# Handbook - Appendage
# 2016

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## Policy Statements

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### *Topic:* Mailing Lists

*Date:* March 28,1994

**Abstract:**
Mailing lists, or lists of members and certificate holders, are for the purpose of communication and management of PHRF-LO. Therefore, membership lists, either with or without addresses, will not be distributed in their entirety.

Should a PHRF-LO handicapper require information on boats in a class, only the information included in the class listing, with the addition of the specific club that boat is a member of will be provided.

Should a member PHRF-LO club request information on all certificate holders, a supply of mailing labels will be made available of active certificate holders.

**Update:** March 98
Commercial organizations wishing to contact PHRF-LO certificate holders will be able to contract the organization to prepare and mail flyers, etc. to a select group of certificate holders for a fee as set out by the organization.

As at March 98: $98.00 / 100 Cdn $ 75.00 / 100 U.S.
price includes postage, printing cost if applicable are extra.

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### *Topic*: Mainsail Policy

**Update:** March 1990
Regarding the necessity for mainsail measurements. Mainsails may optionally be measured at any time. Mainsails **must** be measured in the absence of a fixed backstay regardless of the status of **battens**.

**Update:** May 2002
All new mains are to be measured (this includes all new Certificates on boats not currently in PHRF-LO data base). No new certificate is to be issued without the mainsail measurement. Enacted: May 2002.

**Update:** November 2002
All mainsails will be measured for boats with No backstay, backstay deflectors and removable backstays.

**Update:** April 2004
Any NEW sail must have a sail makers Certificate with required information or Handicapper must measure all mainsails.
Also: All boats with mainsails over 106.1% will be reviewed annually.

**Update:** April 2015
All (new to a certificate) mainsails must be measured.

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## *Topic:* Fee schedule

*Date:* March 28, 1994

**Abstract:**
There will be two Fee schedules - New Issue and Update

The New Issue Price will be $25 Canadian, or $20 US. The New Issue price applies to New Application, Renewal and New Boat certificates. Effectively, when a complete certificate is required, the New Issue charge will apply.

The Update Price will be $5, both Canadian and US. This will be applied to an application that has a change (such as a new sail of different dimensions) and will require the issue of a new certificate. This will also apply for a re-print of a certificate.

Information changes, such as address updates, will have no charge.

Handicapper or PHRF-LO initiated changes, such as error or re-issue of an SP, will not require a charge.

**Update:** January 13,1996
RUSH certificates - Due to the increased demand for this kind of service and the resulting time demands put on the administration, a new policy on Rush Certificates was enacted.

It was agreed that: A turn around time for certificates of 1 week is typical and that any faster request would be subject to an addition of $10.00 on top of the regular fee.

**Update:** January 24,1998
Effective immediately Certificate Fees for Canadian Members will increase to $28.00.
Canadian Yacht Club Dues will also increase to $ 70.00

Change Fee, Rush Surcharge, Event Certificates and Us Fees will remain the same.

**Update:** January 15,2000
Effective immediately Certificate Fees for Canadian and US Members will increase to $35.00 and $25.00 respectively.

**Update:** January 19,2002
Effective immediately Certificate Fees will apply **annually** at the present rate of $35.00 and $25.00.

**Update:** March 2002
Effective March 2003, a minimum of 5 certificates will be required by each member. Failing that, a club will be charged a certificate surcharge in addition to their yearly dues equal to the minimum.

**Update:** February 1, 2003
Effective immediately annual Certificate Fees for Canadian and US Members will decrease to $28.00 and $20.00 respectively.

**Update:** January 10, 2004
Effective immediately. Clubs will be given 2 options for Dues payments.

Option 1. Certificate Fees will be added to the Club Dues amount and club will collect fees. Certificate Fee for this will decrease to $20 Cdn $15 US.

Option 2. Club will continue to use PHRF-LO manual system for processing certificates individually. Certificate Fee will increase to $30 Cdn $25 US.

**Update:** January 14, 2006
Effective immediately annual Membership Fees for US Members will increase to $65.
Opt Out option will no longer be available to members.

**Update**: January 12, 2008
Effective immediately, annual Club Membership fee of $75 Cdn/ $65 US. has been removed.
Club membership will be maintained through payment of the certificate portion of the dues.

Certificate fees will increase to $25 per certificate. A Race Credit of $5 per certificate will be applied to the dues invoice.

US fees will be increase to match those of the Canadian Fees.

**Update:** January 12, 2013
There will be a $5 increase in the Certificate fee effective in 2014.

It is recommended that Member Clubs begin collecting the fee during the 2013 season for payment on their 2014 dues invoice.

All other fees and credit remain the same.

**Update:** January 11, 2014
There will be a $5 increase in the Certificate fee effective in 2015.

It is recommended that Member Clubs begin collecting the fee during the 2014 season for payment on their 2015 dues invoice.

All other fees and credit remain the same.

**Update**: January 9, 2016
The US Certificate fee will be dropped from $35 to $25 in line with the current exchange rate.
The Non-member Certificate Surcharge (currently $35) will be removed.

All other fees and credit remain the same.

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## Topic: Privacy Policy

Date: April 4, 2009
The purpose of PHRF-LO is to equitably handicap boats on Lake Ontario.

In furtherance of this mission, certificate holder's names, boat names, yacht club affiliation, boat information, and handicap will be available for public viewing on our web site. This is to enable handicappers and regatta organizers to fairly determine if a handicap is correct and to ensure fair racing on the lake. Certificate holder's physical address, mailing address, telephone, mobile phone, fax number and email address will not be revealed unless permitted by the individual in question.

