# PHRF REGULATIONS

## PART 1: DEFINITION OF TERMS

### HULL

| | |
|---|---|
| **LOA** | LENGTH OVERALL OF THE HULL |
| **LWL** | LOAD WATERLINE LENGTH |
| **BEAM** | MAXIMUM WIDTH OF THE YACHT |
| **DISPL** | DISPLACEMENT OF THE YACHT IN POUNDS |
| **BALLAST** | WEIGHT OF THE KEEL IN POUNDS |
| **INTERNAL BALLAST** | WEIGHT OF ANY INTERNAL BALLAST (EXCLUDING WATER, FUEL, ETC.) |

### RIG DIMENSIONS

| | |
|---|---|
| **I** | HEIGHT OF THE FORETRIANGLE MEASURED FROM DECK SHEERLINE TO HIGHEST POINT OF JIB ATTACHMENT |
| **ISP** | HEIGHT OF SPINNAKER ATTACHMENT MEASURED FROM DECK SHEERLINE |
| **J** | PERPENDICULAR DISTANCE FROM THE FORESIDE OF THE MAST TO THE POINT OF INTERCEPTION OF THE FORESTAY AND DECK |
| **JC** | J DIMENSION CORRECTED TO ACCOUNT FOR SPRITS OR SPINNAKER POLES EXTENDING BEYOND THE FORWARD LIMIT OF J |
| **JS** | FOR PRODUCTION BOATS, STANDARD J DIMENSION TAKEN FROM BASE BOAT RATING LIST. EQUAL TO MEASURED J FOR ONE OF A KIND BOATS. |
| **P** | FULLY STRETCHED OR BANDED LUFF LIMIT OF MAINSAIL |
| **E** | FULLY STRETCHED OR BANDED FOOT LIMIT OF MAINSAIL |
| **PY** | FULLY STRETCHED OR BANDED LUFF LIMIT OF MIZZENSAIL |
| **EY** | FULLY STRETCHED OR BANDED FOOT LIMIT OF MIZZENSAIL |

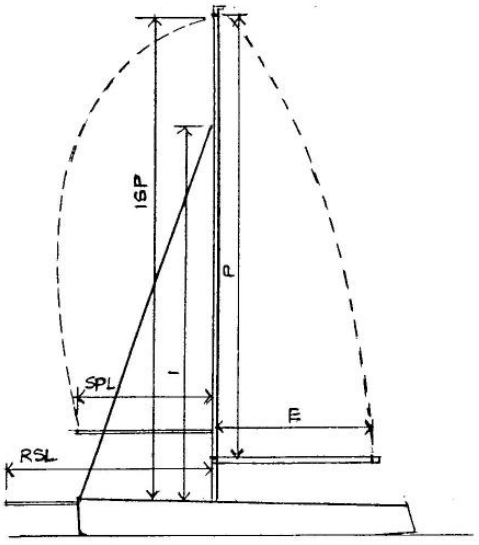
### CALCULATED FACTORS

| | |
|---|---|
| **SA** | RATED SAIL AREA CALCULATED AS 0.5*[(I*J)+(P*E)] |
| **SA/D** | SAIL AREA / DISPLACEMENT RATIO CALCULATED AS SA / (DISPL / 64)^0.667 |
| **C** | THE ABSOLUTE DIFFERENCE BETWEEN A YACHT'S SA/D AND THE NUMBER 21.0 |
| **JAD** | THE DIFFERENCE IN AREA BETWEEN A YACHT'S BASE JIB AND ITS RATED (LARGEST) JIB. |
| **D/L** | DISPLACEMENT / LENGTH RATIO CALCULATED AS (DISPL/2240)/0.01*(0.5*(LOA+LWL))^3 |
| **B/L** | BEAM / LENGTH RATION CALCULATED AS BEAM / LWL |
| **JCF** | JIB CORRECTION FACTOR CALCULATED AS 0.1*(JAD / DISPL/64)^0.667 * D/L * B/L |

