

Sail Trim

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30 Minutes

Sail Trim General Discussion

- Sail to the Tell-Tales
 - Once Trimmed for a close hauled course upwind, helmsman stays focused on “staying in the groove”, that is keeping the telldatales flying
 - The “groove” is a variable that depends on many factors.
 - Wind Speed, Sail shape, Etc

Sail Trim General Discussion

- Trimmers and helm work together:
 - Maximize the effectiveness of the ‘groove’
 - If the helm steers the boat off the wind to build speed, the Sail Trimmers ease slightly to keep the sails efficient.
 - As the Helm comes back up to the close hauled course, the Sail Trimmers trim back in.
 - Avoid stalling of the sails
 - Falling out of the ‘groove’

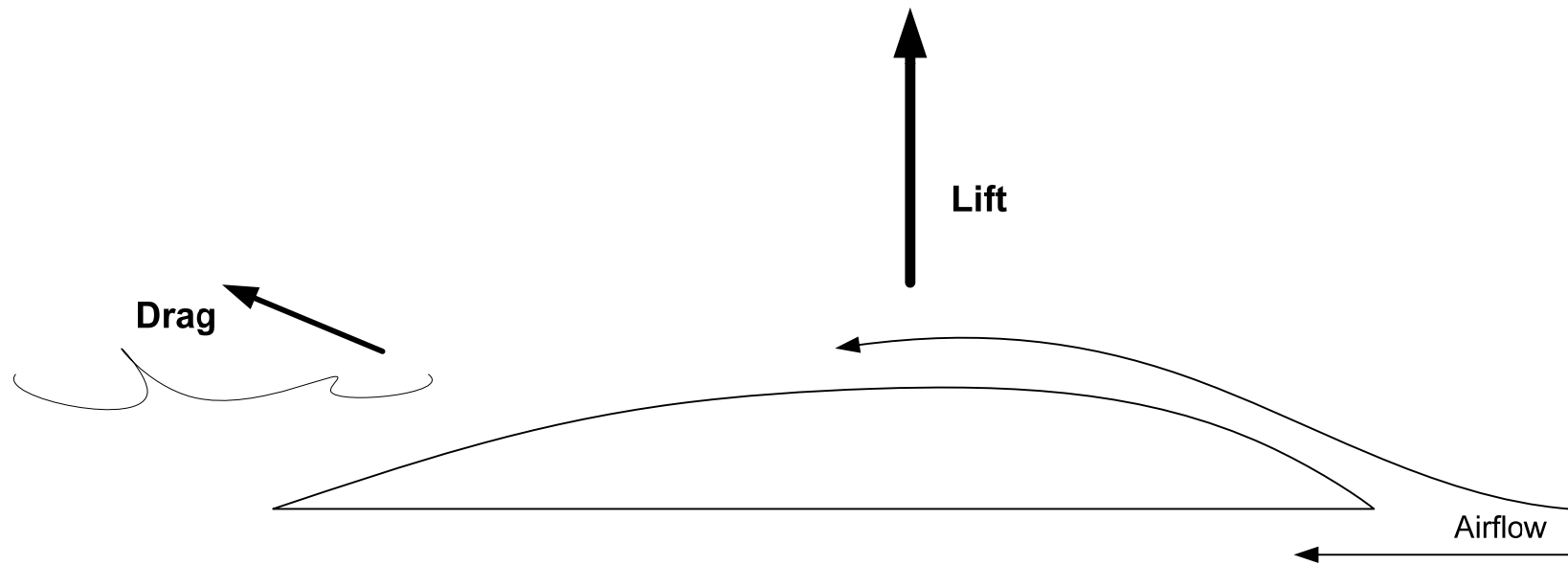
Sail Trim General Discussion

- Trimmers and helm work together
 - Trimmer should be aware of the apparent wind angle and make continuous adjustments.
 - Helm should let trimmers know what is about to happen.
 - “Coming Up”, “Coming Down” , “Weather Helm”, “Ducking”, Etc.
 - Dialog should be two way but not distracting to the helmsman.

