



HANDICAPPERS MANUAL

February 2021

PART II - Rules

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1. RULES

1.1. When the PHRF-LO Certificate is issued and signed as correct by the owner, this will be deemed as acceptance of the PHRF-LO as the “PHRF Class” per RRS Definition of *Rule (d)*.

1.2. For the purposes of RRS **64.4 Decisions on Protests Concerning Class Rules**, the authority for interpretation of class rules shall be PHRF-LO.

1.2.1. PHRF-LO delegates the responsibility of interpretation as follows:

- Primary responsibility of interpretation resides with the PHRF-LO Handicapper associated with the event.
- If the PHRF-LO Handicapper requires assistance, they will consult with the PHRF-LO District where the event is being held.
- If the PHRF-LO District requires assistance, they will consult with PHRF-LO Central Council.

2. SP HANDICAPS

2.1. SP STANDARD HANDICAPS FOR STANDARD BOATS

The SP handicap for standard boats will be found in the Standard Boat Characteristics list as published from time to time. Dimensions for Class Boats shall be obtained from the manufacturers. Where this is impossible, the Handicappers Council shall make the determinations.

2.2. NON STANDARD BOATS

Many boats are not equipped as Standard Boats. The SP handicap of a particular boat shall be adjusted according to the schedules that follow. The intent of the adjustment is to give a penalty to any alteration intended to make a boat sail faster or a credit to any alteration that can be expected to slow a boat. (Ref: Part I, Section 4)

3. DEFINITIONS OF TERMS USED IN HANDICAPS AND ADJUSTMENTS.

(Please refer to the Equipment Rules of Sailing (ERS) for additional information)

AMG is defined as the Asymmetrical spinnaker mid girth, measured mid luff to mid leech under moderate tension.

ALU is defined as the measured luff length of an Asymmetrical spinnaker.

ALE is defined as the measured leech length of an Asymmetrical spinnaker.

ASF (Asymmetrical Spinnaker Foot) shall be the distance from the tack to the clew measured in the shortest path on the surface of the sail.

APR is defined as the propeller aperture. To qualify as in aperture, the propeller must be entirely surrounded (in the vertical plane of the shaft line) by the keel, skeg and/or rudder.

BSL is defined as the measured bowsprit length, the distance from the forward side of the mast to the attachment point of the asymmetrical spinnaker.

E is defined as the length measured along the boom from the aft side of the mast including any external track or groove to the aftermost position to which the sail is permitted to extend.

EXP is defined as Exposed propeller shaft. Any propeller installation that is not in aperture or a Saildrive.

FLYING SAILS – a headsail that is not connected to the forestay.

A: Symmetrical: -For measurement as a standard spinnaker, a sail must have the following characteristics.

- The sail must be symmetrical about a line joining the head to the center of the foot.
- Spinnakers shall be sheeted from only one point on the sail.
- Battens shall not be used.
- Sail area no greater than the Standard Sail area, without penalty.
- Spinnaker pole no longer than JSP, without penalty
- Leech lines are permitted, but must not be adjusted while racing.

B: Asymmetrical: - Asymmetrical spinnakers shall have the following characteristics.

- Mid (AMG) girth, measured mid luff to mid leech, shall be greater than or equal to 75% of the foot length.
- Spinnakers shall be sheeted from only one point on the sail.
- Battens shall not be used.
- Luff and leech of unequal lengths, where luff is at least 5% longer than the leech.
- Sail area no greater than Standard Sail area, without penalty.
- Spinnaker pole or Bowsprit pole no longer than JSP, without penalty
- Leech lines are permitted, but must not be adjusted while racing.

FS Handicap: Boats racing with a Flying Sail rating (FS) may use Main, jibs, Genoa's, Spinnakers, Bloopers, and staysails as long as the largest Genoa and spinnaker are measured.

HHW (Headsail Half Width) is defined as the shortest distance between the half leech point and the luff. . Ref: appendix ERS – Half Leech Point

Headwidth (HW) (previously known as Headboard (HB)) is defined distance from the Head Point to the Aft Head Point of the mainsail.

I is defined as the distance from shear line abreast the mast to the intersection of the headstay with the forward side of the mast.

ISP is defined as the “Standard Equipment supplied” (ref: Part I, 4.3) spinnaker hoist, measured from the bottom of the spinnaker halyard, when drawn horizontally forward from the mast, to the level of the sheer line abreast the mast.

