

Tech Talk *with Don Campbell*

In this issue Don discusses the points you need to consider in dealing with a sailmaker.



Sails are technical beasts in almost every aspect. As sailors, our fun is to sort out the technical details of sails to get propulsion for our boat, so we can have fun moving with just a transfer of energy from the air to the boat. That is how we tame the beast in the sail and end up with a servant for our needs and wants.

This issue of Tech Talk is slightly out of order because I would prefer to discuss the theoretical aspects first, but there is a seminar planned with a sailmaker for this spring, so I thought I would discuss the important considerations that you might want to make to buy a new sail before you go to see a sailmaker. I always start every project with the question "what do I want or need to have to get me where I want to be when I finish?" Thus the decision on size, construction, and maker are the main things to consider.

First the usage, if you are going to be in light air most of the time, then you want bigger and if you are going to be in heavier air most of the time, then smaller. The other compromise for size is stability of the boat and heeling angle. You will find that heeling angle is more a function of a too deep draft on a new sail or how blown out the mainsail is on old sails. If the draft is deep and aft, your boat will heel before it goes forward. Any draft problems in a foresail will only exacerbate things.

My foresail compliment for everyday sailing is a 135 and a 170. I do have a 150 that is useless and stays on a shelf at home! The 170 has been retired from the race sail inventory and has sunbrella on the leech for sun protection when rolled up, so it has become the everyday foresail. I have had a blown out 135 that I used for everyday usage but I could not trim the leech well enough for my liking and so have a new one that is used for both racing and heavy air. If we are taking out guests and want good boat speed but no thrills, we use the 135. It is about 0.5-1 knot slower than the big sail in lighter winds but for a day sail and lack of heel it is great. That speed loss means about 1.5 hours longer on a full day trip to get to a destination, which I do not appreciate at the end of the day so I tend to use the 170 as much as possible but I like performance first, any and every day.

For racing, I use a 165 now, so that if I race PHRF, as in a club race, I will only incur a 3 second penalty. PHRF-LO has changed their sail measurements from the old 153 as standard to 155, so the increments are 165 and 175 now. (The Chesapeake may still be on 173 and they seem to have a much different clew placement for the same rating than we have.) If we go to the 175 then the penalty is 6 seconds and I don't think that the advantage of the extra cloth is equal to the extra penalty incurred, because once at hull speed there is no more to get.

Once the wind gets above about 14-15 knots, I will switch to the 135, as in this year's Syronelle, and find no loss. At over 22, Joe Fernandez said to use just the 135 and no main to win races. We have sailed with

just a 135 from Port Dalhousie to the National Yacht Club in 4 hours on a reach with about 20-22 knot winds. That was a great ride with no heel and no spray to get wet in 2 meter waves.

I also like the sail to have the maximum luff, so all my sails go right to the top limit that allows for the halyard to have the needed angle to furl on my foil without having to have a pendant in there as well. I think it necessary to always try to get the wind high off the water, especially with low aspect sails, since there is a geometric increase in wind speed as height off the water increases.

I usually go as heavy on the cloth as I think I can and that is usually one heavier than is often suggested. However, usage is the first object and while my mainsail is 7.2 oz. cloth, Jean du Sud carries a mainsail made from 12 oz. cloth. Height of the clew is important, and I do not like high cut clews on genoas for two reasons: first you lose the air on the deck and second you raise the center of effort so increase the heeling propensity. The height of the clew determines the area distribution of the sail, a higher clew will have less area low than a low clewed sail.

As for a 135 not losing much compared to a 165, there will be some loss upwind up to mid range air velocities. Downwind you lose a lot, especially with a compromised pole length and that will be so up until about 18 knots. I find the adjustable whisker pole to be very helpful in maximizing pole length for each sail used.

The main determinants that you need to take to a sailmaker for sails are the wind speed you normally sail in, how deep you want the draft, the overall measurements of the sail. For the mainsail, you also need the set back at the gooseneck, the number of reefing points and their measurement from the boom, the weight of cloth, and I prefer to stipulate the maker of the cloth too, the headboard size and measurements, the half girth measurement and you will get a good sail made. There are some easy extras that you may want to consider as well: sail numbers, class logos and racing draft stripes. I find that the stripes make it much easier to see the curves in the sails and changes in adjustments, so they are on my sails. Then there is the question of battens for the main. Sailmakers like this newer, catchy phrased 2+2, which means the top two battens are full and the bottom two are short. (This is really a UPS fix, because UPS refuses to take shipments of packages as long as the battens are for Alberg mainsails). I have one North mainsail that is a 2+2 and was very disappointed with the life of that sail.

This sounds like a ton of material to take to anyone, but the sailmaker needs it to build your sail. If you want it in writing, then go to the race rules in our by-laws and it is there in black and white. I have included them below.

The one other thing that is getting to be more common, unfortunately, is loose footed mainsails. These are not class legal sails for Alberg racing, and so not legal for PHRF racing either if you expect to have an Alberg PHRF factory rating. I know of three in the Ontario fleet and know of a fourth one that was a nightmare for all concerned. Of the three in the fleet, one is not delivered yet, one contributes significant weather helm and the third is liked by the owner. The fourth was a new sail sold to an engineer. He was unable to trim the sail to his satisfaction so he had the sailmaker come sailing twice and both times, the sailmaker trimmed the sail well on the boat. After another two weeks of trying, the sail was taken back by the sailmaker to avoid further complaints and an unhappy customer. It has since

had a boltrope added and been bent onto a Corvette and that sail is working very well there! I will never condone a loose footed sail on an Alberg for one-design reasons, but if you must have one, then be prepared to add significant modifications to the boom and boat to control the foot of this sail. At least, modifications include a track and car on the boom, and a control line and blocks to take the outhaul to a winch. However, you attempt to set this sail up, you will be on your own, because we do not have much experience on measurements that work. (My personal feeling is that it will be much cheaper to add the boltrope and an outhaul that works for you and you will not exclude your boat from the one-design class. If you choose not to buy the controls, then your boat will be slower than the class fitted sail because you will not be able to control draft and clew placement.)

So now you have the details you need to talk to a sailmaker. But you need to know the specifics that he will ask, like the depth of draft, and placement of draft on the main particularly. You may need to review that. I have also not mentioned the type of cut for sails and new cloth is making some of the old styles of cut obsolete. More to think about for you for sure!

I will discuss some of the theoretical subjects that relate to sails in future Tech Talks and , as always, I invite questions and comments from the readers. You can reach me at dk.campbell@sympatico.ca

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