



Article:

Racing with the Sailcomp

By:

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The Sailcomp compass has become standard equipment on most of the top racing sailboats in the world from One Designs to the America's Cup for the simple reason that they provide the most accurate and understandable heading information available. This information translates into better racing tactics and will help you win races. This article will show you how to use all of the Sailcomp's features while racing. Thank you for expressing interest in our product and good luck in your next racing season.

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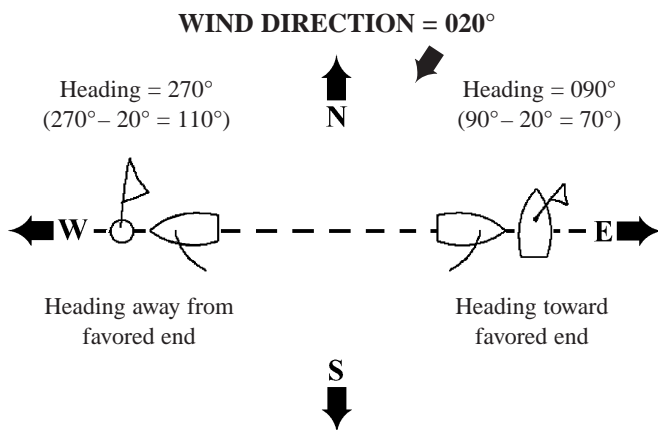
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OUT OF THE BOX AND INTO YOUR BOAT

“Well, that’s all very nice, but what do I do with it on my boat?” asked a sailor at a recent boat show after patiently listening to my lengthy description of the new Sailcomp system. After thinking about it, he had a valid point. Most manufacturers go to great lengths to describe the product but don’t bother to tell you what it will do for you on your boat. To answer that, I offer the following:

The Starting Line

Sailing is one of the only sports where it is legal to get a head start on the competition. So it makes sense to start at the favored end of the line (or close to it). You can use the accuracy of the digital compass to precisely determine which end of the line is favored and exploit this to your advantage. By carefully sighting the wind and then the starting line, even a 2 or 3 degree favor can be detected. The mechanics of this operation are quite simple. First, point your boat into the wind and remember the number. Next, run the starting line from one end to the other and note your compass heading. Now, subtract the two numbers. If the line is perfectly square, the difference would be 90 degrees. If it’s more than 90 you were heading away from the favored end. If it is less than 90, you were heading toward the favored end. To most sailors this is nothing new. True enough, but having the exact number on a digital readout makes it easier to do the math and more accurate than some of the other methods now in vogue. Detecting a 3 degree favor may not seem that important, but if the starting line is 1000 feet long (typical for a 30-40 boat fleet), then you would be starting 72 feet ahead of someone at the other end. Those 2 or 3 boat lengths will mean the difference between clean and dirty air for the first part of the beat.



Shooting the Breeze

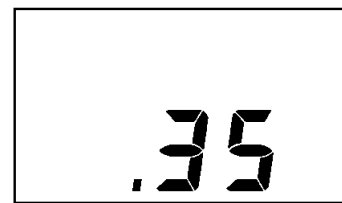
While the boat is head to wind, you can push the reset button for the off-course indicator so the Sailcomp will remember the bearing for you. This way, the next time you shoot the wind, it will show you graphically if the wind has gone left or right. If you are in a small light boat, you may want to reduce

the damping on the compass to position #1 or #2 so that the display will give you fast information. This ensures that you will be able to take a quick accurate reading before your boat goes into irons.

The Start

Knowing which end to start at is nice, but being there when the gun goes off is even better. The new Sailcomps offer a starting timer, head/lift, and off-course indicator. Press the yellow button at the 10 minute gun, and the compass switches into starting timer mode. The time shows up on the LCD where the heading normally does and the upper display blanks out so that you can tell the difference between starting time and compass heading.

TIMER MODE ON LCD



You can switch back and forth between compass heading and starting time by pressing any of the other buttons. For example, if you want to shoot the wind again during the starting sequence, just press the black button and head up. While you are checking the wind or the starting line, the timer still keeps track of the remaining time, so that when you press the yellow button again, it shows time remaining on the LCD once more. During the last 8 seconds the display gives you a graphic count-down to the start.

TIMER COUNTDOWN



After the gun, the display automatically switches back to the compass heading. If you are in a multiple fleet starting sequence, just catch one gun. When the timer runs out, it automatically rolls over onto another 5 minute sequence so that you will always be synchronized with the Race Committee.

The First Upwind Leg

There are two primary functions of the digital compass. One is to provide you with more accurate numbers and the other is to help keep track of the course changes due to windshifts. To use the head/lift feature of the compass, you should sail upwind on each tack for at least 10 minutes (ideally this is done before the start). Sailing upwind, you should use this time to put your boat in the groove and get your sails adjusted to the wind and water conditions. Once you feel comfortable

with your settings, start looking at the compass. Note the high and low numbers on this tack. When you feel you are on the median heading for port tack, press the port tack (red) memory button. This locks your present heading into memory and tells the compass, “remember this number, this is my port tack average heading.” Then repeat the procedure on starboard, and press the green button to lock in your starboard average. Now the Sailcomp has both your average “in mind” and can show you visually on the upper part of the display when you are being headed or lifted.

If you are sailing on port and see five segments to the left of center, this means you are 10 degrees to the left of your average.