Handicap certificates are made available for viewing on our website by Registered Member Club Handicappers on Lake Ontario who have secure password authentication.

Personal information supplied to us may be used to keep the provider informed and up to date on the activities of PHRF-LO.

# PREDICTION EQUATIONS AND CONVERSIONS FOR PHRF

**OCTOBER/85**

One of the difficult tasks for handicappers is the assignment of a handicap for a boat with limited or no race data. This occurs with new designs and one offs. It is the intent of this article to provide various methods that have been designed to fill this void. No particular method is endorsed and where possible the known variation (mean difference) between method and actual PHRF-LO SP's will be quoted. It must be remembered that we are not a measurement rule and that we are dependent on the analysis of race data to ensure the accuracy of our handicaps. It still is however, in our best interest to attempt to assign an initial handicap as accurately as we can estimate it in the interest of fair and equitable racing without unduly penalizing new designs.

Present PHRF-LO handicaps are said to have an average error of 4.5 seconds/nautical mile. Rounding off to 3 seconds/nautical mile interval accounts for l.5 seconds/nautical mile of this. With even the best accuracy in prediction formula we would expect that we could not get better than this value.

It should be remembered when taking information from brochures or manufacturers that builders do not apply a consistent method in specifying boat displacement and the accompanying waterline length.

**CONVERSIONS**

IOR: SP=2160 x (1/Ö(IOR RATED LENGTH)-1/Ö(150)) - 125
(unreliable, mean diff. age/design dependent)

IRC: SP=(650/TCF)-550

MORC: SP=(2160 x (1/Ö(MORC)-1/Ö(160)))-112
(mean diff = -3.51 sec/mi., very weight sensitive)

PORTSMOUTH: SP=11.8 x DPN-827 FOR DPN <84
SP=5.67 x DPN-310 FOR DPN >=84

IMS: IMS (GP) - 550

*From SAIL May/79 PP 141-145 Article by Frank Watts*

WP = 747.5 - ( 99.7 x Ö(LWL)) - (4.79 x (SA ¸ D)) - (17.67 x AS1)
(note 1st figure changed from 741.6 to reduce mean diff.)

SA=100 x SAIL AREA = .5 x ((I x J) + (E x P)) LWL = WATERLINE LENGTH

D=(BOAT WEIGHT LBS./62.4)^2/3 LH = LENGTH of HULL

AS1=ASPECT RATIO OF THE MAIN = P/E

MEAN DIFF. PSP vs PHRFLO SP's = 13.67 sec/mi.

## C. KRAMER'S MEASUREMENT PERFORMANCE RATING (MPR)

The need to include a measure for keel efficiency (lift/drag) and sail plan efficiency in terms of wind gradient was felt necessary to improve accuracy after a review of **"A VELOCITY PREDICTION PROGRAM FOR OCEAN RACING YACHTS REVISED TO JUNE 1978" BY J. E. KERWIN, REPORT #78-11 FROM THE H. IRVING PRATT OCEAN RACE HANDICAPPING PROJECT M.I.T., OSP #81535**.

MPR= 849-(78 x Ö(**LL**))-(4.75 x (**RSA**¸**D**))-(42.5 x **AK**)-(1.68 x (LOG(304 x **H**))$^2$ )-(5.7 x **BC**)

**LL**=RATED LENGTH = (.3 x LH)+(.7 x LWL)
LH = LENGTH of HULL
LWL = WATERLINE LENGTH

**RSA** = RSAM+RSAF = IOR SA FOR 150% GENOA, 180% SPINN, SPIN.POLE=J
RSAM=(.35 x E x P)+(.2 x E x (P-2 x E))
RSAF=(.683 x I x J)+(.125 x J x (I-2 x J))

**D**=(DIS¸62.4)$^{.667}$
DIS = BOAT WT.+CREW WT.
BOAT WT. = .4 x MDL x LWL x B x 62.4 lbs.
CREW WT. = 1.342 x LWL x Ö(I x J)
B= Maximum Beam
MDL = LOR MEASURED HULL DEPTH AT POINT OF MAX. BEAM
OR…. IOR HULL DEPTH MEASUREMENT (.5 x (CMDI+MDI))
OR…. WITH MEASURED WEIGHT (e.g. MORC VALUES) : $\frac{\text{DISPLACEMENT}}{24.95 \times \text{LWL} \times \text{B}}$

**AK** = AK of KEEL
Fixed and Daggerboard: AK = KEEL DEPTH ¸ KEEL LENGTH AT 50% DEPTH
Centerboard: AK = $\frac{.25 \times \text{BOARD DEPTH}}{\text{BOARD LENGTH AT 50\% DEPTH}}$
Keel CB: AK = (KD+.25 x BD)/((KD x KL)+(BD x BL))

NOTE: IF DAGGERBOARD AK >1.75 : AK = 1.75
IF FIXED KEEL AK >1.75 : AK = 3.06 x KL ¸ KD

**H** =(.6 x I)+(.4 x P)+4.6

**BC**=ABS((.25 x LWL)+2.67-B)
B = MAXIMUM BEAM

*My thanks for much hard work done by C. Kramer in the preparation of this formula.*

MEAN DIFF. MPR vs PHRFLO SP'S = 6.66 seconds/nautical mile
(172 yachts used for this analysis)

# JIM TEETERS - VPP FOR CALCULATING THE NFS-DELTA

In 2010, PHRF-LO contracted US Sailing's Offshore Office to develop algorithms based on their Velocity Prediction Program and a representative database of Lake Ontario yacht classes.
These new scientific formulae are based on class measurements and result in objective estimates of boat performance. As a result we now have objective deltas (differences) between FS and NFS handicaps for all classes.

