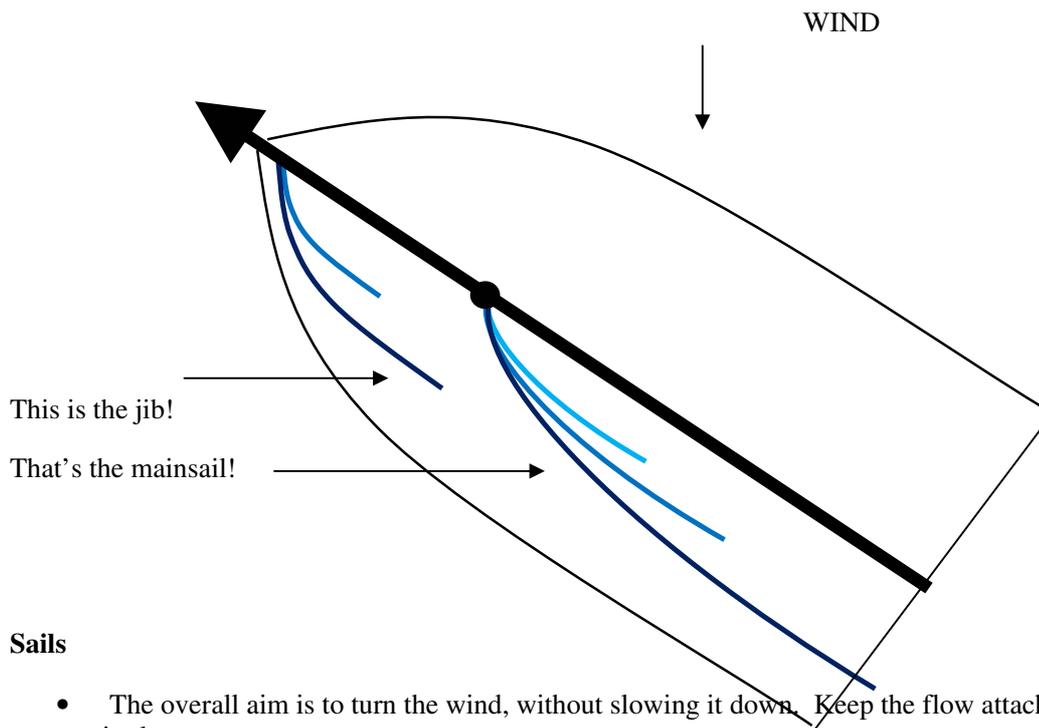


Upwind Sailing Medium and Light



Sails

- The overall aim is to turn the wind, without slowing it down. Keep the flow attached to both sides - stall is slow.
- Entry – Top and bottom of jib point as high as each other. Tight jib brings in the top, closes leech, makes the top point higher.
- Entry – Top and bottom of main point as high as each other. Outhaul controls bottom, boom should be on the centreline. Mastbend controls mid sections. Kicker/mainsheet controls the top.
- Entry – Jib and main point as high as each other. (Tell tales break evenly with slight luff).
- Exit – Sails aren't hooked, or too open. More return gives more power, until air flow detaches. Open leech gives no power. Firm leech aids pointing.
- Kicker – This tends to flatten the sails by inducing bend. Avoid use of the kicker (unless overpowered), and control the leech using the mainsheet tension.
- Fullness – Main and jib are consistent.
- Fullness – Foot of main should err towards flatness. The jib is closely sheeted and it is easy to block the slot, which is slow. Air must be able to go through the gap. Therefore, also don't over sheet jib, as this closes the slot/gap.
- Centre of Effort (with the boat flat) – There are a couple of schools of thought. Either a neutral helm, i.e. when the tiller is released boat continues straight. Or slight weather-helm, i.e. the boat heads up when the helm is released. The latter allows the helm to maintain a feel of the boat. Move the rig back/forward to move centre of effort back/forward. This can be done using rig tension and/or mast foot. Take care to maintain correct rig bend.