J is defined as the distance from the forward side of the mast to the point where the headstay attaches to the deck or bowsprit in a direction perpendicular to the mast.

JIB a headsail that is connected by the luff to the forestay. May also be referred to as a Genoa.

JSP is defined as the length of the class spinnaker pole or bowsprit pole (refer to BSL or SPL definition for measurement instructions). Described as the “Standard Equipment supplied” (ref: Part I, 4.3) spinnaker tack location. Note that this can be much greater than the J.

LP is defined as the shortest distance from the projected intersection of the leech and the foot of a jib to the luff in a direction 90 degree to the luff.

LEECH is the distance between the aft head point and the clew of the aft edge of the sail.

LUFF is the distance between the head point and tack point of the forward edge of the sail.

MG is defined as the symmetrical spinnaker maximum girth. With the spinnaker folded in half, this is 2 x the maximum width of the sail measured from the center/fold of the sail to the luff and leech.

MGM (Main Girth Middle): Shall be the length of the girth of the mainsail taken at the half leech point of the leech from the clew. Ref: appendix ERS – Half Leech Point

MGU (Main Girth Upper): Shall be the length of the girth of the mainsail taken at the three-quarter point of the leech from the clew. Ref: appendix ERS – Three-Quarter Leech Point

MGT (Main Girth Top): Shall be the length of the girth of the mainsail taken at the seven-eighth Point.

NFS handicap: Boats racing with a No Flying Sails rating (NFS) may use Main and one genoa attached to the forestay for its entire length.

P is defined as the distance along the aft side of the mast from the top of the boom to the black band at the top of the mast or the top of the main halyard sheave.

SF (Symmetrical Spinnaker Foot) shall be the distance from the tack to the clew measured in the shortest path on the surface of the sail.

SLU is defined as the Symmetrical Spinnaker luff measurement. Measurement shall be the distance from the projected intersection of the luff and foot with the luff line under moderate tension.

SLE is defined as the Symmetrical Spinnaker leech measurement. Measurement shall be the distance from the projected intersection of the leech and foot with the leech line under moderate tension.

SPL shall be the distance between the ends of the spinnaker pole.

STREAKER is defined as a sail set flying in the space to leeward of the flying sail sheet, forward of the mainsail, and alongside the flying sail. A streaker is measured as a genoa.

Square Top Main shall be any Mainsail Headwidth (HW) that exceeds 0.5 feet (6 inches) or the calculated HW Limit (HWL)

WPL - No longer a required measurement

4. REQUIRED MEASUREMENTS

- 4.1. It is the responsibility of the OWNER to obtain required measurements.
- 4.2. It is the responsibility of the Handicapper to vouch for the validity of the required measurements on the applications he/she signs.
- 4.3. The following measurements are required for all boats:

LP	of the largest jib or upwind Staysail	HW	Mainsail Headwidth
HHW	When the Jib LP <115%	MGT	Mainsail Top (7/8)
MG	Symmetrical sail Max girth.	MGU	Mainsail girth upper (¾)
SLU	Symmetrical Luff Length.	MGM	Mainsail girth middle (½)
SLE	Symmetrical Leech Length	AMG	Asymmetrical Mid Girth
SF	Symmetrical Spinnaker Foot	ALU	Asymmetrical Luff
ATP	Articulating Tack Point Length	ALE	Asymmetrical Leech
CTP	Centerline Tack Point Length	ASF	Asymmetrical Spin Foot

5. TERMS and GUIDELINES FOR MEASURING SAILS

See ERS – Equipment Rules of Sailing (ERS)

6. ADJUSTMENTS TO SP HANDICAPS

6.1. JIB (GENOA)

6.1.1. Jib Luff Perpendicular (LP)

The boat is handicapped on its largest jib or upwind staysail. The ratio of LP/J shall be calculated and expressed as a percentage.

$$LP\% = LP/J * 100$$

6.1.2. Jib Headsail Half Width (HHW)

Should the largest headsail in the boats rated inventory be of a LP 115% or less, and that sails aft edge trims ahead the spreaders with battens, the HHW shall be measured. The ratio of $2 * HHW/J$ shall be calculated and expressed as a percentage.

$$LP\% = (2 * HHW) / J * 100$$

6.1.3. Handicap Adjustments are based on LP% as follows:

- 6.1.3.a. Maximum LP% without penalty shall be 155%
- 6.1.3.b. Adj = 1 sec/nm adjustment for every 5% (or part).
- 6.1.3.c. Maximum penalty for any Jib shall be -9
- 6.1.3.d. Maximum credit for any Jib shall be +11
- 6.1.3.e. No adjustment for short luffed jibs

