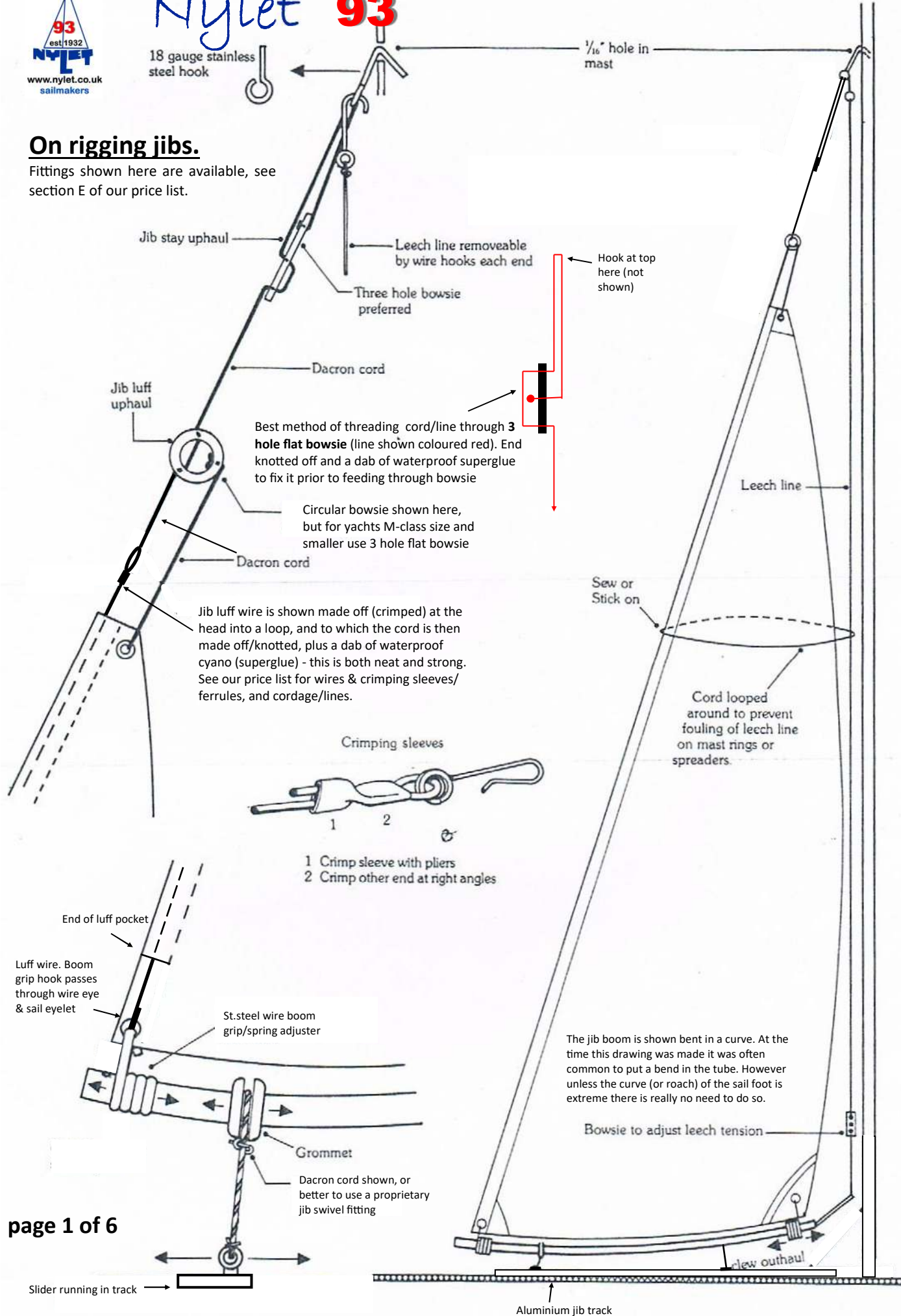


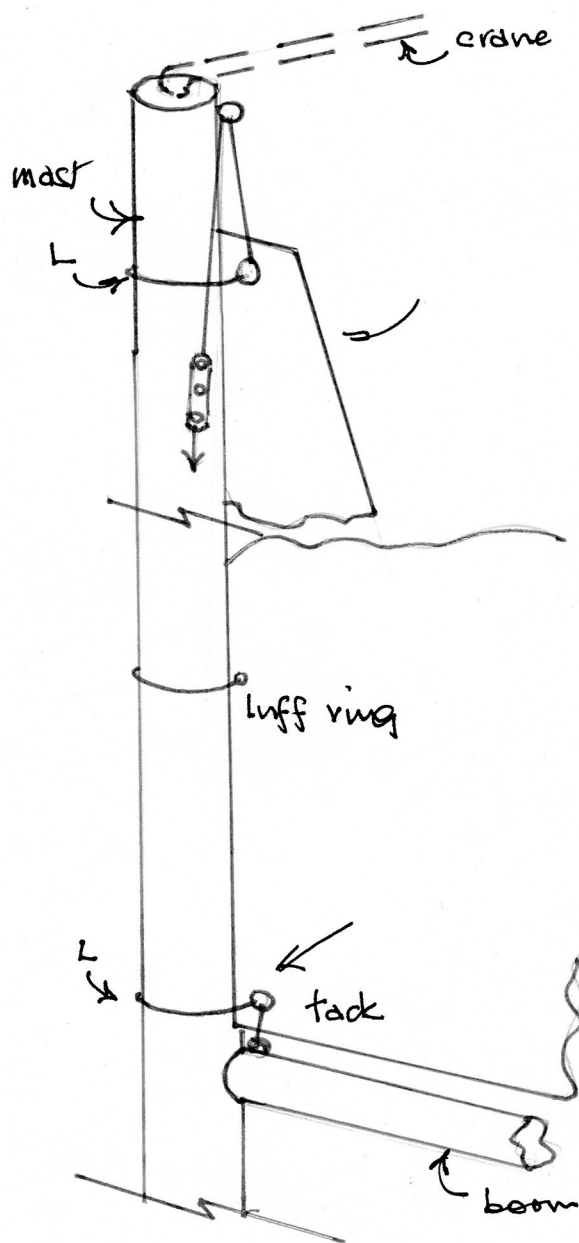
On rigging jibs.

Fittings shown here are available, see section E of our price list.



Mainsail luff location.

This drawing is just a simple reminder on how to secure the luff of your mainsail at the foot (tack corner) and the head. I have seen many wrongly/poorly/incorrectly fitted mainsails and you might find this drawing a useful reminder. Correct practice is in the detail.



At the foot. Both tack and clew (the after corner, the clew, is not shown here) are fixed/made fast to the boom with lashings (cord). In racing practise a flow adjuster spring is used at the clew and this facilitates control of the amount of flow (of the foot). On older/smaller timber yachts then adjust sail flow in the foot at the clew with a running line and bowsie. The foot "lashings" are not adjustable vertically, all adjustment takes place at the head and at that one point only. All sails are hoisted and adjusted thus, and NOT adjusted at the foot, except longitudinally at the clew. "L" denotes either lashings or luff rings and are made off at the tack and head (around the mast) and up the luff at convenient intervals. This keeps the luff in right position to the mast, otherwise the sail will fall away at these points and if the luff is badly 'shaped' you CANNOT control the mains'l properly. DO NOT 'strangle' the luff at any point to the mast, the sail needs to move as well as being in line up its entire length without falling away. Luff rings (or cord lashings) will probably be used along the entire height of the luff, unless tags (or tabs), or a luff cord, is employed to run into a groove in the mast.

At the head note the cord/lashing made off to the head eyelet, it runs aloft and through an eye (or hook let in to a drilled hole in the mast) to return down via a bowsie adjuster - the arrow simply shows the direction of the cord which will extend down to a hook and which locates through a hole or fixing in the mast. Running this cord downwards some six inches or so will mean you can reach it more easily to adjust! The backstay crane is shown 'dotted' as it has no bearing on the subject matter here discussed.

Maintaining 'shape' is vital to the performance of the sail, disregard that and you will lose 'way' (speed). You will find more detailed information regarding correct mast shape in our BB3 "How to" booklet.

Correct sail practice is in the detail so pay attention to all these small points.

Terminology. On any Bermudan sail, at the foot the leading corner is the "tack"; the after corner is the "clew"; the top, the "head", well that's self explanatory, it is exactly that!

