

## MAXIMUM SAIL POWER

### CHAPTER 7

#### THE DEVIL IS IN THE DETAILS - Part 1



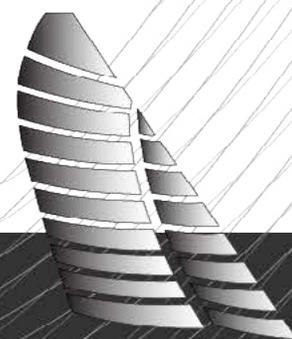
Chapter 7 is close-up look at the individual parts of a sail. We will examine all the bits and pieces that go into making a good sail from whether you should add a foam luff and sunshield to a headsail or have full length battens in your mainsail. Understanding the make-up of your sails is key to getting the most use and performance out of them.

A good sail is the sum of its parts, and the detail work that goes into a sail counts for as much as the fabric, engineering, and designed shape. It's important to know not only what these details are, but whether or not you need them on your sail. Getting the details right comes from asking more of the right questions. The answers will influence the kind of sails you end up with, and ultimately how happy you will be once you begin using them.

Remember that sails are no different from any other item you buy. You get what you pay for. If you invest in fabric and construction detailing, you will get a sail that looks better and holds its shape longer. If you measure the usefulness of a sail by how long it looks good and does a good job, then a larger investment up front will pay off over time.

Also bear in mind that buying a sail that is overbuilt or over engineered for your needs is almost as bad as buying one that is under-built. If you daysail out of the Florida Keys, for example, you don't need a sail built to withstand the rigors of a Newfoundland gale. Likewise, you wouldn't want to cross the Pacific with sails engineered for a summer afternoon off Sausalito. Give some thought to where and how you like to sail, and make sure that your sailmaker understands your plans. The differences in sail engineering are subtle, but the result will be a sail inventory that is just right for you and your boat.

These same questions apply to racing sailors. In fact, racers have a few additional ones to answer as well. For example, you need to be honest with yourself about your level of expertise and that of your crew, and you need to decide at what level you wish to play the game. Sailboat racing, at the top end in particular, is one of the most expensive hobbies there is, more so than horse racing and right up there with automobile racing, so deciding up front where and how you want to race will not only save you heartache down the road, but also a lot of money. It's one of the cruel realities of sailboat racing that money can buy a lot, but it can't buy everything. You still need to be able to handle both your boat and your crew. Racing sails built using the finest fibers and the latest technology are highly engineered pieces of equipment, but you need to know how to use them. This is not only so you won't damage them, but also so that you can get the most out of them. A sail designer will create a very different sail for a top-level experienced sail trimmer who knows how to get the most out of his sail than a trimmer who simply places the lead in a fixed position and cleats the sheet. The differences are subtle, but they are there, and for you to be happy the designer needs to know how the sails are going to be used.



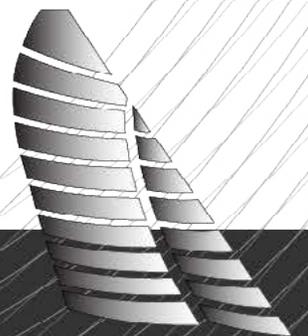
## Fabric and Engineering Considerations for Cruisers

Let's start by looking at the options open to the cruising sailor. The first decision will be about fabric, since your choice will have an initial impact on the panel layout and ultimately on your budget. While a number of fabric choices exist, for most boats in the 30 to 50-foot range, it really comes down to only three, and they remain the same no matter what kind of sailing you will be doing: durable Dacron for a woven, cross-cut option, and either laminated Polyester or Pentex for radial construction. The fabric engineering of these latter two options are similar, but as discussed in Chapters 2 and 3 the way the yarns are treated and the manner in which they are used make for very different fabrics.