Small Jib Adjustments 0 – 155%			Large Jib Adjustments 150.1 – 999		
Min %	Max %	Adj	Min %	Max %	Adj
150.1	155	0	150.1	155	0
145.1	150	+1	155.1	160	-1
140.1	145	+2	160.1	165	-2
135.1	140	+3	165.1	170	-3
130.1	135	+4	170.1	175	-4
125.1	130	+5	175.1	180	-5
120.1	125	+6	180.1	185	-6
115.1	120	+7	185.1	190	-7
110.1	115	+8	190.1	195	-8
105.1	110	+9	195.1	999	-9
100.1	105	+10			
0	100	+11			

6.2. FLYING SAILS

Flying sails adjustments are based on the largest Symmetrical and Asymmetrical flying sail. Measurement of each sail may be required to identify the largest in inventory.

All Asymmetrical sails in inventory “must” be measured to ensure they meet the definition of an Asymmetrical sail as outlined in Part II, Section 4.1 Definitions.

There are two distinct configurations of flying sails permitted:

- Flying Sails attached to a spinnaker pole or articulating bowsprit (ATP).
- Flying Sails attached to the centerline only to a fixed bowsprit or stemhead (does not include a spinnaker pole or articulating bowsprit) (CTP)

6.2.1. STANDARD FLYING SAIL AREA

for both Symmetrical and Asymmetrical Design

$$SA_{std} = 1.8 * .79 * JSP * (ISP^2 + JSP^2) ^ 0.5$$

6.2.2. FLYING SAILS ATTACHMENT POINT

(Recognized as the distance to the attachment point for the spinnaker)

ATP = Spinnaker Pole length or Articulating Bowsprit length

CTP = Non-articulating Bowsprit or Centerline Tacked Sails

SG = Symmetrical Max Girth (MG) or Asym Max Girth (AMG)

6.2.2.a. ARTICULATING TACK POINT (ATP)

Maximum Articulating Tack Point permitted without penalty is as follows:

$$MaxATP = SG/1.8 \text{ or } JSP \text{ (whichever is greater)}$$

Sail Girth Adjusted (SGadj)

If the actual ATP is greater than MaxATP
(ATP > MaxATP)

$$SG_{adj} = SG + (ATP - MaxATP) * 1.8$$

If the actual ATP is NOT greater than MaxATP
(ATP <= MaxATP)

$$SG_{adj} = SG$$

6.2.2.b. CENTERLINE TACK POINT (CTP)

Applicable to Non-articulating Bowsprits and sails tacked to the centerline

JSP adjusted (JSPadj)

For Boats converted from ATP to CTP only

$$\text{JSPadj} = \text{JSP} + \text{greater of } (0.15 * J \text{ or } 1 \text{ foot})$$

For Boat manufactured as centerline

$$\text{JSPadj} = \text{JSP}$$

Maximum Centerline Tack Point permitted without penalty is as follows:

$$\text{MaxCTP} = \text{SG}/1.8 \text{ or } \text{JSPadj} \text{ (whichever is greater)}$$

Sail Girth Adjusted (SGadj)

If the CTP is greater than MaxCTP

$$(\text{CTP} > \text{MaxCTP})$$

$$\text{SGadj} = \text{SG} + (\text{CTP} - \text{MaxCTP}) * 1.8$$

If the CTP is NOT greater than MaxCTP

$$(\text{CTP} \leq \text{MaxCTP})$$

$$\text{SGadj} = \text{SG}$$

Centerline Credit: (Ref: Section: 6.2.5)

6.2.3. SAIL AREA %

SA% (Ref: Section 6.2.4)

6.2.3.a. SYMMETRICAL (SAsym)

Size is defined as the percentage of SAsym / SAstd

SF (Sym Foot) = MG for “unmeasured” sails currently in our database.

$$\text{SAsym} = .83 * \text{SLU} * (\text{SF} + 4 * \text{SGadj}) / 5$$

$$\text{SA\% is then } 180 * \text{SAsym} / \text{SAstd}$$

6.2.3.b. ASYMMETRICAL (SAasym)

