



ASYMMETRICAL SPINNAKERS

**THE DRIVING
FORCE IN
PERFORMANCE
ASYMMETRICAL
SPINNAKERS.**



Asymmetrical Spinnakers are a special class of sail that fills in the performance gap between genoas and spinnakers on a boat equipped for a standard spinnaker. On a "Sport" or "Sprit" boat, they are the primary reaching and downwind sails.

Unlike a conventional spinnaker, an "asymmetric" has a leech and luff just like a genoa does and the luff is substantially longer than the leech. The longer luff maximizes the driving force of the sail. The higher clew allows the leech to open, reducing drag and heeling moment.

Besides being dimensionally asymmetric, these sails are asymmetrically shaped also meaning that they are designed and built

with powerful luffs and flat leeches. Their draft is built in by shaping the panels in much the same fashion as is used in genoas.

Asymmetrics are not

necessarily a single sail type any more than genoas are. There is potentially a greater variety of shapes, sizes and cloth weights in asymmetrical spinnakers than in genoas or conventional chutes. Close reaching asymmetrics have a triangular shape and are designed to fly flat and close to the boat like a genoa. For broad reaching, they are designed with wider girths and wider head angles and fly further from the boat like a regular spinnaker.



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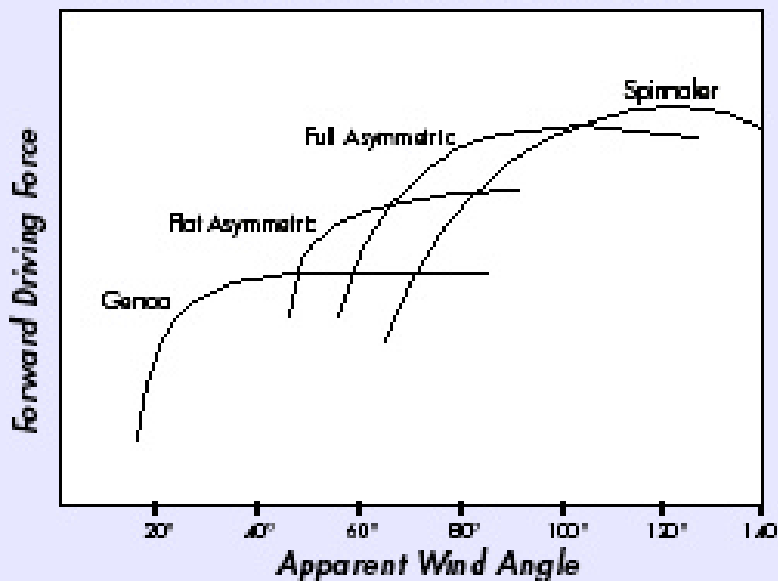
OPTIMUM POWER RANGES FOR VARIOUS HEADSAILS

This graph also shows some other interesting points:

1. There is a trade-off between pointing and power. Flatter sails can be carried at narrower angles but don't develop as much driving power as the deeper sails.
2. A sail is at its best when used at an angle about 10 to 30 degrees wider than the closest angle the sail can achieve. At angles wider than this, the performance gradually falls off. At closer angles, the performance falls off quickly.
3. Flatter asymmetrics have a sharper peak in their performance curve.

Editors Note

A Staysail can slightly increase the driving force at wider wind angles.



Analysis of the Forward Driving Force coefficient developed by each sail at each apparent wind angle shows that the flatter sails that fly closer to the boat are the best at tight angles and the fuller sails that lift and fly out away from the boat are better at wider angles. From this, a sail designer can determine the ideal camber ratios, vertical depth and twist for any apparent wind angle.

Because of the trade-offs involved in the performance of asymmetrical spinnakers, it is important to know what gap in the spinnaker inventory you intend to fill. For example, on a boat with just conventional spinnakers, the addition of an asymmetric with a sweet spot in the 75-100 degree apparent wind range would be most useful.

On a sport boat which planes easily, a VMG downwind asymmetric should be optimized for a 100-120 degree range. For wind angles tighter than this, an especially flat asymmetric will be very fast.

Now that most handicap rules are allowing the use of asymmetrical spinnakers, they are a necessary part of your spinnaker inventory. The right one for your boat is only a telephone call away.



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For more information on Asymmetrical Spinnakers see our web site at <http://www.uksailmakers.com>

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