

Sailing upwind, the genoa is the most important sail. The larger the genoa's size relative to the mainsail, the more profound its effect on a boat's performance. If the genoa is trimmed incorrectly, not even the best mainsail trimmer can recover the lost speed.

SAIL SELECTION

The first element of genoa trim is selecting the proper sail. Wind speed, sea conditions, tactical decisions and hull design all impact on headsail selection. Sailboat performance is generally hampered by heel angles greater than 25 degrees. Narrow boats can sometimes exceed this while beamy boats usually lay over and die when heeled more than 19 degrees.

For example, in 13 knots apparent wind, the choice of which #1 genoa to use is dictated by sea condition and the wind trend. Choose the Heavy #1 in flat water and/or increasing breeze; and pick the Light #1 in choppy seas and/or dying breeze.

In wind strong enough to warrant use of a smaller headsail (#2 or #3 genoa), the choice will be dictated by the design wind range of the sail, and by your ability to sail the boat on its feet.

Most boats offer little adjustment of athwartship lead angle, as they are supplied with single fore and aft track. However, lead angle adjustment can result in significant performance gains, especially in rapidly changing wind conditions.

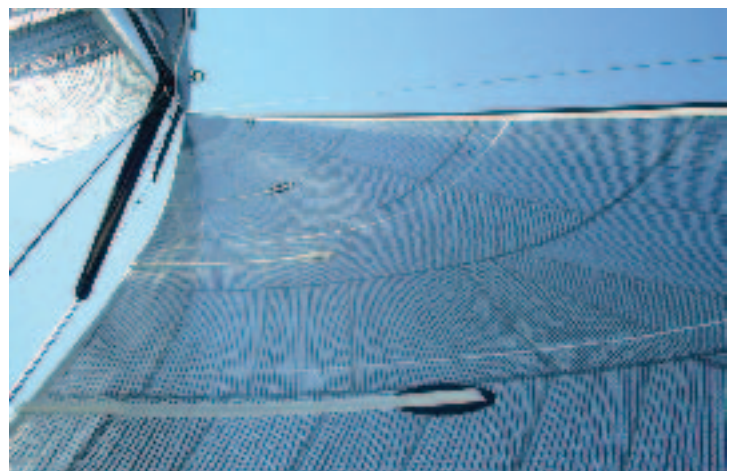
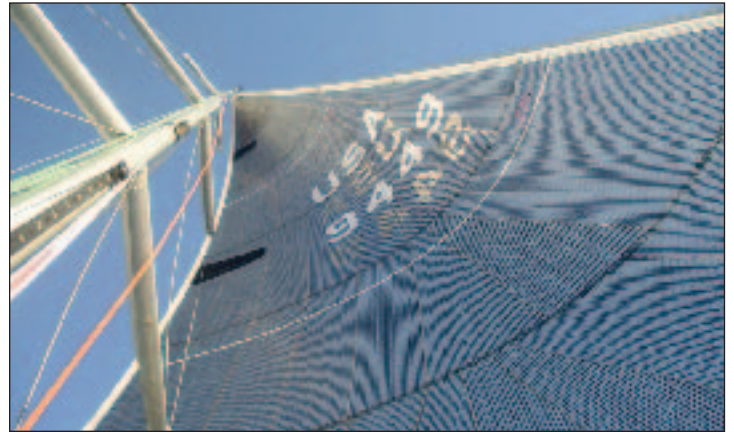
Inboard sheeting is best for "ideal" conditions: medium air, smooth water, an experienced helmsman, or when the boat has a modern underbody. Inboard sheeting is most often considered when high pointing is required.

Outboard sheeting should be considered when you can afford to trade some pointing ability for some consistent power; when the wind is very light or strong, the seas are rough, or tactics require footing. Moving the lead outboard (barberhauling) and forward is very effective for genoa reaching.

Once these general "boat-specific" decisions are made, it's time to work on the individual shape changing adjustments at your disposal: headstay sag, halyard tension, lead position and sheet tension.