Size is defined as the percentage of SAasym / SAstd

$$\text{AML} = (\text{ALU} + \text{ALE}) / 2$$

$$\text{SAasym} = .83 * \text{AML} * (\text{ASF} + 4 * \text{SGadj}) / 5$$

$$\text{SA\% is then } 180 * \text{SAasym} / \text{SAstd}$$

6.2.4. SPINNAKER HANDICAP ADJUSTMENT

Only applied to the single largest SA% (Sym or Asym) in inventory

- 6.2.4.a.** Maximum SA% without penalty shall be 180%.
- 6.2.4.b.** Adj = 1 sec/nm adjustment for every 5% (or part).
- 6.2.4.c.** Maximum penalty for any spinnaker shall be -24
- 6.2.4.d.** Maximum credit for any spinnaker shall be +12

Flying Sails Adjustments 0 – 180%			Flying Sails Adjustments 180.1 – 240%			Flying Sails Adjustments 240.1 – 999%		
Min %	Max %	Adj	Min %	Max %	Adj	Min %	Max %	Adj
0	120	+12	180.1	185	-1	240.1	245	-13
120.1	125	+11	185.1	190	-2	245.1	250	-14
125.1	130	+10	190.1	195	-3	250.1	255	-15
130.1	135	+9	195.1	200	-4	255.1	260	-16
135.1	140	+8	200.1	205	-5	260.1	265	-17
140.1	145	+7	205.1	210	-6	265.1	270	-18
145.1	150	+6	210.1	215	-7	270.1	275	-19
150.1	155	+5	215.1	220	-8	275.1	280	-20
155.1	160	+4	220.1	225	-9	280.1	285	-21
160.1	165	+3	225.1	230	-10	285.1	290	-22
165.1	170	+2	230.1	235	-11	290.1	295	-23
170.1	175	+1	235.1	240	-12	295.1	999	-24
175.1	180	0						

6.2.5. CENTRELINE CREDIT +6

Any Spinnaker tacked to the centerline will receive a +6 sec/nm credit

Exceptions:

- No spinnaker pole or articulating bowsprit shall be on board in order to qualify.
- Only applicable to Asymmetrical Spinnakers per Central Council meeting Nov 2019.

6.2.6. EQUIVALENCY LIMIT (FS-ASP greater than NFS-ASP)

The FS-ASP shall not be slower (numerically higher) than the NFS-ASP. In order to ensure that the ASP calculation results in a value that is not so, the FS-ASP shall be adjusted to match the NFS-ASP.

$$\text{NFS-ASP} - \text{FS-ASP} = \text{Equivalency Limit}$$

6.3. NON-FLYING SAILS (NFS)

6.3.1. An NFS handicap (no flying sails) will be calculated for all boats.

At the Inter-Club level there is no mixing of fleets allowed (flying sails and non-flying sails). However, recognizing the need for individual Clubs to allow this practice it is important to point out that the NFS handicap cannot fairly compensate under all circumstances to allow fair racing in all fleets.

6.3.1.a. Downwind Jib Adjustments are based on the Jib LP%:

6.3.1.b. Maximum LP% without penalty shall be 155%,

6.3.1.c. Adj = 1 sec/nm adjustment for every 5% (or part).

6.3.1.d. Maximum penalty for any Downwind Jib shall be -9

6.3.1.e. Maximum credit for any Downwind Jib shall be +11

Small DW Jib Adjustments 0 – 155%			Large DW Jib Adjustments 150.1 – 999		
Min %	Max %	Adj	Min %	Max %	Adj
150.1	155	0	150.1	155	0
145.1	150	+1	155.1	160	-1
140.1	145	+2	160.1	165	-2
135.1	140	+3	165.1	170	-3
130.1	135	+4	170.1	175	-4
125.1	130	+5	175.1	180	-5
120.1	125	+6	180.1	185	-6
115.1	120	+7	185.1	190	-7
110.1	115	+8	190.1	195	-8
105.1	110	+9	195.1	999	-9
100.1	105	+10			
0	100	+11			

6.4. MAINSAIL

- SP is based upon manufacturer's standard P and E dimensions. If no such standard exists, the Handicappers Council will make a determination.
- Mainsail measurements are required for all new (to a certificate) mainsails.
- MGT updates.
2017, the MGT (7/8th) will be also be required on all "New to a Certificate" mainsails.
2018 & 2019, boats currently rated and missing the MGT measurement will use the 2017 mainsail formula.

