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You Don't Need Instruments to Find the Best Angle Downwind

John Alofsin explains how to sail by feel on the runs. "Boatspeed" from our February 1999 issue.

by John Alofsin

We're all familiar with the phrase, "Hey buddy, what's your angle? Everyone's got an angle." While the question clearly isn't aimed at sailing, it's still a good one for us. Having the right angle is the secret to sailing downwind.

When running downwind, there's a simple trade-off: you can sail directly toward the mark, but your boatspeed will slow as you head more toward dead downwind. Alternatively, you can reach up, away from the mark, to generate more speed, but you'll then sail a longer distance. Is the extra speed worth sailing the extra distance? That's the question you need to answer.

The trimmer and helmsperson need to work together. The trimmer should talk about "pressure" on the spinnaker, and help the helmsperson sail up or down to maintain VMG. During all these course changes, the tactician should keep tabs on the boat's position on the racecourse.

Choosing the best angle to the wind results in the greatest velocity made good toward the mark. The rule of thumb is to reach higher in lighter conditions (to keep up your boatspeed) and to sail lower as the wind builds. The range of apparent wind angles is huge, going from less than 90 degrees in light air all the way down to 180 degrees apparent in windy conditions.

Sight, Feel, and Hearing

When running, the clues to finding the best angle are subtle but plentiful, and you don't need electronic instruments to detect them. Let's say our instruments are limited to a masthead fly, perhaps a compass, and our five senses. We'll start with our senses since they do the same thing as the most sophisticated instruments: they gather information (data) which is then processed by our brain.

The three players involved in selecting a downwind angle are the helmsperson, the spinnaker trimmer, and the tactician. The trimmer, through "feel," is often the first to detect a change in wind strength. A puff will cause the spinnaker sheet to load up and tug, while a lull will have the opposite effect. The trimmer should tell the helmsperson about any change in feel or pressure. A comment from the trimmer that "I've got good pressure" should result in the helmsperson bearing off and sailing a more direct angle to the mark. As the boat bears off, the pressure on the sheet will lessen and the trimmer should tell the driver to "hold it there" before the sheet goes too soft.

How do you know what "too soft" is? If the helmsperson continues to bear off, the spinnaker will begin to droop and can eventually collapse. When you sail too deep, there's not enough apparent wind to pressurize the sail. If the trimmer says he's "losing pressure," the helmsperson needs to head up slightly and re-evaluate the sailing angle.

I've heard experienced trimmers simply tell the driver to either "heat it up" (head up) or "burn it off" (head down) without explanation. In a sense, it's the trimmer who really chooses the course downwind, and he does it by feel. To be able to feel sheet pressure, the trimmer should use the minimum number of wraps on a winch and/or turn off the ratchet block whenever possible.

The decisions being made by the trimmer and driver should be backed up by the tactician. Since the goal in a race is to beat the other boats, the tactician should look at other boats to confirm that the best angle is being sailed. If you're consistently sailing lower than the other boats but not losing too much speed, then your eyes confirm that you're choosing a better angle. If the trimmer keeps telling the driver to bear off in pressure, but your eyes tell you that you're losing ground to other boats, you need to pass this on so the trimmer can adjust his definition of "good pressure."

It's also important that the trimmer adjust his definition of good pressure to suit the sea conditions. In general, you'll usually need to sail with more pressure (a higher angle) in choppy conditions than in flat water. This extra pressure is needed to keep the boat and sails from wallowing in the waves. Also, in ocean waves, a higher angle (with the resultant boatspeed increase) will sometimes make the difference between surfing and not. Of course, once you catch a wave, be sure to bear off and use it to sail down to the mark and increase your VMG. When the wave passes, head back up to build speed for the next one.

The helmsperson should be aware of any changes in feel on the helm. Unless crewmembers have shifted position, a change in the feel of the helm usually indicates a change in wind strength, and the associated change in sailing angle should follow. Weather helm indicates increased pressure, and lee helm indicates decreased pressure.

An Olympic medalist I sailed with always got a haircut before a big regatta because it let him feel the puffs sooner. In light air, your best angle is often when you just begin to feel the tickle of wind on the small hairs of the back of your neck. Your sense of hearing can help, too. Notice the sound that the water makes against the hull. If the noise level softens, it indicates that your boatspeed is dropping, you're possibly in a lull, and you might want to consider a higher angle.

When to Use a Masthead Fly

The most common mistake I see is a driver who stares at the masthead fly while sailing downwind. A small piece of plastic that's swinging back and forth with every wave is not a great primary instrument. Keep your eyes on the road.

However, the masthead fly is very handy when jibing. The act of jibing disrupts your downwind rhythm. After the jibe, it can take a long time to rediscover the best angle. To avoid this, look at your masthead and note the wind angle before going into the jibe. Then turn smoothly until you match that angle with a mirror image after the boom comes across.

Since you always lose some speed during a jibe, it's OK to exit the jibe on a little higher angle than you entered the maneuver. The trimmer should expect a little extra sheet pressure after the jibe and should wait until the boat is back up to speed before coaching the driver down to the ideal angle.

Learning to recognize the clues and to listen to your senses is the key to sailing fast downwind. Until you master these fundamentals, the best electronic instrumentation in the world will be of little use. This is what "seat of the pants" sailing is all about.