

# 2010 LAKE MICHIGAN PHRF® MONOHULL HANDICAP CERTIFICATE APPLICATION

STOCK PRODUCTION BOAT

MODIFIED STOCK BOAT

ONE DESIGN BOAT

CUSTOM OR "ONE-OFF" BOAT

**Instructions:** Read all pages of this application form. Supply all requested information. Record measures of length to the nearest 100<sup>th</sup> of a foot. Record measures of displacement or weight to the nearest pound. *Do not use metric measures.* If available, attach the most recent measurement rating or performance handicap certificate. Send this form with a \$55.00 application fee to LMPHRF, INC.; 1135 Maricopa Drive; Oshkosh, WI 54904-8118. An incomplete application forms or incorrect certificate processing fee will cause the application to be returned. *All requested information on this application is required. Consult page 2 of this application for terms and definitions related to the items to be completed on this page. For assistance, please send an email message to [lmphrf@lmphrf.org](mailto:lmphrf@lmphrf.org).*

OWNER INFORMATION
OWNER'S NAME
ADDRESS
CITY / STATE / ZIP
RESIDENCE PHONE
BUSINESS PHONE
FAX PHONE
MOBILE PHONE
E-MAIL ADDRESS
US SAILING MEMBER NUMBER <i>(Required)</i>
YACHT CLUB

BOAT INFORMATION
SAIL NUMBER
BOAT NAME
FORMER BOAT NAME (IF ANY)
MANUFACTURER
MODEL
DESIGNER (IF KNOWN)
HULL ID NUMBER
YEAR BUILT
PRIMARY SAILING AREA
LMPHRF REGION (IF KNOWN)

MEASURED RIG AND HULL DIMENSIONS (Measures in decimal feet or pounds)	
<b>PRIMARY SAIL PLAN</b>	<b>ASYMMETRICAL SPINNAKER</b>
I	ALU
IG	ALE
ISP	AMG
J	AF
JC	TPS
P	Tacked to the end of spinnaker pole? Yes <input type="checkbox"/> No <input type="checkbox"/>
E	Tacked to the end of a bowsprit or prod? Yes <input type="checkbox"/> No <input type="checkbox"/>
PY	Tacked to bow at center line; no pole? Yes <input type="checkbox"/> No <input type="checkbox"/>
EY	Using symmetrical and asymmetrical spinnakers? Yes <input type="checkbox"/> No <input type="checkbox"/>
LP	<b>HULL</b>
<b>MAINSAIL GIRTHS</b>	LOA
MGT	LWL
MGU	BEAM
MGM	KDRAFT (Deepest excluding extensible appendage)
MGL	CBDRAFT (Deepest with CB, drop keel, or swing keel fully extended)
<b>SYMMETRICAL SPINNAKER</b>	DISPLACEMENT (LBS.)
SPL	WEIGHT OF INTERNAL BALLAST (lbs.)
SL	WEIGHT OF EXTERNAL BALLAST (lbs.)
SMW	MOVEABLE BALLAST Yes <input type="checkbox"/> No <input type="checkbox"/>
If yes, indicate type: Water <input type="checkbox"/> Articulating Keel <input type="checkbox"/>	

LIST MAJOR DEPARTURES FROM STANDARD DIMENSIONS
<p>Is there any equipment used while racing that is not manually operated? If yes, list in the space below or on an attached sheet.</p>          <p>List other departures from standard hull and rig dimensions below or on an attached sheet.</p>

OTHER DESIGN FEATURES
RIG TYPE
ENGINE TYPE
PROP INSTALLATION
PROP TYPE
KEEL TYPE
RUDDER TYPE
BALLAST TYPE
NUMBER OF SPREADERS

