**Proposed addition to section III.D of the Harbor 20 Class Bylaws**

The Differential Mast Rake on the Harbor 20 shall not be set less than 29 inches as measured by the following process. Loosen the jib stay so it does not confine the forestay. Tighten the back stay slightly so it pulls the forestay taut. Run the main halyard to the precise intersection of the transom and the deck, and cleat the halyard tight. Take the halyard and run it alongside the mast and mark the center of the mast hinge pivot. Measure the distance along the halyard to find the exact difference between the mast hinge pivot and the intersection of the transom/deck. This distance is the Differential Mast Rake, and shall not be less than 29 inches.

An approved alternate to this process is to attach a measuring tape to the main halyard, and to run it to the top of the mast. Then use the tape to measure the two distances, and subtract the numbers to get the Differential Mast Rake.

**Compilation of Measurement of Differential Mast Rake (DMR) on Harbor 20s docked at or near Newport Harbor YC, by Bob Yates, August/September 2022**

Testing was done by Bob Yates, assisted by Patrick Kincaid and Chris Hill.

Eighteen boats were measured using the process previously described. The data sheet is available separately. The results are as follows.

Average DMR: 28.74 inches

Range is: shortest is 25.9 inches on boat #336; longest is 32.5 inches on boat #327.

Average on boats known to have long forestays: 27.14 inches; on boats known to have a short forestay is 30.25 inches.

The adjustment range on the turnbuckle is about 2.64 inches, as measured on boat #80. Note that there is designed space for about 3 inches of adjustment, but this corrected number gives space for the two cotter pins and for setting a tool in place to make the movement of the turnbuckle without removing the jib. Moving the turnbuckle for the longest to the shortest position changes the DMR by nearly the same amount, ie 2.64 inches of turnbuckle adjustment results in about 2.64 inches of change in the DMR.

Applying the adjustment range to the measurements shown above, it is apparent that the nominal value that can be achieved by all of the boats, except possibly the most extreme cases, is 29 inches.

Unfortunately, there are tolerance differences on all the boats, so the results can be affected on some boats, and special lengths of forestays may be needed in a few cases to accommodate these special situations. This problem can be alleviated in most cases by using a different length shackle on the top of the jib stay to effectively lengthen it.

For reference, the short forestays are 26 feet 3.5 inches long, and the long forestays are 26 feet 5.5 inches long.