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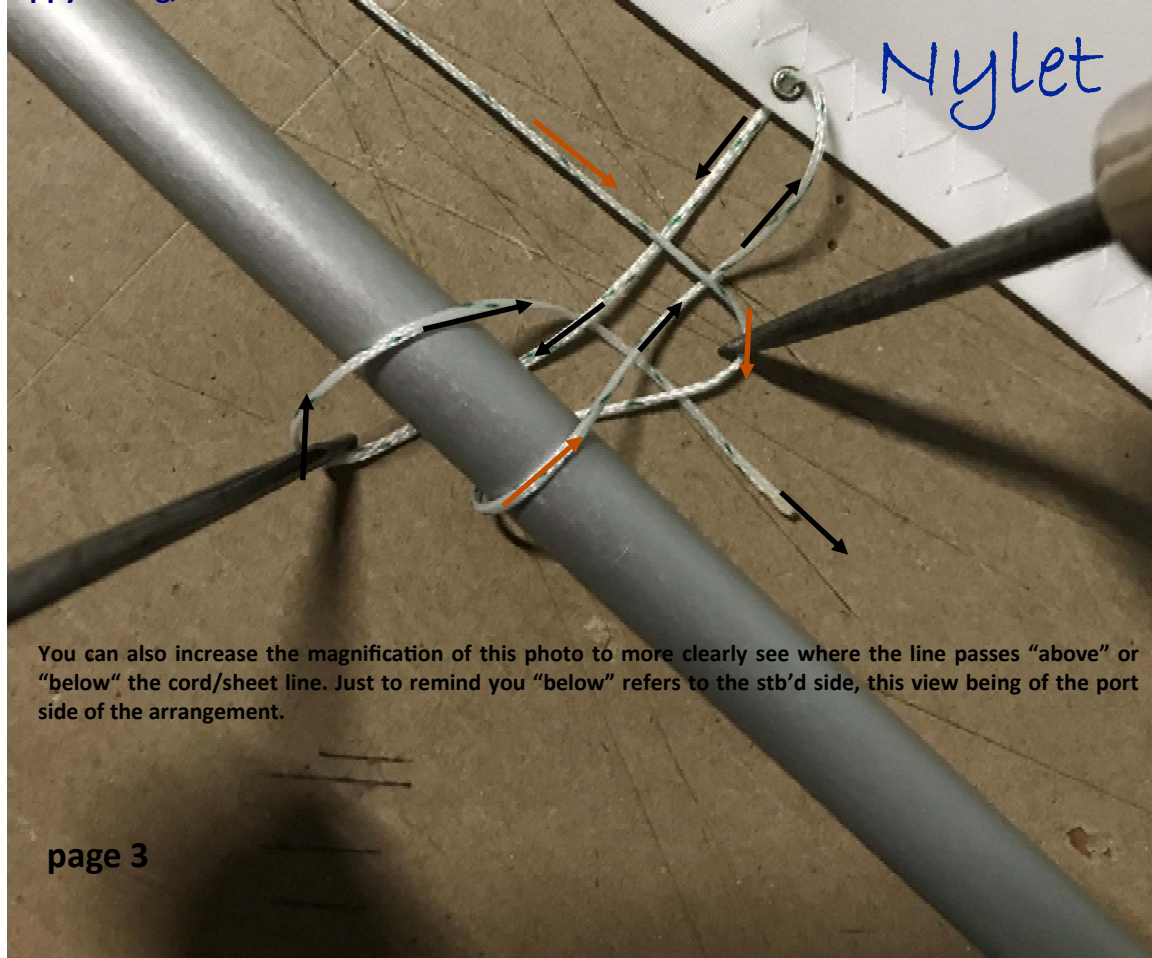
I've been asked on several occasions "how should I make a running lashing".

This method makes a line which will not run or shift. This is the traditional method of connecting the luff of the sail to the mast using a line and where the sail is fitted with a row of eyelets to remain attached to the mast. The photo is looking at a part of a mainsail and its mast and is the port side when rigged; the mains'l and mast beyond the left top of the picture is the head, the foot is down beyond the bottom right corner.

The prickers here simply spread the line, or sheet, to make them more readily seen in their correct attitude. Follow firstly the red arrows for direction of travel and after passing around the mast follow the black arrows. A running lashing uses one length of line which is continuously passed through each eyelet in turn running from the head to the foot. Firstly the line is made off very near the head of the mast and secured there firmly to it, then it is run down (red arrow) to the first eyelet to be firstly passed around the mast on its stb'd side, returning port (still red arrow) and "under" the red arrow line, the line then having changed to black arrow, and through the eyelet passing red line to stb'd then passing stb'd side of mast, around it, and then "under" (starb'd) all three lines, then down to the next eyelet and so on. The line is actually shown here cut short for clarity and of course carries on down to the next eyelet on the luff of the sail and repeating at each and every eyelet, till attaining the last eyelet where you pass the line through it and make a turn around the mast to make fast there. Either a dab of waterproof superglue on the knotted line at top and bottom, or to a self-tapping screw into the mast for making off at; using a screw is more secure to lash to.

