Flingtime - Sails (Rev 20140830)

Some terminology (Wikipedia modified)

- Barber haulers, which adjust the jib sheeting angle by pulling the sheet inboard at right angles to the sheet. Consists of a ring on the sheet attached to a (White/Yellow) line which is secured and adjusted via fairleads and clutch.

- Cunninghams, which tighten the luff of a boom-footed sail by pulling downward at the point on the boom closest to the mast. The idea is to flatten the main sail in heavier weather or when sailing to windward. In its simplest form a stainless steel hook that goes through an eye. From the hook a cordage tail passes through a turnblock on the deck at the base of the mast and back to a cleat on the deck.

- Downhauls, which lower a sail or a yard, and can be used to adjust the tension on the luff of a sail.

- Guys, which control spinnaker angle with respect to the apparent wind.

- Halyards (sometimes haulyards), are used to raise sails and control luff tension.

- Outhauls, which control the foot tension of a boom-footed sail. This is one of the main controls for sail fullness. In a racing boat the boom outhaul runs from the sail clew through a turning block along the inside of the boom and out through another turning bock at the fore end of the boom. The outhaul tail is attached to a block and tackle system so that it can be adjusted to many positions. Can be let off for downwind sailing, so the main sail becomes full.

- Preventer, is cordage attached to the end of the boom and fixed to (or running through a block) on the rail athwart or forward of the mast. Its most common purpose is to prevent potentially dangerous movement of the spar in an accidental gybe. Use the unloaded half of the mainsheet bridle for this purpose.

- Sheets, which control foot tension of loose-footed sails, angle of attack with respect to the apparent wind and/or the amount of leech "twist" near the head of the sail. Central sheeting refers to main sheets that attach to the centre of the boom.

- Topping lift, which holds the boom aloft when the sails are lowered.

- **Mainsail** (Evolution Sails; 32 M^2; 3 reefs)

  Rules-of-thumb... **"Reef when you first think about it"** Note: Wind pressure increases as function of wind speed **squared,** (i.e. 4x per doubling of speed) but linearly with **area exposed,** (i.e. sail area + boat structure windage)
- First reef at 20kts sustained
- Second reef at 25kts
- Third reef at 30kts. (This requires the storm jib to maintain helm balance)
- In extreme conditions spill wind from the main

The bridled mainsheet system is either 4:1 or 8:1 by pulling on either both or a single line. The port and starboard lines are colour coded.
Each sheet is spliced as a continuous line.

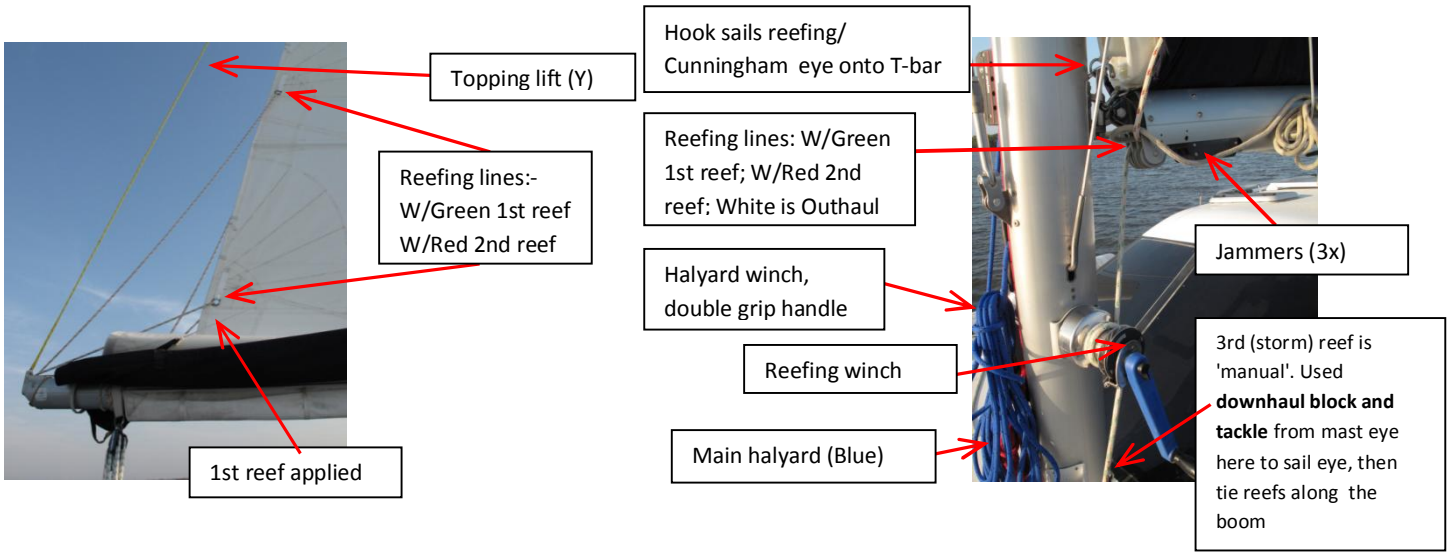
- watch that both cleats are always fully engaged
- flake the mainsheets as there is a lot of rope; easily tangled
- maximum sheet out, block to block distance, is 4.4 metres.
  (Watch for side stay and/or lazy jack > batten chafe on upper main sail.)