HEADSTAY SAG

Headstay sag controls the overall fullness (power) of a genoa and, to a lesser extent, the fore-and-aft position of draft. Sag changes have the greatest effect on the sail's upper two-thirds, where the amount of sag compared to the genoa's chord length is greatest.



Altering backstay tension by means of an adjuster (hydraulic or block and tackle purchase), changes headstay sag. The backstay should be gradually tensioned as wind increases, for any given sail. When a change is made to a heavier or smaller sail, the adjuster should be eased, because the new sail requires more sag at the bottom of its range than the old sail did at the top of its range.

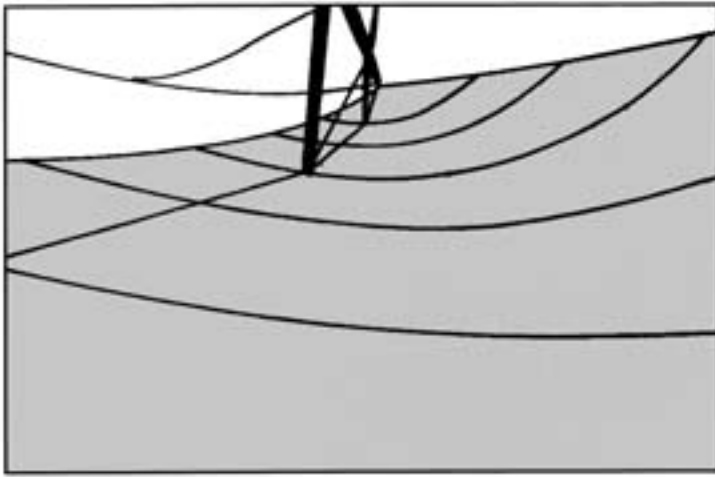
A sail which exhibits an upper draft stripe which is significantly flatter than its middle stripe, has too little headstay sag. The result is less power than conditions dictate and the backstay should be eased until the upper stripe is only slightly flatter than the lower stripe. In very light air the backstay tension should be about 80% less than the maximum, although never so slack that the headstay flops around in waves or curls like a spinnaker.

Excessive sag is usually not apparent until a sail is above the middle of its design range. In this case, the upper stripe will be fuller than the middle one and the entry will be very round. Although a rounded entry does not hurt speed, the boat will point several degrees lower than optimum. When this is the case, tension the backstay until the upper stripe is a little flatter than the lower stripe(s).

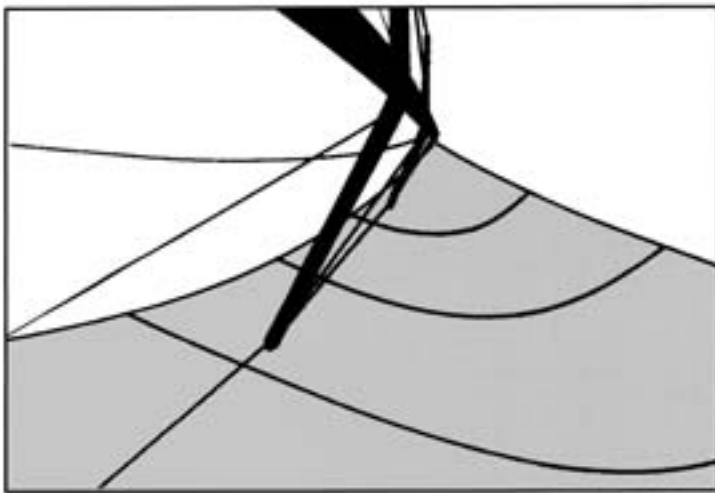
HALYARD TENSION

Halyard tension works the same as Cunningham on a mainsail. It adjusts the fore-and-aft location of maximum draft in the sail.

