

# The Mighty Staysail

By Bill Whitney

Looking at the typical 20 – 40 foot sloop-rigged production sailboats built from the 1960's to the 80's, there are very few rigged with staysails. Almost all of them employed big, overlapping genoa jibs to provide the sail power needed to drive their hulls. Larger schooners and world cruisers employed staysails but these faded from popularity as production boats. Now, decades later, we see a resurgence of the staysail, not only in new boats, but also in many refits of older production boats, as people discover the limitations of the single headsail rig. Heading upwind in a building breeze with a big genoa, even if it can be efficiently roller-reefed, becomes a challenge. Too much sail overpowers the boat and reefing a large jib upsets the balance of the sail plan by shifting the center of effort too far forward.

Designers and builders are now producing boats with either permanent or removable inner stays attached to the mast, with the inner triangle about 2/3 of the foretriangle area. Conveniently, this is about the same sail area as a reefed/furled jib. With a sail on the inner stay, the center of effort is moved aft, and provides much better balance for the entire sail plan. On a Friendship sloop, this inner stay is attached to the mast at the same place as the shrouds, and approximately at the center of horizontal thrust for the reefed mainsail, thus providing a strong, mechanically balanced structure. It's amazing that it only took modern designers 50-plus years to "discover" the staysail again!

The staysail is a handy and versatile sail, almost effortless to tack or jibe, and easy to set or strike from the cockpit if properly rigged. This small headsail generates considerable power on its own, and trimmed correctly, augments the mainsail, amplifies the jib, and balances the center of effort on many points of sail.

A clubfooted staysail has its foot secured to a boom, hence the name "club" commonly given to that spar. Its foot can be attached to the club with lacing, but more commonly it's 'loose-footed', attached only at its tack and clew. I have a short lanyard attached to the clew as an outhaul so I can give the sail minor adjustments for wind conditions. In light winds I slack off the outhaul to give the sail a little more curvature, or draft, and I tighten it up to flatten the sail as the wind increases.

Another alternative rig is to install roller furling, which offers an easy way to deploy, furl, and stow a staysail from the cockpit, and with some set-ups, a way to reduce sail area by partially furling, or roller-reefing. If the sailcloth is robust enough for heavy weather, and the sail is adequately protected from sun exposure when furled, a furling staysail may be a viable option.

In heavy weather, the staysail becomes the 'go-to' foresail, providing just the right amount of sail area and maintaining the same balanced center of effort under a double-reefed main as exists with the full rig. Back-luffing it can also be a big help getting on the right tack when sailing off the anchor or mooring, and when coming about in heavy seas. The staysail is at its best on any points of sail between a close reach and a broad reach, and the self-tending ability of the club-footed staysail is very useful in short tacking and single-handing.

Like all other sails, however, staysails have some limitations, wind range and points of sail to mention a few. When sailing downwind on a very broad reach, the staysail can interfere with the airflow to the jib, due both to the weight of the club, and the partial blanketing by the mainsail. I find that dropping the staysail can actually increase boat speed, as the full jib moves the center of effort forward to counteract the tendency of the boat to round up. Similarly, on a dead run, a preventer or whisker pole which keeps the club 'winged' out on the opposite side from the mainsail, prevents the staysail from collapsing. The staysail and club can become a weapon during an accidental jibe. Clubs tend to dominate the foredeck, and can interfere with anchoring, keeping a bow watch on a foggy day, or storing a dinghy.

The design elements your sailmaker has to consider are the area and normal wind range in which you will be sailing, proximity to the mast and other sails, amount of inner stay sag on various points of sail, and desired location of the center of effort for the sail relative to the overall sail plan. One of the issues I have with my staysail is how much it disturbs the luff of the mainsail when close-hauled. The windward performance would likely improve with a smaller staysail, or by having my existing sail recut with some hollow added to the leach. If the staysail is too full, or the slot between leech and mainsail is too tight (because of poor sail trim or shape), it will disturb the airflow and efficiency of both the jib and the mainsail, particularly when sailing close-hauled.

Since the staysail often doubles as the heavy weather sail, robustness all around is imperative. The most failsafe staysail arrangement is a hanked-on, loose-footed sail that's stoutly constructed and that's sized and shaped conservatively. Its fabric weight should be equal to or greater than the weight of the mainsail cloth. Its corners should be heavily reinforced with multiple layers of sailcloth, extending along twelve to fifteen percent of the length of the luff, leech, or foot that they're supporting.

The corner hardware should be non-corroding bronze or stainless steel, built and installed to take the load of a 50-knot gust. Webbing reinforcement may be added to enhance the strength and flexibility of the corner rings. The type of jib hanks and the way they're secured to the luff of a hanked-on staysail, make a huge difference in the reliability, ease of repairing, and handling of the sail. Jib hanks should be bronze, reusable, and large enough to allow an easy run up and down the stay, with piston pulls all on the same side.

The venerable, valuable and versatile little staysail adds much to a sailor's options if it's built for the task, and the rig it's flown on is designed to maximize its performance. This headsail that consistently provides yeoman service, proves once again that good things do indeed come in small packages!

*(Note: Much of the content of this article is a distillation of multiple sources, among them, "In Praise of the Versatile Staysail", by Carol Hasse, "The Sailmaker's Apprentice" by Emiliano Marino, and "Sails", by Jeremy Howard-Williams, and of course, YEARS of personal experience)*