

PHRF - LWLW

PERFORMANCE HANDICAP RACING FLEET OF LAKE WINNIPEG AND LAKE OF THE WOODS



HANDICAPPING MANUAL

1999

PREAMBLE: 1999 Edition

This is the fourth edition of the PHRF Handicapping Manual for Lake Winnipeg and Lake of the Woods. The previous editions were published in 1984, 1992 and 1995. The prescriptions included in this manual shall remain in effect until the publication of the next edition or until changed by the Board of Handicappers with due notice sent to all Clubs.

If any errors or omissions are noted, please bring them to the attention of your local handicapping officer. Similarly, if there is any part of the manual that is unclear, please seek clarification so that we can incorporate improvements in the next edition. We would like all members of our fleet to understand the handicapping system under which they are racing and this will only be possible if the manual is clear and is read.

1999 Board of Handicappers

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CHAPTER 1

GENERAL INFORMATION

1. MAILING ADDRESS

406- 200 Main Street
Winnipeg, Manitoba
R3C 4M2
Phone:(204) 925-5650
Fax: (204) 925-5624
Email: sailing@sport.mb.ca

2. HOW TO JOIN PHRF

- 2.1 Obtain an Application and Rating Form (A/R Form) from your local Handicapper, Yacht Club or MSA office. Fill in the requested data.
- 2.2 Attach a cheque for Annual Dues.
- 2.3 Mail one copy of A/R Form to your Area Handicapper or the above address.
- 2.4 You are eligible for a PHRF rating even if you are not a Yacht Club member.

3. EXCHANGE OF OLD BOAT FOR NEW BOAT (OR USED BOAT NEWLY ACQUIRED)

- 3.1 Make out NEW A/R Form.
- 3.2 List sail number and name of old boat.
- 3.3 Send to your Area Handicapper.
- 3.4 If you have paid dues for current year, don't pay again.

4. ANNUAL DUES

- 4.1 Dues are \$5.00 per member.
- 4.2 Dues will be set on an annual basis by the Board of Handicappers at an amount designed to cover the anticipated handicapping costs.
- 4.3 Cheques payable to MSA or money orders acceptable.
NO CASH PLEASE
- 4.4 For present members, Annual Dues are payable with their Club membership dues or by May 1st of each year.

4.5 For new members, Annual Due must accompany the application.

4.6 For new members, joining after October 1st, dues will be credited to the next season.

5. BOATS NOT ELIGIBLE FOR PHRF ARE:

5.1 Less than 18 feet length overall (LOA).

5.2 Center-boarders with no ballast for self-righting.

6. RATINGS

6.1 Speed Potential Ratings (SP ratings) assigned by the handicapping committee.

6.2 Performance Ratings (PF ratings) assigned by clubs for local races.

7. PHILOSOPHIC BASIS OF PHRF RATINGS

7.1 The ratings and rating adjustments are intended to represent the sailboat as it is and are not intended to favour one design over another.

7.2 The aim is to furnish each boat with a rating which fairly represents its racing speed, regardless of age, design or origin.

7.3 All ratings and rating adjustments are known to contain a "probable error" unknown in amount and direction. Whenever evidence indicates a change, corrections will be made so as to reduce the "probable error". These corrections may be made at any time without prior notice.

7.4 Because of "probable error" no rating is ever finally settled and PHRF is always open to new evidence.

7.5 PHRF Handicappers do not actually measure boats but rely on honesty and good will of owners to supply correct information. This works well, but other contestants are urged to protest or contact a Handicapper when violations are discovered.

7.6.1 If an owner makes a change in a PHRF rated boat, he is obligated to report the change to his Handicapper who will reflect the change in a changed rating.

8. ROSTER AND SUPPLEMENTS

8.1 Data from the A/R Form and Change Forms are used to assemble the Roster and the Supplements (Supplemental Rosters).

- 8.2 The Roster is a listing of SP ratings complete as of issue date and which will be issued to the yacht clubs and handicappers once yearly.
- 8.3 Supplements will be issued when changes occur and will include data on New Members and any changes. Supplements will be mailed to Handicappers and Yacht Clubs.
- 8.4 Performance (PF) Ratings (used optionally by local groups) do not appear in the Roster or Supplements.

9. SPEED POTENTIAL RATINGS (SP)

- 9.1 Definition: SP ratings represent the maximum racing speed which can be obtained by a top 1% skipper and crew with a top condition standard boat. This speed is the observed average performance over several representative races. The assigned ratings by the Handicapper shall take into account that boats of newer design are generally lighter per cubic foot than boats of older design. Lighter designs possess the ability to accelerate faster in spotty and variable winds than their heavier sisters. Generally, therefore, the lighter designs will be rated slightly on the fast side and heavier designs slightly on the slower side. Older designs being generally heavier will be considered for slower adjustments - on a case by case basis.
- 9.2 The ratings are stated as "seconds per nautical mile" (hereafter s/m). For example: SP Rating for a J24 is 162 seconds/mile (s/m).
- 9.3 All standard boats in any class receive the same SP Rating.
- 9.4 SP ratings for modified class boats will be adjusted "faster" or "slower" according to the nature of the modification. Such adjustments will be described below.
- 9.5 Codes are shown for each boat in the Roster and Supplements describing the sails, rig, propulsion and miscellaneous items on which the SP Rating is based.

10. HOW SPEED POTENTIAL (SP) RATINGS ARE DETERMINED

- 10.1 Standard Class Ratings are determined by vote of the Board of Handicappers.
- 10.2 When no Standard Class Rating exists, such as for new classes and one-off boats, a rating will be determined by the local handicapper. A rating so determined by a single handicapper is known as a "Tentative" or "T" rating. T ratings may be changed at any time by the local handicapper without prior notice to owner. T ratings are not binding on other handicappers who may be required to rate other near identical boats of the same class. Thus, in the event of a new and popular class, there is the possibility of several near identical boats of the same class arriving at a race, each with a different T rating each assigned by a different Handicapper. The hosting

area handicapper has authority to change any or all of the T ratings to achieve fair and consistent ratings for the race. Changes may be made without prior notice to the competitors or to the handicappers.