Stability

- The impact of motion and rough conditions is very significant.
- The maximum righting moment is about 20° of heel; After that the risk of capsize is high.

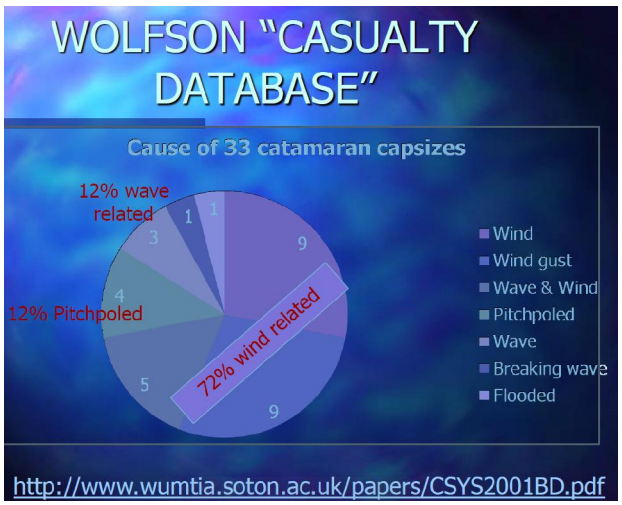
- 5° of heel is usual enough; take action if boat heels over 10°
  Check the inclinometer above the helm from time-to-time to get a feel for it.
  The sensitive scale range is 0° to 5°

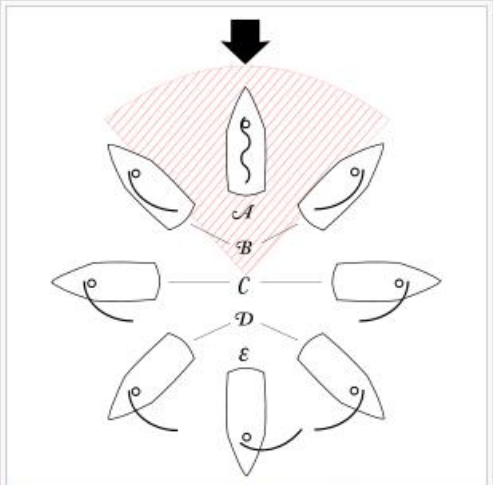
Gybes must be controlled by keeping the leeward side sheeted with little slack.
Once this technique is followed, gybing is no drama and is easier and often safer than tacking into the wind. It depends entirely on having all sheets in cleats, none free to run, boom towards the centre.



GREATEST RISKS TO MULTIHULLS IN STORMS

- Wind/wind gusts cause majority of capsizes
- Relatively small percentage caused by waves
- Multihulls more prone to pitch poling than monohulls





The points of sail. A. in irons (into the wind); B. close hauled; C. beam reach; D. broad reach; E. running; Shaded: "no go zone"

Handling Squalls ...