Importantly the mains'l is lashed "easy" to the mast, that is to say it does not touch the mast but its edge maintains a 1mm gap from it up its entire length thus allowing the sail to "work". Lastly tension the sail using tack and head eyelets in the usual way with their own fittings, hooks, or hook and line, and at the head with bowsie to hoist/adjust. The foot of the sail at the tack eyelet is held (down) static, convention being all sails are hoisted at the head.

Happy sailing, Frank



You can also increase the magnification of this photo to more clearly see where the line passes "above" or "below" the cord/sheet line. Just to remind you "below" refers to the stb'd side, this view being of the port side of the arrangement.

USEFUL TIPS.

We have collected these 'tips' from emails sent to customers in reply to their questions, or from experience, in the hope that you might find something that is useful. If your query isn't here or for more information see the Nylet BB3 "how to" booklet.

The drawing on page 1. Although this drawing shows a jib boom which is bent into a curve (this being a favourite technique at the time of the drawing) it isn't currently usual and providing the fores'l hasn't an excessive foot roach it is best ignored.

Upon the subject of adhesives.

Bonding bow bumpers and cleaning deck before applying deck patches. White spirit is fine for cleaning around the deck area – certainly if its GRP or epoxy. Again, white spirit for the final clean around bumper area. Firstly rough up/key both GRP and floppy bumper with 800 grade wet and dry, used dry. Finally wipe over both surfaces with white spirit. Ensure surfaces are completely free of dust/grease and clean and dry. Bond using bathroom sealant (not Dow Corning however, it doesn't bond well enough). Whatever you are bonding do remember to be diligent over prepping the surfaces. If they are greasy or oily or dusty then you can't expect anything but an indifferent bond.

Types of adhesives giving good results. I have used 24 hour Araldite in the past, also 2 ton Devcon. The latter is extremely successful when bonding dissimilar items, i.e. wood to plastics, to GRP materials, and epoxy based materials, and metals such as aluminium and brass. When bonding epoxy to glassfibre, for example, then Devcon is almost the 'only' adhesive to use to give a permanent bond. Note that a glassfibre based resin will not give a permanent bond to epoxy. Most 'fast' adhesives tend not to be waterproof and are best avoided, after all a waterproof bond in a yacht is the one thing you are aiming to achieve! So avoid those fast glues, they may be convenient but that may come at the expense of your work falling to bits when on the lake! An exception is one of the 'cyano' glues – Zap-A-Gap is an American manufactured product, it will gap fill, it is medium fast, grabbing inside 10 minutes and will go off completely overnight. It bonds dissimilar items, it stops knots shifting, it bonds metal to GRP, as well as wood and plastic, and it is totally waterproof. It really is the marine modeller's friend, and is invaluable for bonding the smaller items or small areas. It can also be a quick remedy at the pond side, so carry it with you on sailing days in your 'fix it' box! It has a snap fit cap, wipe the nozzle clean before replacing the cap and it can be perfectly useable for 2 years!

Preparation before bonding surfaces – and see the previous entry. Also a 'warning' about GRP (glassfibre) hulls and mouldings. The inside (the side which has been laid up with cloth) might appear 'rough' but it isn't, if you were to inspect it under a microscope you would see that the glass resin is about as smooth as glass. It is also dusty, just about the worse cocktail to be trying to bond anything to it, so prep the surface very thoroughly. The outside, the gel coat side, is equally 'smooth', both sides need the same amount of prepping. See the previous entry for method.

Timber is a porous material and so it receives an adhesive readily, but I still give it a 'key' by lightly scoring the surface to be bonded with a Stanley knife, or similar. Again, the slow Araldite and the 2 ton Devcon are admirable adhesives used on wood. There are many other adhesives these days, by all means use your favourite makes but ensure they are totally waterproof!