- 10.3 Local handicappers do not have authority to change standard class ratings determined by the Board of Handicappers.
- 10.4 Evidence used in determining ratings includes, but is not necessarily limited to, the following:
 - a. opinions of handicappers;
 - b. opinion of owner;
 - c. opinions of competitors;
 - d. opinions of salesman and designers;
 - e. observation of comparative speeds of boats with known ratings;
 - f. comparison of gross dimensions with boats of known ratings;
 - g. calculations from race results.
- 10.5 The policy is that ratings for new boats or new classes shall be estimated to be on the "fast" side.
- 10.6 SP Ratings, either standard class or T, may be changed at any time by the Board of Handicappers without prior notice to owners or competitors.

11. EFFECTIVE DATES OF RATINGS

- 11.1 The dates on which individual SP Ratings become effective are:
 - (a) for new boats, new owners of used boats, old members with used boats and newly acquired: the date on A/R form on which area handicapper records rating.
 - (b) for rating changes pursuant to actions of Handicappers Council: the date of Supplement or Roster on which changes are recorded and distributed.
 - (c) for rating changes pursuant to a request by an owner, or to correct mistakes: the date on change form issued by the area handicapper.
- 11.2 In the event of a rating change of type "c" above, the revised handicap can be backdated up to 5 days if a race committee deems it necessary to adjust the results of a race series.
- 11.3 Nevertheless, the spirit of the PHRF rule dictates that the SP Rating for a given boat should not change (type "c" above) over the season unless an actual change in sail inventory, or other boat modification occurs. Specifically, skippers cannot change their declared sailing configurations for a short period of time based on weather forecasts.

12. PERFORMANCE (PF) RATINGS

- 12.1 PF ratings include all the factors which affect your boat speed including the skill of skipper and crew, the shape and size of boat, conditions of the boat, sail area, etc.

- 12.2 The PF rating represents your "normal average performance". Generally, the results of your "hot" races are not included in the average, since your rating should not automatically become "faster" for "hot" performance; so also, the results of "cold" races are not in your average since your rating should not automatically become "slower" because of "cold" performance.
- 12.3 PF ratings are intended for use by a small group of boats, all being served by a single handicapper. Such groupings would include:
- (a) All the boats in Yacht Clubs with small sailing groups;
 - (b) All the boats in two or more neighbouring Yacht Clubs when served by one handicapper or by two or more co-operating Handicappers; and
 - (c) In Yacht Clubs with large sailing groups, where some elect to sail in Speed Potential rated classes and some elect to sail in Performance rated classes.
- 12.4 PF ratings are not shown on the Roster. They will be on a local list maintained and distributed to local boats only by the group handicapper. Each boat in a performance rated class will thus have two ratings; 1) his SP rating shown on the Roster; 2) his PF rating shown on a local list for local racing only.
- 12.5 PF ratings will be adjusted by handicappers from race results. The intention is that at the warning gun all boats shall have an equal chance to win.
- 12.6 A PF rating for an absolutely "average" boat has been measured to be about 30 s/m slower than the SP Rating for a boat in the same "standard" class. Initial PF ratings for all boats are determined by judgement and comparison with the ratings for standard class boats.

13. "OFF-THE-CUFF" HANDICAPS

- 13.1 Some Yacht Clubs, for their own races, issue temporary non-valid "off-the-cuff" handicaps to boats not members of PHRF to assist the growth of local PHRF racing. PHRF has no objection to this - indeed it encourages the practice - but it has to be that this "off-the-cuff" rating is NOT a valid PHRF Rating, and that it is not usable in the races sponsored by other Yacht Clubs. After 5 races or so, we believe a skipper should join the PHRF since he really is getting the benefits of the PHRF organization.

14. RELATIONSHIP OF PHRF TO SAILING INSTRUCTIONS

- 14.1 PHRF entrants must conform to requirements of the Sailing Instructions of host yacht clubs. Races are organized, not by PHRF, but by yacht clubs and PHRF starts are provided courtesy of these host clubs.

15. MEMBER'S GRIEVANCES

- 15.1 A member's first appeal is to the area handicapper.

- 15.2 Unsolved grievances then are referred to the Board of Handicappers by either the handicapper or the member.
- 15.3 If the Board of Handicappers is unable to resolve the problem it is finally referred to the Chairman for a decision.

16. RACING RULES

- 16.1 PHRF Racing Rules are recommended for inclusion in the Sailing Instructions of every Yacht Club using the PHRF rating system.
- 16.2 PHRF Racing Rules can be adopted in full or in part.
- 16.3 The following are the PHRF Racing Rules.
- (a) No part of the torso of skipper or crew shall be outside of lifelines or outside of the rail. Torso is defined as the trunk of the human body. Arms, legs, knees, elbows, hands, feet, head, are specifically not considered torso;
 - (b) The use of trapezes, hiking straps, hiking boards or any other kind of hiking support is not permitted. A normal erect sitting position on the side deck with feet in cockpit is considered within this definition if no part of the torso is outboard of a vertical plane extending upward from the rail, and no hiking aid is used;
 - (c) PHRF boats racing with sails or equipment other than those for which it is rated are subject to protest by competitors, race committee or any PHRF handicapper or Director. Details of rating codes, rating adjustments and allowable methods of flying certain sails are included in the following chapter. All parts of Chapter 2 are hereby included in the Racing Rules of PHRF.

17. CORRECTED TIME CALCULATIONS

- 17.1 Time on distance (TOD) scoring is defined as a method for deriving corrected time from elapsed time as follows:

$$\text{Corrected time (s)} = \text{elapsed time (s)} - \text{distance (m)} \times \text{SP (s/m)}$$

- 17.2 Time on time (TOT) is defined as a method for deriving corrected time from elapsed time using a time-on-time factor (TOTF) as follows:

$$\text{Corrected time (s)} = \text{elapsed time (s)} \times \text{TOTF}$$

- 17.3 The TOTF is derived from the SP using the empirical formula:

$$\text{TOTF} = (685.411 / (\text{SP} + 514.411))$$

17.4 Examples of time on distance corrected time calculations

Race distance: 15mi

	Boat 1	Boat 2
Elapsed Time:	2h 40m 22s	2h 49m 35s
Convert elapsed time to seconds:	9622s	10175s
SP rating:	126s/m	168s/m
Time allowance (TA):(15 mi X SP s/mi)	1890s	2520s
Corrected time: (Elapsed - TA)	7732s	7655s

Boat 2 with the lower elapsed time (by 77s) is the winner!