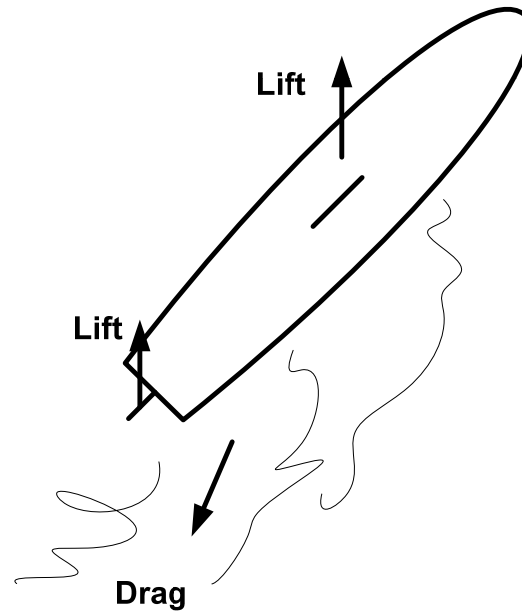
Lift and Drag

- Lift: The force generated by pressure differential on the sails, hull, keel and rudder.
- Drag: The force generated by the friction of the air and water flow, turbulence, and other factors

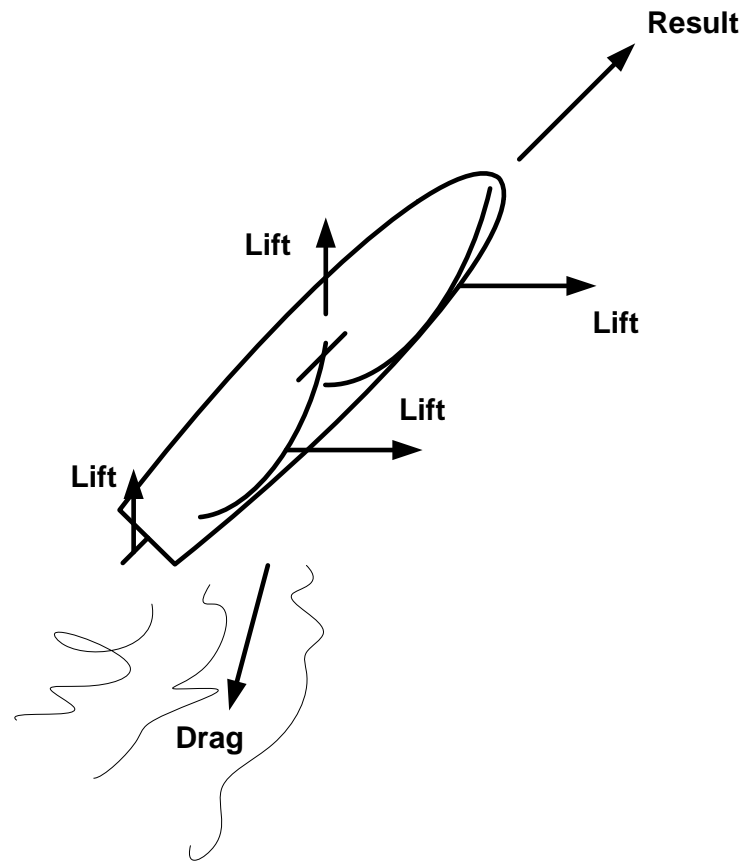
Lift and Drag On the Sails



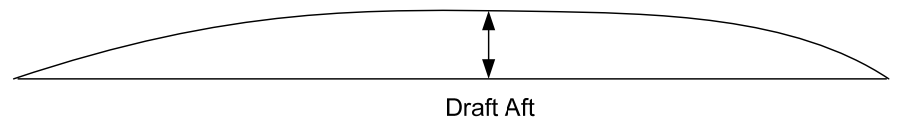
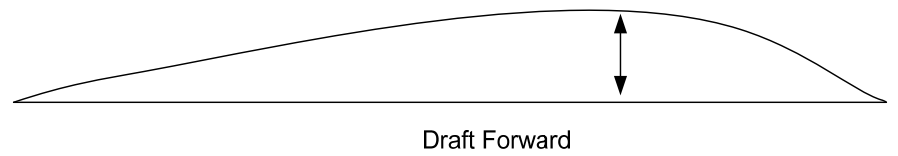
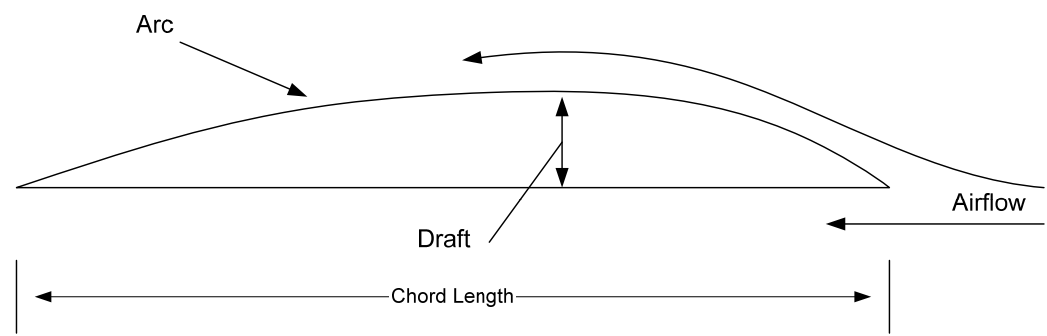
Lift and Drag on the Hull and its' Appendages



