Sailing Article
The use of Backstays.

Most people do not handle the backstays on their vessels very well. That is possibly because on every boat they seem to be different and sometimes have different purposes. For students of sailing, they often seem too complicated and or secondary to the main action on the boat. But they are one of the most critical parts of any yacht.

But lets start with the normal fractional racing type boat, with a masthead backstay coming to the back of the boat. Could be a square top main, or could be the normal pin head main. The backstay on a fractional boat is primarily there to steady the mast and control the forestay tension.

The forestay has the jib on it and the jib has been cut by the sailmaker with sag (athwartships, across the boat) of a predetermined amount. The sailmaker can tell you but in a normal 30-35 footer, the forestay sag should be about 4-6 inches at the most, not tighter, as that puts too much compression load on the mast. On a 50 footer, use 6 inches as a guide, depending upon the mast tensions, which these days are usually determined by the mast jack pressure…… more on that later.

When the boat is "on the wind" or beating to windward, the backstay should be about 75% of its tension level, (measured either by gauge or by marks on the rope). Then the sheet hands may seek to have it adjusted as it affects the shape of the headsail at the front, and also affects the leech of the main. At 75% it assumes that here is the starting point. In light weather, make your starting point 50%.

As the boat tacks to windward, there will be refinements required to the forestay tension. And the backstay hand would keep those adjustments in mind so they can be replicated.

When tacking, the backstay is loosened on every tack to about 25% of the tension range. Coming into a tack, as the headsail is being released, the backstay should come off at the same time, but be careful to retain 25% of the tension for mast stability purposes. This therefore allows the boat to come out of a tack with a saggy forestay which increases the drive in the headsail. Once out of the tack, new sheets are on, when the boat speed is about 75% of target then the backstay should be wound on to the mark achieved prior to the tack. When most boats tack, they take a little while to build up speed, and in that process the backstay coming on gradually enhances considerably the need for speed. Then sit over the rail.

At the top mark when spinnakers are being set, as you go around the mark, the backstay should be loosened to the minimum tension mark. That should be done in the mark rounding so there is no mast bend when the spinnaker is hoisted.

Again, as the spinnaker is being dropped, the backstay is taken to the 25% tension mark, and when going around the mark, then the backstay should be back to 50% and comes back to 75% as the boat gathers speed.

As you know, most boats carry a range of headsails for different conditions. The sail changing is like changing gears in a car, in a car, as the revs increase, so you change gear. In a boat as the wind increases we change the sails to become smaller and they become flatter.

When I have said 75% is a good starting point for the backstay, that is qualified by the following. When there is a sail change, the settings will change. And like a car, we change the setting according to the range the sail is in. For example, we have a Number 1 headsail, the largest, on the forestay, it is blowing 18 knots and there is a change to the Number 3. The backstay with the Number 1 up, as it was in the end of its useful range was probably at 85%, trying to keep the luff round forward. When the Number 3 goes up, different sail, and it is in the bottom of its range at 18 knots, so the backstay would be reset at about 65% for the moment, until the boat gets going and the trimmers see how much forestay sag they want. As the wind increases they will seek to have the backstay brought on so at the end of the Number 3, in say 25 knots, then the backstay will be back up to 85%. And so it goes to the Number 4 where the process is repeated.

So, whilst most people think the backstay is somewhat insignificant, it is one of the most vital controls on a boat.

And be careful; never let the backstay slip or jerk. These are designed with very limited safety margin, slipping a backstay could well damage the integrity of the mast and that would not be insurable. As most masts are now over $200k, you can be assured of never being invited again if you scare anyone with your backstay management. Make sure you ease it smoothly and never unwrap it from the winch. Some of the backstays are loaded up with tonnes of weight and at sea, even more.

Good sailing.