"Squalls come in all shapes and sizes. Most are benign, a little bit of rain, a few minutes of increased wind, then a stretch of near calm after it passes. They are often frustrating, but no big deal. Now and then a big one comes along, advertising itself long in advance with thunder and lightning, a black line of clouds and a froth of white on the sea surface as it approaches. These are the scary ones. You watch and wait, reef or drop sails ahead of time.

Then there is the dangerous squall. These are the ones that don't look that bad. There may be a large rain shield, it may not look too dark and or ominous, but within the squall, behind the first band of rain, lurk very strong winds. We experienced an increase from 20 to 45 kts of wind in a fraction of a minute along with a 90 degree wind shift. I did not expect that at all. And that's the lesson. Sometimes a squall will dish out something that you don't expect and are not prepared for. It may only be one out of 50 or 100 squalls that are truly dangerous but you don't know and can never be sure which ones they are."
"Be aware, be alert. Have a plan." (*from an article by Chris White author of 'The Cruising Multihull'*)

Rules-of-thumb for an approaching Squall

- Lifejackets must be ON all crew
- Autopilot must be OFF. (It cannot handle rapid wind or wave changes)
- Daggerboard UP
- Reef the main, furl the jib (or it will flog). It is easier to deal with one sail
  - (optionally hoist the storm job)
- Sail on a beam reach (if possible, and sail to the wind direction)
  - (for good control and fewer mistakes)
- Ease the mainsheets and spill the wind in any strong gusts
- Track squalls on the radar
- If it really gets bad, start the motor to keep positioned on a beam reach.

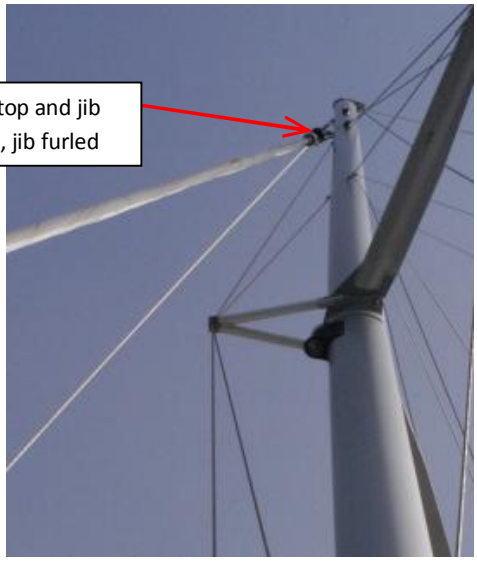
Jib (Evolution Sails; 15 M^2; UV strip for furling)

The Jib halyard is relaxed when on berth to unload the furler bearings; tighten with winch before sailing; it has its own clutch

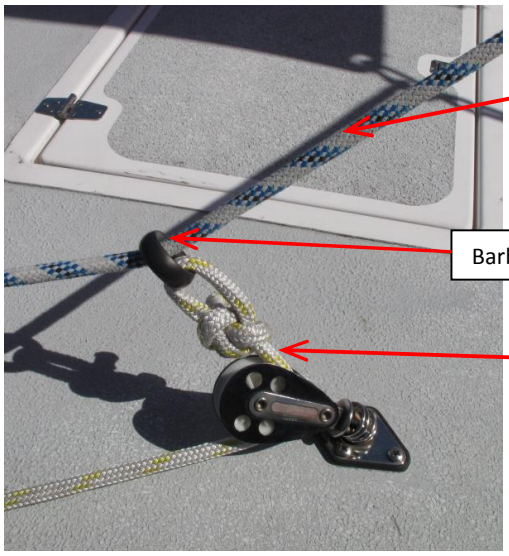
- When **unfurling**, maintain some tension on the control line or it will jam between the drum and its cage
- When **furling** relax both jib sheets for about two turns of wrap around the sail.
- Keep the windward **barber hauler constrained** from flapping around by tacking slack out of the windward jib sheet (white/blue flecks). Just pull it through the clutch by hand. It can be quite dangerous and might crack a window or a bone.
- **For close hauled sailing**, the Barber hauler is pulled **right in** by winching the white/yellow line. (also when mooring to keep deck clear)
  Let it out for reaching.
  It is necessary to relax a very tight jib sheet in order to haul it in.
- Partial jib furling is possible but not often required. It is probably better to go direct to the storm jib and improve visibility from the helm.
- Watch telltale streaming for a good set.

