Rig Tension: Tight or Loose?

By Keith Dodson

After reviewing trends in rig tension among several of the classes that I have sailed over the years, it is clear to me that some rigs must be tight, some loose and some ambidextrous.

Dinghies that carry spinnakers or plane upwind almost always use a tight rig with a pre-bent mast. These include 470's, 5o5's, Flying Dutchman and in recent years, the Flying Junior. No way can anyone seem to increase speed on these boats by using a loose rig (i.e., no pre-bend in the mast while the jib is hoisted to the upwind setting while sitting on the trailer or at the dock). These boats all carry spinnakers and, with the exception of the FJ, all plane upwind.

The antithesis to boats that plane upwind is the Lido 14. Possibly the slowest boat alive, whose only possibility of planing is by air transport abroad. It does not use a pre-bent mast and has extremely loose shrouds.

Somewhere in between are the ambidextrous classes — the Snipe, and the C-15. Through the years, the champions of each class have gained top speed using both tight and loose rigs. Neither boat planes upwind or carries a spinnaker. However, they do have in common the latest "fashion," and that is that most of the top sailors are or have already migrated to the tight rig.

The Theories

A tight rig will provide more headstay tension and a tighter luff helping in pointing (only if the jib is cut for this). A tight rig causes pre-bend which takes some of the belly out of the main by flattening it. This should help lighter crews when they are overpowered. Both sails are now less baggy, subsequently reducing heeling moment. Or if you're a heavy team, you don't have to hike as hard . . . forget that idea or we'll move you to a Keel Boat fleet. You can take the mast pre-bend a step further and pin the spreaders aft, forcing more pre-bend (flatter sail). Mark Elliot did this on the boat he loaned to us at the 1990 Long Beach area District Championships.

Downwind is your trade-off. The looser your shrouds, the faster you go with your pole up. This applies to Lidos, Snipes and, believe it or not, C-15's. The concept is simple: A loose rig allows the boom to get closer to perpendicular to the centerline of the boat than a tight rig. Since the wind is running in line with the centerline while going dead downwind, a sail set at ninety degrees to the centerline projects more surface area and generates more power, i.e., speed. A loose rig equates to a loose jib luff while running. This allows the jib to be trimmed more outboard and out and away from the main's shadow — more power and speed. To say that a tight rig is just as fast downwind, period, is not true. The good guys can make it look that way by sailing by a lesser sailor with a loose rig. Beware of this deception! Allison and Mark are likely to pass you downwind even if they left their jib on the dock . . . they have been sailing that well.

A reaching dinghy likes a tight head stay most of the time. C-15's with a loose rig use a mast block and snipers use a mast aft puller combined with more jib halyard tension to achieve this. This keeps the mast from rocking back and forth. This rocking softens and tightens the jib luff, causing it to collapse . . . this is a big problem with Lidos sailing in chop. Generally, a slighter looser luff works well on a broad reach just prior to putting the pole up. The mast has less tendency to rock and the loose luff creates a fuller, more powerful jib shape. For C-15ers, this simply means pull your mast block out and, if you by chance can adjust your jib halyard while racing, let it off a bit. In summary, tighter reach, tighter headstay (jib luff). Snipes use halyard and aft puller, Lidos use nothing, and C-15s use the mast block and, for those so equipped, more jib halyard. Some of you are thinking . . . I've got a halyard lock on my jib and I'm pre-bent, what adjustment do I make to my rig? Answer — none. This can be a slight negative in the prebend argument.

My experience

About ten years ago the heros of Snipe sailing like Mark Reynolds were sailing with loose rigs. The fleet slowly transitioned to tight rigs/prebent mast to where approximately 95% of the fleet sailed tight. What changed? Sailing theory, laws of aerodynamics, hull and mast design, or global warming? The answer is not that simple, but revolves around a few of the better sailors trying something different in order to gain an advantage over the other better sailors. Sail design was tweaked to fit the new-fangled rig set-up . . . voila, the pre-bent guys were on top. The interesting thing was that they were on top before the change, but a perception was created and the domino effect began. A deception? Quite possibly.

In 1984 my then crew and now crewwife Claudia (I call her Claudia for short) went against the trend at the Snipe North Americans. We used a loose rig and a forward puller to prebend the mast upwind. We won by a good margin largely due to speed. We had stumbled into a rig, sail and tuning combination by trial and error that was very different from the gang. It gave us a speed advantage that we could not explain. As the fleet continued to migrate to tight rigs, we tried it but couldn't find an edge. In 1989 my crewwife (should be a new word in Webster's) and I took our loose rig to Clearwater, Florida, for the first leg of the Snipe Southern Circuit. At the Midwinter Championships in medium sea and wind conditions we handily won with an edge in boat speed. The fleet was 99% tight and still shook their heads at us. We repeated at the second leg in Miami for another win with the loose rig. However, we were mere mortals when the wind picked up in Nassau for the finale. Through the years I have felt more vincible in the breeze upwind than in lighter air. I cannot blame the rig set-up, but there may be a trend.

In C-15s it has been "loose rig mania" since 1968 when I began sailing with my Father in ole *Tea Bag* (back then it meant the Lipton Type). Development has been little slower, but several years ago the tight rig finally made it . . . or so it appears. In 1986 my crewwife and I secured a boat for the C-15 Nationals at ABYC. The loose rig was all we knew. In medium air upwind we were fine, but in the breeze the 125 pound crewing machine wished she was 185 pounds. We struggled and hiked, played the traveler and hiked. At the 1990 Districts at ABYC we borrowed a boat tuned by Mark Elliot. After racing in eight different C-15 Nationals this was the first time that I had seen something different, a pre-bent mast and stern sheeting. Visibly the main is flatter and headstay tighter. The jib luff did not sag when I let the main off. The mainsail shape was similar to that of a 470. Claudia, is this still a C-15? We were not faster upwind in the 20-25 knots than the best guys, but we had closed up the gap that we experienced at the Nationals. In 15 knots, we were close to the leaders in upwind speed, but not so at the Nationals. The boat was easier to sail and didn't trip as much over the centerboard when a puff hit. This tripping (boat heels suddenly, weather helm almost tears the tiller out of your hand, and boards stall out) is the primary demon that dinghy sailors fight upwind in a breeze.