17.5 Examples of time on time corrected time calculations

	Boat 1	Boat 2
Elapsed Time:	2h 40m 22s	2h 49m 35s
Convert elapsed time to seconds:	9622s	10175s
SP rating:	126s/m	168s/m
TOTF from Table 1 (section 14.6)	1.0703	1.0044
Corrected time: (Elapsed X TOTF)	10298s	10219s

Boat 2 with the lower elapsed time (by 79s) is the winner!

17.6 It is possible to derive a variation of the TOTF expressed as seconds per hour (s/h) of racing time which is called the Time Correction Factor (TCF). The intention is that TCFs can be used by competitors to quickly determine their position relative to other competitors in races being scored time on time. TCFs can be used in several ways. For example, the difference between the TCFs two boats can be determined and this difference is multiplied by the number of hours that have elapsed in the race, say at the time of a mark rounding. This provides a time differential in seconds that should exist between the boats if they are both being sailed up to their respective SP ratings. Any deviation means one boat is ahead of the other by the amount of the deviation.

17.7 Example of a time correction calculation using TCFs

Boat 1 with SP=126 and TCF = 253s/h and Boat 2 with SP=168 and TCF = 16s/h. After two hours of racing Boat 1 should be $(253 - 16)\text{s/h} \times 2\text{h} = 474\text{s}$ ahead of boat 2.

17.8 Table of time on time factors (TOTF) and time correction factors (TCF) in seconds per hour(s/h) of racing time.

SP	TOTF	TCF		SP	TOTF	TCF		SP	TOTF	TCF
-60	1.5084	1830		75	1.1629	586		210	0.9462	-194
-57	1.4985	1794		78	1.1570	565		213	0.9423	-208
-54	1.4887	1759		81	1.1512	544		216	0.9384	-222
-51	1.4791	1725		84	1.1454	523		219	0.9346	-236
-48	1.4695	1690		87	1.1397	503		222	0.9307	-249
-45	1.4602	1657		90	1.1340	482		225	0.9270	-263
-42	1.4509	1623		93	1.1284	462		228	0.9232	-276
-39	1.4417	1590		96	1.1229	442		231	0.9195	-290
-36	1.4327	1558		99	1.1174	423		234	0.9158	-303
-33	1.4238	1526		102	1.1119	403		237	0.9122	-316
-30	1.4149	1494		105	1.1066	384		240	0.9085	-329
-27	1.4062	1462		108	1.1012	364		243	0.9049	-342
-24	1.3976	1431		111	1.0959	345		246	0.9014	-355
-21	1.3891	1401		114	1.0907	327		249	0.8978	-368
-18	1.3807	1371		117	1.0855	308		252	0.8943	-380
-15	1.3724	1341		120	1.0804	289		255	0.8908	-393
-12	1.3642	1311		123	1.0753	271		258	0.8874	-405
-9	1.3561	1282		126	1.0703	253		261	0.8839	-418
-6	1.3481	1253		129	1.0653	235		264	0.8805	-430
-3	1.3402	1225		132	1.0603	217		267	0.8771	-442
0	1.3324	1197		135	1.0554	200		270	.08738	-454
3	1.3247	1169		138	1.0506	182		273	.08705	-466
6	1.3171	1141		141	1.0458	165		276	0.8672	-478
9	1.3095	1114		144	1.0410	148		279	0.8639	-490
12	1.3020	1087		147	1.0363	131		282	0.8606	-502
15	1.2947	1061		150	1.0316	114		285	0.8574	-513
18	1.2874	1035		153	1.0270	97		288	0.8542	-525
21	1.2802	1009		156	1.0224	81		291	0.8510	-536
24	1.2730	983		159	1.0178	64		294	0.8478	-548
27	1.2660	957		162	1.0133	48		297	0.8447	-559
30	1.2590	932		165	1.0088	32		300	0.8416	-570
33	1.2521	908		168	1.0044	16		303	0.8385	-581
36	1.2453	883		171	1.0000	0		306	0.8354	-592
39	1.2385	859		174	0.9956	-16		309	0.8324	-603
42	1.2318	835		177	0.9913	-31		312	0.8294	-614
45	1.2252	811		180	0.9870	-47		315	0.8264	-625
48	1.2187	787		183	0.9828	-62		318	0.8234	-636
51	1.2122	764		186	0.9786	-77		321	0.8204	-646
54	1.2058	741		189	0.9744	-92		324	0.8175	-657
57	1.1995	718		192	0.9703	-107		327	0.8146	-667
60	1.1932	696		195	0.9662	-122		330	0.8117	-678
63	1.1870	673		198	0.9621	-132		333	0.8088	-688
66	1.1809	651		201	0.9581	-151		336	0.8060	-698
69	1.1748	629		204	0.9541	-165		339	0.8031	-709
72	1.1688	608		207	0.9501	-180		342	0.8003	-719

CHAPTER 2

HANDICAPPING INFORMATION

1. GENERAL INFORMATION

- 1.1 PHRF is a rating system designed to serve the handicap racing needs of racer-cruiser monohull sailboats. Characteristically, these will have outside ballast for self-righting, cabins, inside living equipment, engine and propeller. PHRF is adaptable to many variations from the general theme, however, up to a certain limit. Thus, unballasted monohulls and multihulls have such different sailing characteristics from the ballasted monohull racer-cruiser that handicapping them to race together is difficult. PHRF has only recently attempted to rate multihulls and PHRF ratings are not available to unballasted monohulls.
- 1.2 PHRF ratings are based on a standard class boat to which a standard class rating is assigned.

