Sail Trim and Shape

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Topics to be covered

• Different Types of Sails
• Sail Trim/Controls
• Downwind Sails
GOAL

• #1 – Boat Speed- Cruising or Racing, we all like to go fast!
  – How is it achieved – BALANCE!
  • No Helm
  • Sail Set Up
  • Sail Trim
  • Selecting the proper sail for the conditions
Different Types of Sails

- Cruising
- Racing
- Club Sails
- Heavy Boats vs. Lighter Boats
Some boats are very fast and easily driven and sail with very straight exits on the sails as a result.
Some boats are larger and require a more powerful sail plan and set up.
Different boats and sail plans demand different sail shapes- the J/24 sails best with a draft forward straight exit design but sheeted very hard.
The Thistle sails fastest with draft aft round exit shape mainsail.
Some jibs setup on straight forestays with little sag.
Some sail with a great deal of sag, such as this Kevlar laminated T ten jib.
No matter what type of boat or sails you have you always have the ability to change the sails shape and set up.

One Design
Mainsail Trim
Mainsail controls

- Main Sheet
- Halyard
- Traveler
- Cunningham
- Outhaul
- Vang
- Backstay
Main Sheet

• What does the Main Sheet do?
  – Controls Leech Tension
  – Pointing Ability
  – Overall Power of The Sail
Mainsail Trim

• The upper telltale is an excellent indication of mainsail twist

• When the telltale stalls the mainsail is overtrimmed, when it flows the mainsheet tension is correct
Basic Rule - Mainsail upwind
Mainsail Trim

• Oversheeting the mainsheet will close the leech, increasing weather helm and making the bow want to point up

• Easing the mainsheet opens the leech and decrease weather helm, making the boat easier to sail straight
Mainsail Trim

• The mainsail is over trimmed when the telltale curls to leeward

• Slight over trim on the main puts the boat into point mode
Main Halyard

• What does it do?
  – Entry angle
  – Draft position
  – Loose halyard = draft aft
  – Tight halyard = draft forward
Main Halyard

NO BUMPS
Traveler

- The traveler changes power in the mainsail by changing the angle to the wind

- The traveler will also affect pointing ability
Traveler

• Adjust to keep help neutral

• Up in light air

• Down as the breeze builds
Cunningham

- Draft forward is a better heavy air shape, keeping the leech more open to depower.

- Draft aft is a better light air shape, firming the leech for power.
J/24 mainsail - 10 knots true wind speed
Outhaul

Controls shape in lower aft part of main
Outhaul

- A loose outhaul makes the bottom of the main fuller for more power

- A tight outhaul flattens the bottom of the sail and opens the lower leech
tightly outhaul

mainsheet length constant

camber

8.4%

9.5%

6.0%

10 mph
20mm looserouthaul

mainsheet length constant

camber

9.1%

10.3%

6.8%

10 mph
40mm looser outhaul

Camber

9.5%

10.8%

7.4%

Mainsheet length constant

10 mph
80mm looser outhaul

Camber

- 10.2%
- 11.9%
- 9.1%

Mainsheet length constant

One Design
Mainsail Trim

• **Light Air**
  - Outhaul Loose
  - Cunningham off
  - Vang Loose
  - Backstay, loose
  - Traveler up to boom on C/L.
  - Mainsheet- Top Batten parallel

• **Moderate**
  - Outhaul Max
  - Cunningham loose
  - Vang Snug, no slack
  - Backstay, adjust power to keep boat flat
  - Traveler, keep boat flat
  - Mainsheet top parallel or slightly open
Mainsail Trim

• Heavy Air
  – Outhaul Max
  – Cunningham, no wrinkles
  – Vang very firm
  – Backstay on hard
  – Traveler, down, below C/L
  – Mainsheet, top batten open 5-10 degrees
Headsail Trim
Headsail Trim

• Low aspect headsails sheet at an angle nearly bisecting the leech and foot

• High aspect sails sheet more directly up the leech

• Moving the lead forward will close the leech for power, moving it aft will open the leech to depower
Headsail Trim

- Proper trim allows the wind to flow evenly on both sides of the sail, telltales flow aft

- Overtrimming stalls the windflow on the backside of the sail, creating vortices that spin the telltale
Set sail same distance off spreader and base
J22 Jib Good Set Up
J22 Jib too tight
Headstay Sag

1. Headstay sag increases depth in the headsail to add power

2. Sag can be controlled through backstay and shroud tension

3. Sag controls sail entry, deep for chop, fine for flat water
Sail depth is controlled by headstay tension or mastbend.
Spinnaker Trim
Spinnaker Trim

• A full shape is more stable and good for power in chop or when pumping

• A flatter shape provides more exposed area and is most effective in flat water
Spinnaker Trim

• A high pole flattens out the top of the spinnaker and depowers the leeches

• A lower pole stabilizes the spinnaker and makes it easier to fly

• As a rule the clews should be equal height
Spinnaker Trim

- Pole too high flattens the luff and moves the draft aft, closing the leech

- 2. Lowering the pole moves the draft forward and opens the leech
Notice the different shapes due to the different pole heights...

These are the same design of spinnaker!!
Spinnaker Trim

• As a rule, the spinnaker pole should be square to the wind

• Over squaring the pole means oversheeting the spinnaker
Spinnaker Trim

• Lead forward tightens the leech and powers the foot with increased depth

• 2. Lead aft opens the leech and flattens the foot
Asymmetric
Asymmetric

• Tack line controls the luff tension and shape
  – Looser tack - rounder luff
  – Tighter luff = less power
Downwind Trim

- Too little vang allows too much twist and flattens the top of the main, depowering the sail.

- Vang on decreases twist and makes the top of the main deeper and more powerful.
Go for it!