Modern low-stretch sail materials have reduced the role of halyard tension in sail trim. However, **EXCESSIVE** halyard tension can hurt the sail's effectiveness and/or permanently destroy the sail's proper shape! **DO NOT OVER-TENSION THE LUFF OF A LAMINATE GENOA!**

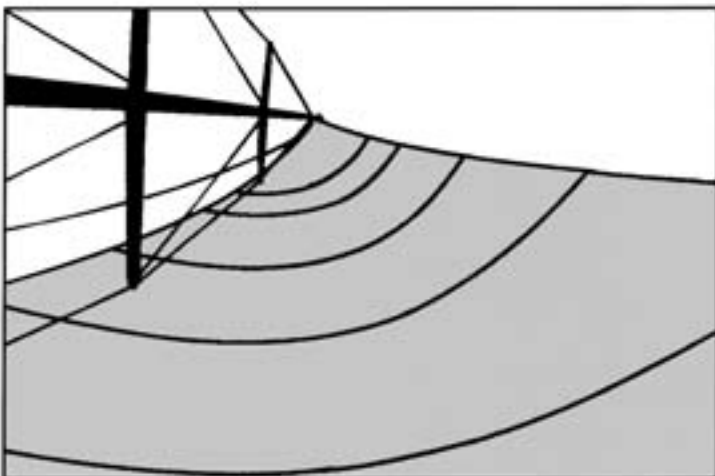


TIGHT BACKSTAY – A tight backstay produces very little headstay sag. The genoa becomes flatter in its upper sections, and draft moves aft in the sail. A tight backstay is typically required for any genoa near the top of its designed wind range.

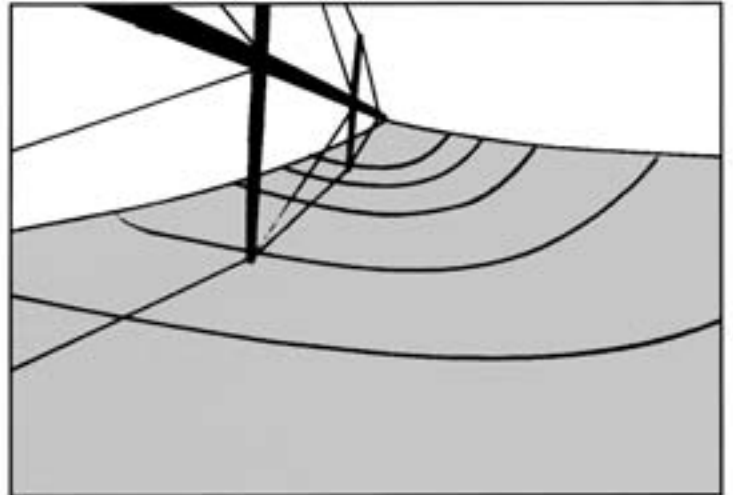


LOOSE BACKSTAY – When the headstay sags more than necessary, the head of the genoa becomes fuller than the middle and the entry gets too rounded. Boatspeed remains good but pointing will suffer. In light air, when maximum sag is desired, the backstay will be tensioned about one-quarter of its potential maximum.

Overall genoa fullness should be viewed like gears in your car. Full (1st gear) for tacking, starting, chop. Medium (2nd gear) for average conditions. Flat (overdrive) when you have good straight-line speed conditions, such as smooth water and medium wind.