2. STANDARD CLASS BOAT: (DEFINITION)

- 2.1 Was built to a single design of which the manufacturer has made, or intends to make, a number of copies with nearly identical hulls and nearly identical rigs;
- 2.2 Has:
 - (a.) an external ballasted keel as designed;
 - (b.) or a retractable keel, or a retractable ballasted dagger-board, or a retractable ballasted centreboard which must be kept locked down at all times when racing;
 - (c.) or ballast inside the hull plus a daggerboard, which may be unballasted but which must be locked down at all times when racing;
 - (d.) or a ballasted external keel, containing a slot thru which a centreboard can be adjusted up and down;
- 2.3 Has displacement as designed;
- 2.4 Has I, J, P and E dimensions as designed;
- 2.5 Has a largest jib with $LP = 1.5J$;
- 2.6 Has a mainsail with standard P and standard E.
- 2.7 Has a largest spinnaker with $G = 1.8J$ and $LL = I$;
- 2.8 Has a spinnaker pole of length = J;
- 2.9 Is equipped with an engine, propeller and fuel tanks;

- 2.10 Has a folding or feathering propeller if it is an inboard auxiliary engine with a propulsion assembly sufficient to drive boat at 90% of hull speed in flat water. There shall be fuel onboard sufficient for two hours running at 90% hull speed.
- 2.11 Or, if it has an outboard auxiliary engine, have the engine installed on a permanent mounting, permanently connected to securely fastened fuel tanks, completely retracted but ready for instant immersion. The propulsion assembly must be sufficient to drive boat at 90% of hull speed in flat water. There shall be fuel onboard sufficient for two hours running at 90% of hull speed.
- 2.12 Have inside fittings and equipment as intended by the manufacturer. This may include all or part of the following: head, sinks, stoves, icebox, navigation desk, berths, lockers, shelves, drawers, table, doors, curtains, instruments, domestic water, stove fuel, fire extinguisher, plumbing, wiring, fuel and water tanks, etc.
- 2.13 Have outside equipment required by safety regulations of the National Authority and also equipment intended by the manufacturer. This may include all or part of the following: ground tackle, lifelines, pulpits, life preservers, emergency signalling equipment, self-draining cockpits, waterproof decks and cabins.

3. MODIFICATIONS TO THE STANDARD CLASS

- 3.1 Many sailboats vary from the definition of "standard" above. It is not intended that these be barred from PHRF racing or penalized or that boats will be forced to recut sails or be altered in any way. Instead, rating and adjustments will be made proportionally to the speed changes caused by non-standard variations. Thus, ratings will be adjusted proportionally "faster" for non-standard variations which cause the boat to sail "faster" and proportionally "slower" for non-standard variations which cause the boat to sail "slower". Some typical adjustments are listed below.
- 3.2 Common variations or modifications of the standard class boat which may call for rating adjustments are:
 - (a) "Faster" because of larger than standard sails, a taller than standard mast, a significantly altered rigging, a significantly altered keel or hull, a significant removal of interior or exterior equipment ("stripping"), a propulsion system that does not meet criterion in sections 2.9, 2.10 or 2.11 of the standard class definition, a lighter than standard displacement;
 - (b) "Slower" because of smaller than standard sails, a heavier than standard displacement, an inboard propulsion system with solid propeller, an outboard propulsion system with immersed propeller, a conversion from outboard to inboard.

- 3.3 One-off/custom/no-class boats are rated individually, there being no "standard class". However, to develop the code that goes along with "non-class" rating, the handicappers approach should be to develop a rating which would be a "standard" class rating if there were a class and thereafter make rating adjustments for variations from the assumed "standard".
- 3.4 Ballasted "bare" boats such as Soling, Star, Dragon, Etchells 22, Six Meter, etc. were intended by the manufacturers to be devoid of much equipment as described in the standard class definition above. Standard class ratings for these boats take this into account. Standard class ratings, in other words, are "faster" than they would be if the boats had the missing equipment. "Bare" boats may vary from "standard" and if so rating adjustments should be made proportionately to changes in boat speed. Common adjustments are:
- (a) "Faster" for having larger than standard sails, or
 - (b) "Slower" for having smaller than standard sails, a conversion to IB power, a conversion to include equipment as described in the standard class definition above.

4. RATING CODE

- 4.1 In the PHRF roster, the Rating Code is intended to show the factors on which the rating is based. A typical rating code is 5555. The basis of this code is as follows:

First Digit	Second Digit	Third Digit	Fourth Digit	Fifth Digit
Jib	Spinnaker	Mast	Propulsion	Miscellaneous
5*	5	5	5	_**

* The meaning of the numbers appearing in each will be explained below.

** The Fifth Digit space will usually be unoccupied, but it may be occupied by a letter representing a Miscellaneous adjustment. In the event of more than one miscellaneous item, additional code digits will be shown.

5. DEFINITIONS USED IN RATING ADJUSTMENTS

- 5.1 "I" is the fore triangle height measured along the foreside of the mast from the main deck datum to the top of the jib halyard. The height of the deck used as datum for "I" measurement shall be taken as 4% of beam above the sheer line abreast of the mast. Beam shall be taken at the sheer line abreast with the mast. For boats like Cal 28 and Morgan 27 whose cabin extends thwart ship to the sheer line, use the stripe along the hull which represents the sheer line.
- 5.2 "J" is the distance measured from the foreside of mast to point where the forestay attaches to deck or bowsprit, in a direction level with the water line.
- 5.3 "P" is the luff length of mainsail from tack to head.

