



HANDICAPPERS MANUAL

PART I

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1. HANDICAPPER AND HANDICAPPER COUNCILS

- 1.1. The method of selection of Handicappers and the Handicappers Councils shall be in accordance with the By-laws, sections 3.6, 4.3 and 4.4.

2. HANDICAPS

- 2.1. Speed Potential handicaps (SP) as defined in Part I, section 4.9 shall be the basis for all handicaps approved by the Handicappers Councils.
- 2.2. SP handicaps may be adjusted according to the methods described in Part II, section 6 of this Manual. PHRF-LO does not endorse “golf” type performance handicap ratings.
- 2.3. Handicapping Changes. that affect PART II of the Handicappers Manual, will be ready for presentation at the Annual Meeting *, the year previous to when the changes take effect. With a "draft" of PART II available for viewing by Sept 1st of the previous year.

NOTE: Exceptions will be made for minor housekeeping corrections.

* Effective starting at the 2017 AGM

3. DUTIES OF HANDICAPPERS AND HANDICAPPERS COUNCILS

3.1 HANDICAPPERS COUNCILS

- 3.1.1. Determine SP handicaps for monohull yachts racing on Lake Ontario in accordance with sections 8 and 9 of the Bylaws.
- 3.1.2. Determine schedule of adjustments to SP handicaps.
- 3.1.3. Act on appeals in accordance with section 10 of the By-laws
- 3.1.4. Approve the content of the Handicappers Manual.

3.2 HANDICAPPERS

- 3.2.1. Issue temporary handicaps of all boats within his/her jurisdiction in accordance with the published SP handicaps (Standard Boat Characteristics) where applicable and adjusted by the schedule of adjustments contained in Part II section 6 of this Manual.
- 3.2.2. Forward application forms and change forms to the administration address of the Organization for inclusion in the Web Roster and verification by the Chief Handicapper.
- 3.2.3. Forward all RACE RESULTS to the address of the Organization to assist in providing a basis for updating SP handicaps.
- 3.2.4. Refer questions of fact or procedure to the District Council.

3.2.5. Attempt to resolve Member appeals at the local level. Refer only those unresolved to District Council for action.

4. DEFINITIONS (Boat types)

- 4.1 A Class Boat** is defined as a boat produced by one or more manufacturers with the intent of producing a number of essentially identical boats with respect to rig, hull, keel and rudder configurations. When a class of boat is available with different choices of mast height, keel type etc., each such combination shall constitute a separate class.

The Handicapper must correctly identify the exact class to characteristics
(i.e. C&C 27-1, C&C 27-2 etc.)

- 4.2 A Custom Boat** is defined as a one-off design or a boat of a limited production run where each boat was customized at the factory (e.g. Andrews 30's) to make it unique.

- 4.3 A Standard Boat** is defined as either a Class or Custom boat in top condition with good equipment, 155% Genoa, 180% flying sail, a flying sail attachment point or otherwise a class defined sprit, standard mast, and an engine able to power the boat to hull speed fitted with, for an inboard installation, a folding prop, or feathering prop, or a 2 bladed prop in an aperture or, for an outboard powered boat, a retracting outboard engine. "Standard Equipment" shall be what the manufacturer supplied.

Boats are required to maintain all accessories and amenities associated with the model in its typical production configuration. Stoves, heads, cabinet and locker doors, drawers, steps, cushions, floorboards, headliners, tankage, engine enclosures, stowage covers, anchors, head and passageway doors, etc. shall remain in place as supplied as standard equipment for a boat not to be considered a Modified Boat. Carpet and removable tables are not required to be on board. A boat that has altered or removed bulkheads, permanently attached furniture or structural interior components shall be considered a Modified Boat.

Minor fairing of the hull/keel/rudder is permitted to correct unfairness in production molds and establish original design profiles. Fairing of the trailing edges of the keel/rudder is not considered a modification, provided any chord (fore-aft length) of the keel/rudder is not changed by more than two percent from design dimensions. Fairing of through-hull fittings, rudder gudgeons, and propeller struts is also allowed.