The following is based on a GPH (General Purpose Handicap) formula.

**NFS-SP = FS-SP + NFS-Delta**

GPH Coefficients:

C1= -24.2535
C2= 33.67219
C3= -431.522
C4= 92703.04
C5= -0.00386

Sail Area Calculations:

Amain = 0.5 * P * E *1.225

Agenoa = 0.5 * 1.55 * J * $\sqrt{}$ ( I^2 + J^2 )

Aspin = 1.8 * 5 * JSP * 0.95* $\sqrt{}$ ( ISP^2 + JSP^2 ) /6

Parameters:

SAdn Ratio = (Amain + Aspin) / (Amain + Agenoa)

DLR = 1 * Disp / 2240 / (0.01 * LWL) ^3

SadnDisp = (Amain + Aspin) / (1.12 * Disp/64)^(2/3)

Rating Delta:

NFS-Delta = C1 + C2 * SAdn Ratio + C3 * DLR^(-1) + C4 * DLR^(-2) + C5 * SadnDisp^2

# TIME ON TIME MULTIPLIERS WITH SECONDS PER HOUR HANDICAP

**Normalized to SP of 165 (seconds/nautical mile)**

**New for 2010 using Scratch boat = 165**

TOT = (566.431/(ASP+401.431)) J.Schneider's Simplification

## ASP -30 TO 130

| SP | TOT | SEC/HR |
|---|---|---|
| -30 TO 10 | | |
| -30 | 1.5250 | 1890 |
| -29 | 1.5209 | 1875 |
| -28 | 1.5168 | 1861 |
| -27 | 1.5128 | 1846 |
| -26 | 1.5087 | 1831 |
| -25 | 1.5047 | 1817 |
| -24 | 1.5008 | 1803 |
| -23 | 1.4968 | 1788 |
| -22 | 1.4928 | 1774 |
| -21 | 1.4889 | 1760 |
| -20 | 1.4850 | 1746 |
| -19 | 1.4811 | 1732 |
| -18 | 1.4773 | 1718 |
| -17 | 1.4734 | 1704 |
| -16 | 1.4696 | 1691 |
| -15 | 1.4658 | 1677 |
| -14 | 1.4620 | 1663 |
| -13 | 1.4583 | 1650 |
| -12 | 1.4545 | 1636 |
| -11 | 1.4508 | 1623 |
| -10 | 1.4471 | 1609 |
| -9 | 1.4434 | 1596 |
| -8 | 1.4397 | 1583 |
| -7 | 1.4361 | 1570 |
| -6 | 1.4324 | 1557 |
| -5 | 1.4288 | 1544 |
| -4 | 1.4252 | 1531 |
| -3 | 1.4217 | 1518 |
| -2 | 1.4181 | 1505 |
| -1 | 1.4146 | 1492 |
| 0 | 1.4110 | 1480 |
| 1 | 1.4075 | 1467 |
| 2 | 1.4040 | 1455 |
| 3 | 1.4006 | 1442 |
| 4 | 1.3971 | 1430 |
| 5 | 1.3937 | 1417 |
| 6 | 1.3903 | 1405 |
| 7 | 1.3868 | 1393 |
| 8 | 1.3835 | 1380 |
| 9 | 1.3801 | 1368 |
| 10 | 1.3767 | 1356 |

| SP | TOT | SEC/HR |
|---|---|---|
| 11 TO 50 | | |
| 11 | 1.3734 | 1344 |
| 12 | 1.3701 | 1332 |
| 13 | 1.3668 | 1320 |
| 14 | 1.3635 | 1309 |
| 15 | 1.3602 | 1297 |
| 16 | 1.3569 | 1285 |
| 17 | 1.3537 | 1273 |
| 18 | 1.3505 | 1262 |
| 19 | 1.3473 | 1250 |
| 20 | 1.3441 | 1239 |
| 21 | 1.3409 | 1227 |
| 22 | 1.3377 | 1216 |
| 23 | 1.3346 | 1204 |
| 24 | 1.3314 | 1193 |
| 25 | 1.3283 | 1182 |
| 26 | 1.3252 | 1171 |
| 27 | 1.3221 | 1160 |
| 28 | 1.3190 | 1148 |
| 29 | 1.3160 | 1137 |
| 30 | 1.3129 | 1126 |
| 31 | 1.3099 | 1116 |
| 32 | 1.3069 | 1105 |
| 33 | 1.3038 | 1094 |
| 34 | 1.3009 | 1083 |
| 35 | 1.2979 | 1072 |
| 36 | 1.2949 | 1062 |
| 37 | 1.2920 | 1051 |
| 38 | 1.2890 | 1040 |
| 39 | 1.2861 | 1030 |
| 40 | 1.2832 | 1019 |
| 41 | 1.2803 | 1009 |
| 42 | 1.2774 | 999 |
| 43 | 1.2745 | 988 |
| 44 | 1.2716 | 978 |
| 45 | 1.2688 | 968 |
| 46 | 1.2660 | 957 |
| 47 | 1.2631 | 947 |
| 48 | 1.2603 | 937 |
| 49 | 1.2575 | 927 |
| 50 | 1.2547 | 917 |
| | | |