SOURCE OF REPORTED DIMENSIONS	DATE OR CERTIFICATE NUMBER
OWNER <input type="checkbox"/>	
CERTIFIED MEASURER <input type="checkbox"/>	
PHRF CERTIFICATE <input type="checkbox"/>	
ORR CERTIFICATE <input type="checkbox"/>	
IRC CERTIFICATE <input type="checkbox"/>	
ORCi CERTIFICATE <input type="checkbox"/>	
ORC CLUB CERTIFICATE <input type="checkbox"/>	
MORC CERTIFICATE <input type="checkbox"/>	

CONSTRUCTION MATERIALS
HULL
DECK
KEEL
RUDDER
MAST
BOOM
SPINNAKER POLE
BOW SPRIT OR PROD
Does the sprit or prod pivot? Yes <input type="checkbox"/> No <input type="checkbox"/>
STANDING RIGGING

GENERAL SAIL INVENTORY	
Description	Material
<input type="checkbox"/> MAIN Roller Furl'd Yes <input type="checkbox"/> No <input type="checkbox"/>	
<input type="checkbox"/> MIZZEN	
<input type="checkbox"/> STAYSAIL	
<input type="checkbox"/> LARGEST JIB/GENOA Roller Furl'd Yes <input type="checkbox"/> No <input type="checkbox"/>	
If yes, indicate wrap: None <input type="checkbox"/> UV <input type="checkbox"/> Sunbrella <input type="checkbox"/>	
<input type="checkbox"/> LARGEST SYMMETRICAL SPINNAKER	
<input type="checkbox"/> LARGEST ASYMMETRICAL SPINNAKER	
<input type="checkbox"/> SMALLEST ASYMMETRICAL SPINNAKER	
<input type="checkbox"/> STORM JIB	

*By my dated signature I certify that this boat will compete in LMPHRF scored events with the hull and rig dimensions declared and specified on this application form. My signature further indicates that I will immediately notify LMPHRF, INC., in writing, of any change or modification to the boat since the date of this application.*

Signature of owner: \_\_\_\_\_ Date: \_\_\_\_\_

## Definitions of Critical Hull, Rig and Sailplan Dimensions and Characteristics for Performance Handicapping of Monohull and Multihull Racing & Cruising Sailboats

(Note: All dimensions are expressed in decimal feet and pounds.)

