

Sail Trim for a faster boat



Sailboat Racing Hierarchy of Needs



Boat Speed

- Boat Prep- Clean Bottom all gear works. Winches, halyards, cleats.
- Rig Tune- Rig is straight in boat, not inverted.
- Boat Trim- All excess gear off, no weight in ends of boat, crew weight on the rail.
- Boat Handling- Tacks and Gybes, Sets and Douses.
- Sail Trim- Correct trim for conditions

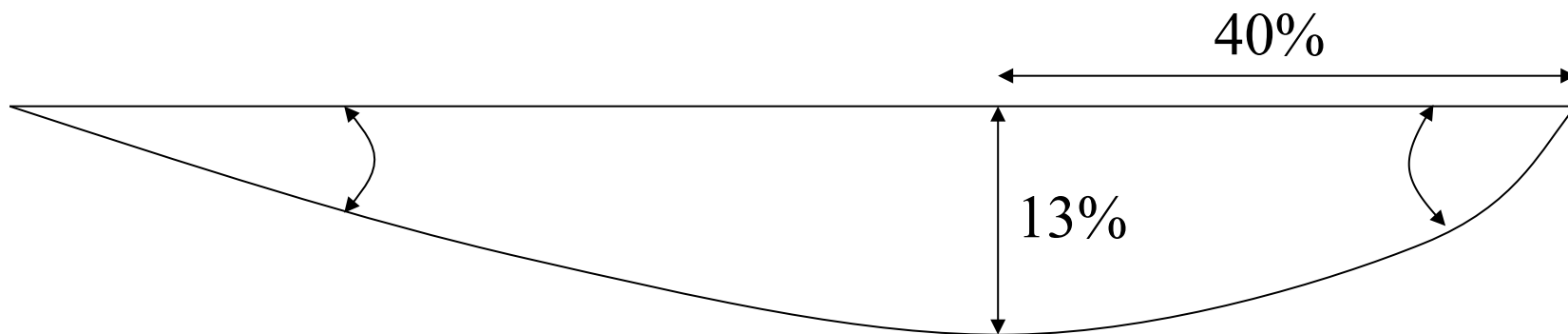


Sail Shape





Defining Sail Shape



Cord

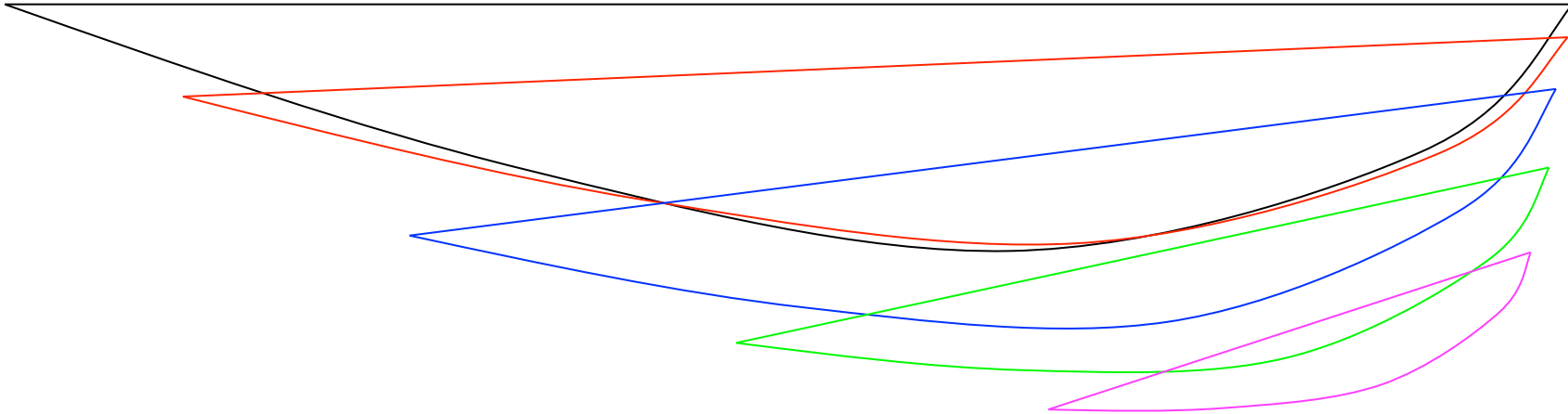
Draft

Position of Max Draft

Entry Angle

Exit Angle

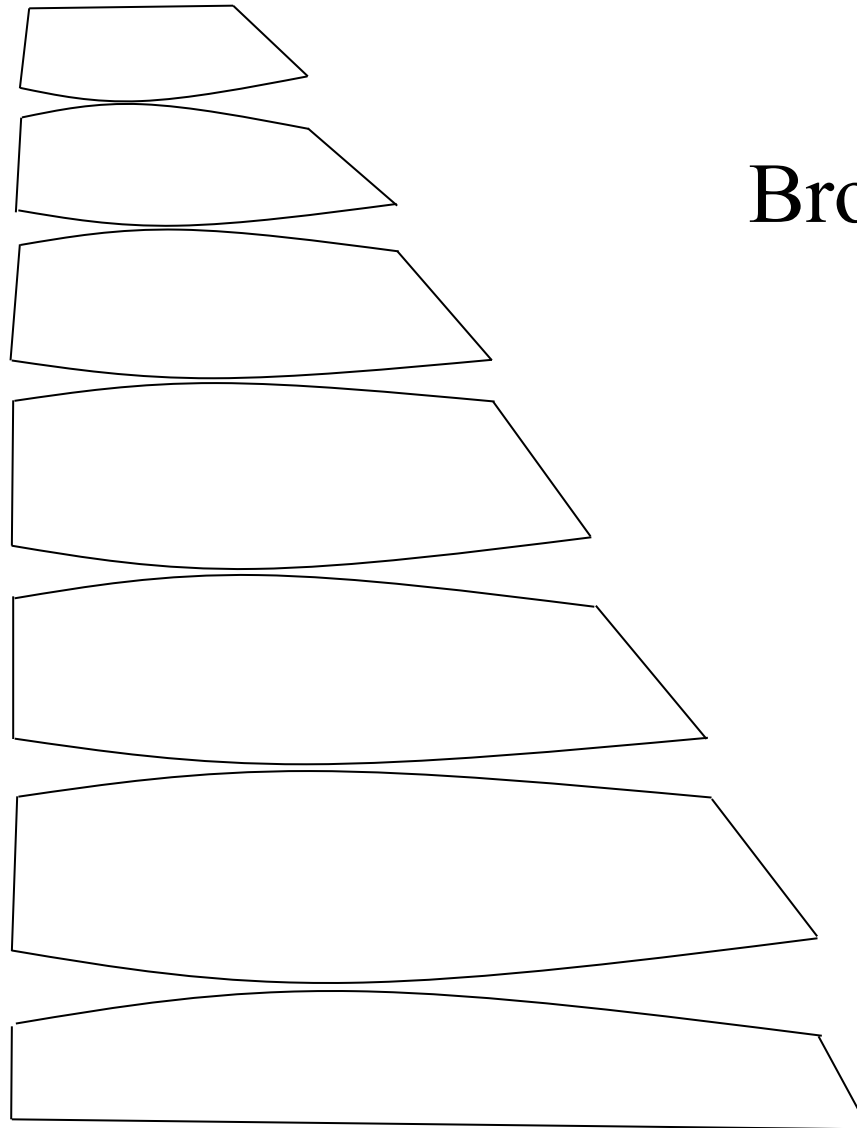
Twist



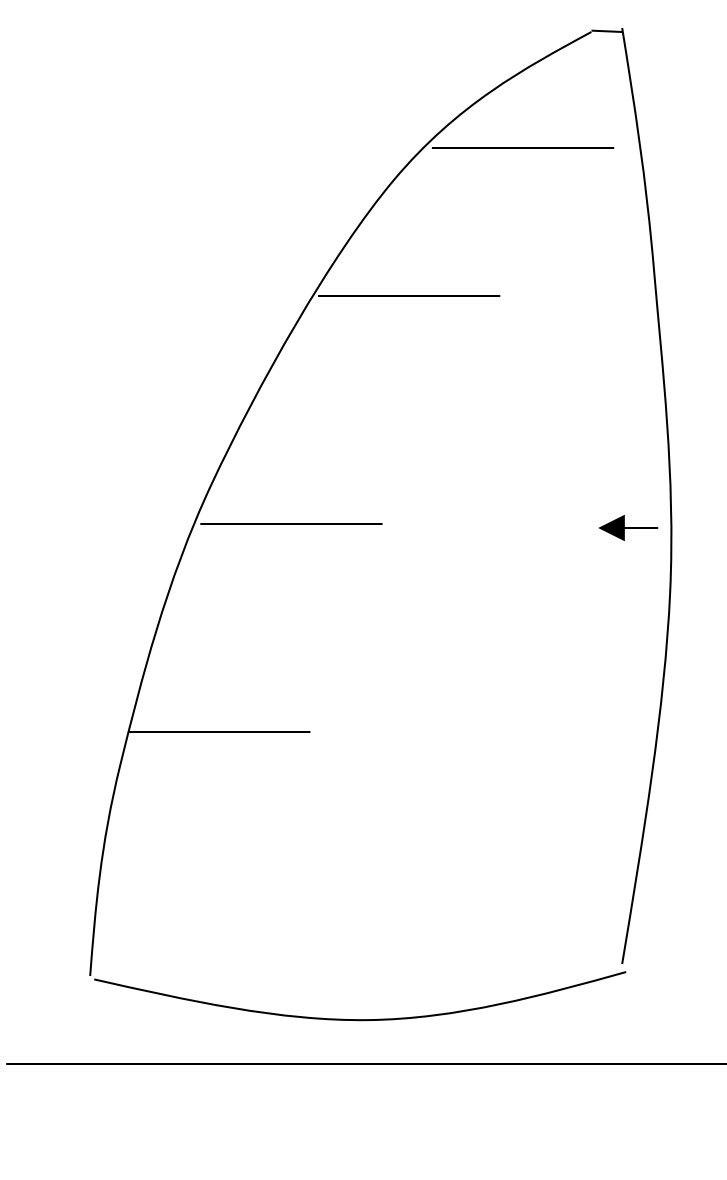


Creating Shape

Broadseam
