

Step-by-step Guide - Sail

Warnings/Cautions

- It is preferable to rig your boat for the first time in the company of more experienced Paper Tiger sailors. However, as this is not always possible, read through this guide and ask questions to clarify anything you are unsure about.

Definitions

Battens	The seven fibreglass (usually) strips used to give the sail stiffness.
Boltrope	Rope sewn into the Luff and Foot of a sail that retains the sail inside the sail track, preventing the sail coming away from the mast or boom.
Boom	The spar or pole along the bottom edge of the sail, usually made of mast section.
Clew	Bottom rear corner of the sail.
Downhaul	System that enables adjustment of tension on the luff.
Ferrule	Metal band used to clasp two pieces of wire permanently together, especially where a loop is formed. Also known as a 'tallurit'.
Foot	Bottom edge of the sail.
Gooseneck	Device used to join the boom to the mast. Usually contains two pivot points allowing movement of the boom in both the vertical and the horizontal plane.
Halyard	Rope used to hoist (raise) a sail.
Head	Top corner of the sail.
Leech/Leach	Rear edge of the sail.
Leech Line	System used to tension the leech.
Luff	Front edge of the sail.
Mainsheet	System attached to the boom and the traveller car that is the main system used to adjust the sail's position.
Outhaul	System that attaches to the clew of the sail and is used to adjust the tension of the foot of the sail.
Outhaul Car	Device with wheels that connects the clew to the boom and allows easy travel of the clew when being adjusted by the outhaul. Sometimes has slides rather than wheels.
Shackle Key	Tool used to tighten and undo shackles. It usually has a screwdriver tip on one end and a cup-type tip on the other to cope with the two most common types of shackles used in sailing.
Shock-cord	Elasticised cord used on sailing boats.
Spanner	Bracket/device attached to the bottom of the mast to which the vang attaches. Controls the rotation of the mast. Also known as Mast Spanner.
Stays	Wires used to hold the mast upright on the boat.
Tack	Bottom front corner of the sail.
Track	The slot in the mast or boom into which the boltrope of the sail slides. Also known as the sail track or mast track.
Traveller	The track that goes across the rear beam along which the traveller car moves.
Vang	System that connects between the mast spanner and the boom that controls the amount the boom is able to lift at the rear and also controls mast rotation. Also known as Boom Vang.

Note: This article follows on from: "**Rigging a Paper Tiger – Step-by-step Guide – Mast**"