Working with carbon-fibre (keel fins & tubing). Do not drill tubing, this will fatally weaken the material, use carbon tow and secure fittings in place using an 2 part epoxy adhesive (such as Devcon 2 ton). When cutting/sawing flat sheet use masking tape along both sides of the surface to be cut, this avoids splitting. Finish the edge with a fine to medium file and then apply some Devcon to seal the edge, finish the surface when set, again, with a file.

Beware of household glues such as bathroom fillers, sealants and general handyman adhesives, they are often the wrong adhesives for the yacht builder, some are not waterproof, some do not give a durable bond, some will not adhere to epoxy and glassfibre, or wood.

Bow bumpers. We only make these to fit our own range of IOM yachts; but if you are making your own I am reliably informed that "SUGRU" is an idea compound to make rubber like bumpers. It is available on Amazon.

A tip (from our BB3 booklet). The rudder. This is also a brake so use it sparingly. Coming up to a buoy you will find that easing the sails using the radio control stick will change the course of the yacht, as you prepare to turn begin the turn with the attitude of the sails, and complete the main turn by using the rudder, again, as sparingly as possible. A smooth turn with minimum rudder will hardly slow the boat and you can then apply drive on the new tack early, powering out of the turn and leaving the rest behind!

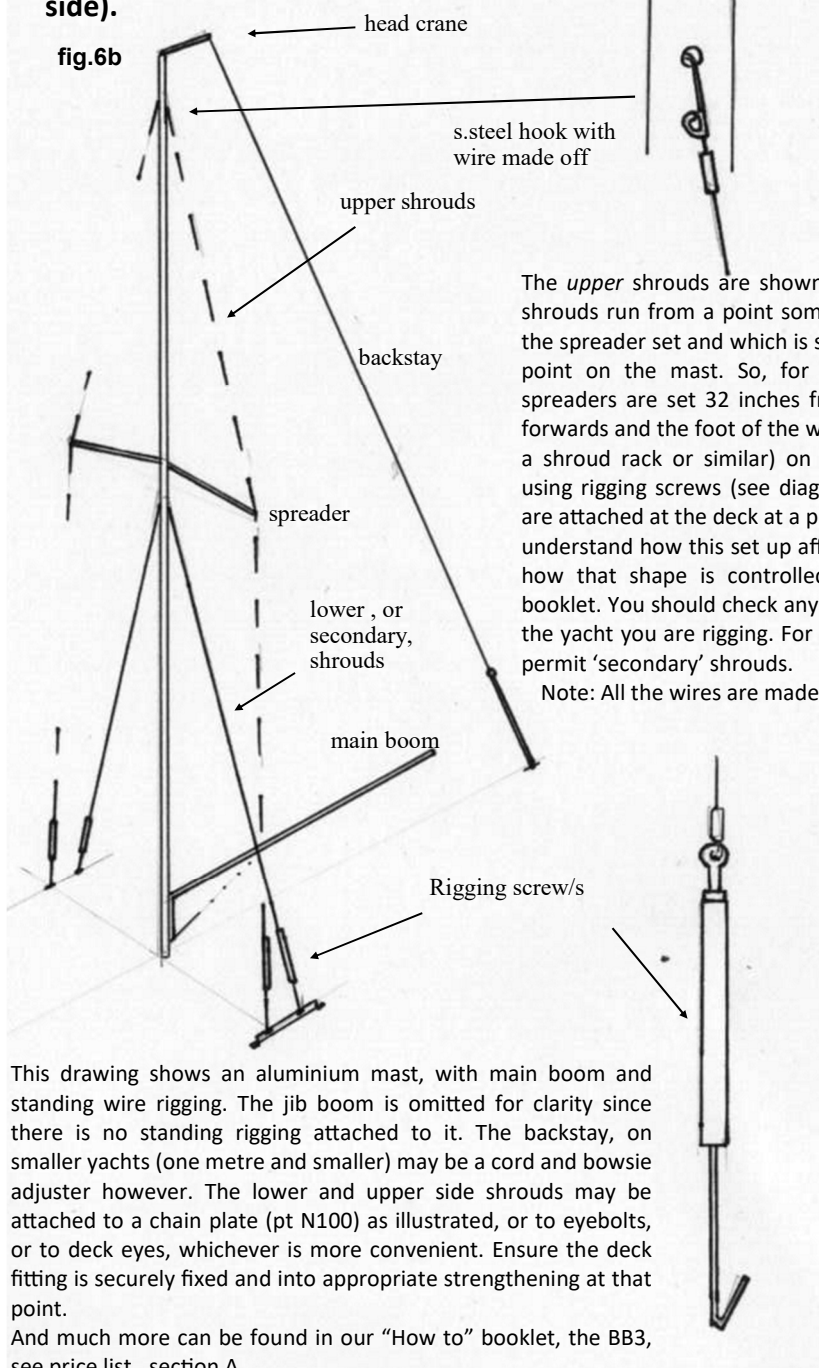
At the beginning of a race. An entire book might well be written on sailing techniques, pitfalls to avoid, and yet another on racing and rules! But crossing the line at full tilt and on the nail of the gun is a recipe for a cracking good start. So hang back, get to know at the 5 second mark just where you need to be to drive over the line on the nail. If you can lead from the very start then there is every reason that you will maintain the lead throughout that race. And remember that the shortest line is a straight line; and yes, you will have to tack but don't do so unnecessarily.

