Basic Sail Controls and Trim

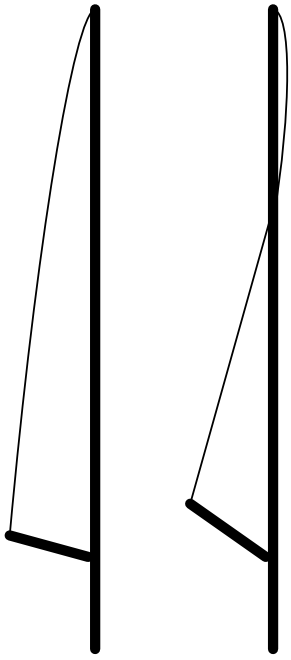
These notes hopefully explain the basic sail controls available on all boats. In most cases they can (and should) be adjusted whilst sailing.

Kicking Strap or Vang

This pulls the boom down so applying tension onto the leech of the sail :

Kicking strap tight
Leech held straight
Sail flattened

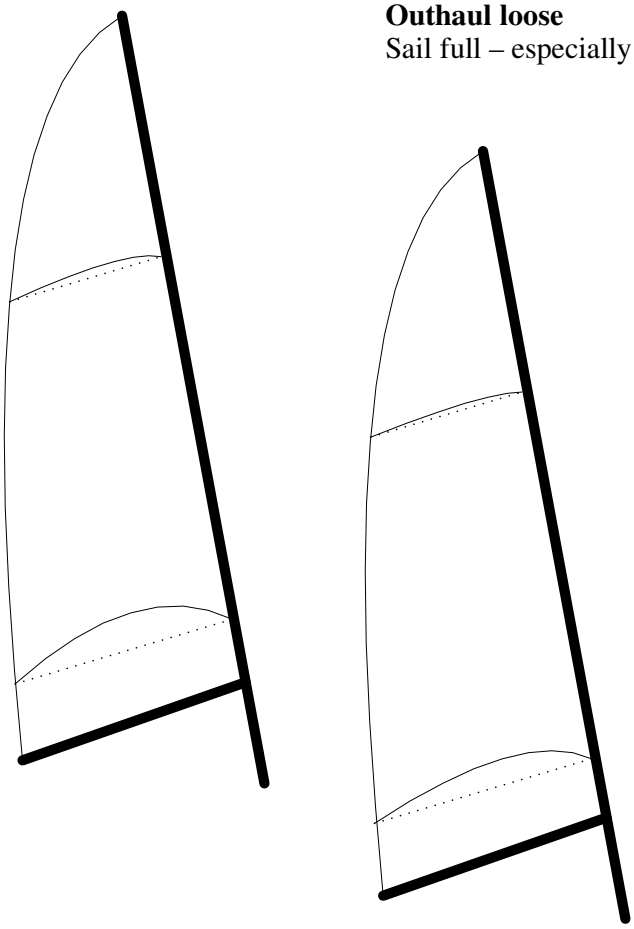
Kicking strap loose
Leech allowed to curl off
Sail fuller



Downwind, if the kicking strap is too loose the top of the sail will blow in front of the mast – sometimes this is helpful however it may cause the boat to become unstable and may lead to a capsize to windward.

Outhaul

The outhaul pulls the sail along the boom changing the shape of (mainly) the lower 1/3 of the sail



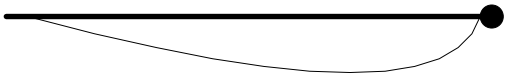
Outhaul loose
Sail full – especially at bottom

Outhaul tight
Sail flattened off

Downhaul

The downhaul tensions the luff of the sail and changes the shape of the front part of the sail

Downhaul Tight
Front part of sail flattened off

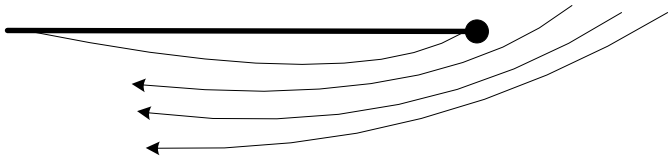


Downhaul loose
Front part of sail fuller

Sail Trim

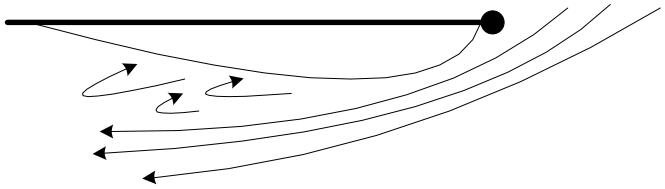
Using the controls mentioned previously the sail can shape can be altered to suit the conditions. This changes the airflow over the sail, the driving force or power of the sail and the amount of drag or resistance to movement which the boat feels.

The following pictures show the air flow over a sail when it is flattened off and when it is a lot fuller:



Flat Sail

Here the air flow is smooth and the sail is working efficiently.



Full Sail

Here, whilst the fuller sail will provide more power the eddies over the aft part of the sail will cause drag (the wind effectively is pulled along). If the wind were stronger the eddies would disappear and the sail would become more efficient, providing more power than the first example. It would however make the boat more difficult to hold upright and would not sail so close to the wind on a beat.

Full sail

- More power
- More heeling
- Less pointing

Flat sail

- Less power
- Less heeling
- More pointing

Upwind the sail needs to be flat enough to allow the boat to point well but not too flat that there is no power.
Downwind the sail needs to full enough to develop plenty of power but not too full that the eddies described above slow the boat.