

“Rules of Thumb” For the proper tuning of a boat.

The following “rules of thumb” are but a guide to sailing a boat; they are not “hard and fast.” Please consider them a safe starting place.

Control of the Rudder

You should set the rudder control such that you have absolute position control of the rudder for angles between -10 and +10 degrees with a resolution of 1 degree or better. Using a compass to establish a constant heading, you can determine the angle of the rudder required to maintain that heading. That angle is the measure of the helm. Of course you will need to be able to move the rudder beyond 10 degrees but you do not have to have absolute position control.

Neutral Helm

The boat will sail the fastest with the rudder on the center line of the keel. More than 2 degrees off center will produce noticeable drag and thus reduced speed. Neutral helm is the condition where the boat sails freely without any force on the rudder by the steering mechanism and is thus aligned with the center line of the keel. Weather helm is the condition where you must offset the rudder to prevent the boat from pointing into the wind from the desired heading. Lee helm is the opposite.

The Range of the Sheets

For both the main and jib sheets the position of the clew (point of attachment of the sheet to the sail) of the sails should be limited to the edge of the hull when sailing into the wind, “close hauled”.

For the main sheet, when running before the wind, the clew should not be allowed to go beyond 80 degrees from center line.

Weight distribution on the Boat

The distribution of weight fore to aft should be adjusted so that in light air the helm should be neutral. This means the boat will sail a straight course without any force on the rudder.

Rake and Step of the Mast

The rake of the mast, fore to aft, has about the same effect as does the weight distribution. Thus for a known weight distribution, adjust the rake of the mast to produce neutral helm in light air. Decrease the rake to reduce weather helm. Likewise, moving the mast step forward will decrease weather helm. As a starting position, rake the mast aft a few degrees.

Angle of Heel

The maximum angle of heel of the boat should be about 30 degrees to leeward.

Angle of the Boom

The boom vang should be set to position the boom parallel to the deck.

Position of the Jib relative to the Main sail

In light air, set the course of the boat to fill the main sail when the clew of the main is close hauled (at the edge of the hull). Then set the length of the jib sheet to position the jib such that it is filled without forcing air directly into the back of the main sail. Under these conditions the boat should have near neutral helm.

The ratio of the Jib sheet movement to that of the Main sheet.

In light air, set the course of the boat to a beam reach, 90 degrees to the actual wind. Adjust the main sheet to fill the main. Then adjust the tie position of the jib sheet on the jib spar to fill the jib without back filling the main. Again the boat should have near neutral helm. (You may have to repeat the earlier adjustment of the length of the jib sheet until both the length and ratio of the sheets is proper.)

Performance in Heavy Air

Once the rig has been adjusted in light air, the boat will hopefully have a slight amount of weather helm in heavy air, 2 degrees or less of the rudder. If this is not the case, adjustments should be made fixed rigging to reduce the weather helm as noted above.

Which set of sails to use

Once all the adjustments above have been made, the selection of sails should be based upon the amount of weather helm the boat requires when running into the wind close hauled. If the boat has excessive weather helm and or has more than 30 degrees of heel, decrease the size of the sails as a pair.

The Most Important Things

Stability and helm are the most important aspects of sailing quickly. Under perfect conditions and settings, the boat should move to windward, close hauled, at about 45 degrees to the actual wind direction, with a heel of 30 degrees and a neutral helm...this is the sailors dream and should produce the fastest results. When going into the wind, if you find you have too much weather helm, lengthen the main sheet until the helm becomes neutral.