For the "secrets" of sail setting and how to use the jib which is the mainsail's partner, see next page (also BB3 booklet for more detail).



Typical standing rigging for a modern yacht, with spreader set. (viewed from the port side).

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The *upper* shrouds are shown with a pecked line. The *lower* shrouds run from a point some 2 inches (50mm) or so below the spreader set and which is set some 2 inches above the mid point on the mast. So, for a mast 60 inches height, the spreaders are set 32 inches from the foot. These are angled forwards and the foot of the wires are attached at the deck (to a shroud rack or similar) on a line level with the mast and using rigging screws (see diagram below). The lower shrouds are attached at the deck at a point aft of the upper shrouds. To understand how this set up affects the shape of the mast, and how that shape is controlled see further text in our BB3 booklet. You should check any racing rules which may apply to the yacht you are rigging. For instance, the IOM rule does not permit 'secondary' shrouds.

Note: All the wires are made off using crimping ferrules.

This drawing shows an aluminium mast, with main boom and standing wire rigging. The jib boom is omitted for clarity since there is no standing rigging attached to it. The backstay, on smaller yachts (one metre and smaller) may be a cord and bowsie adjuster however. The lower and upper side shrouds may be attached to a chain plate (pt N100) as illustrated, or to eyebolts, or to deck eyes, whichever is more convenient. Ensure the deck fitting is securely fixed and into appropriate strengthening at that point.

And much more can be found in our "How to" booklet, the BB3, see price list., section A

On setting/rigging your new Nylet sails (or any sail cut correctly).

Rigging sails is not a 2 minute job, it is important to understand what you are trying to achieve. A badly rigged sail will not look right nor will it be able to do the job required of it. The control of the mast shape is 80% of achieving a well set mainsail; a jib is somewhat easier to set, but correctly placed shrouds (side rigging wires) are key to get the right mast shape. Play around with the yacht rigged at the pondside, or in your garden, on a day where light airs prevail. Lets say your yacht is rigged, so you then fit/attach the mainsail & jib. As you hoist/tension the main luff you will alter the set of the mast, and conversely as you alter the tension of the shrouds/forestay & backstay then the set of the mainsail will alter/deteriorate/improve. A whole chapter could be written on this subject, but the result is key to the yachts performance. Take time to watch how the sails shape alters, you need a nice amount of flow at the foot, a certain 'fullness' in the sail - if its as flat as a board then its terribly wrong - alter your rigging! A nice flow from the luff, no crinkles, no flatness, a smooth curve, it has to 'look right'. See our booklet the BB3 for more detail. Higher wind speed will require a certain amount of "hardening down" - that is to say tightening shroud tensions and 'flattening' the sail somewhat. Lighter air conditions will demand a slacker rig with more flow in the foot and easing everything so it allows the sails to fill at the slightest puff of wind. Different sails will be required for different conditions and most yachts will have three rigs/suits of sails for varying wind speeds and conditions. Ensure that the angle your jib makes from the centre line of the boat is MORE than that made by the mainsail. If it is the same angle, or worse still, LESS, then your jib will be 'backwinding' the mainsail. The jib is the mainsails partner and the 'slot' between the two is there to speed up the air flow on the lee side and this reduces the air pressure so the mainsail is 'sucked' into the area of lower pressure. This promotes correct sail shape and increases 'drive'. That is how a wing on an aircraft works, the air is speeded up (over the wing) and the lower air pressure area above induces 'lift'. Without that phenomenon an aircraft won't fly, and if you don't get it right then your yacht is going to perform indifferently no matter how good the sails are.