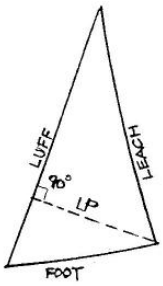
**SAILS**

| | |
|---|---|
| **LP** | PERPENDICULAR MEASUREMENT OF THE JIB FROM LUFF TO CLEW. |
| **G** | MAXIMUM GIRTH OF SYMMETRICAL SPINNAKERS MEASURED LUFF TO LUFF. |
| **MSL** | LENGTH OF SYMMETRICAL SPINNAKER LUFF. WHEN MEASURED SAIL IS TO BE STRETCHED FLAT WITH ONLY ENOUGH TENSION TO REMOVE WRINKLES. |
| **SLIM** | MAXIMUM SPINNAKER LUFF LIMIT WITHOUT PENALTY, CALCULATED AS 95% OF THEORETICAL FORESTAY LENGTH ( $0.95\sqrt{I^2 + J^2}$ ) |
| **ALU** | ASYMMETRICAL SPINNAKER LUFF MEASURED FROM HEAD TO TACK. |
| **ALE** | ASYMMETRICAL SPINNAKER LEACH MEASURED FROM HEAD TO CLEW. |
| **AMG** | ASYMMETRICAL SPINNAKER MAXIMUM GIRTH MEASURED FROM MID-POINT OF LUFF TO MID-POINT OF LEACH. |
| **ASF** | ASYMMETRICAL SPINNAKER FOOT MEASURED FROM TACK TO CLEW. |
| **SPL** | SPINNAKER POLE LENGTH MEASURED FROM CENTERLINE OF MAST TO OUTBOARD END OF POLE WHEN SET IN A HORIZONTAL POSITION ATHWARTSHIP. |
| **RSL** | RETRACTABLE SPRIT LENGTH MEASURED FROM SPINNAKER ATTACHMENT POINT ON SPRIT TO FORWARD FACE OF MAST. |
| **WPL** | MAXIMUM LENGTH OF WHISKER POLE; MEASURED SIMILARLY TO SPL. |

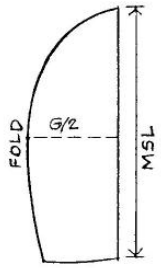
## Sail Measurement Diagrams:



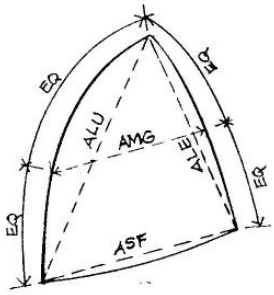

RIG




JIBS




SYM. SPINNAKERS




ASYM. SPINNAKERS

**ASYMMETRICAL**

LIMITING DIMENSIONS WITHOUT PENALTY ARE AS FOLLOWS; .5(ALU + ALE) <= SLIM, ASF <= 1.8 JS, AMG <= 1.75 JS AND AMG => .75 ASF. MEASUREMENTS THAT EXCEED THESE LIMITS WILL BE CONVERTED TO ADDITIONAL GIRTH IN A MANNER SIMILAR TO THAT USED FOR SYMMETRICAL SAILS. EXCESS GIRTH ISPENALAIZED ACCORDING TO TABLE 3.

ASYMMETRICAL SPINNAKERS FLOWN FROM THE JIB TACK FITTING, BOW PULPIT OR A TACK PENNANT (LENGTH NOT TO EXCEED TWO FEET) QUALIFY FOR A CREDIT OF +9 SEC/MI. ASYMMETRICAL SPINNAKERS FLOWN FROM SPINNAKER POLES OR SPRITS DO NOT QUALIFY FOR THIS CREDIT. A YACHT MAY CARRY BOTH SYMMETRICAL AND ASYMMETRICAL SPINNAKERS BUT BY DOING SO WILL FORFEIT THE ASYMMETRICAL SPINNAKER CREDIT REGARDLESS OF THE MANNER IN WHICH THE SAIL IS SET.

**NON – SPINNAKER RATING ADJUSTMENTS**

RATING ADJUSTMENT IS BASED ON THE RATIO OF A YACHT'S RATED SAIL AREA AFT OF THE FOREMAST TO THE RATED AREA OF ITS SPINNAKER MODIFIED BY THE YACHT'S SAIL AREA / DISPLACEMENT RATIO. THESE RATIOS ARE EXPRESSED BY THE TERM M/G WHICH IS DERIVED FROM THE FORMULA M/G = P x E + (.6 PY x EY)/(ISP x JC)+(SA/D + C –21)/ 45. M/G RATING ADJUSTMENTS ARE SHOWN IN TABLE 4.

**TABLE 4**

| M/G | RATING ADJ. | M/G | RATING ADJ. | M/G | RATING ADJ. |
|---|---|---|---|---|---|
| 0.30 – 0.39 | + 26 | 1.20 – 1.29 | + 17 | 2.20 – 2.39 | + 8 |
| 0.40 – 0.49 | + 25 | 1.30 – 1.39 | + 16 | 2.40 – 2.59 | + 7 |
| 0.50 – 0.59 | + 24 | 1.40 – 1.49 | + 15 | 2.60 – 2.99 | + 6 |
| 0.60 – 0.69 | + 23 | 1.50 – 1.59 | + 14 | 3.00 – 3.39 | + 5 |
| 0.70 – 0.79 | + 22 | 1.60 – 1.69 | + 13 | 3.40 – 3.99 | + 4 |
| 0.80 – 0.89 | + 21 | 1.70 – 1.79 | + 12 | 4.00 – 4.99 | + 3 |
| 0.90 – 0.99 | + 20 | 1.80 – 1.89 | + 11 | 5.00 – 5.99 | + 2 |
| 1.00 – 1.09 | + 19 | 1.90 – 1.99 | + 9 | 6.00 – 6.99 | + 1 |
| 1.10 – 1.19 | + 18 | 2.00 – 2.19 | + 8 | 7.00 and greater | 0 |

MAXIMUM WHISKER POLE LENGTH (WPL) WITHOUT PENALTY; FOR JIBS WHERE LP< 1.25 J, WPL = JS; FOR JIBS WHERE LP > 1.25 J, WPL = (LP) x 0.8.