Luff Curve



Broadseam



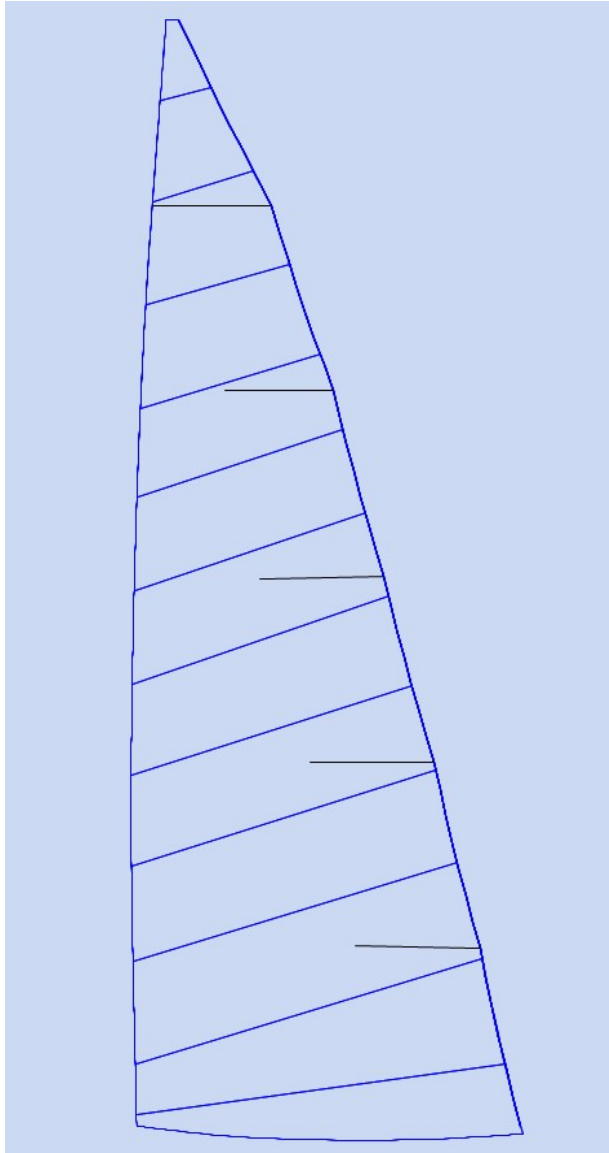
Luff
Curve

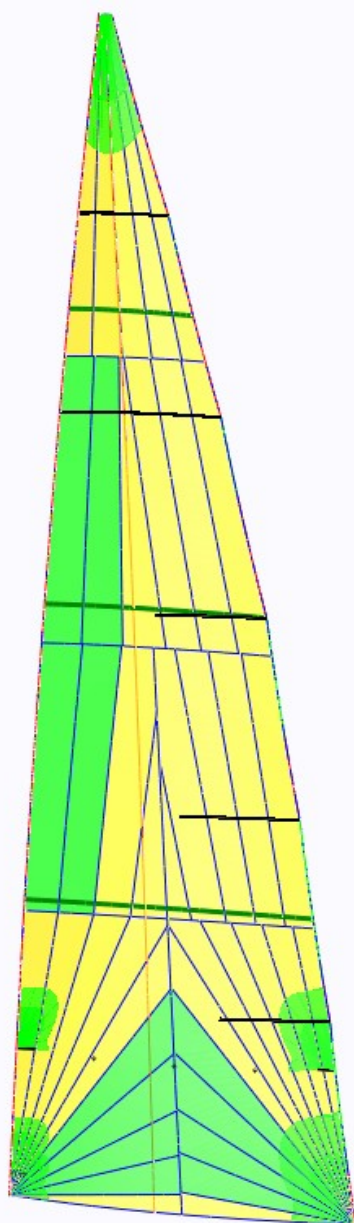


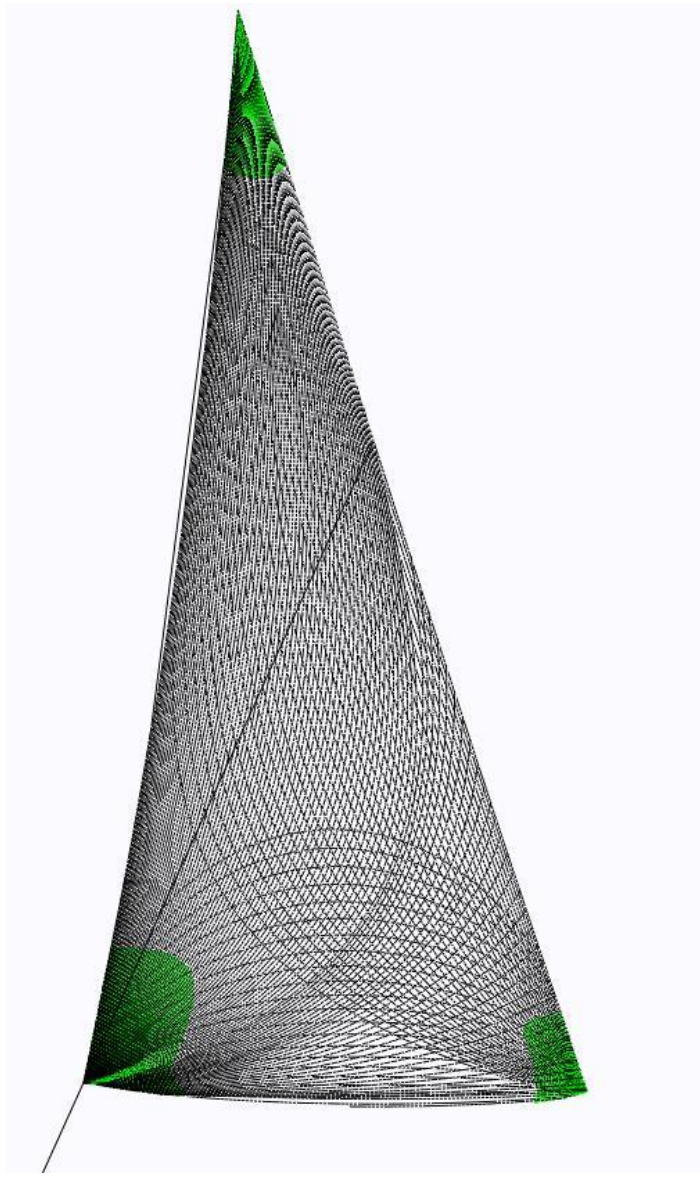
Sail Structure

Sail Structure

- Warp and Fill dimensions of cloth
- Orientation of Cloth
- 3 types of sail structure (panel layout)
 1. Cross cut
 2. Radial
 3. Load Path