Jib furler drum

Furler control line.
(Maintain some tension when unfurling)
Line goes via fairleads to horn cleat, aft port rail mounted.



Furler top and jib halyard, jib furled

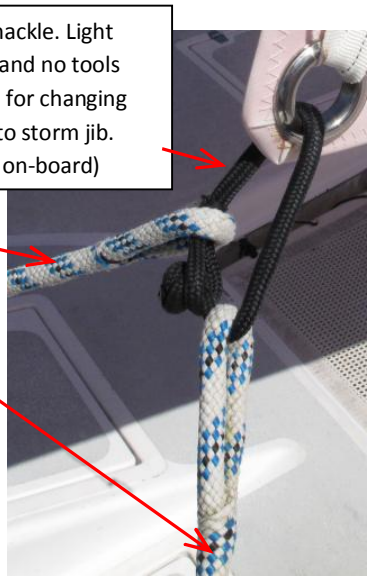


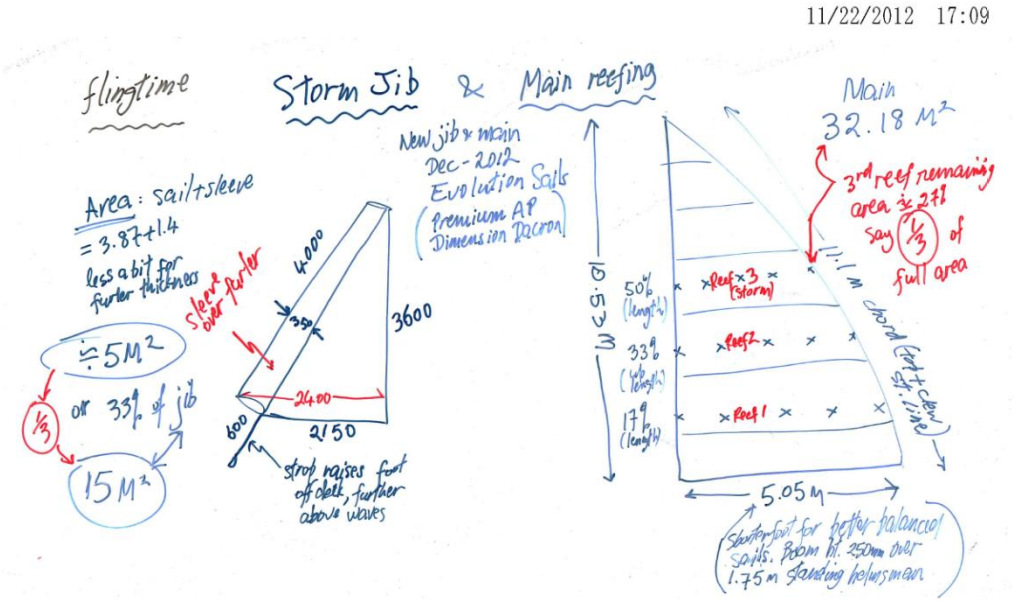
Jib sheets, to aft clutches

Barber hauler ring

Jib's Barber hauler control line to aft clutch /winch. (In close hauled position)

Rope shackle. Light weight and no tools needed for changing sheets to storm jib. (spares on-board)





Storm Jib

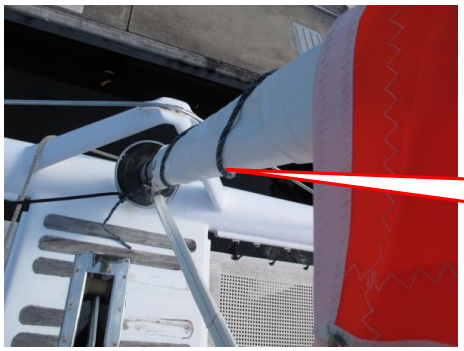
When to use the storm jib?