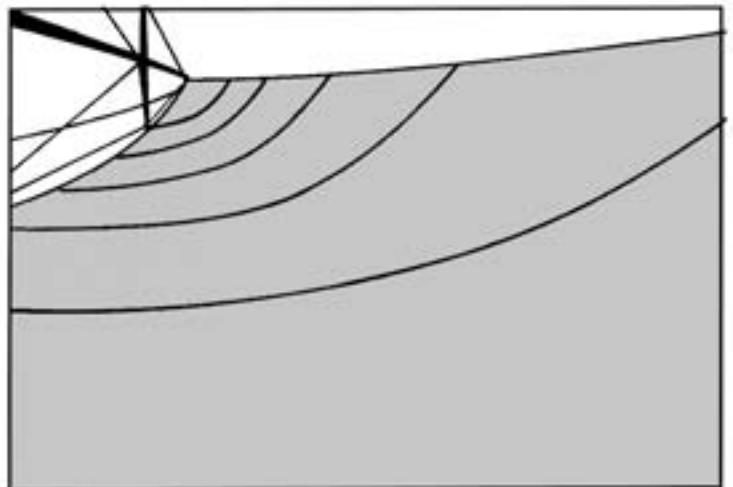


MEDIUM BACKSTAY – Backstay tension should correspond to shape in the sail's upper quarter vs. mid-sail. Shown here is the correct sag for a #1 Genoa in the middle of its intended range. The sail shape is identical at every height along the luff.



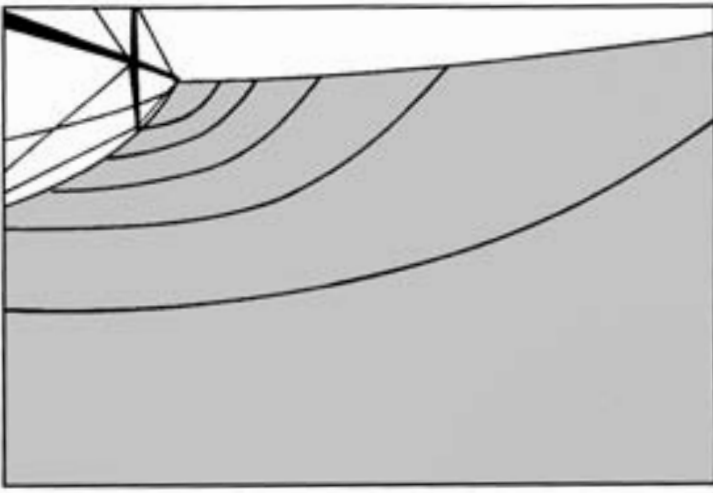
TIGHT HALYARD – When the genoa luff is tightened, the position of maximum draft moves forward in the sail, producing an easy to steer sail shape, but one, which points lower. Avoid luff tension which pulls the draft forward of 40%, or which produces vertical wrinkles along the luff.

To maintain draft in its designed fore-and-aft location, not much halyard tension is required. Use the following guidelines: on boats with grooved headstays, the luff should be loose enough to produce a small amount of sag between the feeder and the tack. On boats with hanks, small “crowsfeet” will appear at mid-luff.



CORRECT HALYARD – Halyard tension should always be as “relaxed” as possible to achieve the proper setting. Try to maintain fore-and-aft draft location at 43 – 47% aft of the luff for #1 and #2 genoas; slightly farther forward for #3s.

Using the above technique the draft will be 43% to 47% aft of the luff, (39% - 43% on #3s). In light air and flat water, scallops or wrinkles are permissible to let the draft slide aft to 47% - 50%. This produces a flat entry, high pointing narrow-groove shape. A rounder entry (39 – 43%) is advantageous in wider groove conditions: slop, poor helmsman or too flat a sail.



LOOSE HALYARD – A loose halyard allows genoa draft to slide aft in the sail producing a high pointing shape which is difficult to steer. Large crow's feet or horizontal wrinkles coming off the headstay are usually an indication of a halyard which is too loose.

Similar to the backstay, as the wind increases, the halyard should be tightened, but only slightly. On a laminate #1 genoa with a luff of 55' the halyard is typically tightened only 2" as the apparent wind goes from 4 to 15 knots. It is easy to inadvertently over tension the luff, so a scale on the deck or spar should be used to record fast settings.

Draft in any sail moves toward the area of greatest stretch. This is why, as a sail ages, the draft moves aft (the leech material is breaking down faster than the luff material). This is also why tightening the halyard moves the draft forward. At the end of a sail's life, no amount of halyard tension compensates for leech stretch. When the draft stays aft in the sail, regardless of halyard setting, it's time to think about replacement.