- 5.4 "E" is the foot length of mainsail along boom from tack to clew sail. The "E" measurement is horizontal at 90° to "P".
- 5.5 "LP" is the distance from the clew of the jib to the luff line of the jib, in a direction at 90° to the luff line. If in doubt about the clew location, project the leech and foot to point of intersection.
- 5.6 "G" is the girth of the spinnaker. This is the maximum width of the spinnaker, measured from luff to luff with the spinnaker stretched flat; measured parallel to the foot.
- 5.7 "SPL" (Spinnaker Pole Length) is the length of the spinnaker pole, when in its fitting on the mast, and set in a horizontal position athwartships, measured from the center line of the yacht to the extreme outboard end of the pole and any fittings used when spinnaker is set.
- 5.8 "WPL" (Whisker Pole Length) is the distance from vertical center line of forward face of mast to center of clew cringle (or D ring of clew) of the jib to which whisker pole is attached, measured in a direction perpendicular to the vertical center line of the forward face of the mast.
- 5.9 "LL" is the luff length.
- 5.10 Jib is defined as a headsail hanked on or otherwise attached to a permanent forestay or head stay by at least 8 points over 90% of the luff length.
- 5.11 Streaker is defined as a sail set flying in the space to leeward of the spinnaker sheet, forward of the mainsail and alongside the spinnaker. This is a functional definition and applies to any sail so used whether a jib, drifter, blooper, small spinnaker etc.
- 5.12 Spinnaker is defined as a headsail flown from a halyard attached to the forward side of the mast and attached at the clew to a spinnaker pole except for brief periods during jibes or sail changes.
- 5.13 Hull speed is defined in knots as $V = 1.33 \times (LWL)^{0.5}$ where $(LWL)^{0.5}$ is the square root of the length of the water line in feet.

6. RATING ADJUSTMENTS FOR NON-STANDARD JIBS

- 6.1 The boat is rated on its largest jib or upwind stays'l. Jib and stays'l size are measured by the LP/J ratio. For example, $LP/J = 1.5$ for a standard jib. This ratio is usually stated as a percentage ($LP/J \times 100 = 150\%$ for the standard jib.) The J length to be used is the standard J length for the class even where actual J is altered from standard.
- 6.2 Calculate the LP/J value for a non-standard jib and use this value in the table in section 6.5 to determine a rating adjustment.

- 6.3 There is no rating and adjustment for stasl's flown between headstay jib and mast.
- 6.4 There is no rating adjustment for use of a headfoil on the forestay in place of hanks.
- 6.5 Rating adjustment table for jibs.

LP/J Nominal	LP/J Range	Rating Adjustment s/m	Code 1st digit
2.0	1.94 and up	-15	L (large)
1.9	1.84 to 1.93	-12	9
1.8	1.74 to 1.83	-9	8
1.7	1.64 to 1.73	-6	7
1.6	1.54 to 1.63	-3	6
1.5	1.44 to 1.53	0	5
1.4	1.34 to 1.43	+3	4
1.3	1.24 to 1.33	+6	3
1.2	1.14 to 1.23	+9	2
1.1	1.04 to 1.13	+12	1
1.0	0.00 to 1.03	+15	S (small)

7. RATING ADJUSTMENTS FOR NON-STANDARD SPINNAKERS AND SPINNAKER SUBSTITUTES

- 7.1 Spinnaker rating adjustments are based on the largest spinnaker used by the sailboat being rated. The standard PHRF spinnaker has a G/J ratio of 1.8. The standard J length for the class is used for these calculations even though the actual J is altered from standard.
- 7.2 Calculate the G/J value for the non-standard spinnaker and use this value in table in section 7.4 to determine a rating adjustment.
- 7.3 Cruising spinnakers (Genaker, Flasher, etc.) may be used in lieu of a spinnaker. Models hanked to the forestay should be treated as jibs. Maximum girth is taken as per the jib LP distance. Then calculate a G value as $G = ((\text{maximum girth})(\text{maximum LL}))/I$ which used to calculate the G/J ratio for use in the table in section 7.4. Digit 2 becomes "X" for such sails.

7.4 Rating adjustment table for spinnakers and spinnaker substitutes

G/J Nominal	G/J Range	Rating Adjustment s/m	Code 2nd digit
2.7	2.59 and up	-18	H (huge)
2.55	2.44 to 2.58	-15	L (large)
2.4	2.29 to 2.43	-12	9
2.25	2.14 to 2.42	-9	8
2.1	1.99 to 2.13	-6	7
1.95	1.84 to 1.98	-3	6
1.8	1.69 to 1.83	0	5
1.65	1.54 to 1.68	+3	4
1.5	1.39 to 1.53	+6	3
1.35	1.24 to 1.38	+9	2
1.2	1.09 to 1.23	+12	1
1.05	0.94 to 1.08	+15	S (small)

7.5 For staysail's flown additional to spinnaker forward of the mast, aft of the forestay in space between spinnaker, its attached sheet and guy and tacked to foredeck, there is no adjustment.

7.6 Streaker or blooper sails are dealt with in the Miscellaneous section below.

7.7 It is possible that multiple jibs or other sails may be set forward of the foremast. Possible combinations include: two jibs hanked on headstay; one or two jibs plus stas'l's; jib plus stas'l plus flying drifter, jib plus streaker used as flying jib, etc. Calculate an adjusted G as follows: $G = (0.59 \times LP1st \text{ sail} \times LL/I) + (0.525 \times LP2nd \text{ sail} \times LL/I) + \text{etc.}$ The factor 0.59 applies to the largest sail. Then G/J is used in the table in section 7.4 to determine a rating adjustment. The code for this adjustment is W (second digit).

7.8 NFS (No Flying Sails). To be eligible for a No Flying Sails rating, a boat must use working sails only, attached by their luffs to permanent stays or spars. Only one working sail luff may be attached to each permanent stay or spar. Only one jib may be used forward of the main mast on sloops, cutters, yawls and ketches. When changing jibs, the "up" jib must be lowered to the deck before the replacement jib is raised. Before lowering the "up" jib, the replacement jib may be hanked on the forestay or inserted in the second groove of headfoil up to five feet above deck. The second halyard may be attached before lowering "up" jib. Jibs may not be attached to temporary or detachable stays. NFS ratings exclude such sails as spinnakers, mizzen stas'l's, streakers, spinnaker stas'l's and drifters, flying from their own temporary stays, etc. Rating adjustments are based on the largest jib. The size of the sail is measured by LP/J ratio as described above for jibs and use the table in section 7.9 to determine the rating adjustment. Some roller furling jibs are mounted on their own roller stays in a position just aft of the permanent forestay. This installation is approved for a NFS rating when no sail is flown from the permanent forestay.