- For heavy weather when the main is on the 2nd or 3rd reef and the sails need to be balanced.
- For heavy weather downwind running with or without a main sail.
- If waves are catching the jib or visibility under the normal jib is critical.

Deployment:

- The normal jib is furled and **securely tied** so it will not unfurl and the furler drum is secured so it cannot rotate (use the one line)
- The storm (orange) jib has a sleeve with clips so it goes over the furled jib and can be hoisted on the same stay **using the spinnaker halyard** (red)
- The sleeve can be clipped on before hoisting.
- The storm jib also uses the normal jib's sheets. Undo the rope shackle and move them to the storm jib. (spare rope shackles are kept in the small gear box adjacent to the stb'd dagger board case.

- The lower strop is shackled on to the normal jib's shackle (watch out for chafe of the jib webbing)
- Barber haulers work as usual but watch out for any flogging.
- If heaving-to then may need to back the storm jib by letting off the hauler (***to be tested)



The jib is furled and secured with lacing. So is the rotating furler drum.

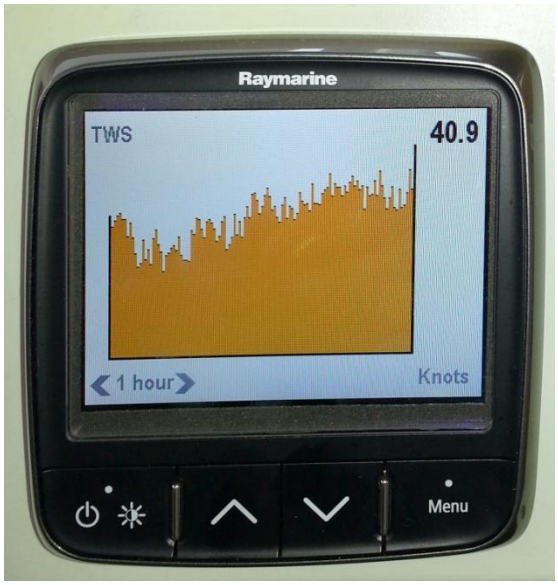
Storm Jib hoisted over the furled jib

Sleeve clips

Strop attachment (a potential chafe point)

Rope shackle (black) and jib sheets re-deployed

Storm Jib In Use



Storm jib with reefed main sail, Moreton Bay 20130217

Spinnaker

Feared by many, partly due to the complexity of the rigging and the perceived difficulty of controlling it, the spinnaker can provide delightful and smooth fast sailing in the right conditions, with good visibility from the helm.

The rig on Flingtime has been significantly refined to make spinnaker hoisting, lowering and subsequent control, safe and easy and essentially a single person job. Only on rare occasions will the spinnaker be partially rigged, say with only one guy line, but to be prepared for any sudden change in wind direction the sail should be fully rigged. Once fully rigged, all control except dousing and lowering is from the cockpit.