LEAD POSITION

Fore-and-aft lead position affects overall twist, which is most easily seen by sighting up the genoa leech. Power in the foot is also controlled by lead placement. Twist is necessary because the apparent wind angle is ordinarily farther aft at the head of the sail than it is at the tack.

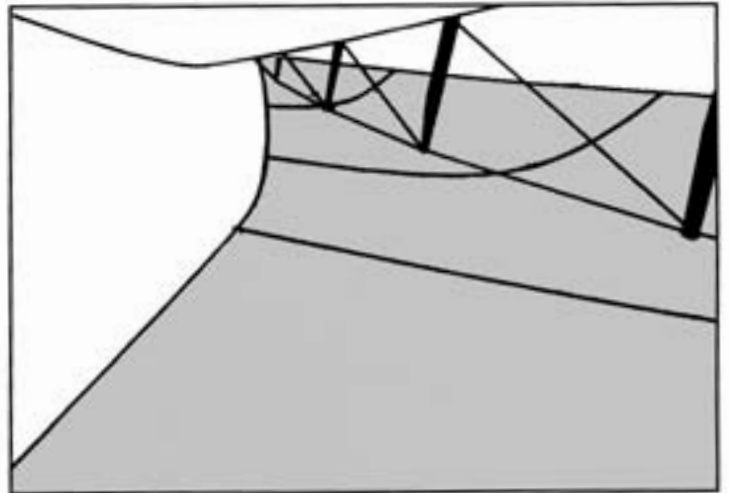
To determine proper lead location, observe the sail as the boat sails to windward. The windward streamers should lift simultaneously as the boat is slowly luffed head-to-wind.

If the upper, windward telltales lift first the leech has too much twist and the lead should be moved forward. If the bottom, windward tell-tale lifts first the lead should be moved aft.

When in doubt, it is better to have too much leech twist, rather than too little – this is particularly true in overpowering conditions. Moving the lead aft will also flatten the foot, effectively de-powering the lower quarter of the genoa.

SHEET TENSION

This is the most frequently used sail trim adjustment on any boat. Sheet tension has an effect on many trim factors, such as twist,



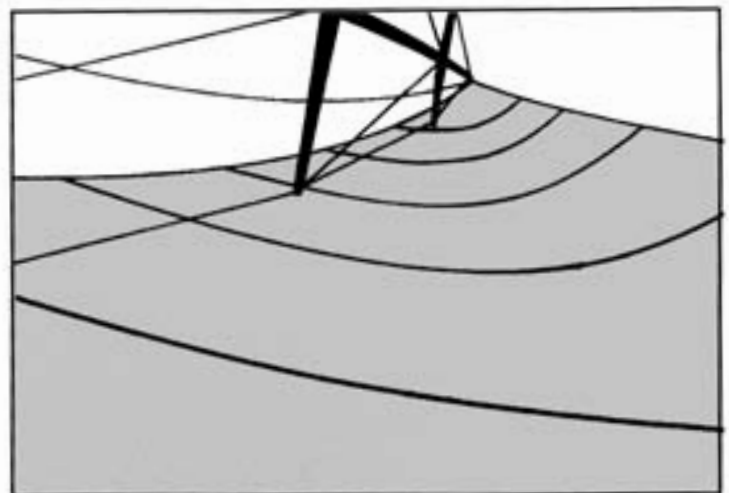
SHEET TENSION – Genoa sheet tension relies on a combination of proper twist and athwartship sheet angle to produce the best pointing and power. The distance of the genoa leech off the top spreader is a good relationship to use, when determining the best sheet setting for any condition.

draft and sheeting angle. For this reason, it is highly interactive with other trim adjustments.

For instance, sheeting a genoa harder reduces twist, reduces camber (draft depth) and narrows the sheeting angle. These changes improve pointing ability, but decrease power. It is impossible to simply sheet the sail against the spreaders and expect to be well positioned at the windward mark!