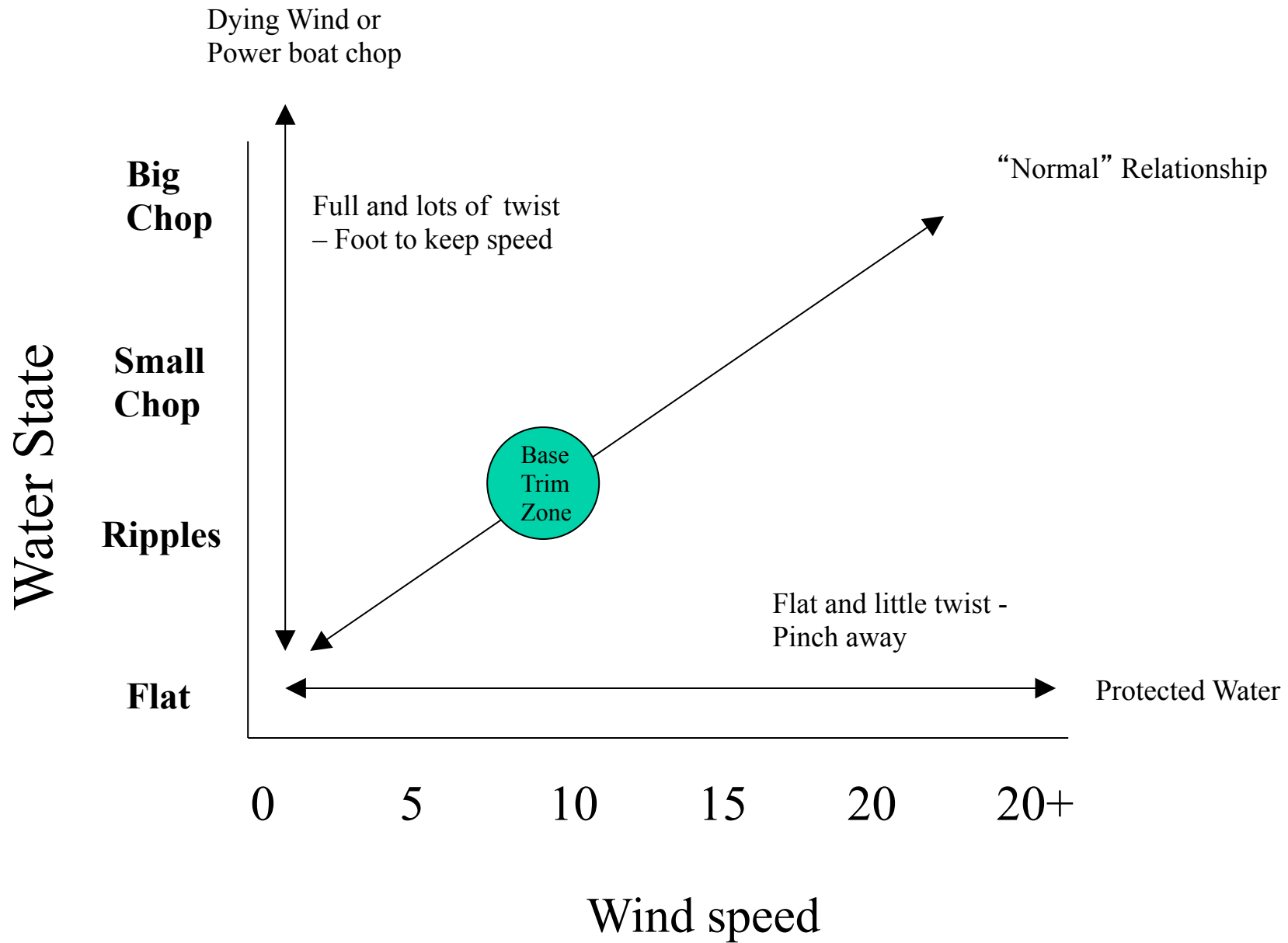




Sail Trim for Conditions

- Wind
- Sea State
- Changing wind strengths
- Changing Sea State
- Up Wind
- Down Wind





Cruising

Why do I care about speed for
cruising?



Speed is Efficiency

- Efficiency is less heel or rocking
- Efficiency is less loads
- Efficiency is safer
- Efficiency is easier



Mainsail Trim

Mainsail

Trim Controls



Halyard/Cunningham

Outhaul

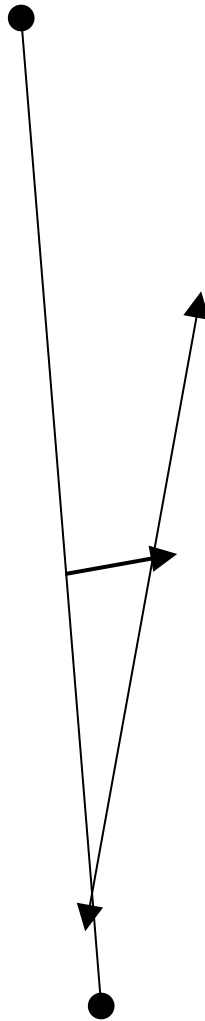
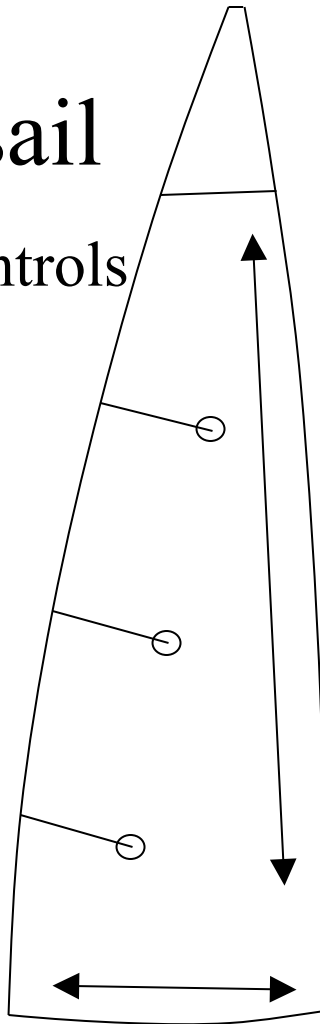
Mainsheet

Boom vang

Backstay

Mainsail

Trim Controls



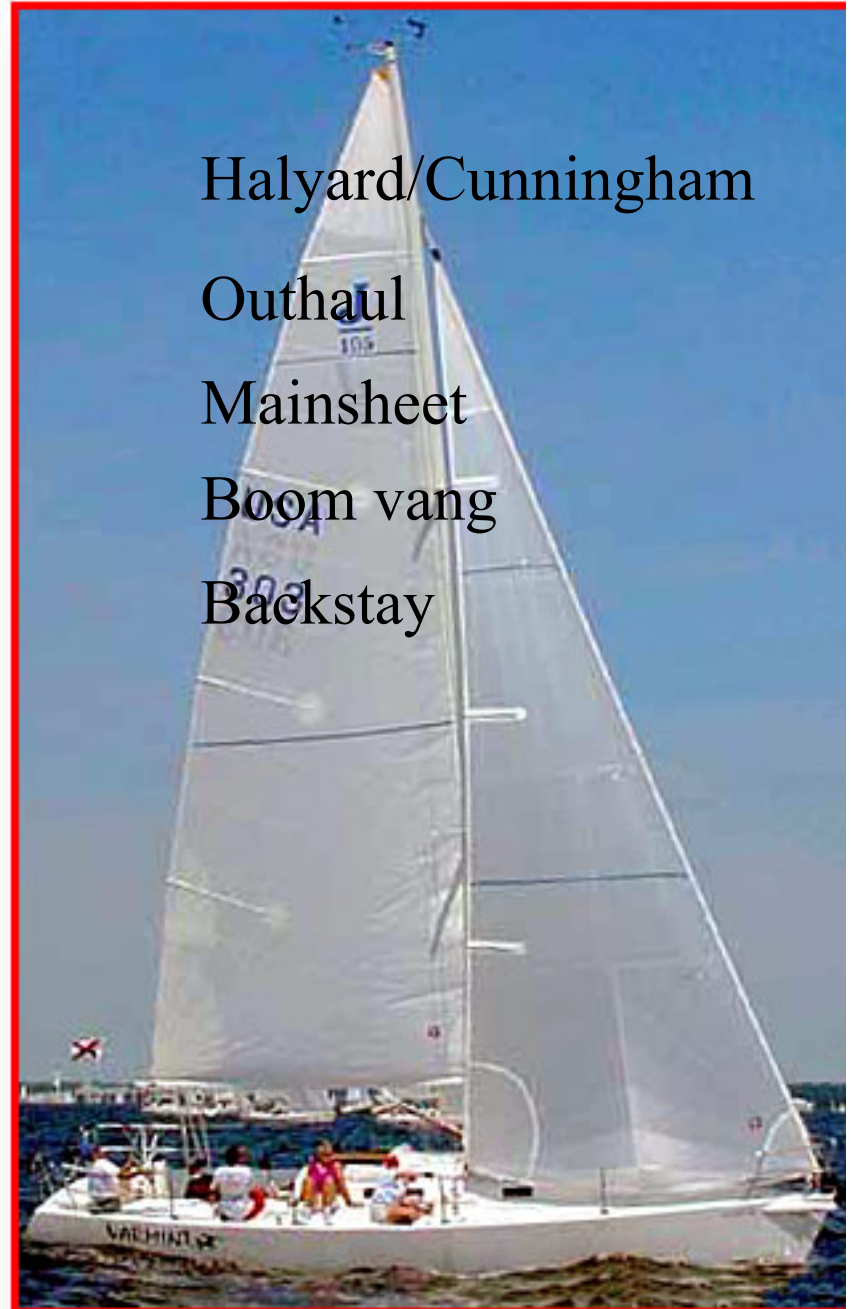
Halyard/Cunningham

Outhaul

Mainsheet

Boom vang

Backstay



Mainsail

Trim Controls



Traveler

Golden Rule of Mainsail Trim

Place Boom on Centerline and make top batten parallel with it.