7.9 Rating adjustment for NFS boats.

LP/J	Rating Adjustment s/m	Code 2nd digit
1.551 and larger	+15	A
1.301 to 1.55	+18	B
up to 1.30	+21	C

8. RATING ADJUSTMENTS FOR NON-STANDARD SPINNAKER POLES

- 8.1 The allowable spinnaker pole length is:
- (a) $SPL = J$ for spinnakers of $G = 1.8J$ and smaller, and
 - (b) $SPL = G/1.8$ for spinnakers of $G = 1.8J$ and larger.
- 8.2 For spinnaker poles whose length is in excess of the allowable SPL, calculate the theoretical spinnaker girth to fit this pole as $(1.8)(\text{Pole Length})$, and base the rating adjustment on this size spinnaker.
- 8.3 There is no rating adjustment for spinnaker poles shorter than SPL.
- 8.4 Only one spinnaker pole may be used.

9. RATING ADJUSTMENT FOR NON-STANDARD MASTS

- 9.1 The mast standard height is I + any length from the jib halyard sheave to the top of the mast.
- 9.2 An excessive or deficient mast height is defined as the Mast Height Factor MHF in the following equation and is used in the table in section 9.4 to determine a rating factor adjustment:
 $MHF = \text{Actual } I / \text{Standard } I$
- 9.3 The non-standard mast height rating adjustment is a short cut way of computing changed sail areas in jib, spinnaker and main resulting from changes in I and P resulting from a change in mast height. If, in addition, there are changes to LP , G or E , an additional adjustment for changed sail area due to these is required.

9.4 Rating adjustment table for non-standard masts.

MHF Range	Rating/Adjustment s/m	Code 3 rd digit
1.111 and up	-18	H (huge)
1.091 to 1.11	-15	L large)
1.071 to 1.09	-12	9
1.051 to 1.07	-9	8
1.031 to 1.05	-6	7
1.011 to 1.03	-3	6
0.991 to 1.01	0	5
0.971 to 0.99	+3	4
0.951 to 0.97	+6	3
0.931 to 0.95	+9	2
0.911 to 0.93	+12	1
0.000 to 0.91	+15	S (small)

10. RATING ADJUSTMENT FOR NON-STANDARD MAINSAILS

- 10.1 The standard mainsail has standard E and P measurements, and a standard leech area = $(0.05)(P)(E)$ to give $A = 0.5(P)(E) + 0.05(P)(E) = 0.55(P)(E)$
- 10.2 Non-standard mainsails can result from changes in "P", in "E", in leech area, from "droopy boom" mast rake or mast bend. Calculate the area of a non-standard main by any appropriate geometry and calculate a mainsail ratio $MR = \text{non-standard main } A / \text{standard main } A$. Use this ratio in the table in section 10.3 to calculate a rating adjustment.
- 10.3 Rating adjustment table.

MR Range	Rating Adjustment s/m	Code (5 th digit)
1.32 to 1.39	-15	M (miscellaneous)
1.25 to 1.31	-12	M
1.17 to 1.24	-9	M
1.10 to 1.16	-6	M
1.02 to 1.09	-3	M
0.95 to 1.01	0	-
0.87 to 0.94	+3	M
0.80 to 0.86	+6	M
0.72 to 0.79	+9	M
0.65 to 0.71	+12	M
0.57 to .064	+15	M

11. ENGINE AND PROPELLER

- 11.1 If the propulsion system does not meet the requirement of a standard boat definition as outlined in sections 2.9, 2.10 and 2.11, a rating adjustment will be determined from the table in section 11.3.
- 11.2 A sail drive unit (also "Volvo Drive") is considered the same resistance as the shaft, strut and propeller hub of a typical inboard installation. Propellers of different kinds attached to a sail drive Shaft shall set the same allowances as if attached to a typical propeller shaft.
- 11.3 Rating adjustment table for non-standard propulsion units.

Item	Rating s/m	Code (4 th digit)
11.3.1 Inboard Engine		
Conversion to OB from IB	-6	and consult 11.3.2
Propulsion insufficient for 90% of HS	-6	7
Retractable prop with flush plate	-6	6
Folding or feathering prop	0	5
Solid 2-blade prop in aperture	0	5
Solid 2-blade prop exposed to water flow	+6	4
Solid 3-blade prop in aperture	+6	3
Solid 3-blade prop exposed to water flow	+12	2
Unusual installations (to be handicapped)		1
11.3.2 Outboard Engine		
Inadequate speed under power	-3	P
Retracted when racing	0	M
Not retracted: immersed both tacks	+6	K
Conversion to inboard	+6	and consult 11.3.1

- 11.4 If an outboard is not mounted, connected and ready for immersion, an adjustment will be made by the area handicapper based on an estimate of speed gained. This will be shown under Miscellaneous (5th digit) as E

12. RATING ADJUSTMENT FOR NON-STANDARD WHISKER POLES

- 12.1 A whisker pole is defined as a pole (or substitute) used to wing out a jib to weather on off wind legs. The allowable whisker pole length is:
- (a) $WPL = J$ for those jibs with $LP = 1.25J$ and smaller, and
 - (b) $WPL = (0.8)(LP)$ for those jibs with $LP = 1.25J$ and larger.

- 12.2 For whisker poles whose length is in excess of the allowable WPL, a rating adjustment is calculated as follows:
- (a) for (1.001 to 1.1)(WPL), -3s/m
 - (b) for (1.101 to 1.2)(WPL), -6s/m
 - (c) for (1.201)(WPL) and longer, -9s/m
- 12.3 The rating penalty for excess whisker pole length is included in the Miscellaneous column with code "B".
- 12.4 There will be no rating adjustment for whisker poles whose length is less than the allowable WPL.
- 12.5 Only one whisker pole shall be used and it must be on the side of boat opposite to the main boom, even if more than one jib is set.
- 12.6 Any equipment combination used to obtain an allowable WPL (or WPL plus penalty length) is authorized. For example: two short poles lashed together; spinnaker pole; metal extension pole; bamboo pole; etc. The inner end of the pole may be fastened to the boat at any place. The outer end of the pole shall be fastened to clew or in as close proximity thereto as fittings permit. The owner must be prepared to prove that the whisker pole gear which he uses does not exceed the allowable WPL (or WPL plus penalty).