Design Features	
RIG TYPE	Masthead or Fractional sloop, Cutter, Yawl, Ketch, Schooner, or other.
ENGINE TYPE	Inboard, Saildrive, Outboard, or none.
PROP INSTALLATION	Exposed shaft, in-aperture, outboard (retractable or (fixed in well).
PROP TYPE	Fixed 2, 3 or 4 blade, folding or feathering or in-aperture.
KEEL/CENTERBOARD TYPE	Full, fin, fin/bulb, wing, daggerboard, drop keel, swing keel keel/centerboard with prefix of "shoal" where descriptively correct.
RUDDER TYPE	Spade, Skeg, Attached, or Transom mount.
BALLAST TYPE	External or Internal.
Construction Materials	
HULL	Fiberglass, cored fiberglass, carbon fiber, steel, aluminum, ferro cement.
DECK	Not cored, cored, balsa, plywood.
KEEL	Lead, iron, steel, or wood.
RUDDER	Fiberglass, carbon fiber, wood.
MAST AND BOOM	Wood, aluminum, or carbon fiber.
Hull Dimensions	
LOA	Length of hull over all less bowsprit, boomkin or prod.
LWL	Length of the water line.
KDRAFT	Deepest draft of the vessel excluding extensible appendage.
CBDRAFT	Deepest draft of the vessel with centerboard, drop keel, daggerboard, or swing keel fully extended.
BEAM	Maximum beam of the vessel.
DISPL	Displacement measured in pounds without crew, water, fuel, and stores on board.
EXTERNAL BALLAST	Weight of ballast mounted outside of the canoe body of hull.
INTERNAL BALLAST	Weight of ballast mounted within the canoe body of hull.
Rig Dimensions	
I	Height of the foretriangle measured from deck sheer line abeam the mast to the highest point of sail attachment.
IG	Height of genoa (jib) hoist above the deck - height of the point where the forestay intersects the front of the mast.
ISP	Length of the spinnaker hoist measured from the deck sheer line abeam the mast to the highest point of spinnaker attachment. Limited to 100% of I without penalty.
J	Distance perpendicular from the foreside of the mast line to the point of intersection of the forestay with the deck.
JC	Distance perpendicular from the foreside of the mast line to the point of intersection with the outermost point of sail attachment with the bowsprit, boomkin or prod. JC may equal or exceed TPS and SPL and force a handicap adjustment.
P	Luff length of the mainsail measured from the boom to the headboard in its highest position.
E	Foot length of the mainsail measured from the mast to clew in its most outboard position.
PY	Luff length of the mizzen (two masted boats only) measured same as P.
EY	Foot length of the mizzen (two masted boats only) measured same as E.
LP	Length of the perpendicular defined as the distance perpendicular from the luff to the clew of the largest jib or genoa. LP is often expressed as a percentage of J.
Mainsail Dimensions	
MGT	Top mainsail girth - the length of the girth of the mainsail taken at 7/8 of the leach from the clew.
MGU	Upper mainsail girth - the length of the girth of the mainsail taken at 3/4 of the leach from the clew.
MGM	Mid mainsail girth - the length of the girth of the mainsail taken at 1/2 of the leach from the clew.
MGL	Lower mainsail girth - the length of the girth of the mainsail taken at 1/4 of the leach from the clew.
Symmetrical Spinnaker Dimensions	
SPL	Spinnaker (or whisker pole) length measured from the centerline of the mast to the outboard end of the pole with the pole in fitting and in a horizontal position athwartship. SPL is often expressed as a percentage of J not to exceed 100%.
SMW	Spinnaker maximum girth or width measured luff to luff. The measurement may not exceed 180% of SPL.
SL	Length of spinnaker luff measured along luff tape from head to clew on the largest spinnaker. The measurement may not exceed .95 times the square root of the sum $IG^2$ plus $J^2$ .
Asymmetrical Spinnaker Dimensions	
ALU	Length of an asymmetric spinnaker luff measured along longest luff tape from head to tack. This measure expressed as a percent must be no less than 100% nor greater than 110% of the square root of the sum $IG^2$ plus $J^2$ .
ALE	Length of the asymmetric spinnaker leech measured along the shortest tape from head to clew.
AMG	Asymmetrical spinnaker mid girth measured from mid-point on the luff to mid-point on the leech.
AF	Length of asymmetric spinnaker foot measured along foot tape from clew to tack.
TPS	The horizontal distance from the foreside of the mast at its lowest point above the deck or coach roof to the point of attachment at deck level of the foremost tacking point of an asymmetric spinnaker if tacked to the deck at the centerline or to the extreme forward end of any bowsprit or prod in its maximum extended position.

**LMPHRF Performance Handicaps** are systematically derived for each class or type of racing/cruising sailboat. The handicap takes into account the influence of sails, rig and hull form on potential speed. It is not unusual for handicaps to consider the overall influence of wind, sea conditions and course types that are typical for the Lake Michigan geographic region

The base LMPHRF handicap is a single number developed for application in Time-On-Distance scoring to determine a competitor's finish position. Determining an initial LMPHRF base Handicap depends upon empirical data gathered from a great many races in which many boats of a particular type or class have competed regionally and nation-wide. These results are correlated with general design parameters (critical dimensions) for rig, sails and hull form to assess potential speed to derive a base handicap. This process includes the systematic application of several speed potential prediction algorithms. Potential speed is reflected as a positive or negative handicap number scaled in three seconds per nautical mile increments. Analysis of race results and observations of on the water performance are utilized to refine initially determined base handicaps. The error variance among PHRF handicaps  $\pm$  3 seconds per nautical mile and is sufficient to lead to fair competitive racing.

Handicaps for applying Time-On-Time scoring, for scoring long distance races, and for scoring races when competitors sail without spinnakers are also derived.