Drop keels, centerboards, dagger boards, canards and other movable appendages shall be declared. Except for Keel-Centerboards. Lifting of such appendages during racing is strongly discouraged for safety reasons.

- 4.4 A Non-Standard Boat** is defined as any boat that does not fulfill the requirements of a "Standard Boat". Several specific modifications have prescribed adjustments to the SP for the Standard Boat in Part II, Section 6 of this Manual. These can be applied to otherwise Standard Boats to arrive at an Adjusted Speed Potential (ASP).

4.5 A Modified Boat is defined as any Non-Standard Boat with modifications that cannot be adjusted using the parameters in Part II, Section 6 of this Manual.

Examples of this are:

- Rig height (I) changes
- Boom length (E) changes
- Rig cross section/weight changes
- Rig staying changes
- Sail measurement
- Keel/ballast weight changes
- Keel/rudder camber changes*
- Keel/rudder chord changes*
- Keel/rudder depth changes
- Interior modifications other than those allowed under “Standard Boat”
- Any change in configuration weight or equipment carried (such as a different motor)

* Except as permitted in for a “Standard Boat”

Those boats are designated with the suffix “MOD” added to the Boat Class Name

4.6 All Boats, therefore, fall into one of four categories:

- 1) Standard Class boats
- 2) Standard Custom boats
- 3) Modified Class boats
- 4) Modified Custom boats (modified post-production)

4.7 Standard Mast is defined as the mast supplied by the manufacturer as standard equipment. Replacement with a mast of different staying configuration shall be deemed a modification. Replacement masts shall conform to the weight and section properties of the original to the extent practicable.

If variations in mast height exceed +3% for a particular class of boat, the boat shall be considered representative of a different class for handicapping purposes.

4.8 Standard Propulsion is defined as:

For all boats, an engine and propeller combination must be capable of propelling the boat at hull speed in calm water.

For inboard installations, the propeller is either folding or feathering, or if solid, is 2 bladed mounted in aperture.

For outboard installations, the engine is retracted when racing.

4.9. SP is defined as a time allowance in seconds/nautical mile given to a Standard Boat with the intent that all perfectly sailed Standard Boats in the same race would have identical

corrected times. It follows that all Standard Class Boats of the same class have the same SP.

- 4.10.** “**R**” is defined as the algebraic sum of all time allowance adjustments (Part II section 6), which apply to a particular boat. These adjustments are given in seconds/nautical mile. A "+" adjustment gives extra time for slower expected performance, and a "-" adjustment gives less time for faster expected performance.
- 4.11.** **ASP** is defined as the adjusted Speed Potential of a boat in seconds/nautical mile. SP, R, and ASP are related as: $ASP=SP + R$. Even if R is zero, so that $ASP=SP$, the ASP handicap shall be used to compute the corrected time of each yacht racing under PHRF-LO.

N.B. Since R is readily determined as in Part II section 6, and ASP can be determined empirically for any boat, then SP ($= ASP-R$) can be determined whether the boat is in reality a Standard Boat or not.

- 4.12.** **Moss factor** is defined as the time allowance in seconds/nautical mile which, in the judgment of the Handicapper, represents how much a particular combination of skipper, crew, general condition of boat, sails, etc., slows the actual boat compared to a perfectly equipped and sailed boat. In order to facilitate the review of Handicaps by PHRF-LO, the Organization requires an assessment of how well each boat is prepared and sailed. This is referred to as the MOSS factor and allows the local Handicapper to more accurately reflect a boat's true Speed Potential having discounted those elements. The scale is a 1 to 10 system and 1/2 points are acceptable. Note that a MOSS factor may only be applied at the Club level in order to facilitate more competitive local racing, or to assist a new racer in learning how to prepare his vessel. Once a boat with a MOSS Factor applied at the Club level moves to inter-club racing, the handicap applied by PHRF-LO would remain in effect. The following is a guide to assist in evaluating the factor:

A GUIDE FOR DETERMINING MOSS FACTORS

10. Expert, Olympic Gold Medallist, National Champion etc.
9. Aspiring to or just leaving above.
8. Excellent Sailor at District Level but not quite above.
7. Top level club sailor-club champ etc., good equipment and preparation.
6. Very good Club Sailor, in top third of fleet, good equipment and crew.
5. Average Club Sailor, middle of fleet, good equipment and crew.
4. Good Sailor but lacks crew, equipment and/or experience
3. Improved performance with good preparation and crew, generally lower third of fleet.
2. Beginner with good crew and equipment. Lots of room for improvement.
1. Beginner. First few years of racing and/or poor equipment.

REMEMBER – THE HANDICAPPER IS RATING PREPARATION AND ABILITY OF SKIPPER AND CREW, NOT THE BOAT ITSELF!

4.13. Time-on-Distance (TOD) scoring is defined as a method of deriving corrected time from elapsed time as follows: Corrected time (sec) = elapsed time (sec.) - distance (n.miles) x ASP. The time units can be altered at the discretion of the scorer.

4.14. Time-on-Time Factor (TOT) is defined as follows:

$$Q = .008$$

$$S = \text{Scratch Boat} = \text{ASP } 165.$$

$$R = (8.36 \times 10^6), ((\text{ASP} + 378.3)^2)$$

$$RS = (8.36 \times 10^6), ((165 + 378.3)^2)$$

$$\text{TOT} = ((1, \text{Ö RS} + Q), ((1, \text{Ö R}) + Q))$$

$$\text{or TOT} = (566.431, (\text{ASP} + 401.431))$$

This formula is derived from an M.I.T. study 1975-76

ASP to TOT conversion table refer to page 9 of Appendages.

4.15. Time-on-Time scoring is defined as a method of deriving corrected time from elapsed time as follows:

$$\text{Corrected time} = \text{elapsed time} \times \text{TOT (Time-on-Time Multiplier)}$$

5. BASIC PHILOSOPHY OF PHRF-LO REGARDING HANDICAPPING AND SCORING.

- 5.1. SP, ASP, and TOT** are intended to represent well-equipped and sailed yachts. No credit is given for poor equipment, poor condition of the boat or inadequacies of skipper or crew. No attempt is made to favor one design over another. No encouragement is given to modify boats in any way to gain an advantageous handicap. Yachts shall be raced with standard interior fittings in place (cushions, head, tanks etc.) and safety equipment (including anchor/rode) on board. For outboard installations, engine is retracted when racing and may be moved from the transom provided it complies with Section 4.8 of this Manual respecting the hull speed of yachts.
- 5.2.** The aim is to furnish each boat with a handicap that fairly represents its speed potential, regardless of age, design, or origin.
- 5.3.** All handicaps are known to contain a "probable error", unknown in amount or direction.
- 5.4.** Consequently no handicap is ever considered final, but may be altered whenever actual race results suggest that "probable error" can be reduced.
- 5.5.** PHRF-LO recognizes both Time-on-Distance scoring and Time-on-Time scoring as valid alternatives. The decision as to which method shall be used in any particular race is left to the discretion of the host Yacht Club.

6. MEMBER CLUB ANNUAL DUES

- 6.1. See Also: By-Laws Section 3. MEMBERSHIP.
- 6.2. Member Clubs annual dues amount will include a minimum of seven Certificates.
- 6.3. Each Member Club will receive an annual invoice based on an amount equal to the agreed Certificate fee times the number of registered Certificate holders from the previous season. Clubs should collect a relative fee from its certificate holders during the season they have raced.
- 6.4. See Fee Schedule page 3 of Appendages.