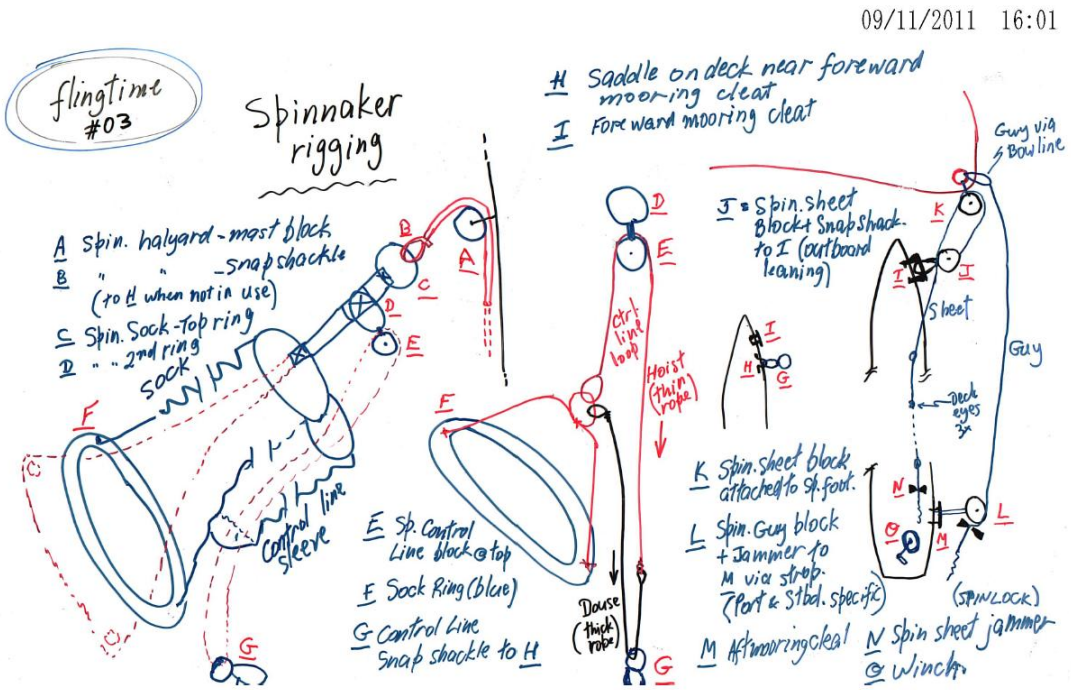
Rules-of-thumb...

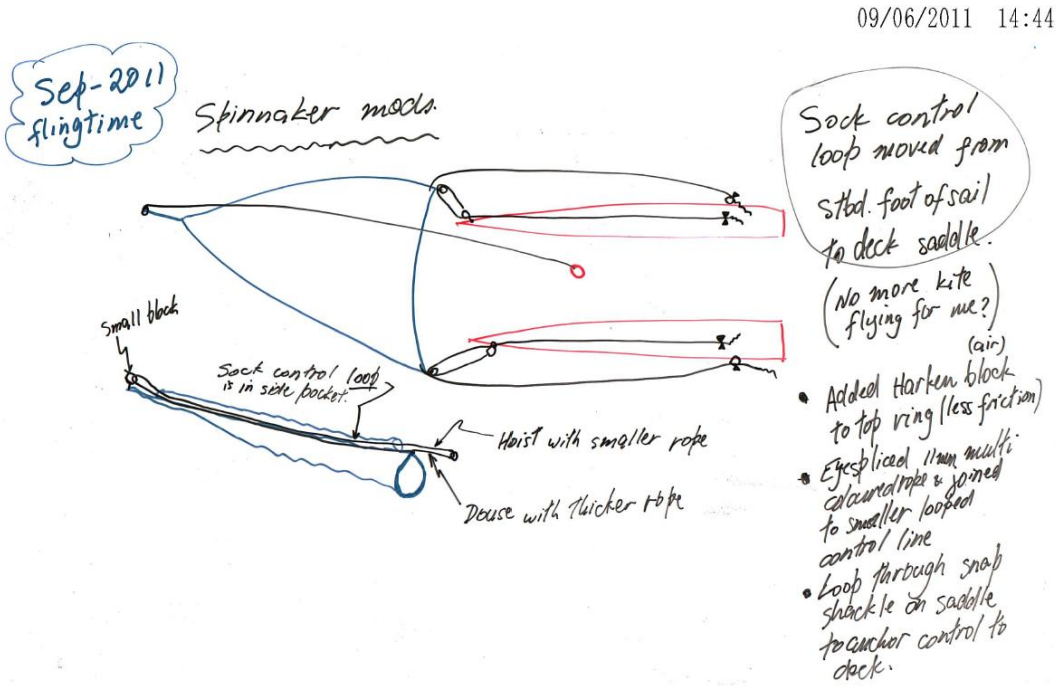
- Double check set-up before hoisting.
  (the control line sleeve on the sock is marked with a red line, it should be straight)
  Twists and rope being on the wrong side of something are the main concerns.
  Lower the sail and sock to fix any problems.
- **douse when true wind speed is 15kts average**
  this may be pushed up a bit to 20 kts if two crew are available to handle it.
- minimum useful true wind speed is 4kts
- the stable range limits of apparent wind direction is running downwind through to broad reaching
- don't bother setting the spinnaker if true wind is higher than a broad reach as forward motion will swing the apparent wind further foreward.
- the jib is furled and the mainsail is lowered (usually), or centered.
- dagger board must be raised to reduce the chance of tripping (overturning)

Setting up for hoist.