13. MISCELLANEOUS ADJUSTMENTS

- 13.1 Table of rating adjustments for miscellaneous items

Item	Rating Adjustment s/m	Code (5 th digit)
Streaker or blooper with spinnaker	(see section 12.2)	A
Whisker pole longer than WPL	(as estimated)	B
Other items not included herein	(as estimated)	C
Outboard not mounted and connected	(as estimated)	E
Faster because of gear removal	(as estimated)	G
Significant hull alteration	(as estimated)	H
Significant keel alterations	(as estimated)	K
Non-standard use of lifting keels	(as estimated)	L
Non-standard mainsail	(see section 10.3)	M
Altered rig (thinner mast, more stays etc)	(as estimated)	R
Significant ballast alteration	(as estimated)	W

14. SAMPLE CODES

Standard class boat, inboard engine	5555
Standard class boat, outboard engine	555M
Modified class boat	6A74B

6 = jib	153 to 163%	3 sec faster (-3)
A = NFS	jib >155%	15 sec slower (+15)
7 = mast	103 to 105% higher	6 sec faster (-6)
4 = IB with solid 2 blade prop on strut		6 sec slower (+6)
C = Miscellaneous: Whisker pole excess length		(See Handicapper for amount of adjustment.)

15. ALTERATIONS AND RATING ADJUSTMENTS

15.1 We recommend that members do not alter sails or boats in order to optimize any rating based on the above adjustment schedules. All of the adjustments are subject to change, by action of the Board of Handicappers. One must recognize that there is a "probable error" in every "Standard Class Rating" as well as in every "adjustment". The Council works continually to find the amount and direction of such "probable errors", and, if found, makes corrections with the intent of further minimizing "probable errors". These corrections will be made at any time, without prior notice.

16. EQUIVALENCE OF SPEED AND DISTANCE

16.1 To show the effect of rating adjustments in terms of distance, the following table showing the distance a boat travels in 0.1 minute:

Boat Speed	Distance
1 knot	10 feet
2 knots	20 feet
3 knots	30 feet
4 knots	40 feet
5 knots	50 feet
6 knots	60 feet

CHAPTER 3

BY-LAWS

ARTICLE I NAME

- 1.1 The name of this Fleet shall be PHRF of Lake Winnipeg and Lake of the Woods (PHRF LWLW).

ARTICLE II OBJECTIVES

- 2.1 It shall be the prime objective of this Fleet to promote the sport of handicap racing of sailing yachts for the exclusive employment of its members.
- 2.2 In furtherance of the above it shall also be the objective of this Fleet to establish and maintain an equitable system of handicaps for yachts owned or chartered by members based on potential performance and following generally the principles and handicaps established by the Performance Handicap Racing Fleet of Lake Winnipeg and Lake of the Woods, the U.S. PHRF as administered through the US Sailing, ORC, the Pacific Handicap Racing Fleet of the Northwest, and other comparable organizations as they evolve.

ARTICLE III MEMBERS

- 3.1 Any person who is the owner or charterer of a yacht principally berthed on Lake Winnipeg or Lake of the Woods and who is a member of CYA or club belonging to CYA is eligible for membership in this Fleet upon written application on a form approved by a President and the Executive Secretary.
- 3.2 A member shall declare on his application only one club to which the member shall be deemed to belong for purposes of calculating boats in accordance with section 4.5 below.

ARTICLE IV BOARD OF HANDICAPPERS

- 4.1 Management of the affairs of this Association is vested in a Board of Handicappers which shall have full power to effect the purposes of this Fleet and to take actions and adopt such Rules, not inconsistent with these By-Laws, as it may deem necessary or desirable for the furtherance of the purposes of this Fleet.
- 4.2 Each club having at least five members of the Fleet among its membership shall be entitled to appoint one member of this Fleet to serve as a member of the Board of Handicappers. Such appointments shall be made by election by Fleet members belonging to each club or in the absence of such election, by the Commodore of the club whose members the Handicapper is to represent.

- 4.3 Each Handicapper shall serve at the pleasure of the club which appointed him and any club shall have the power to remove its Handicapper with or without cause and to appoint a successor in the case of a vacancy caused by such removal or by any other reason.
- 4.4 The Board of Handicappers shall hold its Annual Meeting in November of each year and shall meet on other occasions upon call of the Chairman. Time and place of each annual or special meeting shall be fixed by the President and not less than 10 days written notice of the time and place of each meeting shall be given to all members of the Board by the Secretary of the Fleet.
- 4.5 At meetings of the Board of Handicappers each Handicapper shall have a number of votes equal to the number of members of this Association belonging to the club which appointed him. Handicappers representing a majority of the total number of such votes shall constitute a quorum for the transaction of business and the affirmation approval of a majority of such total shall be necessary for the approval of any resolution or the taking of any action. Any Handicapper unable to attend a meeting may appoint (in writing) another member of the Association to act in his proxy at the meeting. The Board may also act without a meeting by written instrument signed by all members of the Board.
- 4.6 Each Area or Club Handicapper who is a member of the Board of Handicappers shall be responsible for handicapping the yachts in a specific area assigned to him/her.