6.4.1. MAIN AREA Standard (MAstd):

$$\text{HWstd} = 0.04 * E \text{ or } 0.5' \text{ (whichever is greater)}$$

$$\text{MGTstd} = 0.22 * E$$

$$\text{MGUstd} = 0.38 * E$$

$$\text{MGMstd} = 0.65 * E$$

$$\text{MAstd} = (P/8) * (2 * E + 3 * \text{MGMstd} + 1.5 * \text{MGUstd} + \text{MGTstd} + 0.5 * \text{HWstd})$$

MAIN AREA Measured (MAmsd):

$$\text{MAmsd} = (P/8) * (2 * E + 3 * \text{MGM} + 1.5 * \text{MGU} + \text{MGT} + 0.5 * \text{HW})$$

6.4.2. MAIN AREA Standard (MAstd): **NO MGT**

$$\text{HWstd} = 0.04 * E \text{ or } 0.5' \text{ (whichever is greater)}$$

$$\text{MGUstd} = 0.38 * E$$

$$\text{MGMstd} = 0.65 * E$$

$$\text{MAstd} = (P/8) * (2 * E + 3 * \text{MGMstd} + 2 * \text{MGUstd} + \text{HWstd})$$

MAIN AREA Measured (MAmsd):

$$\text{MAmsd} = (P/8) * (2 * E + 3 * \text{MGM} + 2 * \text{MGU} + \text{HW})$$

6.4.3. Handicap Adjustments are based on MA% as follows:**6.4.3.a.** MA%

$$(MA_{msd} / MA_{std}) \times 100$$

6.4.3.b. Maximum MA% without penalty shall be 101.9%

NOTE:

Reviewed with the intent of normalizing the maximum (without penalty) to 100%.

6.4.3.c. 2 sec/nm penalty for every 3% (or part) over 101.9**6.4.3.d.** 2 sec/nm credit for every 3% (or part) below 98%**6.4.3.e.** Maximum penalty for any mainsail shall be -6**6.4.3.f.** Maximum credit for any mainsail shall be +9

Small Mainsail Adjustments 0 – 97.9			Large Mainsail Adjustments 102 - 999		
Min %	Max %	Adj	Min %	Max %	Adj
98	101.9	0	98	101.9	0
95	97.9	+2	102	104.9	-2
92	94.9	+4	105	107.9	-4
89	91.9	+6	108	999	-6
0	88.9	+9			

6.4.4. Unmeasured Mainsail Penalty:

As of 2020, all Mainsail measurements are required.

Unmeasured mainsails will be subject to a -3 sec/nm penalty.

6.5. PROPULSION

See definition – refer to Part I, Section 4.8

6.5.1. SCHEDULE OF ADJUSTMENTS FOR INBOARD ENGINES

INBOARD		Fixed/Solid	Folding or Feathering
Prop Configuration	Blades	Adj	Adj
IN aperture (APR)	2 Blade	0	0
	3 or 4 Blade	+12	0
Out of aperture (EXP)	2 Blade	+12	0
	3 or 4 Blade	+15	0
Saildrive (SDR)	2 Blade	+12	0
	3 or 4 Blade	+15	0
Retractable prop with flush plate		-6	
Inadequate Speed	< Hull Speed ($.67\sqrt{LWL}$)	-6	

6.5.2. SCHEDULE OF ADJUSTMENTS FOR OUTBOARDS

OUTBOARD	Notes	Adj
Inadequate speed	< Hull Speed ($.67\sqrt{LWL}$)	-3
Standard	Retracted	0
Not Retracted	Not retracted Prop immersed both tacks	+6
Retractable motor with flush plate	See IB	-6

6.5.3. SCHEDULE OF ADJUSTMENTS FOR OTHER (Prop types)

OTHER	Notes	Adjustment
NO MOTOR	Absolutely no motor on board vessel	-12
Converted prop	IB to OB = Create MOD class	-6
New class required	OB to IB	+6

6.5.4. When a handicap adjustment is made for inadequate speed under power then no further adjustments are made for propulsion.

6.5.5. Feathering Props: Will be handled as standard props. (Equivalent to two blade folding)

6.5.6. V Drive Props: Will be handled as standard props.(equivalent to two blade folding)

6.6. MAST

- Boats must apply for a correction to their handicap when the mast on their vessel is of a different type than standard.
- All classes are assumed to have aluminum mast as standard unless specified in the class name as being Carbon Fibre and specified in the class name with the abbreviation “CF”.