| SP | TOT | SEC/HR |
|---|---|---|
| 51 TO 90 | | |
| 51 | 1.2520 | 907 |
| 52 | 1.2492 | 897 |
| 53 | 1.2465 | 887 |
| 54 | 1.2437 | 877 |
| 55 | 1.2410 | 868 |
| 56 | 1.2383 | 858 |
| 57 | 1.2356 | 848 |
| 58 | 1.2329 | 838 |
| 59 | 1.2302 | 829 |
| 60 | 1.2276 | 819 |
| 61 | 1.2249 | 810 |
| 62 | 1.2223 | 800 |
| 63 | 1.2196 | 791 |
| 64 | 1.2170 | 781 |
| 65 | 1.2144 | 772 |
| 66 | 1.2118 | 762 |
| 67 | 1.2092 | 753 |
| 68 | 1.2066 | 744 |
| 69 | 1.2041 | 735 |
| 70 | 1.2015 | 725 |
| 71 | 1.1990 | 716 |
| 72 | 1.1964 | 707 |
| 73 | 1.1939 | 698 |
| 74 | 1.1914 | 689 |
| 75 | 1.1889 | 680 |
| 76 | 1.1864 | 671 |
| 77 | 1.1839 | 662 |
| 78 | 1.1815 | 653 |
| 79 | 1.1790 | 644 |
| 80 | 1.1766 | 636 |
| 81 | 1.1741 | 627 |
| 82 | 1.1717 | 618 |
| 83 | 1.1693 | 609 |
| 84 | 1.1669 | 601 |
| 85 | 1.1645 | 592 |
| 86 | 1.1621 | 583 |
| 87 | 1.1597 | 575 |
| 88 | 1.1573 | 566 |
| 89 | 1.1550 | 558 |
| 90 | 1.1526 | 549 |
| | | |

| SP | TOT | SEC/HR |
|---|---|---|
| 91 TO 130 | | |
| 91 | 1.1503 | 541 |
| 92 | 1.1479 | 533 |
| 93 | 1.1456 | 524 |
| 94 | 1.1433 | 516 |
| 95 | 1.1410 | 508 |
| 96 | 1.1387 | 499 |
| 97 | 1.1364 | 491 |
| 98 | 1.1342 | 483 |
| 99 | 1.1319 | 475 |
| 100 | 1.1296 | 467 |
| 101 | 1.1274 | 459 |
| 102 | 1.1251 | 451 |
| 103 | 1.1229 | 442 |
| 104 | 1.1207 | 434 |
| 105 | 1.1185 | 427 |
| 106 | 1.1163 | 419 |
| 107 | 1.1141 | 411 |
| 108 | 1.1119 | 403 |
| 109 | 1.1097 | 395 |
| 110 | 1.1075 | 387 |
| 111 | 1.1054 | 379 |
| 112 | 1.1032 | 372 |
| 113 | 1.1011 | 364 |
| 114 | 1.0989 | 356 |
| 115 | 1.0968 | 349 |
| 116 | 1.0947 | 341 |
| 117 | 1.0926 | 333 |
| 118 | 1.0905 | 326 |
| 119 | 1.0884 | 318 |
| 120 | 1.0863 | 311 |
| 121 | 1.0842 | 303 |
| 122 | 1.0822 | 296 |
| 123 | 1.0801 | 288 |
| 124 | 1.0780 | 281 |
| 125 | 1.0760 | 274 |
| 126 | 1.0739 | 266 |
| 127 | 1.0719 | 259 |
| 128 | 1.0699 | 252 |
| 129 | 1.0679 | 244 |
| 130 | 1.0659 | 237 |
| | | |

# TIME ON TIME MULTIPLIERS WITH SECONDS PER HOUR HANDICAP

**Normalized to SP of 165 (seconds/nautical mile)**

**New for 2010 using Scratch boat = 165**

TOT = (566.431/(ASP+401.431)) J.Schneider's Simplification

## ASP 131 TO 290

| SP | TOT | SEC/HR |
|---|---|---|
| 131 TO 170 | | |
| 131 | 1.0639 | 230 |
| 132 | 1.0619 | 223 |
| 133 | 1.0599 | 216 |
| 134 | 1.0579 | 208 |
| 135 | 1.0559 | 201 |
| 136 | 1.0540 | 194 |
| 137 | 1.0520 | 187 |
| 138 | 1.0501 | 180 |
| 139 | 1.0481 | 173 |
| 140 | 1.0462 | 166 |
| 141 | 1.0442 | 159 |
| 142 | 1.0423 | 152 |
| 143 | 1.0404 | 145 |
| 144 | 1.0385 | 139 |
| 145 | 1.0366 | 132 |
| 146 | 1.0347 | 125 |
| 147 | 1.0328 | 118 |
| 148 | 1.0309 | 111 |
| 149 | 1.0291 | 105 |
| 150 | 1.0272 | 98 |
| 151 | 1.0253 | 91 |
| 152 | 1.0235 | 85 |
| 153 | 1.0216 | 78 |
| 154 | 1.0198 | 71 |
| 155 | 1.0180 | 65 |
| 156 | 1.0161 | 58 |
| 157 | 1.0143 | 52 |
| 158 | 1.0125 | 45 |
| 159 | 1.0107 | 39 |
| 160 | 1.0089 | 32 |
| 161 | 1.0071 | 26 |
| 162 | 1.0053 | 19 |
| 163 | 1.0035 | 13 |
| 164 | 1.0018 | 6 |
| 165 | 1.0000 | 0 |
| 166 | 0.9982 | -6 |
| 167 | 0.9965 | -13 |
| 168 | 0.9947 | -19 |
| 169 | 0.9930 | -25 |
| 170 | 0.9913 | -31 |

