# Managing Your Mid-Girth

by Nelson Weiderman

You are at a major regatta and the Fleet Measurer has just measured a bunch of spinnakers. He sends his assistant fetch you from the dock and separates you from the crowd of owners socializing nearby. He starts talking to you in hushed tones. It seems that your class spinnaker has measured in at 77.5 square meters when the limit is 77 square meters. But you have a certificate from the sailmaker that says it is a legal J/105 class spinnaker! Your backup is a four year old reaching kite. What to do? What to do? You've got several thou invested in this regatta and your crew will not be happy if you have to go home with your tail between your legs. What to do indeed?

If you want to keep yourself from being put into this situation, you should know something about your spinnaker -- especially how it is measured and how it responds to environmental conditions. Here I will describe how to measure your spinnaker and what to do if it is a little too big. If it's more than 1% too big, chances are that your sailmaker has pushed the envelope too far and you should just take it back to be replaced, but anything less than that can probably be "adjusted".

To measure the spinnaker you need four measurements. You're better off if you have a tape measure that reads either meters or decimal feet. Feet and fractions is just too much math. First you need to know about measuring to the corners. At each corner the official measuring point is the intersection of the two sides that form the corner (e.g. the intersection of the luff and the leech at the head). In most cases (but not always) the sailmaker has sewn a ring into the corner so that the bearing point on the ring (the point at which the shackle or bowline contacts the ring) is the same as this intersection. Sometimes the clew does not have a ring so you must use the point of intersection between the luff and the foot.

Now you can perform the first three measurements, the foot (SF), the luff (SLU), and the leech (SLE). Have a helper hold the tape at one measurement point and read the tape at the other measurement point. Pull the sail taught, but don't try to stretch it. Try for accuracy of at least 0.1 foot or about .03 meters.

Now go for the mid-girth (SMG). Instead of trying to measure halfway up the leech and halfway up the luff, simply double the sail over. For example, havve your helper hold the measuring points of the head and clew together and find the midpoint along

the leech by stretching out the doubled-over sail and marking it with a magic marker at the midpoint of the tape. Put another mark on the luff after doubling it over by holding the head and tack together. (If you are batch processing spinnaker measurements, it pays to have a stake in the ground that you can put the corner rings over.) Don't be surprised to see previous marks at these mid-girth points if your spinnkaker has been measured before. Once you have these marks on both tapes, you need to measure the distance between the outer edges of the tapes at those marks. Again, put the spinnaker on the ground, pull the mid-girth taught, but do not try to stretch it.

Next, plug your numbers into the magic formula: (SLU+SLE) * .25SF + (SMG-.5SF) * (SLE+SLU)/3. If you have a metric tape you are done. If you've been using a tape in decimal feet, you need multiply the result in square feet by .0929 to get square meters. If your number is less than 77, you can rest easy. If it is more than 77 there's more work to be done. If your spinnaker is wet or even damp it can be shrunk!

I performed the following experiments in which my midgirth varied by 0.3 feet (over 3-1/2 inches). First I dried it on my hot concrete driveway for 30 minutes for a baseline measurement of 23.5 feet. Then I put it on the lawn for 30 minutes. It drew enough mosture from the grass in that amount of time to increase the mid-girth to 23.6 feet. (If you lay a sail on the grass in the sun, the greenhouse effect causes the grass to "sweat" and the grass will brown out in short order.) Then I hosed it down making it an additional 0.2 feet wider. Then I air dried it at the top of my flagpole for an hour and got it back to 23.6. Then I tried the sailmaker's trick and spread it out in my car with the heater turned on high for 30 minutes. Surprise! The SMG grew to 23.7, perhaps due to the high humidity in the car or the moisture being redistributed from the corners of the sail to the middle. Finally, I dried it on the concrete in the sun for two hours to get it back to 25.5 feet.

So the measurement of my spinnaker varied from 76.69 at its smallest to 77.48 at its largest, simply by varying the amount of moisture in the cloth. (And I only used the midgirth measurement as a variable -- had I used all four measurements, the effect would have been more dramatic.) So the moral of this story is that you can "adjust" the size of your spinnaker by as much as a percent or two in area by controlling the moisture in the cloth (not to mention the people at the end of the tape measure and how much they pull on the sail). If it's much more than a percent, then consider taking it back to your sailmaker for adjustment.

The other good news is that over time the spinnaker gets

smaller because of wrinkles and shinkage of the cloth.  If your spinnaker measures in too easily, maybe it's time for a new one.