Light Air Mainsail Trim



Boom on centerline and upper middle batten parallel

Light Air Mainsail Trim



Boom on centerline and upper middle batten parallel

Heavy Air Mainsail Trim



Boom below centerline and leech twisted open

Heavy Air Mainsail Trim



Boom below centerline and leech twisted open

Light Air Mainsail Trim



Boom on centerline and upper middle batten parallel

Bad Mainsail Trim



Severe Weather Helm
No Acceleration

Boom above centerline and top batten hooked to weather

Bad Mainsail Trim

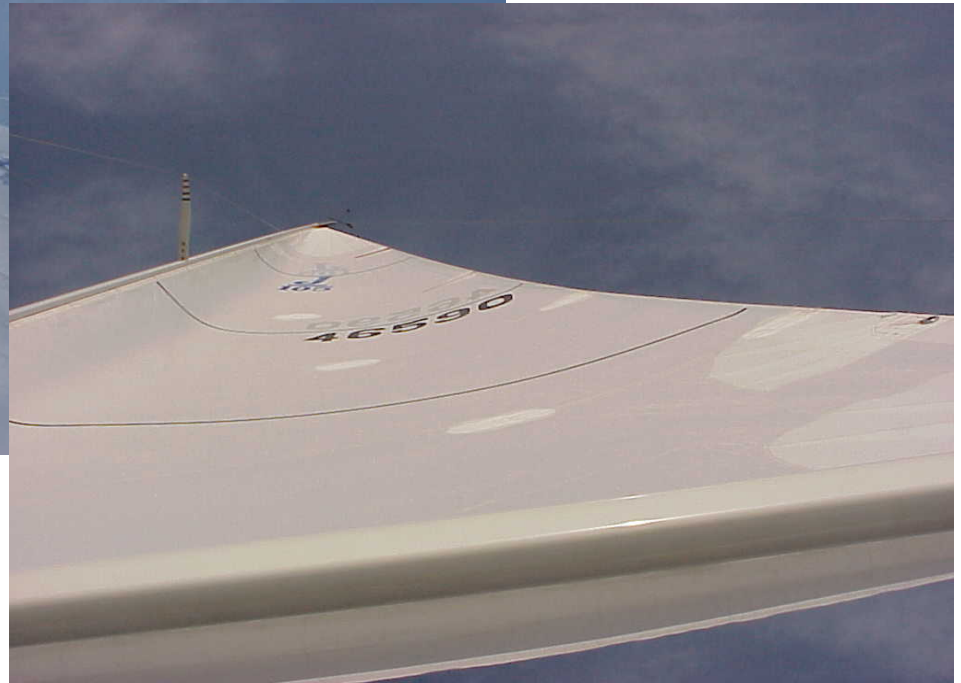


*Bad Pointing

*No Weather Helm

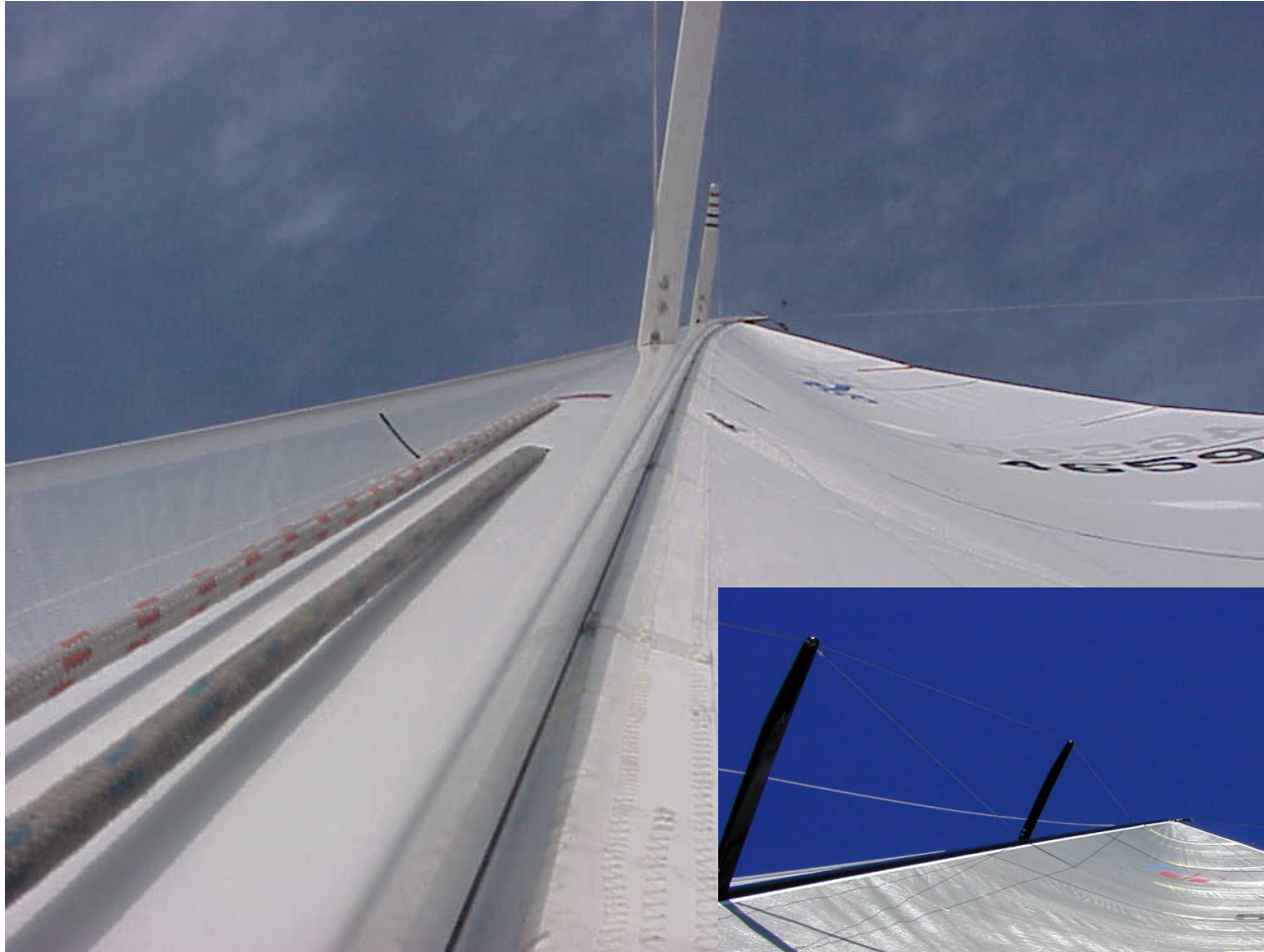
Boom below centerline and leech twisted open