ITEM	ADJUSTMENT
Carbon Fibre Mast	-6
Aluminum Mast	+6

7. GLOSSARY OF ABBREVIATIONS

GENERAL:

- Outboards (OB) are implied unless otherwise specified

1/4T	Quarter ton	IB	Inboard
1/2T	Half ton	M/T	Minton
1T	One Ton	MOD	Modified Boat
2T	Two Ton	MS	Motor Sailer
3/4T	Three Quarter Ton	OB	Outboard
CR	Cruiser	SDR	Saildrive

RIG

- Sloops (SL) are implied unless otherwise specified.
- Masthead sloops (MH) are implied unless qualified: i.e. 15/16, 7/8, 3/4, etc..

CA	Cat boat	SC	Schooner
CF	Carbon Fibre Mast	SM	Short/Small Mast
CK	Cat Ketch	TM	Tall Mast
K	Ketch	Y	Yawl
RFM	Roller Furling Main		

8. MISCELLANEOUS

8.1. WATER BALLAST - is acceptable.

The assumption is that the tanks will be filled and remain filled while racing. Handicaps are based on this assumption.

8.2. MOVABLE APPENDAGES - shall be declared

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

8.3. TRADITIONAL PHRF RACER/CRUISER

The traditional PHRF Racer/Cruiser is a keelboat meeting all the following conditions:

- a displacement to waterline length (in lbs/ft) of greater than 90 (for yachts under 200 sec/mi handicap)
- a rated sail area to displacement (RSA/D) of 25.00 or less
- lifelines (single or double) and bow and stern pulpit surrounding the working deck or affixed jacklines (at all times while racing)
- self-draining cockpit
- permanently or semi-permanently mounted head
- appropriate sleeping accommodations below
- galley (sink and permanently or semi-permanently mounted stove)
- designed for an engine that propels the boat at hull-speed.

8.4. SPORT BOATS - updated March 26, 2017

A sport boat is defined as any boat that has one of the following characteristics:

- sport boat rating (using the Jim Teeters Formula) of 1.000 or higher
- a downwind sail area to displacement ratio (using the formula of $SA/(Disp/64)^{2/3}$ being the standard model) of 63.5 or higher
- an upwind sail area area to displacement ratio (using the formula of $SA/(Disp/64)^{2/3}$ being the standard model) of 37.5 or higher.

8.5. RACING RECOMMENDATIONS

PHRF-LO recommends that yachts whose performance varies dramatically within different sailing conditions (ie: Sport Boats vs Traditional Racer/Cruiser) should, where possible, be raced in their own division.

8.6. EXTREME YACHTS

PHRF-LO will only rate monohull keel boats, as defined by ERS C.6.2.a, without devices or facilities to move the crew member's body outside of the sheerline, as defined by ERS D.1.2., of the hull.

8.6.1. This prohibition includes, but is not limited to:

- Racks
- Wings
- Trampoline
- Trapezes (ERS F.1.7.c, i)

8.6.2. Exception:

This rule does not apply to classes of boats originally designed, built or modified prior to 1980.

8.7. KEEL

8.7.1. Handicap assessment of keels is estimated inclusive in the SP via a range of comparable classes at initial assessment in the Worksheet. The range of comparable classes must have the same type of keel as the new boat being assessed to be meaningful. When a new class that is being first assessed has a different keel than the otherwise comparable classes, the following penalty table is to be used for handicap estimating and comparative adjustment purposes.

8.7.2. When the same class of boat is available with different types of keels as options, the following assessment table provides a comparative guide for different handicaps based on the option being handicapped. It may be practical to do the initial assessment for an option that has comparables in the database, then make the relative adjustment for the option in question.

8.7.3. When an existing class boat is being modified with a new keel, the handicap adjustment is to follow the adjustment table below.

8.7.4. All numeric keel performance adjustments shall be captured in the Initial Assessment tab of the Worksheet and so noted.

8.7.5. Boats that intend to use movable ballast and associated equipment (canting keels, water ballast tanks – if different from 8.1 above, associated dagger boards, outriggers etc.) during racing shall be handicapped outside the penalty table below as custom boats not fitting the definition of the standard PHRF Racer Cruiser. The owner shall be obliged to provide suitable performance data from the designer or a recognized VPP type database for handicapping purposes.