That "hollow" shape in a sail. Otherwise known as "belly" - its the essential "flow" that every sail must have, without that you would have bought a towel or a bedsheet! In fair to normal weather sails flow is more obvious but in heavier weather (smaller/reduced area) sails they are of course made with less flow and it isn't so visible.

Another chapter might be written on tuning your yacht! This needs to be on a day where a steady breeze prevails and not gusty or variable. This aspect of sailing is explored in our BB3 general "how to" booklet. Rigging yachts is also examined, as well as a whole plethora of other useful "stuff" (as a customer once remarked).

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IMPORTANT advice on the avoidance of "back-winding" the mainsail.

A vital technique explained.

The jib should always be set up 'let out' about 4 or 5 degrees *more* than the mainsail, compare the angle the jib in the drawing makes with the dotted line which is drawn parallel to the mainsail. If the main & jib are set up *parallel*, or the jib is pulled in *tighter* than the main, it will cause back-winding (eddying) as the air passes through the "slot" and the mainsail will fail to "fill" to that aerofoil shape that is vital to produce "drive." **This is the one cardinal rule that must be observed if you are to attain maximum drive from your sails!** Failure to set up the main and jib to the "correct" angle will result in a dramatic and fatal loss of efficiency of your suit. Why? Because the air flowing through the slot must be induced to speed up, and as a direct result of this the mainsail is "sucked" into the lower pressure area and both shape and drive occur! It's the **same phenomenon that gives lift to an aircraft wing** and because the pressure above the wing is *lower* than the pressure below, the wing has to rise; **without that an aircraft can't fly!** So you will understand why it is so very vital. A yacht is partly "blown" along, and partly "sucked" if you understand; it's extra drive, for nothing, and it'll win you races! It's not a secret, but it is, I fear, often ignored, or not even understood, by many yachtsmen racing model yachts. Not only that, but if the slot between main and jib are set incorrectly then even a perfectly cut and shaped mainsail will not set right. Signs to look out for are the main "falling away" and not tending to "fill" or looking baggy and flapping. When correct the shape is the classic aerofoil, totally filled by the wind, taut, and working with the jib to power the yacht at full drive; **the jib is the mainsail's partner, the two work together, but only when set up correctly.**

An important tip. The rudder. This is also a brake! Use it sparingly. Coming up to a buoy you will find that easing the sails using the radio control stick will change the course of the yacht, as you prepare to turn begin the turn with the attitude of the sails, and complete the main turn by using the rudder, again, as sparingly as possible. A smooth turn with minimum rudder will hardly slow the boat and you can then apply drive on the new tack early, powering out of the turn and leaving the rest behind!

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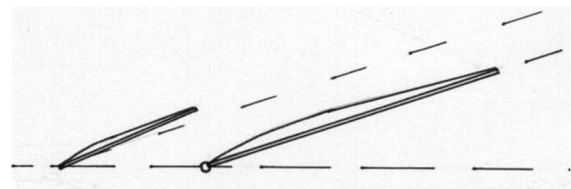
Further reading:

A most excellent book, now long out of print, but possibly traceable from your local library is a publication by MAP (Model Aeronautical Press Ltd). **By R.Griffin, entitled Model Racing Yacht Construction ISBN 0 85242 672 0** Although somewhat dated (in parts) a lot still holds good and is an invaluable source for those building their own yacht from scratch. The chapter where methods are described of obtaining C of G, centre of balance and effort, C of E of sails, fin & lead etc. are simply indispensable to determining mast position etc. and getting the balance of your yacht correct. For those who wish to build a timber yacht in the older style then this book is a perfect source. There is a chapter on vane control, and again, this may be useful for anyone restoring an older yacht thus controlled.

For the larger yachts, from Marblehead upwards to the A-class then the book by **B.H.Priest & J.A.Lewis entitled "Model Racing Yachts"** is a classic work, again a MAP publication distributed originally by Argus Press. My copy is priced at 42 shillings and was my father's purchased in the 1960's. The book has 9 line drawings of the older M-class (50/800), Ten Raters and A-class, including the classic "Highlander." Too far back for an ISBN number, but maybe available from a good local library? Worth enquiring anyway or Google on Abe Books. If you have this in your own collection, keep it safe!

Pictured right:

Mainsail (right hand sail drawn here), and the jib which is let out a fraction more than the main and shown much smaller than usual (at the foot) to make it obvious.



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