Soft Backstay



- *Straight mast
- * Full top
- * Easier to tighten leech
- * Sag in headstay

Medium Backstay



- * Medium bend in mast
- * Flatter top
- * Tighter sheet without top hooking
- * Medium sag in headstay

Hard Backstay



- * **Bent mast**
- * **Flat top**
- * **Easier to twist leech (flatten)**
- * **Minimal sag in headstay**



Hard Halyard Tension



Draft Forward and vertical stress wrinkles on luff

Good Halyard Tension



Draft at design point and neutral tension on luff

Soft Halyard Tension



Draft aft and horizontal wrinkles on luff



Halyard/Cunningham

Outhaul

Sheet

Vang

Backstay

Traveler





Genoa Trim

Genoa/Jib

Trim Controls



Halyard/Cunningham

Backstay

Sheet Lead &

Sheet Tension

Golden Rule of Genoa Trim

Use relationship between shrouds and leech. Should be roughly same distance top and bottom



Light Air Genoa Lead



Rounder shape on foot and leech, more power, less twist

Medium Air Genoa Lead



Medium Shape on foot and leech, good power and point

Heavy Air Genoa Lead



Flat shape on foot and open leech, good DE-power and point

Light Air Headstay Sag



Fuller and more powerful entry, better speed building

Medium Air Headstay Sag



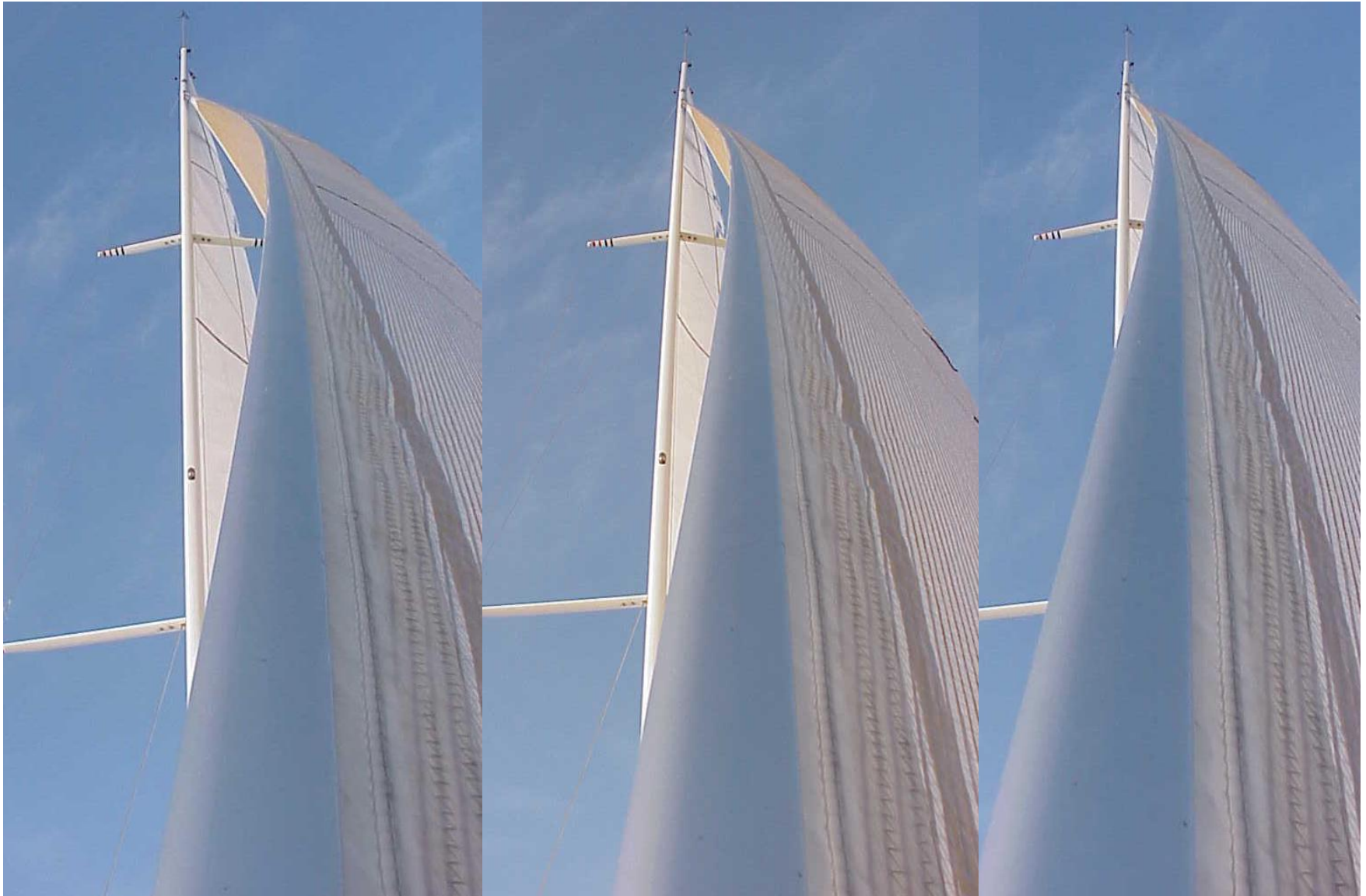
Flatter entry, better speed and pointing