Assumptions Base handicaps are determined assuming the boat is a standard production model or a custom design model in top racing condition. The base handicap for a boat type or class assumes:

1. Standard hull and interior, keel, rudder, and rig and other features specified in the original design and build of a production boat or custom one-of-a kind monohull or multihull sailboat prepared for racing.
2. Jib overlap (LP) of 155% of J.
3. Spinnaker pole length (SPL) no longer than J.
4. Spinnaker mid-width (SMW) no greater than 180% of SPL.
5. A folding prop, a retracted outboard, or a solid prop in an aperture.

Hull, Rig and Sailplan Dimensions and Characteristics influencing base handicaps

<b>Rig Type</b>	<b>Keel Type</b>	<b>Engine Type</b>	<b>Propeller Installation</b>
Cat rig	Full	Inboard - Exposed shaft	Exposed Shaft
Masthead Sloop	Keel/Centerboard	Inboard - Saildrive	In Aperture
Fractional Sloop	Daggerboard	Outboard - retractable	Folding/Feathering
Cutter	Fin	Outboard - fixed in well	Solid 2 blade
Ketch	Fin/Wing		Solid three blade
Yawl	Fin/Bulb		
Schooner	Swing		
Wishbone	Sheel <small>Articulating</small>		

Adjustments The base handicap is often adjusted to arrive at a final handicap when standard design parameters are altered. The list of adjustments includes the following as examples:

1. LP Adjustment: 155% of J, 0 sec./nm.; 155.1% to 165% of J, -3 sec./nm. greater than 165% of J, -6 sec./nm
2. SPL Adjustment: Less than J, 0 sec./nm.. Each 6% or fraction thereof greater than J, -3 sec./nm
3. SMW Adjustment: Less than 180% of SPL, 0 sec./nm. Each 6% or fraction thereof greater than 180%, -3 sec./nm
4. SL Adjustment:  $.95 (\sqrt{IG^2 + J^2})$ , 0 sec./nm. Each 6% or fraction thereof greater than SL, -3 sec./nm
5. I Adjustment: Standard I, 0 sec./nm. Each 6% or fraction thereof greater than I, -3 sec./nm
6. ISP Adjustment: Standard I, 0 sec./nm.. Each 6% or fraction thereof greater that ISP, -3 sec./nm
7. Mainsail Adjustments:
  - a) Change to P or PY. Each 6% increase or fraction thereof, -3 sec./nm.
  - b) Change to E or EY. Each 6% increase or fraction thereof, -3 sec./nm
  - c.) Full-length battens will not be penalized. Mainsails must be constructed within established limitations. Boats not in compliance will not be rated.
  - d) Mainsails with girth measurements exceeding the maximum values up to 5% receive a -3 sec./nm adjustment. Excessive girth mainsails are adjusted -6 sec./nm depending upon the amount of increased girth.
8. Boom length adjustment: For an increase of 0.5% to 10%, a -3 sec./nm penalty is assessed; for an increase of 10.01% to 20% a -6 sec./nm penalty is assessed.
9. Asymmetric spinnaker area for boats with spinnaker poles must not be greater than the area of the maximum sized symmetric spinnaker. Each 6% or fraction thereof greater than this standard, -3 sec./nm is assessed.
10. Auxiliary Power Propeller Adjustments for varying types and installations

Two or three blade folding or feathering propeller on an exposed shaft	no adjustment (0 sec./nm)
Two bladed solid propeller on an exposed shaft	+6 sec./nm. (formally +3 sec./nm.)
Three bladed solid propeller on an exposed shaft	+9 sec./nm. (formally +6 sec./nm.)
Three bladed solid propeller in an aperture	+3 sec./nm.
Feathering or two bladed fixed propeller in an aperture	no adjustment (0 sec./nm).
Outboard fixed in well with two bladed solid propeller	+6 sec./nm.

