

WHEN TO REEF

Dropping in a neat reef at exactly the right moment demonstrates good seamanship. Reef too early and the boat wallows and loses steerage. Reef too late and the boat gets out of control and stops answering the helm. Either way, reefing at the wrong time means sailing less efficiently with an uncomfortable and unhappy crew. So how can you pick the perfect time to reef?

The cruising community's rule of thumb can be summed up as, "Reef the minute you think about it." In the racing community, reefing is often viewed as being "for wimps" and the rule something like, "Reef only when the boat gets completely out of control." Both of these are quite crude rules, and a seaman will exercise much finer judgment based on subtle signals from the vessel, the sky and the sea. Whether the wind builds slowly and steadily or increases suddenly, a profusion of signs signal the perfect moment to reef.

Sudden Wind Increase

A sudden wind increase often occur with the passage of a front, in rain squalls, and around points of land that funnel and accelerate the wind. A weather forecast of rain puts us on alert; a forecast for thunder will make us especially vigilant. The wind acceleration zones around points of land will often be marked on charts or in cruising guides. Where this is not the case, we watch the water and the clouds for signs of wind zones around steep cliffs, tall islands and channels with hills on either side that run parallel to the wind direction.

Whenever you see dark clouds on the horizon up to windward, it's time to clear the decks. Take a look around the cockpit, tidy up the lines and put away the binoculars, drinks and loose sunglasses. Any sign of lightning or thunder in the clouds should have you scurrying to put in two reefs or even to drop sail all together. But in most cases, you still have plenty of time and more information to gather.

If you have radar, turn it on and examine the area where the squall is coming from. No return from under the clouds indicates no rain and little wind. A big speckled gray return indicates light rain and, in most cases, something around a 10 knot wind increase. An almost solid, dark radar return indicates much heavier rain and much stronger wind. You can also put a bearing line on the return to see if the squall or storm is tracking toward you or is likely to pass you by. You're on a collision course if it tracks right down a steady bearing line. This radar analysis is particularly useful at night when it can be difficult to read the clouds.

As the clouds get closer, you can read visually the same messages the radar provides. If light bands of rain slants out at an angle rather than falling straight down from under the clouds, you can expect enough of a wind increase to assume you'll need to put a reef in. At this point you might want to inspect the reefing lines to make sure they are not tangled or caught on anything.

As the clouds get even closer (or you get closer to a land-based wind acceleration funnel) you will be able to see the effects of increased wind speed on the water. Small white caps reaching out a short way in front of the clouds suggest taking a single reef. White foaming water, tall dark anvil heads where the clouds are being blown sharply off, or a long cigar shaped roll of sickly green/yellow clouds indicates much stronger wind. Once, just south of Bermuda, we were tracking a squall heading toward us and preparing to take a single reef when we noticed a really violent chop extending out from under the clouds. We dropped the main entirely and ten minutes later had 40 knots of extra wind.

As the wind comes closer, you will first feel a small puff, just a bit cooler than the old wind and coming from a slightly different direction. This is the time to reef. You now have a couple of minutes before the first solid gusts arrive.

As the old sailor's rhyme "Rain before wind, sheets and halyards tend; wind before rain all will soon be fine again" suggests, if the puffs come before the rain you can be comfortable with one reef as this will be a relatively short and gentle squall. Also if the new puffs are a bit colder than the old wind, but not a dramatic temperature drop, a single reef will be fine. If, however, the rain comes first, even as a few drops splattering on the deck and then stopping for a moment, or if you feel a large temperature change in those first puffs, put two reefs in while your reefing, as you'll quite likely need them.

Steadily Increasing Wind

When the center of a low tracks toward your position, you can expect a slow and steady increase in wind speed to accompany the compression of the isobars around the system. Fishhook looking cirrus clouds that lower and thicken into a mackerel sky over the course of twelve to twenty-four hours signal a low tracking toward you and presage a steadily building wind. A slow and steady increase in the wind can also result from shore effects, as when the land warms up and an afternoon shore breeze reinforces the existing wind.

In either case, as the wind builds you should gradually de-power the sails before taking a reef. This will keep the boat on her feet while still sailing fast. De-powering the sails begins with flattening the mainsail and jib by tensioning the main outhaul, the main and jib halyards and the backstay. Luffing the front of the mainsail by dropping the sail to leeward using the traveler track or by easing the sheet will further de-power the main. On most boats, the mainsail will still be efficient with as much as the front quarter of the mainsail luffing.

Two clear signs indicate when to start de-powering-the amount of weather helm and the angle of heel. To gauge weather helm, we marked our wheel rim to indicate 8 degrees rudder angle either side of the center position. When one of these marks comes to the centerline at the top of the helm, we have 8 degrees of weather helm. Either a helmsperson or the autopilot will soon have a tough time steering a straight course, and the rudder drag will start slowing the boat down. That's when we depower, often as a prelude to reefing.



Reefing Marks on Wheel



Inclinometer on Door

To measure angle of heel, we have an inclinometer mounted just under the companionway. This is one of Beth's favorite instruments. It's cheap, has almost nothing to break, never needs adjustment, draws no electricity and offers a clear, objective metric which arbitrates our debates over when to reef. Based on input from Hawk's designer, we de-power at 20 degrees of heel when we're cruising and at 25 degrees of heel when we're pitting Hawk against other boats. Our previous boat with its older, narrower hull and fuller keel didn't want to be de-powered until we reached 30 degrees of heel; friends' newer, broader, flat-bottomed racing boats need to be de-powered at 15-20 degrees.

It is time to reef when the sails have been fully de-powered, the wind has continued to build, and the helm angle and heel angle have built back up to their marks. Different boats have different reefing patterns, but a general rule of thumb is to reduce the headsail to about 100% of the foretriangle first, then take the first reef in the mainsail, and then alternate between headsail reductions and main reefs.

If you expect a continual increase in the wind speed, it sometimes makes sense to put two reefs in at one time. We often do this on passage, particularly at night if the weather forecast suggests we will have much stronger winds shortly or in the absence of a forecast if there is a large ocean swell developing or a really ugly looking set of clouds.

We have not found the barometer to be very useful for predicting increasing winds. The pressure changes tend to be virtually simultaneous with the wind increases thus giving less warning than we get from the clouds and swell. The barometer also fails to provide any advance warning of a 'crush zone' (a zone of very strong winds created when a depression plows into a slow moving high). This pattern causes many of the worst storms at sea. We can use the barometer to infer how far we are from the center of a low and what direction it is, and we take some comfort when the pressure starts ticking up after a gale. If it rises rapidly it will still blow hard, but we know the end is in sight.

As neophyte sailors, we all learned to "reef early and often." Such conservative advice has its place, and often acts as a much-needed substitute for experience and knowledge. But as we learn to read the abundant signs of wind, sea and sky, we can fine-tune our timing, sailing the boat more efficiently and more safely by putting the right number of reefs in at just the right time. And we can enjoy the satisfaction of keeping the boat in perfect harmony with the wind, and ourselves in perfect awareness of the world around us.

© 2006 Beth A. Leonard & Evans Starzinger