Keel Types & Penalties

<i>ID</i>	<i>Description</i>	<i>Legacy Ref.</i>	<i>Low CG</i>	<i>Efficient Foil</i>	<i>Total adjustment</i>
<i>1</i>	<i>Traditional, attached rudder</i>	<i>FLK</i>			<i>0</i>
<i>2</i>	<i>Long keel with separate rudder</i>	<i>FLK</i>			<i>0</i>
<i>3</i>	<i>Elliptical fin / 'Mickey Mouse'</i>	<i>FK</i>		<i>-3</i>	<i>-3</i>
<i>4</i>	<i>Tapered fin</i>	<i>FK</i>			<i>0</i>
<i>5</i>	<i>Straight fin</i>	<i>FK</i>			<i>0</i>
<i>6</i>	<i>Straight deep fin</i>	<i>DK</i>	<i>-3</i>		<i>-3</i>
<i>6.a</i>	<i>Straight deep fin with vortex shedding tip</i>	<i>DK</i>		<i>-3</i>	<i>-3</i>
<i>7</i>	<i>Flare, low CG</i>	<i>FK</i>	<i>-3</i>		<i>-3</i>
<i>8</i>	<i>Flare, low CG deep fin</i>	<i>DK</i>	<i>-3</i>		<i>-3</i>
<i>8.a</i>	<i>Flare, low CG fin with vortex shedding tip</i>	<i>DK</i>	<i>-3</i>		<i>-3</i>
<i>9</i>	<i>'L' Bulb, low CG</i>	<i>BK</i>	<i>-3</i>		<i>-3</i>
<i>9.a</i>	<i>'L' Bulb, shoal draft, low CG</i>	<i>BK</i>	<i>-3</i>		<i>-3</i>
<i>9.b</i>	<i>'L' Bulb, shoal draft, low CG with vortex shedding tip</i>	<i>BK</i>	<i>-3</i>		<i>-3</i>
<i>9.c</i>	<i>'L' Bulb, shoal draft, low CG, Scheel design</i>	<i>SHK</i>	<i>-3</i>		<i>-3</i>
<i>10</i>	<i>'T' Bulb, deep fin</i>	<i>TB/DK</i>	<i>-3</i>	<i>-3</i>	<i>-6</i>
<i>10.a</i>	<i>'T' Bulb, shoal draft</i>	<i>TB/SK</i>		<i>-3</i>	<i>-3</i>
<i>11</i>	<i>'L' Bulb, deep fin</i>	<i>TB/DK</i>	<i>-3</i>	<i>-3</i>	<i>-6</i>
<i>12</i>	<i>"T" Bulb Deep fin with winglets</i>	<i>TB/WK</i>	<i>-3</i>	<i>-3</i>	<i>-6</i>
<i>13</i>	<i>Wing keel</i>	<i>WK</i>	<i>-3</i>	<i>6</i>	<i>3</i>
<i>13.a*</i>	<i>Wing Keel Shoal Draft</i>	<i>WK/SD</i>		<i>6</i>	<i>6</i>
<i>14</i>	<i>Swing Keel exposed or in shoal draft casing</i>	<i>SK</i>		<i>6</i>	<i>6</i>
<i>15</i>	<i>Centerboard **</i>	<i>CB</i>		<i>6</i>	<i>6</i>
<i>16</i>	<i>Drop Keel (no bulb)/ Daggerboard **</i>	<i>DB</i>	<i>3</i>		<i>3</i>
<i>17*</i>	<i>Articulating or Canting Keel</i>	<i>AK</i>	<i>To be determined on a case-by case basis using outside data as available</i>		
<i>18*</i>	<i>Articulating/canting with dagger or canard</i>	<i>AC</i>			

