



Appendix C - How to Calculate an HPR Rated Length, TOT, and seconds per mile using certificate calculator spreadsheet.

1. Download the latest version of the HPR **class rules** and calculator from the HPR website. <http://hprsailing.org/technical/hpr-rule>
2. There are ten tabs at the bottom of the spreadsheet but only the Certificate and Database tabs are needed to calculate a boat's Rated Length.
3. Start with the Database tab: it contains about 40+ boats, some valid certificates, some demonstration certificates and some tests. Most of the data is measured. For issued HPR certificates, both the input data and the certificate are publically available. The columns show various boats by name, sail number and boat type - move to the right until an empty column is found.
4. If there is red number in row #1 at the top of a column, use that column, otherwise just add a number in row #1 and start your own column.
5. Determine a source of data, whether it is designer information, measurements for another certificate, etc. ORCi, ORC Club or ORR certificates will have almost everything you need. For IRC, a few rig dimensions are different and for IRC and ORC Club you will need VCG from an alternative source. Enter all data in metric units.

There are a few tips for entering data:

- a) 'Dempty' is the displacement in lightship trim with no gear on board, as required by IRC and also ORC starting in 2013. For all IRC data, use Boat Weight. For ORC data starting in 2013, use DSPW. For ORC data previous to 2013 and all ORR data subtract 1% from DSPW before entering.
- b) Freeboards and draft also vary some with this trim difference, however the effect is small for test purposes. If an ORC club or IRC certificate is the data source, freeboards do not appear and need to be approximated.
- c) **FBI** is the freeboard at the base of I in measurement trim at the sheerline. It is solely an HPR measurement and does not appear in other rules. Depending on the sheerline, you can approximate it by assigning a measurement between the values of FF and FA. FF and FA appears on ORCi and ORR certificates, but for ORC Club or IRC certificates they will need to be approximated.
- d) 'VCG incline' is the VCG from an inclination, such as VCGM from an ORCi or ORR certificate. HPR can also calculate VCG from component weights as described in the VCG section of the class rules. If either MWT or KWT are entered it automatically will put a 1 in

cell T74 of the Certificate page to indicate a component calculation. If using the component method, be sure to enter all 5 of the required dimensions: MWT, MCG, BWT, MCG, and KVCG.

e) **CPD** and **CPW**: these calculate cap shroud sweep angle, and if the sweep angle is 15 degrees or greater, but the exact dimensions are unavailable, enter 1 and 0.135.

f) Rows 51-54 automatically calculate typical jib widths if desired: just copy and paste those cells in the new boat column.

6) Flags

RUD2	Enter Y if you have twin rudders
PSP	Enter Y if you have a permanently installed strut drive or a shaft drive.
AC	Not used at this time – will be revised for Version 5
HDHM	Not used at this time – will be revised for Version 5
SPHM	Not used at this time – will be revised for Version 5
EOSC	Enter if you your boat was built as part of a series production run.

7) Go to the Certificate page, in which the cells are protected except for the green box in cell T5. Enter the subject boat number in that box and both the T column and the Certificate should populate. Read your Rated Length and scoring options toward the bottom of the P column on the Certificate.

8) The calculated Rated Length may be less than the Minimum Rated Length in cell P43, which means the minimum rated length will apply instead of the calculated rated length. This is a catch-all to discourage the accumulation of “go slow” factors which might result in low rating boats that are no fun to sail. It means the boat can be sped up some with no cost on the Rated Length. However as better data is developed, the calculated rated length may move slightly.

9) In order to see how close a boat is to the HPR typeform, go to the TYPEFORM tab. For each corrector, there is a red ball which shows where the subject boat is on the performance line and how close it is to the base boat. In the mid range in the performance line and fairly close to the base boat, the slope is intended to rate the factor fairly. As part of encouraging the HPR typeform, the slope increases to discourage extremes on the fast side and also goes flat to reduce incentive for utilizing slow features to reduce rated length. For boats with age dates of 2012 or earlier, and on the fast side, the red ball may be below the performance line. This is because some typeform restraints are relaxed for older boats.

10) To compare several boats, use the tab for “Fleet Report.” Enter the boat numbers to be compared in column A. For a Mac which is running Office for Mac, the procedure is slightly different.

Notes:

- While sail “girths” are the common reference, the ERS refers to them as sail “widths.”
- A small “b” after a term indicates it is a base.
- A small “c” after a term indicates it is a final corrector.