

Fig. 3 Beam reaching, the undertrimmed mainsail again serves to move the center of effort forward when the boat turns to windward and aft when it turns to leeward.

3) the mainsail can be let out quite a bit and vang'd so that it carries a significant luff in the forward part of the sail. Like sailing to windward, when the boat turns downwind the mainsail fills, moves the center of effort aft and turns the boat to windward. When the boat turns upwind, the mainsail luffs completely and the center of effort moves forward, turning the boat to leeward.

On a ketch- or a yawl-rigged boat there is even greater possibility for using sails and sail trim to achieve helm balance. Reefing or dropping the mizzen sail moves the center of effort forward; also, the mizzen can be used like the mainsail to luff when the boat is off course to windward and fill when it is off course to leeward.

While it is often possible to balance a boat so that it will hold a course to windward with almost no helm movement, on a reach this is most often not possible. Good balance is indicated by the necessity of only relatively small and easy helm adjustments.

Broad Reaching

As the wind moves aft of the beam, any sail area located aft — the mainsail on a sloop or cutter or the mizzen on a ketch or yawl — has the tendency to push the stern downwind and turn the boat to windward. Sail area forward,

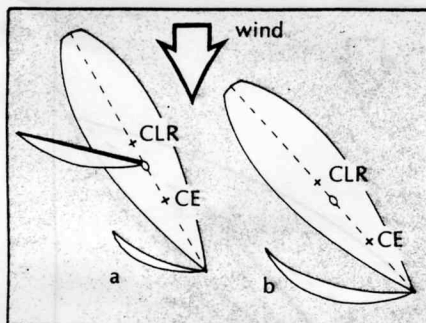


Fig. 4 Broad reaching, the center of effort should be as far forward as possible. A small jib with mainsail (a) is less effective than a large headsail alone (b).

however, tends to pull the bow along on its intended course.

Figure 4 shows that a large headsail (perhaps with a reefed mainsail) has a greater self-steering effect than a smaller jib and full mainsail of equal area because the center of effort is farther forward. A large genoa, drifter or cruising spinnaker can be extremely effective on this point of sail.

Running

When running downwind a boat will only have self-steering tendencies if the sail area can be evenly distributed on each side and concentrated far forward. Any headsails carried when running should be poled out so that they maintain a constant driving force that does not vary as the sail collapses.

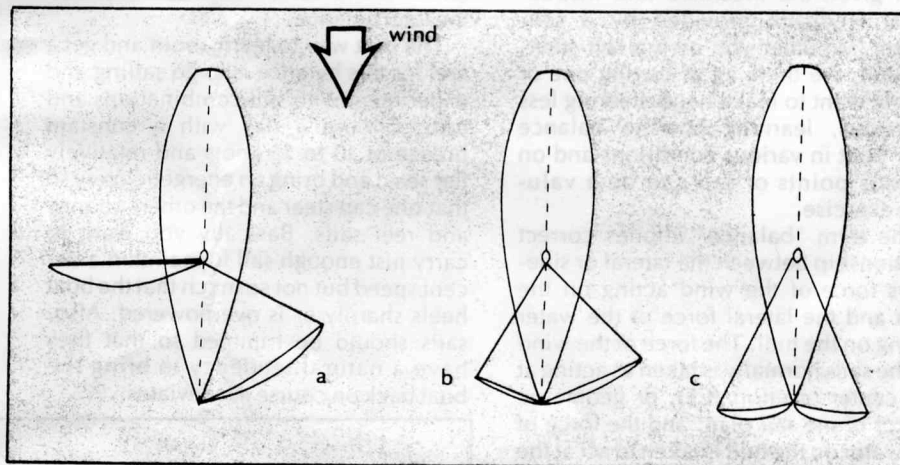


Fig. 5 Running downwind, the sail area should be evenly distributed on each side of centerline and far forward. In ascending order of effectiveness are (a) mainsail and poled out jib or cruising spinnaker, (b) poled out jibs of nearly equal size, and (c) twin downwind sails poled out well forward.

Different size headsails require different lengths of poles, so either a telescoping pole, or two or three sizes of poles should be carried. Carrying two poles allows double headsails to be flown. Even if the boat has a single headstay, a downwind sail with its own luff wire or rope can be set flying, opposite a hanked-on headsail.

Figure 5 shows three downwind rigs. In Figure 5a the mainsail is let all the

way out and a jib of nearly equal area poled out on the other side. As the wind increases the mainsail can be reefed and the jib changed to a smaller one, again of approximately equal area.

In Figure 5b two headsails are poled out. If the boat is not equipped with twin running sails, two jibs as close in size as possible can be used. In increased wind, the larger sail can be replaced with the next smaller jib.

Figure 5c illustrates the ideal arrangement of twin downwind sails. With the poles long enough to position the clews well forward, a deviation in course to either side causes the jib on that side to expose more area more directly to the wind while the sail on the other side luffs. This turns the boat back downwind with no helm movement.

Cruising spinnakers, or traditional spinnakers, are excellent downwind sails but unless they can be stabilized so they do not collapse and lose drive with a moderate change in course, they make self-steering difficult. Overtrimming the sheets, or poling out the clew of a cruising spinnaker can help.

Achieving balance and self-steering in a variety of conditions calls for a good sail inventory and handy reefing systems, and the sailor's readiness to use them. It often calls for a willingness to slow the boat down a little, especially in fresher winds. When sailing at maximum speed most boats require a lot of attention to the helm. If sail area and speed are reduced somewhat, however, the

helm becomes less demanding.

Knowing what combination of sails and trim works best in each situation takes experimentation. Whether you plan to sail with a self-steering device or not, learning the skill of balancing a boat is time well spent. It can make your cruising more enjoyable and rewarding. There can be great satisfaction in feeling that you, your boat and the wind are working in harmony.