| SP | TOT | SEC/HR |
|---|---|---|
| 171 TO 210 | | |
| 171 | 0.9895 | -38 |
| 172 | 0.9878 | -44 |
| 173 | 0.9861 | -50 |
| 174 | 0.9844 | -56 |
| 175 | 0.9827 | -62 |
| 176 | 0.9810 | -69 |
| 177 | 0.9793 | -75 |
| 178 | 0.9776 | -81 |
| 179 | 0.9759 | -87 |
| 180 | 0.9742 | -93 |
| 181 | 0.9725 | -99 |
| 182 | 0.9709 | -105 |
| 183 | 0.9692 | -111 |
| 184 | 0.9676 | -117 |
| 185 | 0.9659 | -123 |
| 186 | 0.9643 | -129 |
| 187 | 0.9626 | -135 |
| 188 | 0.9610 | -140 |
| 189 | 0.9594 | -146 |
| 190 | 0.9577 | -152 |
| 191 | 0.9561 | -158 |
| 192 | 0.9545 | -164 |
| 193 | 0.9529 | -170 |
| 194 | 0.9513 | -175 |
| 195 | 0.9497 | -181 |
| 196 | 0.9481 | -187 |
| 197 | 0.9465 | -193 |
| 198 | 0.9449 | -198 |
| 199 | 0.9434 | -204 |
| 200 | 0.9418 | -210 |
| 201 | 0.9402 | -215 |
| 202 | 0.9387 | -221 |
| 203 | 0.9371 | -226 |
| 204 | 0.9356 | -232 |
| 205 | 0.9340 | -237 |
| 206 | 0.9325 | -243 |
| 207 | 0.9310 | -249 |
| 208 | 0.9294 | -254 |
| 209 | 0.9279 | -259 |
| 210 | 0.9264 | -265 |

| SP | TOT | SEC/HR |
|---|---|---|
| 211 TO 250 | | |
| 211 | 0.9249 | -270 |
| 212 | 0.9234 | -276 |
| 213 | 0.9219 | -281 |
| 214 | 0.9204 | -287 |
| 215 | 0.9189 | -292 |
| 216 | 0.9174 | -297 |
| 217 | 0.9159 | -303 |
| 218 | 0.9144 | -308 |
| 219 | 0.9130 | -313 |
| 220 | 0.9115 | -319 |
| 221 | 0.9100 | -324 |
| 222 | 0.9086 | -329 |
| 223 | 0.9071 | -334 |
| 224 | 0.9057 | -340 |
| 225 | 0.9042 | -345 |
| 226 | 0.9028 | -350 |
| 227 | 0.9013 | -355 |
| 228 | 0.8999 | -360 |
| 229 | 0.8985 | -365 |
| 230 | 0.8971 | -371 |
| 231 | 0.8956 | -376 |
| 232 | 0.8942 | -381 |
| 233 | 0.8928 | -386 |
| 234 | 0.8914 | -391 |
| 235 | 0.8900 | -396 |
| 236 | 0.8886 | -401 |
| 237 | 0.8872 | -406 |
| 238 | 0.8858 | -411 |
| 239 | 0.8845 | -416 |
| 240 | 0.8831 | -421 |
| 241 | 0.8817 | -426 |
| 242 | 0.8803 | -431 |
| 243 | 0.8790 | -436 |
| 244 | 0.8776 | -441 |
| 245 | 0.8762 | -446 |
| 246 | 0.8749 | -450 |
| 247 | 0.8735 | -455 |
| 248 | 0.8722 | -460 |
| 249 | 0.8709 | -465 |
| 250 | 0.8695 | -470 |

| SP | TOT | SEC/HR |
|---|---|---|
| 251 TO 290 | | |
| 251 | 0.8682 | -475 |
| 252 | 0.8669 | -479 |
| 253 | 0.8655 | -484 |
| 254 | 0.8642 | -489 |
| 255 | 0.8629 | -494 |
| 256 | 0.8616 | -498 |
| 257 | 0.8603 | -503 |
| 258 | 0.8590 | -508 |
| 259 | 0.8577 | -512 |
| 260 | 0.8564 | -517 |
| 261 | 0.8551 | -522 |
| 262 | 0.8538 | -526 |
| 263 | 0.8525 | -531 |
| 264 | 0.8512 | -536 |
| 265 | 0.8499 | -540 |
| 266 | 0.8487 | -545 |
| 267 | 0.8474 | -549 |
| 268 | 0.8461 | -554 |
| 269 | 0.8449 | -558 |
| 270 | 0.8436 | -563 |
| 271 | 0.8424 | -567 |
| 272 | 0.8411 | -572 |
| 273 | 0.8399 | -576 |
| 274 | 0.8386 | -581 |
| 275 | 0.8374 | -585 |
| 276 | 0.8361 | -590 |
| 277 | 0.8349 | -594 |
| 278 | 0.8337 | -599 |
| 279 | 0.8325 | -603 |
| 280 | 0.8312 | -608 |
| 281 | 0.8300 | -612 |
| 282 | 0.8288 | -616 |
| 283 | 0.8276 | -621 |
| 284 | 0.8264 | -625 |
| 285 | 0.8252 | -629 |
| 286 | 0.8240 | -634 |
| 287 | 0.8228 | -638 |
| 288 | 0.8216 | -642 |
| 289 | 0.8204 | -647 |
| 290 | 0.8192 | -651 |