7. CERTIFICATES

7.1. APPLICATION FOR NEW – requires Application Form (AF)

- 7.1.1. Each individual member of PHRF-LO must fill out an AF when first seeking a handicap for a particular boat.
- 7.1.2. Change of ownership requires a new AF and a new handicap, even if the vessel had been previously handicapped.
- 7.1.3. The Handicapper shall accept the completed AF, enter or validate the required measurements and calculate the ASP.
- 7.1.4. The Handicapper shall forward a copy of the AF or a copy of the related Handicappers Worksheet to the administration office of the organization as soon as possible.
- 7.1.5. All Certificate AF's are subject to payment (unless otherwise stated) based on the process as described in Part I, Section 6

7.2 CHANGES TO EXISTING CERTIFICATE – requires Application Form (AF)

- 7.2.1. Owners shall report any changes in rig or sails (which may affect the handicap of a previously handicapped boat) to the Handicapper on a PHRF-LO AF. It is the responsibility of the Owner to so report or risk protest.
- 7.2.2. The Handicapper shall complete the AF, invalidate the old racing Certificate and forward a copy of the AF or a copy of the related Handicappers Worksheet to the administration office of the organization.
- 7.2.3. An AF is required for a change of address or change of club. No fee is applicable.
- 7.2.4. All Certificate AF's are subject to payment (unless otherwise stated) based on the process as described in Part I, Section 6.
- 7.2.5. Only one "Sail Change" per certificate/per season will be accepted. This is to ensure fairness throughout the system. New sails are exempt.

7.3. RACING CERTIFICATES

- 7.3.1. Upon receipt, the most recent AF shall be computer verified by the Executive Assistant. The Executive Assistant shall notify the Handicapper of any discrepancies between the AF and the computer-generated handicap.
- 7.3.2. A Certificate Number will be generated for any new Owner/Member and will remain with the Owner/Members and not with the boat.
- 7.3.3. An Owner will have only one valid Certificate per boat being the last and most recent as per the current PHRF-LO Web Roster lists.
- 7.3.4. The Executive Assistant shall upload a computer generated certificate to the PHRF-LO web site, which has been dated and includes the Chief Handicappers signature (or simile), which will be the valid racing Certificate.
- 7.3.5. An application will be processed and a Certificate uploaded to the PHRF-LO web site no later than 1 week after receipt of the AF.
- 7.3.6. To be valid, racing certificates must be signed by their owner and confirmed by the "Valid Lists" at www.phrf-lo.org.
- 7.3.7. Change in SP by the Councils shall institute the issuance of new Certificates by the Executive Assistant (at the MAILING ADDRESS OF THE ORGANIZATION) as soon as possible.
- 7.3.8. Any certificate holder, who suspects another boats racing certificate is incorrect, is encouraged to file a protest in order to verify the information.

7.4 NON-MEMBER CERTIFICATES

- 7.4.1. Lake Ontario Sailors who do not belong to a Member Club will be required to obtain a one-year Non-Member Certificate from the PHRF-LO administration office. This may be done by submitting (to the PHRF-LO admin office) a sailmakers certificate with an application form or through a Member Club Handicapper or event organizer. (See Handbook Appendage: Fee Schedule)
- 7.4.2. Certificates may be issued to yachts, which are normally outside Lake Ontario, that hold a valid Certificate that has been issued by other PHRF authorities given the yacht is a PHRF-LO handicapped Class. The yacht will participate using PHRF-LO established handicaps. This will be verified by generating a PHRF-LO Certificate using measurements as shown on the yachts local PHRF Certificate.
- 7.4.3. No "fee" will apply for Members of PHRF organizations that currently allow PHRF-LO Certificate holders to race on their waters without paying for an additional Certificate. PHRF-LO will extend the same courtesy and issue an event Certificate at 'NO CHARGE' to any Certificate holders of these organizations.

As at June 26,1997 these include:
Lake Erie PHRF & St.Lawrence River Racing Assoc.