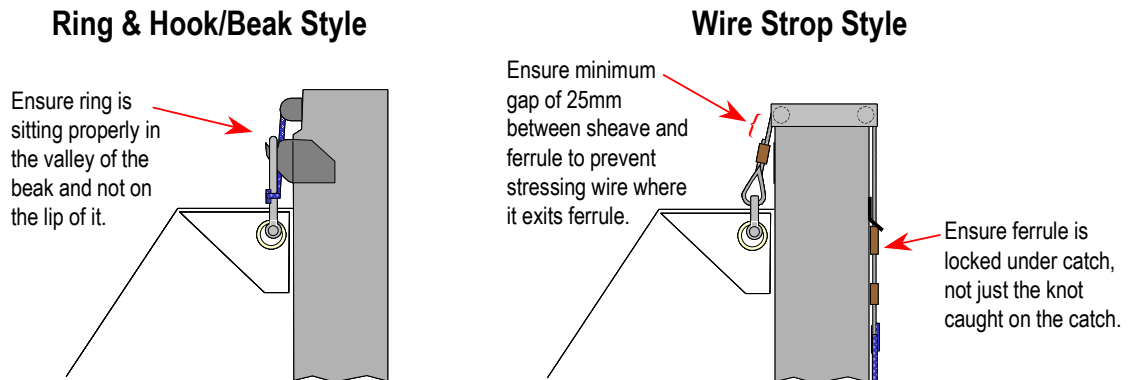
Before hoisting the sail

- Point the boat into the wind (i.e. the front of the boat pointing towards the wind direction).
- Ensure the sail's battens are tied into the sail correctly. They should be tight enough to remove the vertical wrinkles in the sail, but not so tight as to induce horizontal wrinkles.
- Ensure the halyard is not twisted around the mast or the stays.
- Place the sail on the boat, preferably rolled up, but with the head of the sail being slightly unrolled to allow you to attach the halyard. Note that if you normally store your sail rolled from the head first, you will need to re-roll it so that it is rolled from the foot first (so that the 'loose end' is the head of the sail). This is easy to do by just starting to progressively unroll and re-roll in the same process without having to completely unroll the sail first. The reason you want to have the sail sitting rolled up on the boat before hoisting is to prevent it from blowing away, or at least flapping around, which can damage the sail, the boat and other people! Note that this can happen even in moderate winds.
- Make sure the sail is not caught on anything, such as:
 - The traveller rope over a batten.
 - The sail caught under the foot-straps or a rope.
- Attach the halyard to the sail.
 - If the sail enters the mast track below the gooseneck, the sail may need to be slid up the track before the halyard can be attached (depending on the length of the halyard).
 - If the sail enters the mast track above the gooseneck, the halyard can be attached before the sail enters the track.

Hoisting the sail

- Hoist the sail by hauling down on the halyard.
- While hoisting the sail, make sure the boltrope feeds cleanly into the track as it can sometimes get wedged into the track, which will stop it going any further. If it does get wedged into the track, you will need to pull the sail back down the track slightly, just enough to remove the part that is wedged, before beginning to hoist again.
- If the sail is difficult to hoist, it could be worth trying the following:
 - Trim (adjust) the lower forestay tension to induce some bend into the mast. As the sail's luff is curved, sometimes matching the mast curve to the luff curve can help.
 - Try keeping the mast dead centre (i.e. not rotated to one side or the other).
 - Use your foot to assist by forming a "U" shape with the bottom of the halyard, holding up the other side of the U with your hand and pushing down with one foot on the bottom of the U.
 - Wrap the halyard around your hand a few times.
 - Wear sailing gloves while hoisting the sail to avoid damage to fingers.
 - Consider whether a thicker halyard would help.
 - Consider lubricating the track (to be avoided if rigging on sand as the sand can stick to the lubricant, making the task even harder). If you do use lubricant on the track, it would be best to use a Teflon spray (such as CRC Dryglide) rather than an oil-based product (like CRC 5.56).
- When the sail reaches the top, you should feel and/or hear the halyard ring click onto the beak/lock (if that is the system you have) or the catch on the front of the mast is catching the right part if using a wire strop style system (see drawings on next page).
- It is very important to make sure it has connected properly. To do so, you should:
 - Grasp the sail around the tack and try to pull it back down the mast.
 - Check visually from off to the side of the boat that the parts are in their correct position (as per the drawings below).

- Avoid rotating the mast from side to side until you have attached the downhaul, as this can cause the sail to unhook.
- Don't allow the bottom of the sail to float up the mast, as this lack of luff tension can allow the halyard to unlock.
- This drawing shows two common styles of halyard lock, correctly locked into position:



- With the Ring & Hook/Beak style, you must ensure the ring has seated properly in the valley of the beak, otherwise it can slip off the hook when the mast rotates or the downhaul is loaded up.
- With the Wire Strop style, you must ensure the ferrule (the band around the wire that clasps the loop closed, also known as a 'tallurit') has seated properly in the catch or hook on the front of the mast. Make sure the knot of the rope has not caught there instead.
- *NOTE: If setting up a wire strop style halyard, the ferrule on the sail end of the strop needs to be about 25mm clear of the sheave when the sail is rigged, otherwise the wire will stress where it exits the ferrule and eventually break.*
- Attach the downhaul (this may require the gooseneck being in place, depending on the system's arrangement).
- Once the downhaul is attached, you may like to apply just enough tension to keep it from being loose enough to unlock. Do not apply much tension though as this can make the boat more "jumpy" on the shore, especially in stronger winds.
- After sorting out the downhaul, you can move on to the other systems.