ARTICLE V OFFICERS

- 5.1 The officers of this Fleet shall consist of a Chairman, Secretary and Treasurer who shall be elected from among the membership of the Board of Handicappers at its annual meeting and shall serve without compensation for the ensuing calendar year. Vacant offices shall be filled by and from the Board of Handicappers. No person shall hold more than one office at the same time except that one person may hold the offices of Secretary and Treasurer.
- 5.2 The Chairman of the Fleet shall be selected from among the members of the Board of Handicappers, shall preside at meetings of the Board of Handicappers and shall have such other duties as may be assigned to him by the Board of Handicappers. The Chairman shall make final decisions with respect to handicaps in the case of irreconcilable conflict among the Board of Handicappers.
- 5.3 The Secretary of the Fleet may, but need not, be a member of the Board of Handicappers. He shall have custody of the records of the Fleet and shall maintain a list of members and a list of handicapped boats. The President of the Fleet may also appoint an Executive Secretary who shall assist the Secretary with the keeping of records, the mailing of notices and other correspondence, etc. The Executive Secretary need not be a member of the Fleet and may be compensated in such manner as the Board of Handicappers decides.

- 5.4 The Treasurer of this Fleet may, but need not be, a member of the Board of Handicappers. He shall have custody of the funds of the Fleet and shall be responsible for the receipt and disbursement of funds subject to the instructions of the Board of Handicappers and shall be responsible for preparing a Statement of Accounts for presentation at the Annual Meeting.

ARTICLE VI HANDICAPS

- 6.1 The Secretary shall publish rosters of rated boats not less than once a year. Rosters will be issued to Handicappers, yacht clubs, sailing associations and yacht owners who are members of the Fleet.
- 6.2 Handicaps for individual boats will be determined using standard performance handicapping methodologies. Ratings listed in the roster shall be based on boat speed potential as determined from the demonstrated speed of "standard" boats which are well sailed and well equipped. The local/Area Handicapper will keep a record of performance of yachts raced by members of yacht clubs assigned to him. He shall review the performance of each yacht in the races for which he receives results, and shall supplement this with data obtained from the race committee or other sources. Changes in handicap shall be made whenever the results or other data indicate an adjustment in order to provide equitable racing. The local Handicapper shall notify the member of any change in the rating of his yacht.
- 6.3 Each yacht shall be handicapped individually, whether a member of a one design class or not. Yachts are not required to comply with class rules when racing under PHRF.
- 6.4 The Board of Handicappers shall provide criteria for the eligibility of yachts to be rated. They shall also derive and apply adjustment factors to the standard boat rating, which are appropriate to the local sailing conditions. These criteria and adjustment factors must be widely published to the members. Standard boat ratings, for comparison with published data, are defined as follows:
- a. Spinnaker Pole length = J;
 - b. Spinnaker maximum width = Nominal 180% of J;
 - c. Genoa LP = Nominal 150% of J; and
 - d. The boat has a folding or feathering propeller or a retractable outboard motor.
- 6.5 Any member may protest another member's rating or handicap or may appeal his own handicap for the following reasons:
- a. Discrepancy from initial rating; or
 - b. Discrepancy from current rating code.

- 6.6 The first level of protest or appeal is to the local Handicapper to whom the boat is assigned. Unsolved grievances are then referred to the Board of Handicappers for the Fleet by the local Handicapper or the members. If the Board of Handicappers is unable to resolve the problem, the matter is referred to the President of the Board of Handicappers for final resolution.

ARTICLE VII YACHTS

- 7.1 Yachts rated by this Fleet shall be a minimum of 18 feet in hull length and shall be of single hulled cruising type, self-righting, with enclosed cabin or a rated cruising multihull.
- 7.2 Yachts shall carry such equipment as the Board of Handicappers may from time to time prescribe by Rules adopted as herein provided.

ARTICLE VIII COMMITTEES

- 8.1 The Chairman may appoint such committees as he may deem necessary or desirable to assist him in the performance of his duties or to study and report with respect to any matter relating to the purposes or business of the Fleet.

ARTICLE IX DUES

- 9.1 Annual Dues by members shall be fixed by the Board of Handicappers and shall be due May 1. Renewals received May 1 or after must pay the same dues as a new application.
- 9.2 Income from dues, together with any other income, shall be used in such manner as the Board of Handicappers shall determine.

ARTICLE X AMENDMENT

- 10.1 These by-laws may be amended by the Board of Handicappers at any meeting by affirmative vote of two-thirds of the total number of votes which could be cast if all members were represented at the meeting provided that notice of the proposed change has been included in the written notices of the meeting. Base

Base LWLW PHRF Ratings - 1999

Abbott 22	228	Mirage 25	210
Abbott 33	123	Mirage 26	198
Alberg 30	228	Mirage 275	198
Aloha 8.2	204	Mirage 29	168
Aloha 30	141	Mirage 30	165
Balboa 26	219	Mirage 32	156
Bayfield 25	270	Mull 26	177
Bayfield 29	234	Niagara 26	180
Beneteau 285	189	Niagara 31	156
Bucaneer 27	267	Nonsuch 33	165
Bucaneer 29	168	Northern 1/4 Ton	225
Cal 21-1	222	Northern 25	216
Cal 25	219	PY 23	240
Catalina 27 OB	201	PY 26	198
Catalina 27 IB	204	San Juan 21	252
Chrysler 26	228	San Juan 24	216
CS 27	198	Santana 252	216
CS 30	141	Sirius 28	186
CS 33	150	Sonic 23	222
C&C 24	216	Swiftsure 24	231
C&C 25	213	Tanzer 22	234
C&C 26	204	Tanzer 25	189
C&C 29-1	174	Tanzer 7.5	225
C&C 27-2 (3)	186	Tanzer 26	207
C&C 29-2	168	Tanzer 28	192
C&C 27-3 (5)	177	Tarten 10	123
C&C 30-1	174	Tarten 41	96
C&C 30-2	141	Thunderbird 26	204
C&C 32	153	US 22	275
C&C 33-2	129	US 25	216
C&C 34	138	US 27	198
C&C 37	108	Vision 660	252
C&C40	93	Vivacity 20	294
C&C41	66		
DS 20	282		
DS 22	252		
Gilbert 30	168		
Goman 20	231		
Goman 30	138		
Halman 20	276		
Hunter 28.5	180		
Hunter 33	147		
Irwin 28	204		
J24	162		
J30	144		
Kirby 25	171		
Luger 26	246		
Martin 242	156		
Mega 30	138		
Mirage 24	219		