be snug, no slack but not tight.

Jib luff tension should be snug, not tight and definitely no wrinkles in the front of the jib. If the jib luff is too tight there will be a nasty looking wobble in the leach towards the head. Don't let that happen, it is slow.

Note, the lighter the wind, the slacker the jib luff needs to be.

Now wave the boat and sails through the air as before and check there are no overbend creases generated. If there are, loosen the backstay until they disappear and note the distance the calibration marks are apart for future reference.

When looking from astern at the boat as it is waved through the air, it should be possible to see depth in the mainsail from top to bottom. There should be twist easily visible in the mainsail leach and jib leach. The twist in the jib should allow the jib leach to sit a consistent distance away from the belly in the main. This keeps the slot open and parallel to the mainsail.

Then go back over the settings again. They do interact, so one setting can change when a different sail control is adjusted (e.g. vang and backstay) so keep cycling through the settings until they are all to your liking.

Then go for a sail. The boat should sail upwind in steady conditions without any input from the sailor. If it tends to point up into the wind by itself (without being forced to do so by a gust) and ultimately luffs to a stop, then loosen the vang and consider tightening the jib leach, and letting off the jib uphaul a small amount.

If it tends to turn away from the wind by itself, or does not respond well to a gust (it should gently head up into the wind as it accelerates, it should not round up abruptly and stop) then do the opposite.

When judging the boat's setup while sailing upwind be careful to do it in as steady a wind as you can find. A boat will always tend to round up when hit by a strong gust, so do not consider that as bad tuning, instead ease the sails as the stronger gusts hit to allow the boat to accelerate and sail straight on instead of rounding up.

When sailing downwind it must be possible to set the booms out to 90 degrees to the centerline. If this is not possible then consider making adjustments to the proportion control on your radio set, or end stops to increase the winch range of movement. If it is still not possible to get to 90 degrees then consider moving the main and jib sheet slider forward on the respective booms.

A Rig and the smaller B and C rigs

There are some differences when rigging up and tuning your smaller rigs, most notably, they are fractional rigs not masthead. That is, the jib attachment is only part way up the mast, not at the masthead which is the case for the A+ rig. This allows the mast to bend very much more easily and creates more forestay tension for a particular back stay tension. So be happy not to have to pull the backstay on as taut as it needs to be set when using the A+ rig. Other than that, the rigging and tuning principals are the same as set out for the A+ rig. I do not alter the mast foot slider between rigs, but if you find the A rig too bendy, or too stiff, you may have to. Remembering that the rigs are all so different, each boat will have its own optimum setup.

Sailing technique, some tips:

1. We typically sail in very shifty conditions, so the priority is to sail fast upwind rather than to point high. So do not be afraid to ease the sails when sailing upwind. This accelerates the boat which does many good things, to many to go into depth about here. But for certain, never try to sail high in a big lift, ease sheet and sail fast when lifted.
2. Overuse of the rudder, steering too much is very slow. Both upwind and down, only steer if you have to. The boat will go faster and faster and faster if the sails are set correctly and the rudder is left set on the centreline. Move the rudder and the boat will slow.
3. If you want to turn the boat never do it without making a complementary sail adjustment. Infact, because the winches are a little slow it helps to make the sail adjustment first, then move the rudder. This is never more the case than when the boat needs to do a big bear away e.g. at the top mark and spacer, or to dip another boat's stern. If there is time, always ease the main first, then steer down.

Good luck! If you have questions then please come have a chat. Happy Sailing.

By: Nick Jerwood.