Pictures of a typical Ring & Hook style halyard system



^ Halyard ring side view



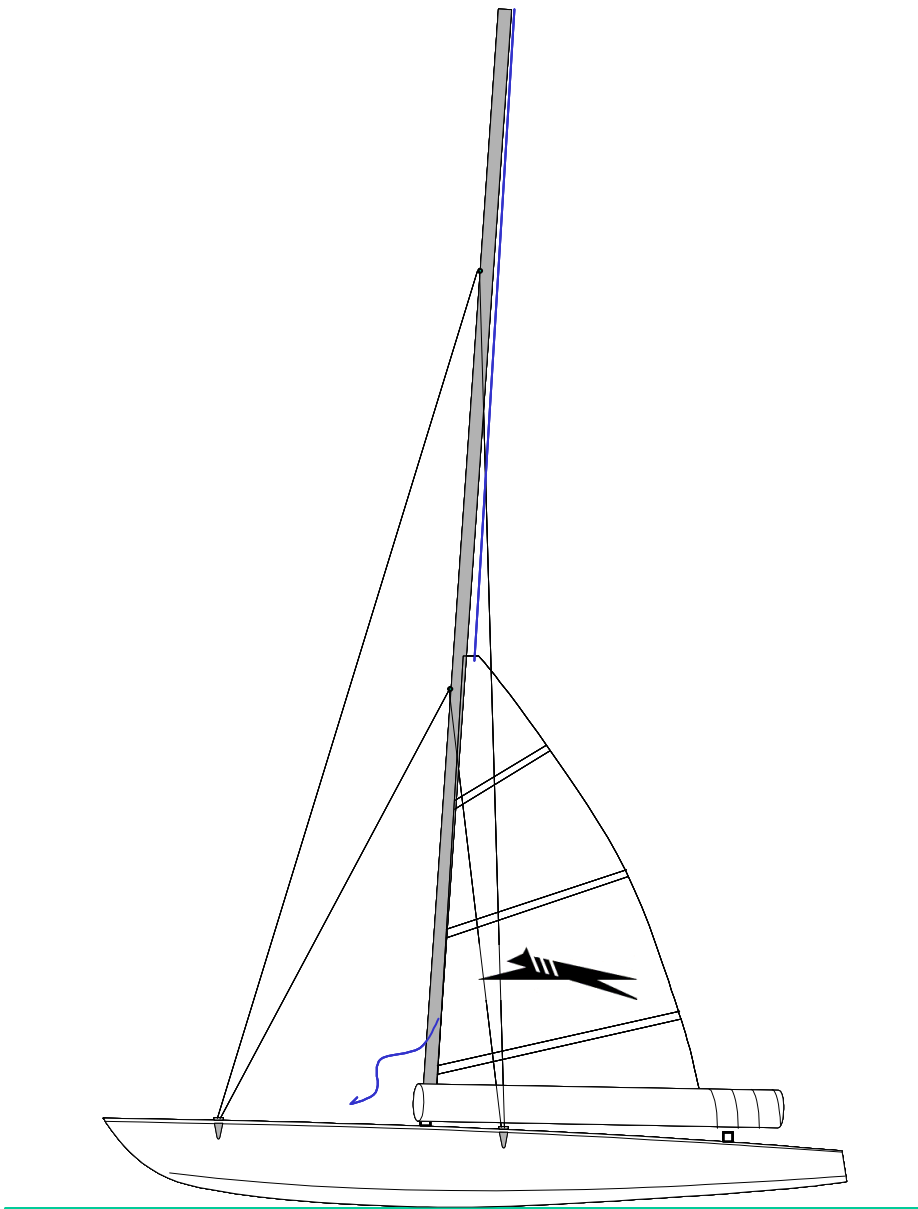
^ Halyard ring rear view

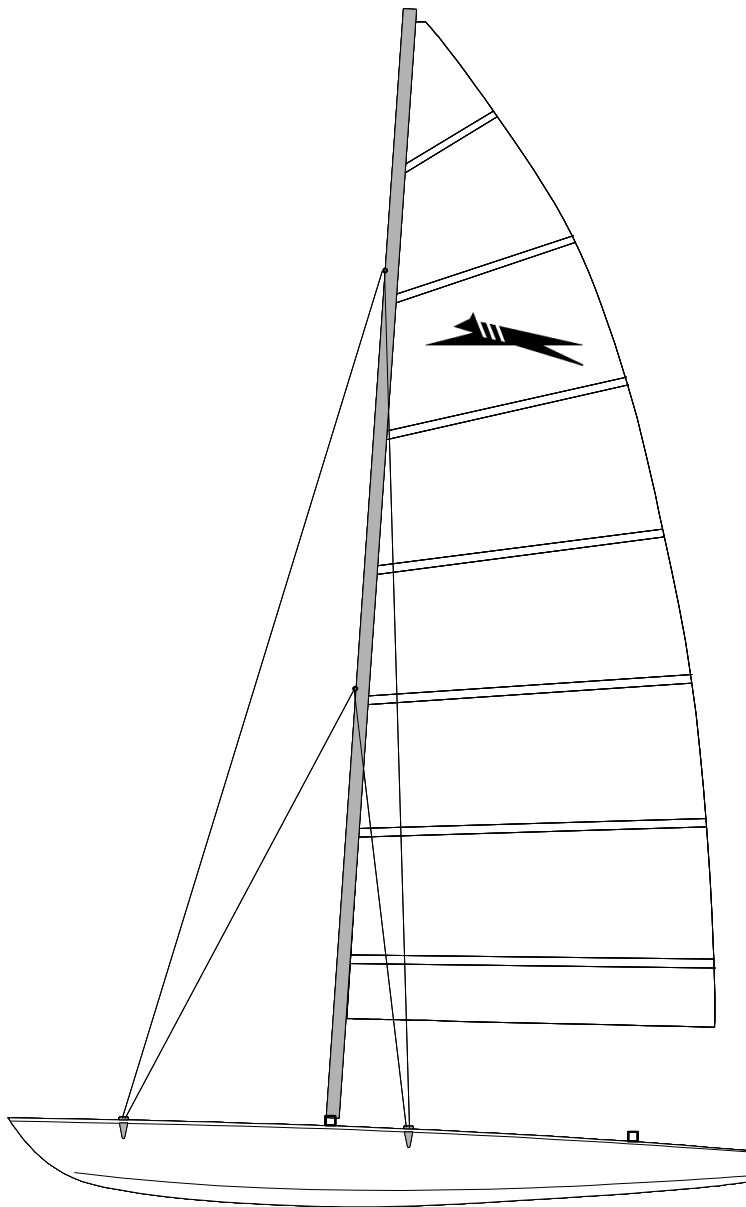


^ Halyard beak/hook side view.

NOTE: For further information about halyard locks, refer to the document "**Guide - Mast - Halyard & Locks**", which can be downloaded from the Paper Tiger Catamaran website.

< Hoist the sail using the halyard, while allowing it to slowly unroll as it feeds up the mast. Having the sail rolled up prevents it flapping away from you and getting damaged, which can happen even in moderate winds.





< How the sail will look once hoisted and attached to the beak or hook at the top of the mast.

Connecting the other systems

- Prior to connecting the other systems, it is a good idea to stow the excess halyard that is left from pulling up the sail. There are many ways to do this, but keep in mind that you don't want any tension on this loose end of the halyard, as it will need more length as the mast bends during sailing, so having it tight will cause problems. Usually the rope is stowed by wrapping it in a loop and tying that loop off with the last bit of halyard. It can be stored in a pocket on the trampoline or tied off to the front beam or the trampoline tensioning rope.
- Fit the gooseneck if you haven't already (or if it is not a fixed gooseneck).
- Slide the boom onto the foot of the sail, again making sure it doesn't wedge into the track of the boom.
- Fit the boom into the pin of the gooseneck.
- Connect the tack (front corner) of the sail to the boom.
- Connect the outhaul to the clew (rear corner of the sail). In some systems, the outhaul car attaches to the clew and then the outhaul itself needs to be attached to the sail. In others, the outhaul is already attached to the outhaul car.
- Attach the leech-line if there is one.