7.5 CERTIFICATE RENEWAL

- 7.5.1. All PHRF-LO Racing Certificates must be renewed annually.
- 7.5.2. Once a year around February 1st, the Executive Assistant will issue a roster of Owners (who held valid PHRF-LO Certificates over the previous season) to their respective Clubs main Handicapper.
- 7.5.3. Certificates can be renewed on-line by the Club Handicapper. Pre-registration and authorization is required for security reasons.
- 7.5.4. It will remain the responsibility of the individual boat Owner to report and/or have measured any new equipment, sails, rigging, hull/keel changes to their local Handicapper.
- 7.5.5. The Chief Handicapper (or Executive Assistant) shall issue (at the MAILING ADDRESS OF THE ORGANIZATION) new Certificates for all Certificates indicated in the process outlined in 7.5.3.
- 7.5.6. Rush requests will be handled as outlined in Part I section 7.3.5

8. HANDICAPS (ASP) & STANDARD SPEED POTENTIALS (SP)

8.1. RACING HANDICAP (ASP)

- 8.1.1. The Administration Office shall upload the most recent verified handicap to the web roster no less than weekly during racing season (May - Oct).
- 8.1.2. Competitors racing under PHRF-LO shall be handicapped according to the most recent handicap available at race time, whether contained in a valid Certificate, web roster, printed roster, or roster update. Any change in sail or rig after this date shall be grounds for protest.
- 8.1.3. Clubs, as always, have the discretion to allow within Club racing, changes to handicaps to enhance participation and Member satisfaction.
- 8.1.5. Unreported/uncertified modifications to a boat, if not protested, will be brought to the attention of the District Chief Handicapper for that member. The owner will be contacted by mail or email directly in an attempt to obtain details of the modification(s).

8.2. INITIAL DETERMINATION OF SP

- 8.2.1. Initial determination of SP shall be only be conducted as a direct results of receiving an AF and will be derived by a consensus of District Handicappers either via a meeting or the PHRF-LO forum and confirmed by the Central Council.
- 8.2.2. Initial ratings will be included in the database (after 7 days) once they have been reviewed by all of Central Council via the distribution of a District's meeting minutes. All concerns will be addressed by the Chief Handicapper.

- 8.2.3 Initial ratings for classes of boat, that have no version currently approved, will be subject to a -6 sec/nm protect the fleet adjustment (PTF). The PTF adjustment will be reviewed by Central Council after 2 full years of performance data has been received and analyzed. If after 3 years, no such analysis is available, the class will be confirmed with no PTF review until future analysis deems it necessary.
- 8.2.4. If a different model of a class of vessel with a current PHRF-LO handicap requires a new handicap, the local District shall address this at the next scheduled District meeting. If no meeting is planned, then one of the Assistant Chief Handicappers or the Chief Handicapper (via the PHRF-LO admin office) may issue a temporary handicap. No PTF will be applied.
- 8.2.5. The assignment of SP must take place within a reasonable time after which the applicant may appeal to the Chief Handicapper for action by the Central Council.
- 8.2.6. This initial determination may take into consideration listings in US Sailing, actual comparative race data, SP conversions and the C. Kramer formula, as well as any other formulae which the Council decides are fair and just. (see: Conversions, Handicap Review Primer)
- 8.2.7. All SP shall be divisible by 3 with no remainder. Thus 120 is a valid number, but 121 and 122 are not. 121.4 shall be rounded to 120, and 121.5 shall be rounded to 123, for example. R-values may be in single value increments. Therefore an ASP of 122 (not divisible by 3 with no remainder) could be expected.
- 8.2.8 A new boat must be physically available to assess the sails and rig dimension if necessary, before a new handicap may be issued.

8.3 REVISION OF SP

- 8.3.1. At least once per year the Central Council shall analyze the race results submitted by its Member Clubs with the intent of updating SP handicaps for PHRF-LO independent of US Sailing or other such groups.
- 8.3.2. At least once per year the Central Council shall perform a mandatory review of the ~~boats~~ classes on "alert", as indicated in the Cumulative Summary Report, with the intended purpose of correcting handicaps as deemed necessary.

Criteria for class review includes:

- All classes with 3 or more alerts (?) showing for the cumulative data
- All classes with 1 or 2 alerts (?) with 4 consecutive years of negative numbers.

- 8.3.3. A simple majority vote of the Central Council in attendance shall be required in order to alter an SP handicap.