Resultant Lift and Drag Boat and Sails



Sail Trim Terms



Genoa Trim

- Genoa Controls:
 - Halyard Tension
 - Sets Draft Position – fore/aft
 - Car Position
 - Sets Sheeting Position and therefore sail trim effectiveness top to bottom, ‘Twist’
 - Sheet Tension
 - Small increments changes the depth of the Draft
 - Larger increments change the angle of attack

Mainsail Trim

- Main Controls:
 - Halyard Tension
 - Set Draft Position – fore/aft
 - Outhaul
 - Sets Draft Depth
 - Traveler
 - Sets Sheeting Angle
 - Sheet Tension
 - Along with traveler, Sets the main sail angle to the apparent wind, sets the ‘Twist’ of the Mainsail

How to Maximize Lift (and minimize drag)

- Lift and drag is variable
- Sails may be adjusted:
 - Light Air
 - Deep Draft, Draft Aft, more sail area
 - Fuller shapes work because light air produces less drag.
 - Medium Air
 - Reduce Draft, Draft Forward, maintain sail area
 - Flatter shapes provide lift without excessive drag

How to Maximize Lift (and minimize drag)

– Heavy Air

- Reduce sail

- High wind velocities produce sufficient lift with much less sail area.
- Overpowered is not fast
- Smaller flatter genoa/jib
- Reefed mainsail, full out haul to flatten the mainsail

General Sailtrim/Boatspeed Guidelines

- Light Air, Flat Seas
 - Sail trim
 - Full Shapes, deep draft
 - Ease halyards, Outhaul and Cunningham
 - Steering
 - Foot off to keep the boat moving. Helm and Trimmers work together to continually adjust sail and helm to the varying conditions. As boat speed increases, point a little higher to make distance toward the mark.
 - Move crew to leeward
 - Keep the boat heeled so it is ready to take advantage of any breeze.

General Sailtrim/Boatspeed Guidelines

- Light Air, Choppy seas
 - Arrgh! This is the worst!
 - Foot off, keep boat moving, one wave can stop you dead in your tracks, and take minutes to get moving again. Don't be greedy and try to point too high.
- Move Crew to Leeward
 - Try to sails from collapsing/flopping

General Sailtrim/Boatspeed Guidelines

- Medium Air, Flat Seas
 - Yeah! This is by far the easiest to sail
 - Start reducing draft in the sails (flattening)
 - Outhaul
 - Halyards (move draft forward)
 - Cunningham
 - Genoa Sheets and Car Position

General Sailtrim/Boatspeed Guidelines

- Medium Air, Choppy Seas
 - With a continuous breeze, it is easy to get the boat moving.
 - Watch for the waves, if you hit one head on, you will lose momentum. If you are about to take a wave on the bow, steer down, momentarily.
 - Anticipation is key, don't get caught sleeping.

General Sailtrim/Boatspeed Guidelines

- Heavy Air, Flat Seas
 - This is a transition state, most likely the wind has just come up.
 - You will need to reduce, flatten sail.
 - Don't be fooled. This state is short lived. The waves will likely come soon. Use this time to get ready.