As an alternative to tight rig pre-bending one can bend the mast on a loose rig by either using the boom vang or additional mainsheet tension. The vang tends to soften the headstay (hurting pointing) and the mainsheet tightens the leach of the main, creating more weather helm (more tripping). Expert C-15er Burt Lowies has been using the "sheet hard — traveler down" method successfully for years. He, like us in the Snipe, in an anomaly with his techniques.

mainsheet

Where does all of this leave us?

As in any competitive sport, the participants are always searching for the magic formula; a series of absolutes that enable one to gain advantage over another. In sailing, there are only a few absolutes, a handful of general rules and lots of room for trial and error. If following the tuning guide made everyone the same speed as the guy who wrote it, you would eliminate one of the exciting variables in sailing: boat speed.

As a matter of fact, copying the fastest guy will only put you in the ballpark. The beauty of sailing is that you now have the opportunity to pass him by trial and error fine tuning. I have never won an event by copying the fastest guy and leaving it at that. Should you choose to stop there you will forever be a sheep . . . and that is baaahaaaad.

I haven't answered the tight rig — loose rig question yet. It may never be answered in "absolutes." However, I will summarize with generalities:

- "Sailing with loose shrouds upwind in a breeze does not in itself depower the rig." You have induced more luff sag in the jib (fuller, more powerful shape) and not taken the belly out of the main (fuller, more powerful shape). If you think that it looks like something to try in light or medium air and chop, I agree.
- "When you ease your main in a puff with a tight rig (upwind) your luff will not sag as much as it would if you were sailing with a loose rig." Luff sag hurts pointing in a breeze.
- "Anything that gets your head out of the boat is good" (refer to Mark Elliot's case for stern sheeting). Stern and bridle sheeting is used in many classes by top sailors.

Rigging and tuning trends in classes change over time. Although a tight rig in a C-15 goes against my sailing moral fiber, I will try it again the next time I put my 125 pound crewwife on the wire in a breeze. The boat felt good. It seemed easier to sail and we were hanging in a little better with the "big boys," giving us a better vantage point from which to strike from down wind.

USYRU Notes and Stuff

by Dick Ohst

I recently accepted the position of USYRU Area J Director. That may sound like some lofty executive office at the National and Southwest level, but I consider it to be just a prestigious volunteer job in my favorite sport. I am anxious to contribute my time to help propagate and reinforce the basic concepts of sailing, racing and family fun that I have enjoyed most of my life. The USYRU, as most of you know, is the national governing body for the sport of sailing. It covers a whole array of different yachting and yacht racing activities. It publishes the racing rules and constantly reviews them for improvement; it also provides and administers an appeals system for rules interpretations. The USYRU sponsors many national championships; besides the ladder elimination events like the US men's sailing championship open to anyone, there are special championships such as the Championship of Champions open to USYRU member one design class champions. As C-15 National champion in 1978 and 1979, Tom Linskey competed in and won the Championship of Champions. The C-15 class has a lot of super sailors and they should continue to get involved in racing in the USYRU National Championships. Other things that the USYRU does are: training of sailing instructors, administering handicap rules, certification of judges, selecting and training teams for the Pan American, Goodwill and Olympic sailing events and it provides a national forum in which every sailor is represented. This is just an overview of the many things that go on within the USYRU, and you can be assured that the C-15 Class is an important part.

Area J is one of ten USYRU areas and since the C-15 class association has adopted district boundaries that are the same as the areas you know that Area J is Southern California, Arizona and part of Nevada. The Area J Council is only about five years old and its primary role is to act as an interface between the USYRU and the local yachting organizations. The two yacht racing associations with Area J are the Southern California Yachting Association and the Yacht Racing Association of Southern California. The Area J Council services both of the YRA's and all have representation at USYRU. If you were to look into the Area J structure further you would discover that there are five Harbor Associations, each designed to serve the yacht clubs in their local region. The Harbor Associations create their own race calendars help in hosting the USYRU ladder events and provide a forum for solving common local Club problems. That is the way Area J is organized at the present and its seems to be working fine.

The USYRU has a Fall and Spring meeting each year in October and March. The C-15 Class is usually well represented at the One-Design Class Council (ODCC) meetings held at these times. This Spring the ODCC will hold a workshop that will be directed at creating a Fleet Captain's Manual to be ready next fall. This looks like an opportunity for the C-15 Fleets to contribute some good ideas to help make this a great manual.

The USYRU annual dues has been reduced to $35 beginning in 1991 in attempt to increase membership. I would hope that every C-15 racer, owners and crews, could see their way to budget this amount each year in the interest of supporting an organization that is dedicated to reach out in every way possible to make sailboat racing enjoyable to all ages. The USYRU will celebrate it's 100th anniversary in 1997 and by the way, Area J has formally submitted a proposal to host the Fall meeting then to make it a gala event. If this proposal is accepted we will have a lot to do.

If anyone has any questions about USYRU activities please feel free to call me. If you have specific issues to bring up with the ODCC you may send them in writing directly to the USYRU or through me if you wish. Good luck in your racing and post-race celebrations.