As the wind drops

- Maintain Flow – If the airflow stops, the boat stops. If the airflow detaches from the leeward side of the sails (stall), massive loss of power. Ease both sails consistently as required. Lower pointing, increases speed and builds apparent wind.
- Maintain Flow – The centreboards aren't great. It is possible to get the centreboard to stall, by pointing high and going slowly. Ease sails, to increase speed through water, and reduce sideways force, get water flowing around the centreboard properly, then head-up and sheet on.
- Fullness – Its more difficult to maintain flow over full sails. Therefore, flatten main using mast bend (by easing jib halyard tension). The rig tends to straighten when unloaded, be aware. If too straight, sails become too full. In very light winds a bit of bend opens the leech and flattens the mid-sections.
- Crews should take care not pull the jib in tight. As the wind drops don't pull as hard! A tightly sheeted jib will be close the slot and stop the boat.

As it gets choppy

- VMG can be improved by increasing power and pointing lower. Ease the jib slightly (1-2 inches). Tighter rig tension alters jib sheeting angle and tightens the top, so beware! As the rig moves forward, the mast straightens, giving more mainsail power, and maintaining jib/main consistency.

Hull

- Level sideways. Move weight fore and aft to either minimise waves, or so transom is just touching the water.

Quick in the Light



Photo courtesy of Chris Gillard

This photo shows Steve Tylecote and Sally Wilson winning yet another nationals race (Hamble 2009). The wind strength allows maximum power to be created, as helm and crew aren't hiking. There is enough wind that the sails and centreboard are unlikely to stall.

- Boat is flat
- Jib entry is fair top to bottom – look at the shadows on the jib luff.
- Nice open slot (the air flows easily between the sails)
- Firm mainsail leech (power and pointing)
- Leech is parallel to centreline
- Mainsail is flattish at the bottom (keeps the slot open to allow airflow).
- Mainsail is quite full around the sail numbers (lots of forward drive)
- The leech between the “F” and the top is closed/firm, so power is generated here also.
- Small amounts of Mastbend. Pick up the page and look along the mast.

Nearly as Quick in the Light Winds

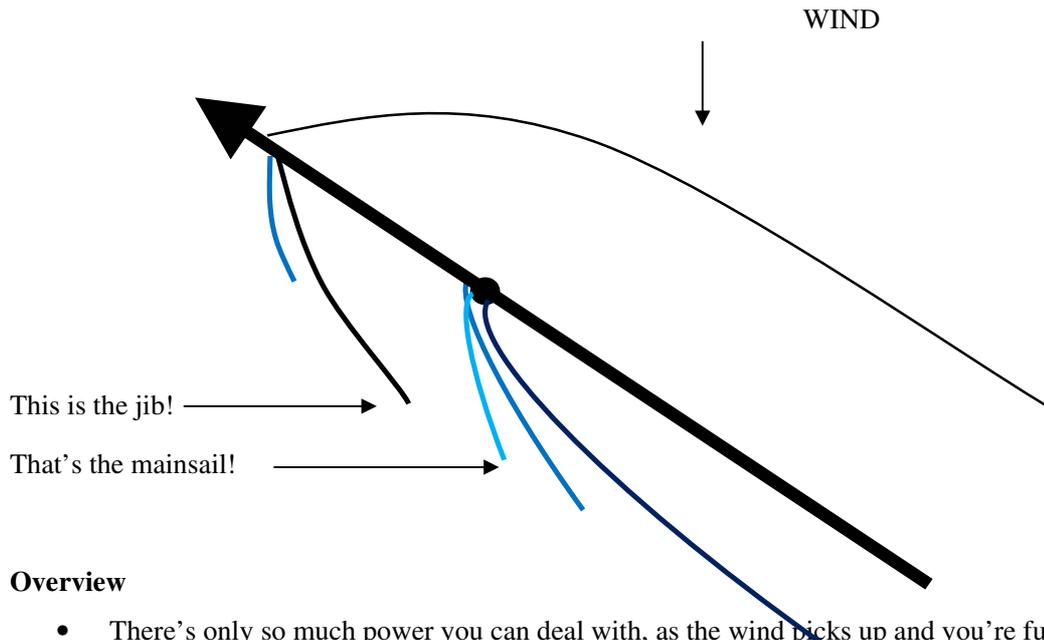


Photo courtesy of Ian Finlay www.ianfinlay.com

Matt and Julia (3612) started the race well, but slipped back, mostly during the upwind legs. In this wind strength, you are looking to create as much power as possible, and don't need to worry about stalling the sails.