The pointing/speed relationship is different for every boat, and it's difficult to make specific recommendations without knowing the boat's characteristics. In general, light air calls for more speed and less pointing, because most boats are trying to develop sufficient power. Think about keeping the leech 5 – 6" off the spreader tip.

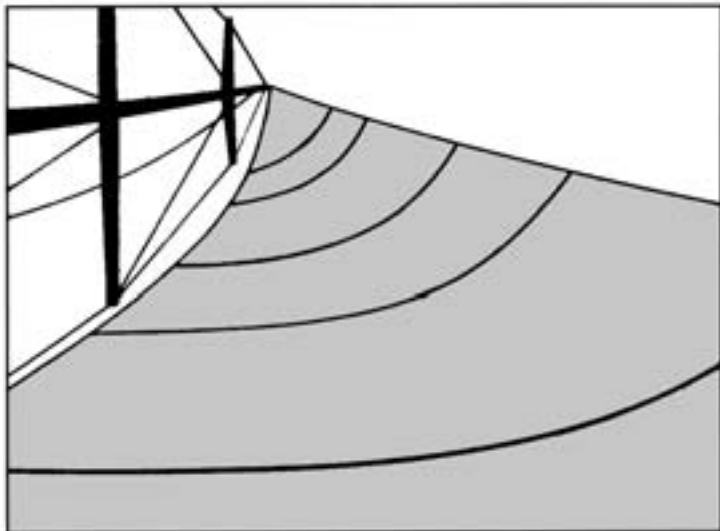
In medium, "high pointing" conditions it is not unusual for the genoa to actually touch the spreader tip. Don't overdo it, though! As soon as speed drops, ease the sheet back out to a lower pointing, higher power position. In heavy air or very choppy conditions, the genoa leech may be effective as much as 8 – 12" off the spreader tip.



"HIGH POINT" SHEETING – When ideal conditions exist - flat water, medium wind – you can sheet the sail until the upper leech just touches the spreaders for higher pointing. As soon as speed drops, it is important to ease sheets to add power, and sail slightly lower.

It is crucial for the trimmer to keep a constant eye on the speedometer. If the boat isn't up to "target" boat speed, trying to point higher will be detrimental to VMG. Conversely, when your boat speed is above target, think about "taking a bite to weather" by sheeting the sails harder and heading up.

Most sailors worry too much about pointing ability, and not enough about speed. Erring on the side of higher boatspeed will almost always improve your VMG.



LOOSE SHEET – In very rough conditions, or when acceleration is needed, it is sometimes necessary to sail with the leech as much as 8 – 12" off the upper spreader tip. This is an easier steering set-up, producing plenty of power with a slight decrease in pointing ability.

CONCLUSION

It is very important for the genoa trimmer, the mainsail trimmer and helmsman to communicate. By logically separating the functions of power and pointing ability, it becomes easier to key in on the critical component for the best performance in any condition or set of circumstances.

As the helmsman relates his needs for better steering, the trimmers can adjust their controls to help him. By watching the boatspeed, and knowing genoa settings at any point, the genoa trimmer has important information for the skipper and tactician, information which changes constantly. Since the genoa has the largest effect on upwind performance, proper input from the genoa trimmer is critical to success.

The genoa trimmer should position him/herself to leeward, and should be able to see the speedo, windspeed indicator and the whole sail. A typical conversation between the trimmer and the helmsman would go something like this...

Helmsman: Flat water ahead, let's point.
Trimmer: Genoa in two inches, still good speed...speed down two tenths; easing genoa three inches.
Helmsman: Coming down a touch...accelerating.
Trimmer: Speed back to target, genoa trimmed to normal.
Helmsman: Wave coming, I'm footing.
Trimmer: Genoa out, speed is climbing.
Helmsman: OK, we're through the waves. Good speed.
Trimmer: Genoa trimmed back to normal.
A light #1 powered up for footing conditions in 6 – 8 kts of breeze.



(800) 342-5033

www.haarsticksailmakers.com
info@haarsticksailmakers.com