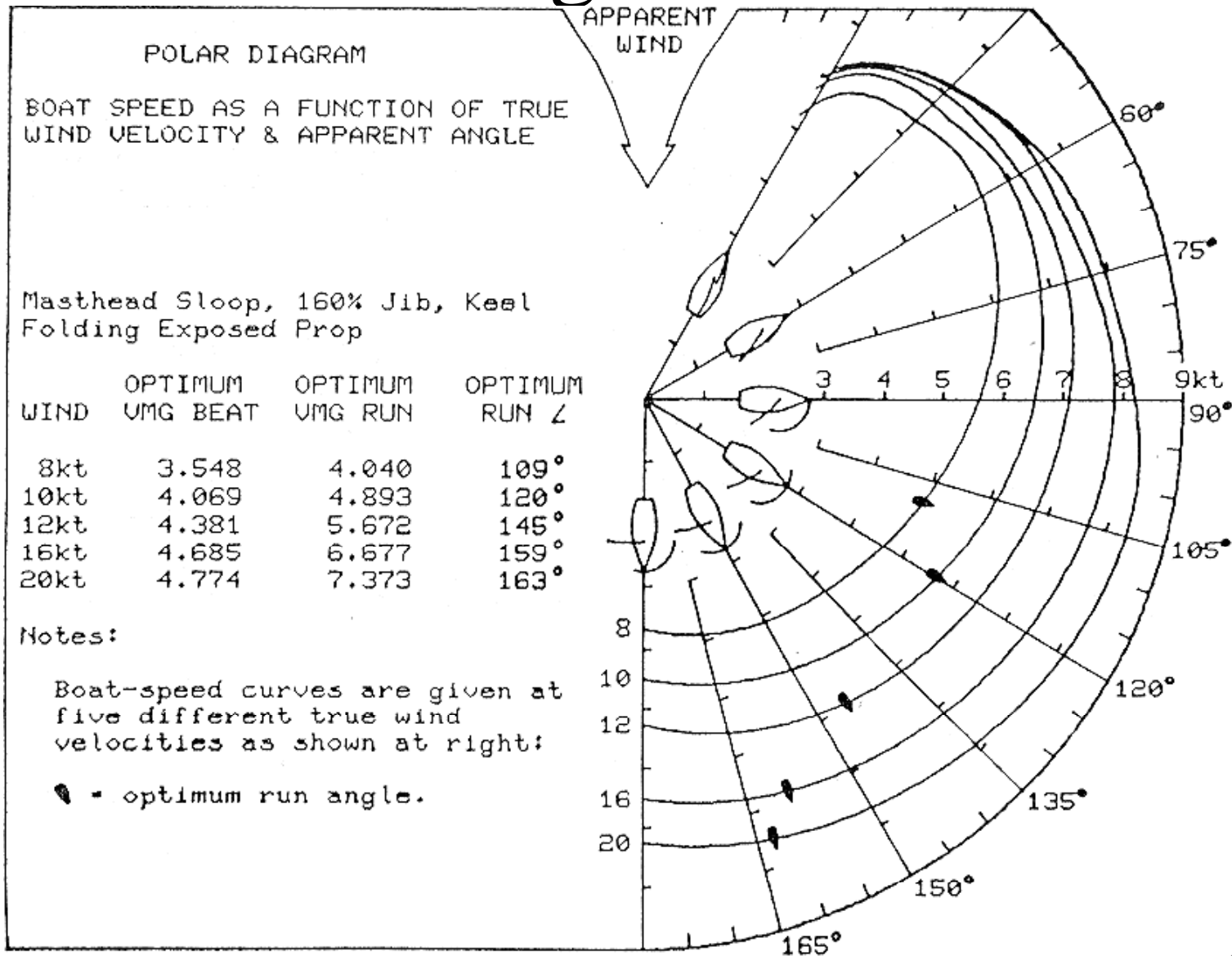
General Sailtrim/Boatspeed Guidelines

- Heavy Air, Choppy Seas
 - Reefed main, Tight Halyards, Cunningham
 - Small, Flat Genoa
 - 90% to 110% Genoa is in order
 - Roller Reefing will reduce sail area, but don't expect to point very high.
 - Watch out for big waves, they'll stop you dead in you tracks.

Down Wind Sail Trim

- Velocity Made Good (VMG)
 - Strong Winds
 - Sail more direct course toward mark, Run down wind, boat speed will be maintained for Best VMG
 - Light Winds
 - Sail more of a broad reach to maintain boat speed for best VMG.

Polar Diagram - VMG



Down Wind Sail Trim

- Loosen most sail Controls
 - Ease Halyards
 - Ease Outhauls
- Sails will be let out, air flow over sails will be reduced, Sails will work in two modes:
 - Drag Mode: Wind is pushing sails and boat down wind
 - Lift Mode: Air flowing over sails produce lift when sailing a broad reach

Using a Spinnaker

- Cruising Spinnakers
 - Asymmetrical
 - Easy to set, less rigging than Symmetrical
 - Dousing Socks – Scrap them, there are better ways
 - Most effective on a reach and broad reach
- Racing Spinnakers
 - Asymmetrical
 - Symmetrical

Using a Spinnaker

- Owning a spinnaker
 - Every Boat should have a spinnaker, whether cruising or day sailing, a spinnaker can really make sailing a more enjoyable experience.
 - Improved boat speed
 - Air flow over the deck
 - Impress your friends and family with your sailing prowess.

Racing with a Spinnaker

- The race environment challenges the boat and crew to perfect their skills
- Sailing with a spinnaker allows you to take your boat to another level
- Asymmetrical Spinnakers are suitable for racing, in some conditions they may be superior.