- The mast is very bent for light winds. There are wrinkles coming from the clew of the sail, and it looks as if Matt is using a lot of mainsheet tension to hold the leech firm.
- As the mast is bent, the sail is flatter than other nearby boats, 3037 and 2144. The sail is especially flat around the area the sail numbers. The leech is too open, especially in the mid and upper sections of the sail.
- If the rig was straighter (pull the jib halyard tighter and let the shrouds off if necessary), the mainsail leech would be more powerful (like 3037 and 2144). The jib luff would also sag less, holding the sails apart and opening the slot.

Upwind Sailing Strong Winds



Overview

- There's only so much power you can deal with, as the wind picks up and you're fully hiked. Do you let the boat heel? Do you stuff (point high) and let the sails flap? Do you sail the same course and let the main out? Nope, you work hard to ditch the power (without lowering the sails or reefing).

Sails

- Never let the mainsail out without easing the jib. This closes the slot and creates a big air brake.
- A flapping sail generates drag and no forwards force, so should be avoided. Flapping sail = no forwards power.
- To remove power flatten the sails, then the wind is turned less (changes direction less) as it travels over the sails. Flat sail = reduced power.
- The outhaul controls the bottom of the sail, pull it tight.
- Let the rig bend, by releasing the rig tension, and dropping the top of the mast backwards and to leeward. The distance from leech to luff increases and the mid-sections flatten.
- Pull the Cunningham/downhaul on tight and the leech opens. Experiment with this.
- Use the kicker to control the leech position and increase mast bend. If the top sections twist out, the power is lost and the centre of effort moves down.

Waves/Flat

- As the sails twist out, pointing is lost. This isn't a problem in waves. If windy and flat, keep the sails less twisted (more kicker, less mast bend), and concentrate on flatter sails (more downhaul)
- .

Quick in the Breeze



Photo courtesy of Chris Gillard

This photo was taken during a very windy race at the 2009 Hamble Firefly Nationals. You can see that Stuart and Jane Hudson gained a huge lead in a short race. As it was so windy, the objective is to lose upwind power efficiently.

- **The sails aren't flapping.**
- The sails are very twisted. You can see the windward side of the main and jib at the bottom. You can see the leeward side of the top of the jib, and some of the main.
- The main is flat across the foot, from outhaul and mast bend.
- The main is flat around the sail numbers, from plenty of mast bend.
- The leech is primarily controlled by the kicker.
- The top of the sails are generating little power.
- The boat isn't pointing very high, but is powering through the waves.
- The centre of effort is quite low, so healing moment is reduced.

Not as Quick in the Breeze



Photo courtesy of Chris Gillard

Very Windy and Waves, same race as previous photo.

- The kicker is fairly tight, but the mast is too straight (perhaps forward bend!).
- There is too much power in the main. The main sail is very baggy/full, especially the area between the spreaders and boom. The sails have been let out, to keep the boat flat which is good. Since the main is flapping, it is creating lots of drag backwards and little drive forwards. If the jib halyard (or rig tension) was eased, the mast would bend back and sideways and the sails would flatten. The flatter sails would be more manageable, and there would be less flapping.
- The jib leech is OK but the bottom of the jib is very full. Since the rig is so upright, the top of the jib is forward. If the rig was raked further back, the top of the jib would be further back, the jib could be pulled in more (flattening it, less power), and the leech would remain open. Compare this jib to the jib in the previous photo.