The rigging diagrams below get a bit too detailed. Here are the general steps:-

- Unbag the sail in its sock and attach its halyard (Red)
- The sail foot is marked for port & starboard sides and the foot is black edged.
- Flake the sock so that the red stripe is aft along its full length (no twists). Bungee the sock onto the trampoline ties if it is windy and the spinnaker might billow out.
- Keep sheets and guys to the fore and sock control lines to aft of the sock. Each set should not foul the other. Snap the control line shackle to the foreward mooring cleat (starboard side usually)
- Tie the (aft) guys on with bowlines and lead them outboard of obstructions like the fore and side stays to the spinnaker blocks (marked P & S) which mount on the aft mooring cleats via strops. Push the block jammer in to hold the line. Tail goes on cockpit seat aft of the winch.
- Mount (fore) sheet blocks on the bow rings, thread the line through the block on the foot and then through the deck eyes to jammer near the winch(es).
- Fully hoist the sock with sail inside; Secure the sock control line shock cord tensioner to the cleat near the windlass.
- Double check that all lines are set-up correctly and that the sock is not twisted.
- Hoist the sock ring with the smaller control line to release the spinnaker
- Once flying, trim from the cockpit. In light airs the winch may not be needed.
- To douse the spinnaker, slacken the sheets and haul the sock down with the thick control line





Lowering.

The apparent wind will usually be much less than the true wind and will therefore increase if the boat slows down. This can make it harder to get the sock over the sail.

- If the main is hoisted it can help blanket the spinnaker during capture in the sleeve.
- The sheets and guys need to be relaxed so the foot can be hauled in without constraint. This is best done in conjunction with pulling down the sleeve.
- A useful tip is to lower and run the motor at full speed while running downwind. This will subtract about 6kts from the apparent wind.

- If everything else fails, and if a downhaul from the top to the bottom of the mast has been rigged, pull the head down to the mast and wrestle it into the sock. At least a lot of the sail will be on deck.

Screecher (screacher)

The screecher is adds flexibility and choice to the sail wardrobe. It is a fairly heavy weight Dacron Screecher for use in stronger wind than the more common, lightweight, Nylon Screechers.

Usage:

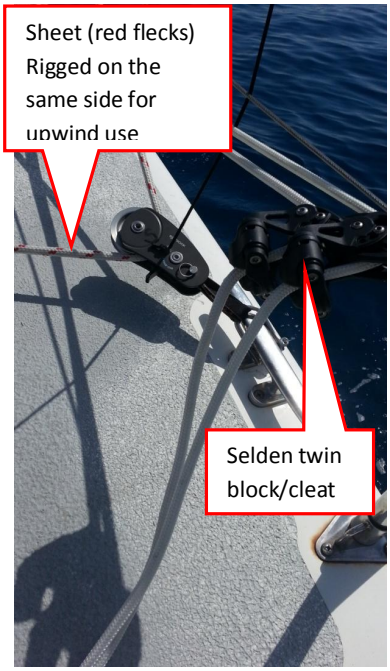
A) Close reaching in lighter airs when the jib is too small for the job. The screecher is flown from the leeward bow.
Max true wind speed of 15 knots or the rig gets too heavily loaded.

B) Broad reaching when the spinnaker would be deployed out of its normal range or if the wind is getting too strong for a spinnaker. In this case the screecher is flown from the windward bow.

Max true wind speed 25+ knots

Sheet via snatch block and jammer for downwind use

Setting up for hoist.



The Screecher shares some of the spinnaker rigging.
The rope furler is attached to the loop on top of the bow plate and the continuous furling line is run down the same side via the double line guides, with the double block/cleats attached aft. The bottom of the stanchion post may be better as high mounting causes riding turns on the winch.
With gloves on, it is usually possible to furl by hand without using the winch.