* *No sketch*

** *Must be fixed in **down** position during racing*

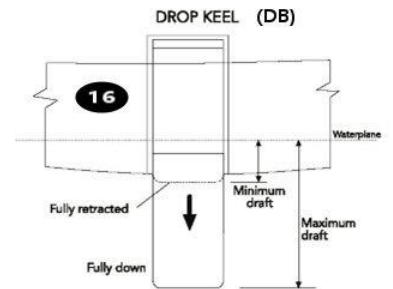
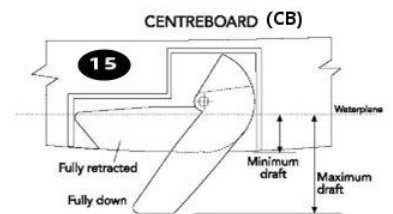
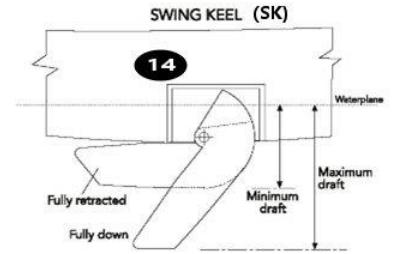
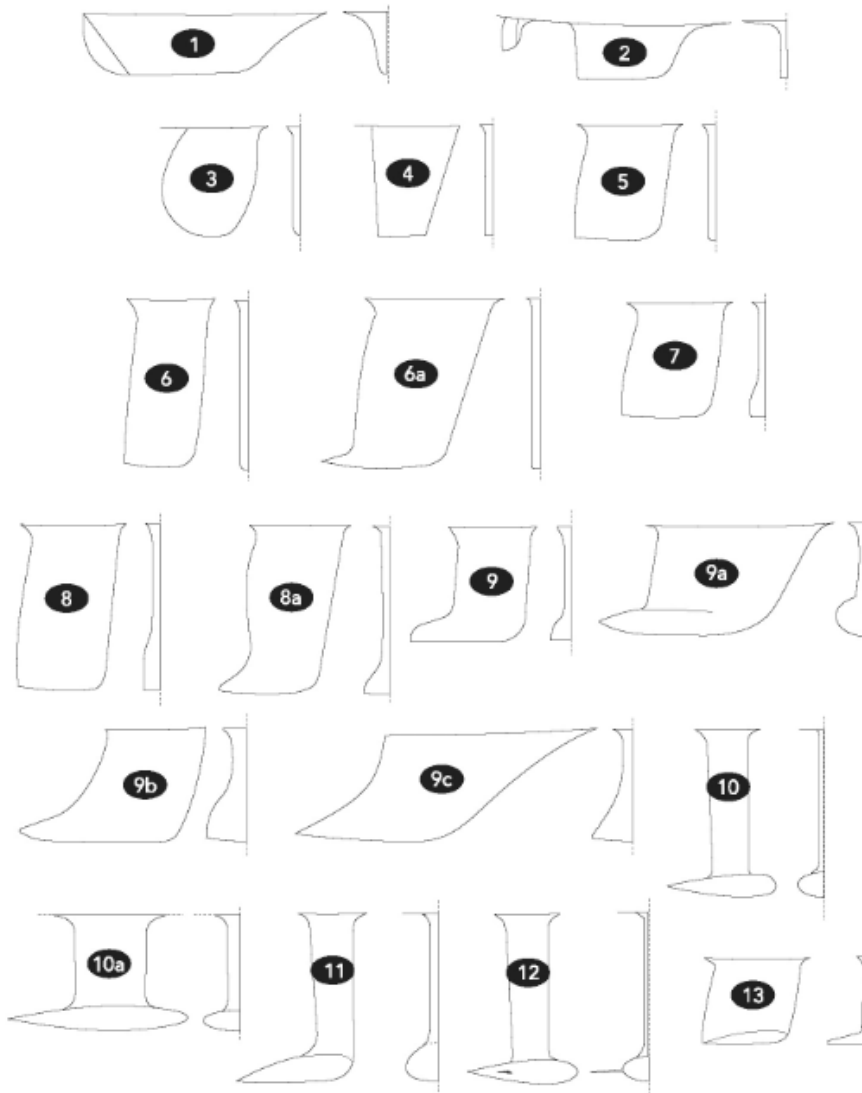
*** *Internal or external (shoal) casing*

8.7.6. Sketches of typical Fin Keel and Movable Keels Types are shown below.

Photographs of some keel types are available on our web site: [Keels](#)

FIN KEEL TYPES

Used for guidance only. Select the number that closest resembles the keel on the boat.



8.7.7. Class version keel identification

In order to distinguish class variations in reports. Class naming (keel) abbreviations will be a combination of Type & Attributes Example: Abbott 36 WK/fl/v			
<i>Types</i>	<i>Description</i>	<i>/att</i>	<i>Descriptions</i>
AC	Articulating or Canting Keel	ar	attached rudder
CB	Centerboard	db	dagger
DB	Drop Keel or Daggerboard	dk	deep fin
FK	Fin Keel (standard)	el	elliptical fin
FLK	Full Keel	fl	flare
LB	"L" Bulb	sc	scheel design
SK	Swing Keel	sd	shoal draft
TB	"T" Bulb	sr	separate rudder
WK	Wing Keel	st	straight fin
		tp	tapered fin
		v	vortex shedding tip
		wg	winglets