# TIME ON TIME MULTIPLIERS WITH SECONDS PER HOUR HANDICAP

**Normalized to SP of 165 (seconds/nautical mile)**

**New for 2010 using Scratch boat = 165**

TOT = (566.431/(ASP+401.431)) J.Schneider's Simplification

## ASP 291 TO 399

| SP | TOT | SEC/HR |
|---|---|---|
| 291 TO 330 | | |
| 291 | 0.8180 | -655 |
| 292 | 0.8169 | -659 |
| 293 | 0.8157 | -664 |
| 294 | 0.8145 | -668 |
| 295 | 0.8133 | -672 |
| 296 | 0.8122 | -676 |
| 297 | 0.8110 | -680 |
| 298 | 0.8098 | -685 |
| 299 | 0.8087 | -689 |
| 300 | 0.8075 | -693 |
| 301 | 0.8064 | -697 |
| 302 | 0.8052 | -701 |
| 303 | 0.8041 | -705 |
| 304 | 0.8030 | -709 |
| 305 | 0.8018 | -713 |
| 306 | 0.8007 | -718 |
| 307 | 0.7996 | -722 |
| 308 | 0.7984 | -726 |
| 309 | 0.7973 | -730 |
| 310 | 0.7962 | -734 |
| 311 | 0.7951 | -738 |
| 312 | 0.7940 | -742 |
| 313 | 0.7928 | -746 |
| 314 | 0.7917 | -750 |
| 315 | 0.7906 | -754 |
| 316 | 0.7895 | -758 |
| 317 | 0.7884 | -762 |
| 318 | 0.7873 | -766 |
| 319 | 0.7862 | -770 |
| 320 | 0.7851 | -773 |
| 321 | 0.7841 | -777 |
| 322 | 0.7830 | -781 |
| 323 | 0.7819 | -785 |
| 324 | 0.7808 | -789 |
| 325 | 0.7797 | -793 |
| 326 | 0.7787 | -797 |
| 327 | 0.7776 | -801 |
| 328 | 0.7765 | -804 |
| 329 | 0.7755 | -808 |
| 330 | 0.7744 | -812 |

| SP | TOT | SEC/HR |
|---|---|---|
| 331 TO 370 | | |
| 331 | 0.7734 | -816 |
| 332 | 0.7723 | -820 |
| 333 | 0.7713 | -823 |
| 334 | 0.7702 | -827 |
| 335 | 0.7692 | -831 |
| 336 | 0.7681 | -835 |
| 337 | 0.7671 | -839 |
| 338 | 0.7660 | -842 |
| 339 | 0.7650 | -846 |
| 340 | 0.7640 | -850 |
| 341 | 0.7629 | -853 |
| 342 | 0.7619 | -857 |
| 343 | 0.7609 | -861 |
| 344 | 0.7599 | -864 |
| 345 | 0.7589 | -868 |
| 346 | 0.7578 | -872 |
| 347 | 0.7568 | -875 |
| 348 | 0.7558 | -879 |
| 349 | 0.7548 | -883 |
| 350 | 0.7538 | -886 |
| 351 | 0.7528 | -890 |
| 352 | 0.7518 | -894 |
| 353 | 0.7508 | -897 |
| 354 | 0.7498 | -901 |
| 355 | 0.7488 | -904 |
| 356 | 0.7478 | -908 |
| 357 | 0.7468 | -911 |
| 358 | 0.7459 | -915 |
| 359 | 0.7449 | -918 |
| 360 | 0.7439 | -922 |
| 361 | 0.7429 | -925 |
| 362 | 0.7420 | -929 |
| 363 | 0.7410 | -932 |
| 364 | 0.7400 | -936 |
| 365 | 0.7391 | -939 |
| 366 | 0.7381 | -943 |
| 367 | 0.7371 | -946 |
| 368 | 0.7362 | -950 |
| 369 | 0.7352 | -953 |
| 370 | 0.7343 | -957 |

| SP | TOT | SEC/HR |
|---|---|---|
| 371 TO 399 | | |
| 371 | 0.7333 | -960 |
| 372 | 0.7324 | -963 |
| 373 | 0.7314 | -967 |
| 374 | 0.7305 | -970 |
| 375 | 0.7295 | -974 |
| 376 | 0.7286 | -977 |
| 377 | 0.7277 | -980 |
| 378 | 0.7267 | -984 |
| 379 | 0.7258 | -987 |
| 380 | 0.7249 | -990 |
| 381 | 0.7239 | -994 |
| 382 | 0.7230 | -997 |
| 383 | 0.7221 | -1000 |
| 384 | 0.7212 | -1004 |
| 385 | 0.7203 | -1007 |
| 386 | 0.7193 | -1010 |
| 387 | 0.7184 | -1014 |
| 388 | 0.7175 | -1017 |
| 389 | 0.7166 | -1020 |
| 390 | 0.7157 | -1023 |
| 391 | 0.7148 | -1027 |
| 392 | 0.7139 | -1030 |
| 393 | 0.7130 | -1033 |
| 394 | 0.7121 | -1036 |
| 395 | 0.7112 | -1040 |
| 396 | 0.7103 | -1043 |
| 397 | 0.7094 | -1046 |
| 398 | 0.7085 | -1049 |
| 399 | 0.7077 | -1052 |

| SP | TOT | SEC/HR |
|---|---|---|

# RECOGNIZED CLASS ASSOCIATION SPECIFICATIONS
## USED FOR ONE DESIGN RATINGS (AKA ODR)

PHRF-LO allows owners to apply for a handicap certificate that is designed to reflect a standard handicap for the vessel when it conforms to that particular class's rules. This includes but is not limited to sail size maximums and prop configurations. Handicap adjustments for "Class Configuration" are reflected in the tables below.