11. Roller furled main or genoa adjustment qualified by rule.

Credit to the base handicap is awarded for a declared luff furled mainsail of +6 sec/nm with no battens and positive roach or +3 sec/nm with battens and/or positive roach.

Credit to the base handicap is awarded on an annual basis for deploying while racing an aftermarket purchased roller furled genoa of laminate construction with a UV wrap of + 3 sec/nm, or an aftermarket purchased roller furled genoa of laminate construction with a Sunbrella wrap of +6 sec/nm, or an aftermarket purchased roller furled genoa constructed of woven sail cloth (Dacron or similar) with a Sunbrella wrap of +9 sec/nm. The roller furled genoa LP must be 155% or less and *must be the only genoa deployed while racing for the entire season* declared by the owner's dated signature on this application. Storm jibs and spinnakers are exempt from this requirement. While racing the roller furled genoa must remain hoisted at all times with the exception of changing to a storm jib. The roller furling drum must be above deck. A current sailmaker's measurement certificate for the roller furled sail *must be submitted* as an attachment to this application to receive credit to the base handicap. A roller furled genoa with an LP larger than 155% will be heavily penalized. *This credit is not awarded to boats that have roller furled genoas as a standard feature of the production design.*

**Important notes**

Do not treat the measurements that you supply for your hull, rig or sails lightly. There are usually some slight differences in actual measurements from designed or allowed measurements that do not result in penalties or credits and in fact reflect the actual hull, rig or sail plan of the boat as shipped and equipped from the manufacturer. If you are unsure about measuring and reporting critical hull, rig and sail dimensions, please see your sailmaker, LMPHRF Regional Handicapper, or LMPHRF Club Representative.

Be reminded there is no credit for under canvassed boats. Boats designed and delivered with a limited sail plan are handicapped with that feature taken into account.

LMPHRF shall handicap those boats that have declared moveable ballast and/or other than manual power on their handicap certificate application in accordance with class rules. Such declaration must specifically describe what may be moved and/or how stored power may be utilized while racing.

LMPHRF issues certificates that are endorsed by a current sailmaker measurement certificates on file with LMPHRF. Sailmaker measurement certificates must accompany a new application for a LMPHRF Handicap

Handicaps are based primarily on self-report of critical sail plan dimensions used for handicapping. A renewal or application for a handicap without sailmaker's certificates on file does not prevent assigning a handicap or racing, but may not be helpful in protests and appeals. Sailmaker measurement certificate forms may be requested by emailing [lmphrf@lmphrf.org](mailto:lmphrf@lmphrf.org).

**LMPHRF Regional Handicappers**

Region	Handicappers	Phone	E-mail
I. Waters of Green Bay and Upper Peninsula of Michigan	Peg Stearn	906.683.6469	pstearn@new.rr.com
II. Lake Winnebago and Inland Lakes of Wisconsin	Steve Mauritz	920.231.5992	mauritz@lmphrf.org
III. Milwaukee to Kenosha	Bob Sample	847.426.9643	bsample@ameritech.net
IV. Waukegan to Michigan City and the inland lakes and reservoirs of Illinois and Indiana excluding Chicago	Gene Bach	847.623.5680	bachgroup@earthlink.net
V. Chicago	Brenda Sollitt	312.664.7771	bksollitt@att.net
VI. Southeast Shore of Lake Michigan to Point Betsie and the bays and inland lakes of Indiana and Michigan	Carl Petersen	616.842.7978	carlpetersen@charter.net
VII. Point Betsie to Traverse Bay	Carl Petersen	616.842.7978	carlpetersen@charter.net
VIII. All regions not otherwise mentioned including Canada	Paul Ansfield Perry King	920.233.5743 612.529.2684	ansfield@uwosh.edu perkyking@mac.com
VIIIa. Multihulls from any LMPHRF Region	Trey Ritter	847.362.3773	treysail@tds.net

**Contacting LMPHRF by mail, phone, fax, and e-mail**

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