PORT TACK



On port tack, going to the left of your average is called a lift, so the compass will also display the word “LIFT” on the LCD readout. The compass knows that going left may be a lift on port, but going left is a header on starboard. When this happens, the word “HEAD” will show up on the display.

STARBOARD TACK



During the race, as you sail upwind, you do not need to press the buttons again until you feel your averages have changed. In other words, you don’t need to push a button every time you tack. The compass just assumes that if your port tack average is 040°, and your starboard average is 310° and you are now heading 050°, you must be on port tack. It looks at your averages and assumes that you are on whatever tack has an average closest to your present heading. This system works fine until you get a 45+ degree permanent wind-shift. When this happens, it’s time to start pushing buttons.

The upper analog portion of the display is intended to show you visually both how far and in which direction your boat has turned since punching in the averages. If you are continually seeing more and more segments on the left side of the display, you may decide that you are into a persistent left shift pattern. Similarly, if the number of segments seem to be about the same on lifts and headers, then you might conclude that it is a simple oscillating shift pattern. We just provide you with the information (the easy part), we leave the rest up to you (the hard part).

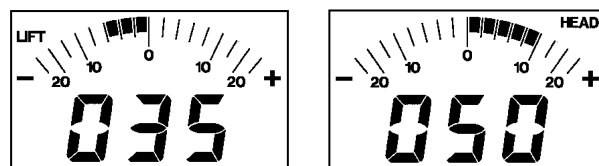
NOTE: Beware the velocity shift

Since the Sailcomp compass works independently of any actual wind data, you have to be careful in the case of a velocity shift. This is not really a shift in the true wind direction, but is only a shift in the apparent wind direction caused by a sudden gust or lull. The best way to avoid being fooled by a velocity shift is to wait at least 10 seconds before tacking on what you think is a real shift. This allows your boat to speed up or slow down to the speed it should be going for the new wind. Remember that velocity shifts are caused by significant changes in the wind velocity, so pay attention to the amount of wind hitting you in the face! Most tactical experts would advise waiting anyway, since tacking too soon may cause you to sail right back out of the windshift you were intending to take advantage of.

The Downwind Leg

Sailcomp’s off-course indicator was originally designed to be just what it’s called. We had intended to show you graphically if you were to the left or right of the rhumb line (left or right of course, hence “off-course”). While it does this very well, some of our more clever customers told us it also served a much trickier function.

OFF-COURSE



Left of Course

Right of Course

While sailing dead downwind, it is often difficult to determine when the wind has shifted and which direction. Unlike upwind, most people do not pay attention to the compass numbers while going downwind. To further complicate things, most people don’t sail dead downwind anyway, they usually keep around 30 degrees of the apparent wind in order to keep their boat speed up and increase their VMG toward the mark. To help keep track of which gybe to be on, one of our customers suggested the following:

“Point your boat at the leeward mark (or the rhumb line if you can’t see the mark), and press the black button to lock on to that number. Now just go back to sailing as you normally do and keep the windex at 30 degrees off the apparent wind. The objective is to keep pointed close to the mark and still keep your boat speed up by staying 30 apparent. You as helmsman do your part and keep an eye on the wind, the tactician should watch the Sailcomp display. If you start veering off too far, he will begin to see more and more segments on the upper part of the display. When this happens, and you are still on the wind angle you want, it means that there has been

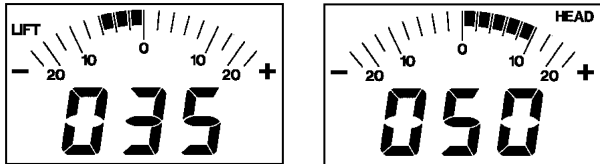
a windshift. You now are heading farther away from the mark just to keep the same wind angle you had before. All other things being equal (like wind speed and boat speed), you should gybe now so that you will be pointed more at the mark on the new gybe and still be able to maintain your nice 30 degree apparent wind angle."

To put it simply, keep your boat pointed at the mark by gybing so as to minimize the number of segments on the off-course indicator.

The Second Upwind Leg

When you get to the bottom mark and you've been using the off-course indicator as described above, you will want to get back into the head/lift mode. As soon as you round the leeward mark and start sailing upwind, there is usually enough going on so that it is difficult to remember what your two numbers were on the last beat. Yet this is precisely the critical moment when you need to know whether or not to tack - to get into phase for the next beat. To solve this problem, just push either the red or the green button once. This tells the Sailcomp that you are now going upwind again and would appreciate knowing if you are up or down. Both numbers are then recalled from memory and you are back in business.

HEAD/LIFT



If, after a while, you feel that you want to reset the averages, just push the button again. Each subsequent push will reset the averages.

The compass system described in this article is the Sailcomp 103AC. The system consists of a remote precision toroidal fluxgate sensor connected to the custom LCD display, with four waterproof remote buttons which trigger the off-course, head/lift, and starting timer features. The buttons may be mounted conveniently anywhere on board the boat for easy access.

Remote Red Button - Head/Lift trigger (Port Tack)

Remote Green Button - Head/Lift trigger (Starboard Tack)

Remote Black Button - Off-course trigger

Remote Yellow Button - Starting timer

Winners

More people have won more races using the KVH Sailcomp® Maxi than any other instrument in the world.



"The KVH Sailcomp® is extremely accurate under a wide variety of adverse conditions, has automatic calibration and will tell you if something's wrong. Based on performance in our tests, it's our pick."

Practical Sailor® Feb. 15, 1995