Heavy Air Headstay Sag



Medium-flat entry, better speed and DE-Powering

Headstay Sag Comparison



Light Air- Soft

Medium Air- Medium

Heavy Air-Hard



Halyard/Cunningham

Backstay

Sheet Lead &

Sheet Tension

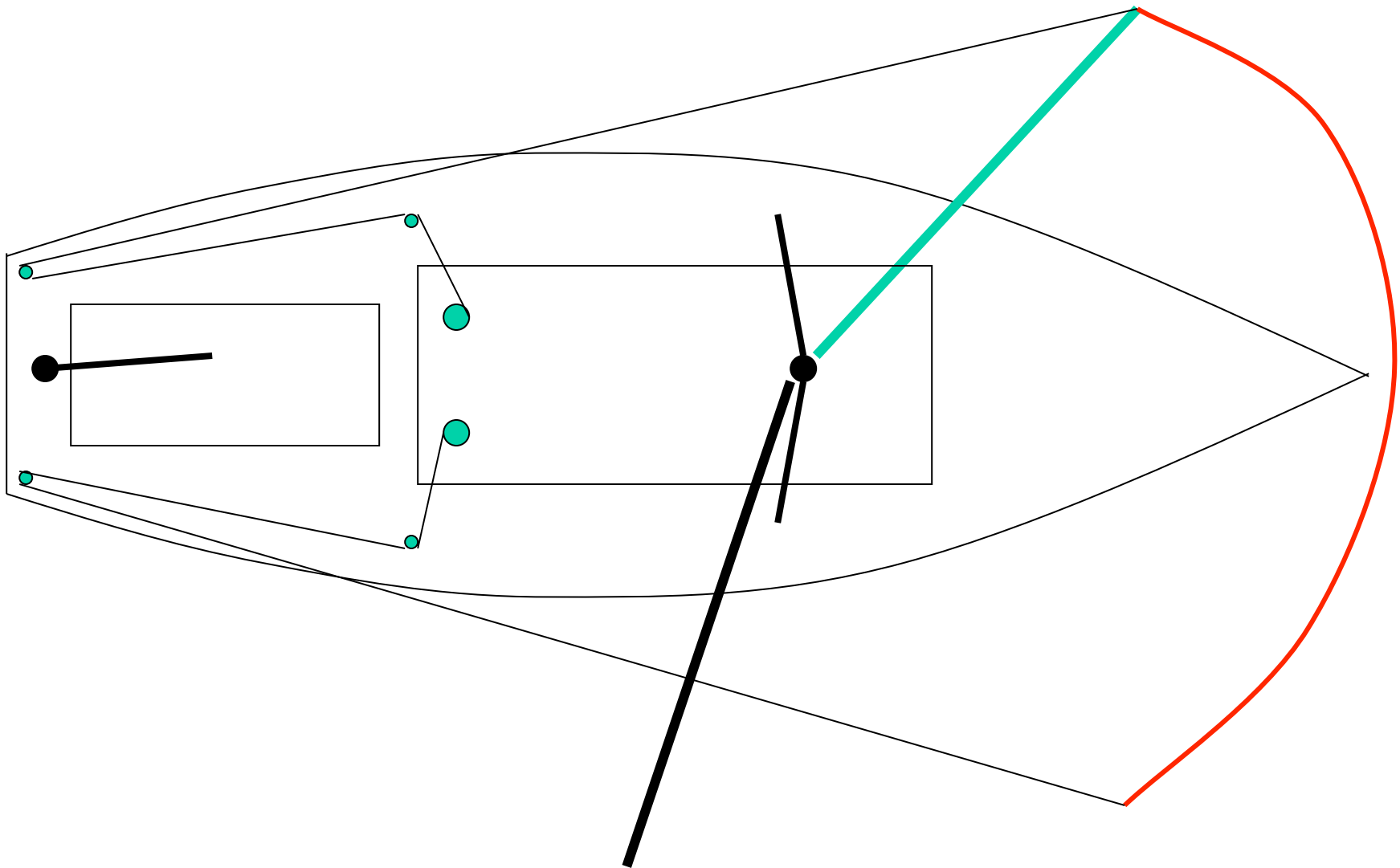
Slot

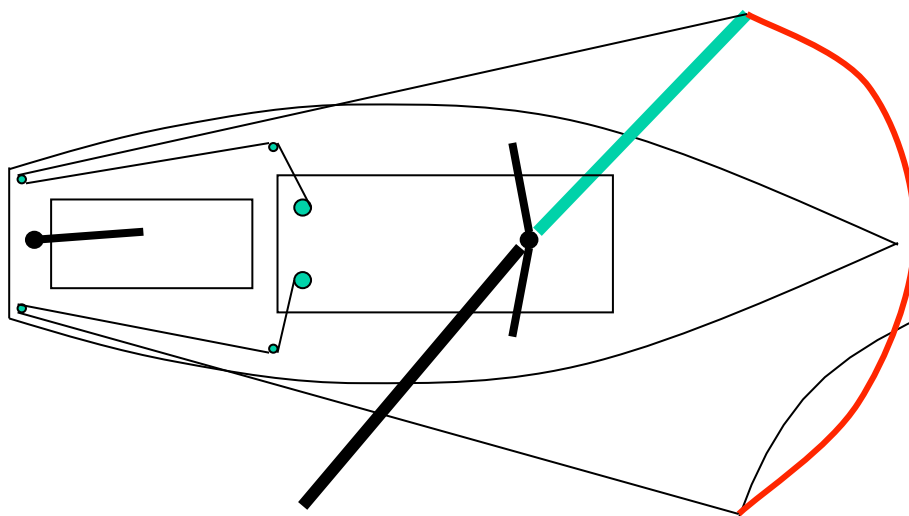




Spinnaker Trim

Spinnaker trim