The screecher sheet may be set up a couple of different ways; outboard as per a spinnaker sheet for close reaching, and this is still possible for downwind, but a better downwind rig is via a snatch block attached to the deck pad eye.

Step-by-step

- Set up the port and starboard Spinlock jam cleat/blocks as for the spinnaker.
- Unbag and restrain/bungee the sail, snap shackle the lower furler drum to either port or starboard bow chain plate eyes (the small ones on top of the flange)
- Use a spinnaker sheet as the sheet and lead it outboard to the spinlock block as per the spinnaker (see above picture) , or (for downwind see reaching picture) in front of the jib, then inboard via a snatch block and jammer, to the winch.
- Run the furling line (continuous loop, so it looks like two lines) through the Selden line guide and shackle the twin block/cleat to the stanchion just aft of the winch and mooring cleat. (see picture)
  The twin block is permanently mounted on the line.
  NB: furler drum must be rolled up (furled) in an anti-clockwise ONLY.
  The screecher's tension ropes are can resist twist in only one direction.
- Maintain some tension on the furling line or it will not bight and hold the drum in place.
  NB: **If the drum is not retained by tension on both furler lines, the sail will quickly an fully unfurl itself.**
- Snap the top to the spinnaker halyard (red) and hoist the furled sail. It should still be tied to prevent unfurling and the furling drum should have the locking wedge in place, also to keep it furled.
  The **rig needs high tension to keep the luff firm**.
- Undo the safety tie and pull out the furler drum locking wedge
- The sail is unfurled by pulling the sheet and allowing the drum to turn while maintaining control via tension on the furling line.

Furling

- The sail furls **counter-clockwise only**.
- Relax the sheet and pull the furling line to rotate the drum counter-clockwise until all the sail is rolled up.
  Tip: lead the furling-in side line to the top, nearest to winch, selden block /cleat.
- Always **maintain tension** on both parts of the furling line.

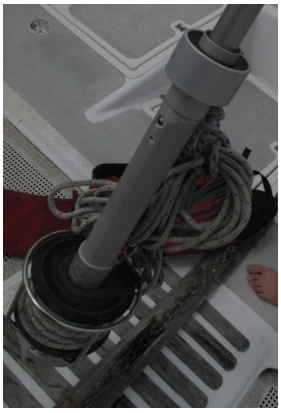
- If the required tension is too great for pulling by hand, use the winch but keep tension on both lines or the drum will free wheel.
- Once furled, cleat the lines tight and go foreward to secure the drum and sail. Tie up the sail where the sheet attaches for protection against unfurling. If necessary, partly lower the furled sail to do this. The short tie line is usually left attached.

Lowering.

Once furled, this is straight forward.

Bare Poles

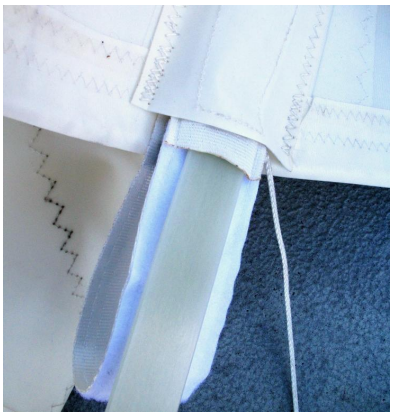
Often mentioned in books when commenting on very heavy weather. Realistically, it is just too hard if the wind is up. Better lashing/lacing everything to the spars. Removing battens is no fun and storing them is even worse. Gloves must be worn when handling battens; glass splinters.



Miscellaneous

Extracting battens requires the special tool. Push it into or towards the slot at the end of the velcro retainer (this will decouple the velcro) and pull on the string. Out comes the retainer.

Insertion is the reverse but the tool needs to be in the small pocket first.



Using the mouse line to pull a new halyard through the mast

Topping lift - Yellow.
Outhaul SS connects to White rope inside boom.
Reefing line #1 White/Green
Reefing line #2 White/Red