8.3.4. The basic principles for re-evaluating SP's are as follows: Each race reported provides information capable of yielding new estimates of SP for each contestant in a race. Central Council can then evaluate the many such estimates accumulated during the season from many sources. Certain of these estimates may be so far out of line as to be discarded, but such occurrences do not invalidate the basic procedure. The actual elapsed time of a particular boat in a race is the result of the true Speed Potential of the boat, as equipped, and any deficiencies to less than expert maintenance and sailing. This time thus needs to be corrected first to what would be expected if the boat were raced expertly. These two corrections to actual elapsed time give an estimate of the intrinsic Speed Potential of the yacht. Any significant differences between the present handicap and the expected speed potential are then addressed.

When the adjusted elapsed time is then corrected for intrinsic Speed Potential differences between Standard Boats, the resulting corrected time should be the same for all boats.

In fact, the corrected times are rarely the same. This failure reflects both errors in assigned SP and the inability of Handicappers Councils to decide which corrected times should be accepted and which discarded. Those, which are accepted, can then be averaged to give a best estimate. From the best estimate, a new estimate of SP for each boat is then readily calculated.

- 8.3.5. Upon receipt of the Member Club race results, the Chief Handicapper will perform the necessary calculations to derive estimates of ASP for each boat by whatever methods are recommended by the Central Council. The Handicappers Council as previously prescribed in paragraph. 8.1 and 8.2 will tabulate this information for review.
- 8.3.6. For boats reviewed under the mandatory review of the "alert" list, any handicap changes will be applied to all versions of the class and the handicaps will remain in effect until the next Central Council meeting held in conjunction with or after the AGM.
- 8.3.7. Change in SP by the Councils shall be updated in the list of Standard Boat Characteristics.
- 8.3.8. Standard Class SP handicap changes, made by Central Council, will be completed by no later than April 1st of the current year for the coming season.
- 8.3.9 Handicappers may bring, to their District meeting, any boat class (not unique to their District) that they feel should be reviewed by Central Council. If the district approves, the District Chief Handicapper will raise these concerns at the next Central Council meeting. Although the analysis is based on human performance, Central Council looks at the overall fleet performance and utilizes the knowledge and experience of the members of Central council when looking at any particular boat class.

9. RACE RESULTS

- 9.1. Suitable Race Results for analysis will ideally consist of either an upwind, downwind, course of equal length beating and running or a Gold Cup course with winds between 5 and 20 knots and no dramatic shift in wind direction or speed. Clubs should inform the PHRF-LO administration office of which courses that Club has utilized.
- 9.2. Races must have a minimum of 3 boats finishing and a minimum of 3 races per boat to be included for analysis. All result must be submitted the acceptable format (see Race Results Primer) and must include the boat name, class and elapsed time for each race.
- 9.3. Local Handicappers shall forward, to the administration office, all their Club race results for analysis. This is essential to provide the necessary statistics for appeals etc.
- 9.4. Any boat to which a MOSS factor had been applied will be analyzed by PHRF-LO with its proper handicap.
- 9.5. Race Data will include all boats admitted by a Club or Organization whether or not they hold a valid PHRF-LO Certificate. Any owner that races a boat more than 5 races in a season will be issued a PHRF-LO certificate number or have his/her certificate renewed. The club handicapper will be notified when the races are analyzed and it will be added to the club roster and billed (at the current certificate rate) to the club the following spring.
- 9.6 Race Analysis reports will be distributed within 7 days following the Annual Meeting, via the web site, and if requested, there will be a fee (plus shipping and handling) for a printed a bound copy. (See Handbook Appendage: Fee Schedule)
- 9.7 Mixed fleet races will not be analyzed as a single fleet. The results must be separated into FS or NFS and analyzed separately.
- 9.8 One design fleets may be added to a regular fleet for analysis purposes when all the following conditions are met:
 1. They are racing with the same rating ie: FS or NFS
 2. They have a relative rating that fits within the fleet.
 3. They started within 12 minutes of and race the exact same course as the regular fleet.