Sheet
Tension

Spinnaker Trim
Flow Chart

Pole Fore
& Aft

Pole
Height

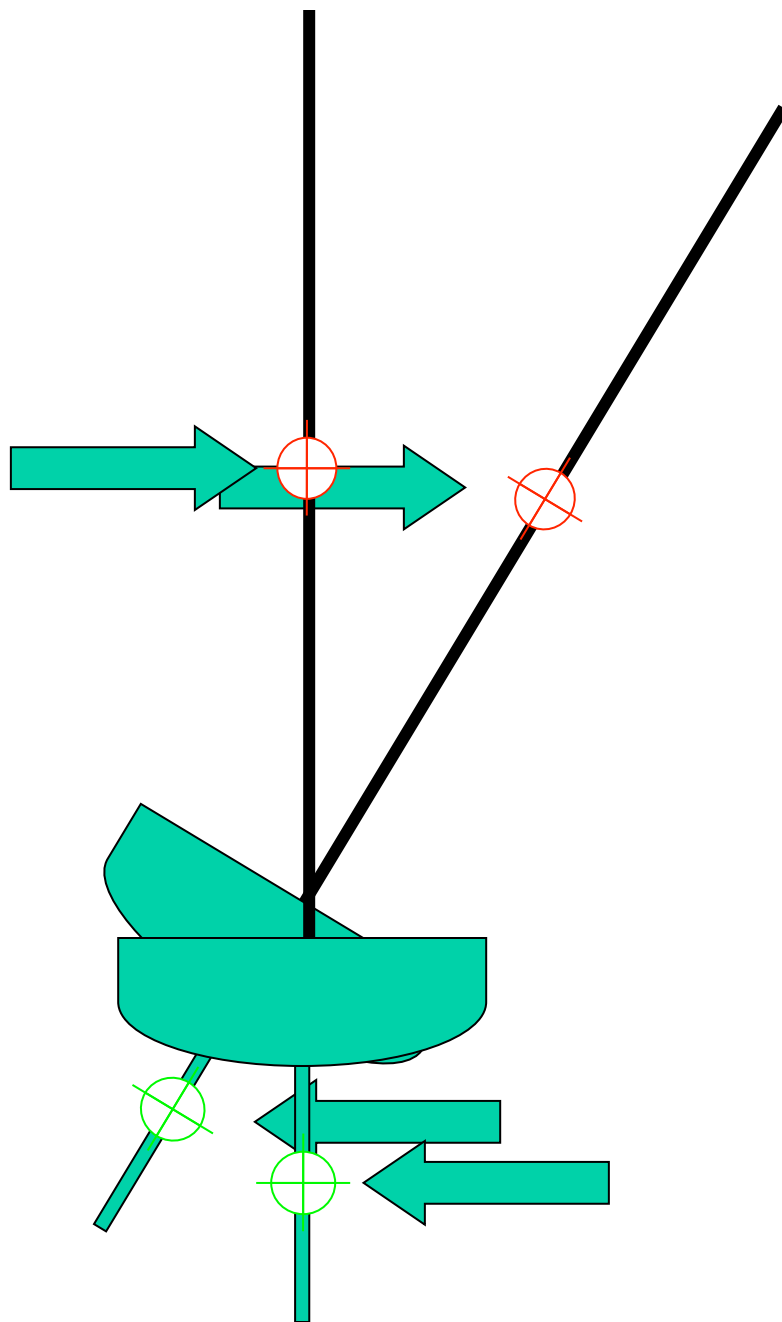
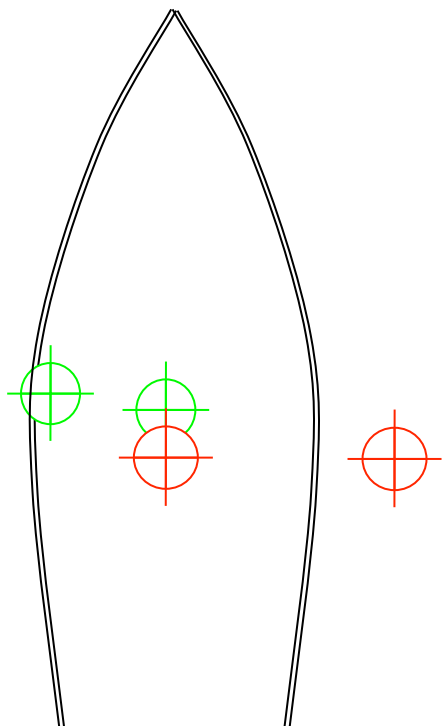
Ease sheet until it curls,
pull in to remove curl,
repeat

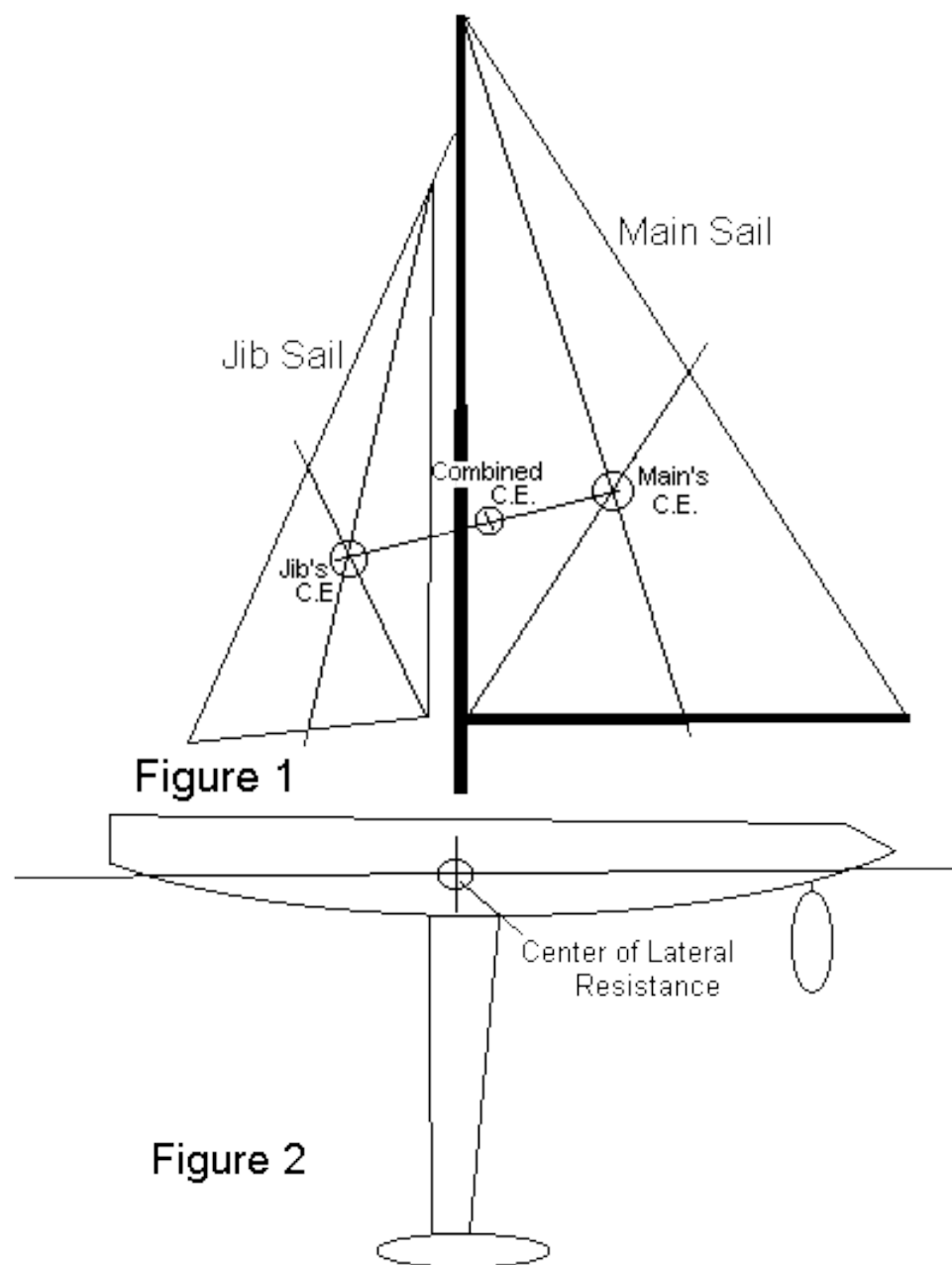


Trim luff shoulder with curl in 1-2 panels



Helm Balance





Wind



Figure 4

