

Sails

28 March 2012

How to trim your Spinnaker with Rod Davis

When sailing off the wind we normally use a spinnaker. This sail is probably the most misunderstood sail on board. Most good sailors can look at mains and jibs and have fair idea of what is a fast or slow shape. Spinnakers on the other hand are a big mystery. Unfortunately it is difficult to tell a good spinnaker from on board the boat. It is far better to be four or five boat lengths away looking at the profile when both leeches are lined up. A good spinnaker has a nice even curve from head to foot. Any lumps or bumps in the profile indicate too much fullness. This could be caused by excessive broad-seam or use in too much wind (blown out).

In designing the spinnaker, Lidgard sailmakers have two objectives; first to build the fastest all-round shape into the sail and second to build in that shape so the sail flies in a stable manner and is easy to trim. A sail that has a fast shape will not produce speed if it is continually bouncing around and needs to be over trimmed to settle it down. Speed and stability go hand in hand.

Stability comes in the form of the overall depth of the sail and the shape of the leading edge. If the sail is too flat or if the leading edge is too straight the lift needed to support the sail and make it project will not be produced. The luff will "wash out" and to maintain a constant curl in the luff would be difficult. An unstable sail will collapse right when the sheet is eased and a slight curl is seen. If you see these symptoms in your sail, have Lidgard Sails take a look at it. Most spinnakers are made of .75oz nylon. The decreased loads off the wind allow the spinnaker to be much lighter than their upwind counterparts. But unlike a main or jib which has a luff and leech a spinnaker has to be reversible and has two luffs. Most of the racing rules require spinnakers to be symmetrical. This is not the fastest way to build the sails but it does challenge the sail designer all the same.

Spinnakers are only fixed at two points: the head by the halyard and the tack by the pole. Everything else on the sail is free floating, relying on its own lift to stay aloft.

Aerodynamically the spinnaker becomes a foil producing lift whenever there is air flow across the sail.

The height of the pole, the sheeting angle and even bouncing over waves change the shape. Be aware of the small changes in wind velocity and angle. The smallest change in either of them means a change in the way the sail should be trimmed.

First, let us consider the use of the spinnaker pole as a control. The poles importance must not be overlooked. Do not just set the pole height to the old rule of keeping clews level. If properly set many times the tack will be lower than the clew.

The vertical component of the pole determines the draft placement and leading edge shape of the luff while the fore and aft component determines the angle of attack.

Because the spinnaker has to be symmetrical the deepest part of the sail is in the middle. But because you want the chute to act as a foil, the draft has to be moved forward. The pole acts as a cunningham in the sense that the more luff tension applied, the more the draft will move forward. Draft placement through pole height is combined with having the sail luff evenly. If the pole is too high the top of the spinnaker will be allowed to lift and it will twist off, collapsing over itself. If the pole is set too low the bottom of the spinnaker will be pulled too tight causing the break to be low.

When the pole height is just right and the sheet is eased a bit the sail will maintain a smooth even curl through the middle of the luff. As the wind speed changes the pole will have to be adjusted to match the spinnaker's new shape. Pole position fore and aft will determine just how effective your spinnaker is. It controls the angle of attack on the luff of the chute. If too far forward the angle will be too great and there will be little attached flow. If the pole is squared too far back the angle of attack will be too narrow causing you to over-sheet the sail and create stall. Basically the spinnaker luff should be vertical and at right angles to the pole.

Proper trimming requires not only trimming the sheet when a slight header comes but also easing the pole forward to maintain the proper angle of attack. The whole sail should be rotated around the boat to the changing apparent wind. Once the pole location is established the sheet is eased to the point the luff of the spinnaker has a slight curl. If the curl increases pull the sheet and take it out. Trimming the spinnaker is more of a full-time job than trimming any other sail on the boat.