Standard Potential (SP) -"**Total R**" = Adjusted Speed Potential (ASP)
*(Please refer to the SP List for the current class handicap)*
Certificates for these boats will reflect the FS handicap as ODR.

***The Class stamp must be visible on the sail to apply for this.***

**New adjustments for April 2016**
The following classes are recognized and accepted by PHRF-LO as Class Association One Design Rated classes. Our database specifications and links to their associated rules are:

| **Farr 30 (MUMM)** | **http://www.farr30.org/class-info** | | | | | | | **Adjustment** | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | **%** | | **ODR** | **NFS** |
| Jib | LP Size | | 11.32 | HHW | 7.04 | 129.3 | | +5 | +5 |
| Downwind Jib Adjustment | | | | | | | | | +5 |
| Spinnakers | Girth | Luff | Leach | Foot | Adj G | | | | |
| Symmetrical (Primary) | 25.59 | 46.26 | | 25.59 | 31.3 | 225.4 | | -10 | |
| Asymmetrical | 24.93 | 48.56 | 45.60 | 25.92 | 31.23 | 225.3 | | | |
| Attachment point | SPL | 13.58 | BSL | | Centreline: No | | | | |
| Main | HB | MGU | MGM | MGT | | | | | |
| | .57 | 6.43 | 10.4 | 3.64 | | 106.6 | | -4 | -4 |
| Full Length Battens | NO | | | | | | | | |
| Propulsion | IB - SDR - Folding Feathering | | | | | | | | |
| | | | | | | | **Total R** | **-9** | **+6** |

| **Farr 40** | **http://www.farr40.org/class-rules** | | | | | | | **Adjustment** | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | **%** | | **ODR** | **NFS** |
| Jib | LP Size | | 16.21 | HHW | 8.47 | 109.6 | | +9 | +9 |
| Downwind Jib Adjustment | | | | | | | | | +9 |
| Spinnakers | Girth | Luff | Leach | Foot | Adj G | | | | |
| Symmetrical | 34.45 | 60.70 | | 34.45 | 39.77 | 213.9 | | -7 | |
| Asymmetrical | | | | | | | | | |
| Attachment point | SPL | 17.06 | BSL | | Centreline: No | | | | |
| Main | HB | MGU | MGM | MGT | | | | | |
| | .59 | 8.5 | 13.78 | 4.82 | | 106.2 | | -4 | -4 |
| Full Length Battens | NO | | | | | | | | |
| Propulsion | IB - SDR - Folding Feathering | | | | | | | | |
| | | | | | | | **Total R** | **-1** | **+15** |

| J 105 | http://www.j105.org | | | | | | | Adjustment | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | % | | ODR | NFS |
| Jib | LP Size | | 13.50 | HHW | 6.63 | 100 | | +11 | +11 |
| Downwind Jib Adjustment | | | | | | | | | +11 |
| Spinnakers | Girth | Luff | Leach | Foot | Adj G | | | | |
| Symmetrical | | | | | | | | | |
| Asymmetrical | 24.50 | 49.54 | 39.83 | 30.00 | 24.5 | 136.9 | | +8 | |
| Attachment point | SPL | | BSL | 19.00 | Centreline: Yes | | | +6 | |
| Main | HB | MGU | MGM | MGT | | | | | |
| | .58 | 5.53 | 9.48 | 3.08 | | 99.9 | | +1 | +1 |
| Full Length Battens | NO | | | | | | | | |
| Propulsion | IB – EXP – Folding/Feathering | | | | | | | | |
| | | | | | | | **Total R** | **+26** | **+23** |

| J 22 | http://www.j22.com/ | | | | | | | Adjustment | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | % | | ODR | NFS |
| Jib | LP Size | | 8.6 | HHW | 4.3 | 97.7 | | +11 | +11 |
| Downwind Jib Adjustment | | | | | | | | | +11 |
| Spinnakers | Girth | Luff | Leach | Foot | Adj G | | | | |
| Symmetrical | 16.18 | 24.89 | | | 16.18 | 182.7 | | -1 | |
| Asymmetrical | | | | | | | | | |
| Attachment point | SPL | 8.8 | BSL | | Centreline: No | | | | |
| Main | HW | MGU | MGM | MGT | | | | | |
| | .38 | 3.79 | 6.27 | 2.36 | | 104.4 | | -2 | -2 |
| Full Length Battens | NO | | | | | | | | |
| Propulsion | OB – Standard retracted when racing | | | | | | | | |
| | | | | | | | **Total R** | **+8** | **+20** |

| J 24 | http://www.j24class.org/ | | | | | | | Adjustment | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | % | | ODR | NFS |
| Jib | LP Size | | 14.26 | | | 150.1 | | 0 | |
| Downwind Jib Adjustment | | | | | | | | | |
| Spinnakers | Girth | Luff | Leach | Foot | Adj G | | | | |
| Symmetrical | 20.58 | 26.67 | | 17.06 | 17.22 | 210.0 | | -6 | |
| Asymmetrical | | | | | | | | | |
| Attachment point | SPL | 9.5 | BSL | | Centreline: No | | | | |
| Main | HB | MGU | MGM | MGT | | | | | |
| | .38 | 3.85 | 6.5 | .49 | | 101.6 | | 0 | |
| Full Length Battens | NO | | | | | | | | |
| Propulsion | OB – Standard retracted when racing | | | | | | | 0 | |
| | | | | | | | **Total R** | **-6** | **0** |