**RIG**

FOR MASTHEAD RIGS ONLY;
EXCESS OR DEFICIENT MAST HEIGHT
IS MEASURED BY RATIO: I actual / I stnd

| RATIO | RATING ADJ. |
|---|---|
| UP TO 0.91 | + 15 |
| 0.911 – 0.93 | + 12 |
| 0.931 – 0.95 | + 9 |
| 0.951 – 0.97 | + 6 |
| 0.971 – 0.99 | + 3 |
| **0.991 – 1.01** | **0** |
| 1.011 – 1.03 | - 3 |
| 1.031 – 1.05 | - 6 |
| 1.051 – 1,07 | - 9 |
| 1.071 – 1.09 | - 12 |
| 1.091 – 1.11 | - 15 |

ABOVE 1.11 ADJ. PROPORTIONALLY

**PROPELLER ADJUSTMENTS**

| INBOARD ENGINE | RATING ADJ. |
|---|---|
| NO ENGINE | - 12 |
| ENGINE UNDERSIZED | - 6 |
| **FOLD OR FEATHERING PROP** | **0** |
| **SOLID 2 BLADE IN APERTURE** | **0** |
| SOLID 2 BLADE, EXPOSED SHAFT | + 6 |
| SOLID 3 BLADE IN APERTURE | + 6 |
| SOLID 3 BLADE, EXPOSED SHAFT | + 12 |

OUTBOARD ENGINE

| | |
|---|---|
| NO ENGINE | - 12 |
| ENGINE UNDERSIZED | - 3 |
| **PROP RETRACTED WHEN RACING** | **0** |
| PROP IMMERSED, 2 BLADE | + 6 |
| PROP IMMERSED, 3 BLADE | + 12 |

# PHRF REGULATIONS
## PART II : HANDICAP ADJUSTMENTS

### HEADSAILS

RATING ADJUSTMENT FOR JIB SIZE IS BASED UPON A YACHT'S JIB ADJUSTMENT FACTOR (JAF) AND TABLE I BELOW. DEPENDING UPON ACTUAL JIB SIZE VERSUS STANDARD JIB SIZE, JAF MAY BE EITHER A POSITIVE OR NEGATIVE NUMBER. IF POSITIVE, ADJUSTMENT IS ADDED TO BASE BOAT RATING. IF NEGATIVE IT IS SUBTRACTED FROM BASE BOAT RATING.

**TABLE 1 JIB ADJUSTMENTS**

| JAF | RATING ADJUSTMENT (SECONDS PER MILE) |
|---|---|
| 0.0000 - 1.316 | 0 |
| 1.3161 - 3.947 | 1 |
| 3.9471 - 6.579 | 2 |
| 6.5791 - 9.210 | 3 |
| 9.2101 - 11.842 | 4 |
| 11.8421 - 14.473 | 5 |
| 14.4731 - 17.105 | 6 |
| 17.1051 - 19.737 | 7 |
| 19.7371 - 22.368 | 8 |
| 22.3681 - 25.000 | 9 |
| 25.0001 - 27.631 | 10 |
| 27.6311 - 30.263 | 11 |
| 30.2631 - 32.894 | 12 |
| 32.8941 - 35.526 | 13 |
| 35.5261 - 38.157 | 14 |
| 38.1571 - 40.789 | 15 |
| ABOVE 40.8791 | 16 |

### SPINNKAERS

**SYMMETRICAL**

RATING ADJUSTMENT IS BASED UPON THE LARGEST SPINNAKER AS MEASURED BY G/JS AND MSL/SLIM RATIOS. MAXIMUM LUFF LENGTH (SLIM) WITHOUT PENALTY IS EQUAL TO 0.95*(I^2*J^2)^0.5

EXCESS LUFF LENGTH IS CONVERTED TO ADDITIONAL GIRTH BY MEANS OF THE FOLLOWING FORMULA: G/JS rated = (G/JS measured)*(MSL/SLIM). EXCESS GIRTH IS PENALIZED ACCORDING TO TABLE 2 BELOW.

MAXIMUM SPINNAKER POLE LENGTH (SPL): FOR SPINNAKERS WHERE G DOES NOT EXCEED 1.8*JS, SPL=JS. FOR SPINNAKERS WHERE G EXCEEDS 1.8*JS, SPL= G / 1.8.

**TABLE 2**

| G / JS | RATING ADJUSTMENT |
|---|---|
| **UP TO 1.80** | **0** |
| 1.801 - 1.85 | -1 |
| 1.851 - 1.90 | -2 |
| 1.901 – 1.95 | -3 |
| 1.951 – 2.00 | -4 |
| 2.001 – 2.05 | -5 |
| 2.051 – 2.10 | -6 |
| ABOVE 2.10 | ADJUST PROPORTIONALLY |