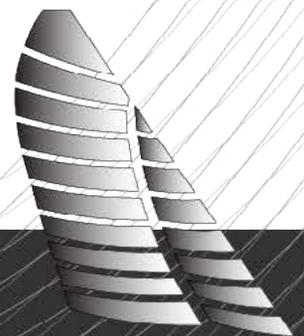
Batten pocket closure detail

Remember that one of the great benefits of radial construction, in addition to precise sail shape, is that the sailmaker can use varying weights of fabric in the same sail, combining different fibers in the fabrics and then incorporating them into the sail to end up with the lightest, most versatile sail possible. Again, light sails



are easier to set and trim, especially in light winds, and if the sailmaker has used fabric efficiently, the sail will hold its shape longer and cover a broader wind range. These are important considerations. Trimming and changing sails is taxing on the crew, and as an overall part of good seamanship, it's important to keep this in mind. It's also important from a performance standpoint to do what you can to avoid weight aloft, even if you're just going for a daysail or a weekend cruise. Lighter sails do not add to the heeling and pitching movement of the boat the way heavier sails do, and this has an effect on the comfort, and by extension, the safety of the crew.

So why not just choose a radial sail every time? In a word: price. Two dominant factors affect the cost of a sail — the fabric and the labor — and on both fronts they cause radial sails to be more expensive. Specifically, laminated fabric is more expensive to produce, and radial sails require more work to manufacture since radial sails have more panels. As a result, for yachts up to 35 feet in length, woven Dacron would be my first choice. There are numerous styles to choose from, the price is reasonable, you can be sure that the sails will last a long time, and smaller boats do not place an undue strain on the sails, so a good-quality Dacron offers good value. Moving up to the low to mid 30-foot range, however, you might begin to consider a laminated polyester, since these boats start to generate loads on the sails where a laminated fabric will be a good option. Dacron will still do a good job, but at least consider a laminated sail, especially if you have a heavy boat that does not heel easily since this will place more strain on the sails than a light boat that heels quickly, thus spilling off some of the load. Between 40 and 45 feet I would recommend a laminated Polyester or Pentex or more increasingly a membrane sail. Certainly above 55 feet, an exotic yarn like Twaron or Vectran even Carbon would be a good choice and a good investment because of the magnitude of the loads involved. More increasingly cruisers are turning to membrane sails because they offer a very good value. Always remember that you should measure the life of a sail by how long it holds its shape and not



just how long it holds together and with that in mind membrane sails will hold their shape longer than any of the others. Also remember, especially with larger boats, that an investment in fabric and engineering up front will pay dividends in the long run.

### **Attributes of a light sail**

Easier to set and trim

Less weight aloft

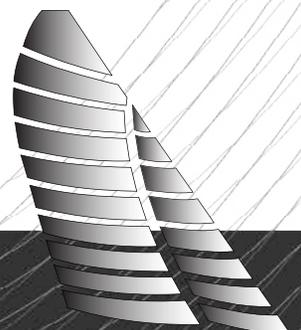
Reduces heeling and pitching



Leechline closure on genoa

### **Fabric and Engineering Considerations for Racers**

For the racing sailor, fabric is an even more important consideration since sail shape is critical to speed, although some of the decision making might be taken away by class rules, in which case you will have to stick with what's allowed. Otherwise, it comes



down to those previously mentioned questions like, do you have the skill to get the most out of a Carbon Membrane sail or would you do just as well to buy two laminated Pentex sails for the same cost? If exotic fibers are allowed will it make that much difference when the skill of the helmsman is questionable? My experience has always been that more gains can be made from learning how to set and trim the sails you have than simply buying new sails. You need to know how to get the most out of them.

Once you have made a choice regarding fabric, it's time to consider what features you want to have on the sails. Remember that these features set apart good sails from ordinary ones, especially if they are appropriate for the kind of sailing you will be doing. We will start the discussion in Part 2 of The Devil is in the Details. Once you have made a choice regarding fabric, it's time to consider what features you want to have on the sails. Remember that these features set apart good sails from ordinary ones, especially if they are appropriate for the kind of sailing you will be doing. We will start the discussion in Part 2 of The Devil is in the Details.

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BRIAN HANCOCK  
Owner Great Circle Sails