| **Melges 24 CF** | **http://melges24.ca/** | | | | | | | **Adjustment** | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | **%** | | **ODR** | **NFS** |
| Jib | LP Size | | 9.15 | HHW | | 115.2 | | +7 | +7 |
| Downwind Jib Adjustment | | | | | | | | | +7 |
| Spinnakers | Girth | Luff | Leach | Foot | Adj G | | | | |
| Symmetrical | | | | | | | | | |
| Asymmetrical | 19.23 | 38.15 | 36.33 | 20.67 | 24.48 | 163.5 | | +3 | |
| Attachment point | SPL | | BSL | 13.5 | Centreline: Yes | | | +6 | |
| Main | HB | MGU | MGM | MGT | | | | | |
| | .57 | 5.51 | 8.86 | 2.99 | | 106.5 | | -4 | -4 |
| Full Length Battens | NO | | | | | | | | |
| Propulsion | OB – Standard retracted when racing | | | | | | | | |
| | | | | | | | **Total R** | **+18** | **+116** |

| **Melges 32** | **http://www.melges32.com/** | | | | | | | **Adjustment** | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | **%** | | **ODR** | **NFS** |
| Jib | LP Size | | 11.58 | HHW | 6.07 | 113.5 | | +8 | +8 |
| Downwind Jib Adjustment | | | | | | | | | +8 |
| Spinnakers | Girth | Luff | Leach | Foot | Adj G | | | | |
| Symmetrical | | | | | | | | | |
| Asymmetrical | 31.17 | 55.7 | 47.80 | 31.82 | 37.94 | 153.2 | | +5 | |
| Attachment point | SPL | | BSL | 21.08 | Centreline: Yes | | | +6 | |
| Main | HB | MGU | MGM | MGT | | | | | |
| | .66 | 6.95 | 11.14 | 4.00 | | 107.4 | | -5 | -5 |
| Full Length Battens | YES | | | | | | | | |
| Propulsion | OB – Standard retracted when racing | | | | | | | | |
| | | | | | | | **Total R** | **+14** | **+11** |

| **Sonar** | **https://www.sonar.org/** | | | | | | | **Adjustment** | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | **%** | | **ODR** | **NFS** |
| Jib | LP Size | | 8.25 | HHW | 4.22 | 102.3 | | +10 | +10 |
| Downwind Jib Adjustment | | | | | | | | | +10 |
| Spinnakers | Girth | Luff | Leach | Foot | Adj G | | | | |
| Symmetrical | 15.47 | 25 | | 15.47 | 15.6 | 188.8 | | -2 | |
| Asymmetrical | | | | | | | | | |
| Attachment point | SPL | 8.25 | BSL | | | | | | |
| Main | HB | MGU | MGM | MGT | | | | | |
| | .5 | 4.58 | 7.49 | ? | | 102.6 | | 0 | |
| Full Length Battens | NO | | | | | | | | |
| Propulsion | OB – Standard retracted when racing | | | | | | | | |
| | | | | | | | **Total R** | **+8** | **+20** |

| **Ultimate 20** | **http://www.u20class.org/** | | | | | | | **Adjustment** | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | **%** | | **ODR** | **NFS** |
| Jib | LP Size | | 8.00 | HHW | 3.58 | 114.8 | | +8 | +8 |
| Downwind Jib Adjustment | | | | | | | | | +8 |
| Spinnakers | Girth | Luff | Leach | Foot | Adj G | | | | |
| Symmetrical | | | | | | | | | |
| Asymmetrical | 17.66 | 31.33 | 28.42 | 19.17 | 12.55 | 145.0 | | +7 | |
| Attachment point | SPL | | BSL | 12.79 | Centreline: Yes | | | +6 | |
| Main | HB | MGM | MGU | MGT | | | | | |
| | .47 | 5.27 | 7.92 | 3.02 | | 113.3 | | -9 | -9 |
| Full Length Battens | YES | | | | | | | | |
| Propulsion | OB – Standard retracted when racing | | | | | | | | |
| | | | | | | | **Total R** | **+12** | **+7** |

| **Farr 395** | **http://farr395.org/content/view/14/30/** | **Removed** |
|---|---|---|

| **Flying Tiger 10M** | **NO LONGER AVAILABLE** | **Removed** |
|---|---|---|

# Fee Schedule

January 2016

| Currency | Canadian | US |
|---|---|---|
| New Member Fee (includes 7 certificates) | $245.00 | $175.00 |
| Rush request | $20.00 | $20.00 |
| Print Certificate Fee | $10.00 | $10.00 |
| Non-member Certificate (no surcharge) | $35.00 | $25.00 |

## Annual Club Membership Fee

The annual Club membership fee includes:
# of certificates issued during the previous season (minimum of 7) times the certificate fee.

| Club Fee - minimum 7 certificates | $245.00 | $175.00 |
|---|---|---|
| Certificate Fee | $35.00 | $25.00 |
| Race Submission Credit (per certificate) | $5.00 | $5.00 |

Eg: If "Some Canadian club" requested 10 certificates during the 2014 season, they will be billed (10 x $35) for their 2015 dues. If they submit there race results at the end of the season, they will receive a credit of (10 x $5) against their 2015 Dues.

| Other Items: | Canadian | US |
|---|---|---|
| Race Analysis Binder | $50.00 | $50.00 |
| Direct Mailing to owners(per 100,printing costs not included) | $100.00 | $100.00 |
| Standard Boat Characteristics | $30.00 | $30.00 |
| Handicappers Manual | $40.00 | $40.00 |