- Attach the vang to the mast spanner and then to the boom.
- Attach the mainsheet. Some people prefer to disconnect the whole mainsheet system so that only the blocks need to be attached to the boom and the traveller car. Others leave the blocks attached and re-thread the rope through the system each time.
- Once these tasks are done, you can move onto the systems that aren't related to the sail, such as:
 - Centreboards and any systems required to raise or lower them, as well as any shock-cord used to keep tension on the board (stops the board falling down through the case when on shore as well as sliding up or down when on the water).
 - Rudders, tiller cross-bar and tiller.
 - Telltales on the forestays (usually cassette tape or fine ribbon).
 - Water bottle – an essential item when sailing!

De-rigging

- Obviously, de-rigging is pretty much the reverse of rigging. However, there are a few things you need to be aware of when trying to de-rig the sail.
- If using the ring and beak style halyard lock, to disconnect the halyard ring from the beak or lock, you will need to pull on the halyard and twist the mast right around to one side (while maintaining tension on the halyard). Try twisting to the other side if this doesn't work.
- Once it is off the hook, pull down on sail.
- If using the wire strop system, simply pulling on the halyard enough so that it comes free from the catch on the front of the mast should then allow you to pull the sail down.
- Roll the sail up as you are pulling it down. This is very helpful in stronger winds to prevent it from blowing away from you.
- Store the sail rolled up, trying to keep the battens straight while doing so (don't let them become twisted around the curve of the sail).

For assistance with your Paper Tiger Catamaran, or suggestions for this or other Guides, please contact the
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