



THE RYA PORTSMOUTH YARDSTICK SCHEME 2007

Objectives and Using the Scheme

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1 OBJECTIVE

The objective of this disc is to help clubs to organise fairer racing between boats of different classes and types by making available:-

- a) Portsmouth Numbers
- b) A method of calculating race results
- c) Methods of assessing and adjusting Numbers
- d) Suggested clauses for insertion in the Notice of Race and the Sailing Instructions when it is intended to use the Portsmouth Yardstick Scheme.
- e) General guidance on Pursuit Racing, Average Lap Racing and Personal Handicaps.

NOTE: While always ready to deal with questions or suggestions from participating clubs, the RYA cannot correspond with individuals either on particular Portsmouth Numbers or on general aspects of the Yardstick Scheme.

2 USING THE SCHEME

This section of the disc explains how the Scheme can be used for racing between boats of different classes and types.

The Specimen Races give recommended methods for assessing and adjusting Numbers, which have been developed over several years and are both reliable and relatively simple to use.

The Portsmouth Number Lists, gives the Number for each class or type for which sufficient Returns have been received and classes for which more Returns are required, whether these be new or old classes. There are separate lists for Centreboard (dinghy), Cruiser, Keelboat and Multihull. Each is listed both alphabetically. These lists are also given in Excel format.

The next three sections give general guidance on Pursuit Racing, Average Lap Racing and Personal Handicaps.

The Appendices include a number of suggested forms for use with the Scheme.

3 DEFINITIONS

- 3.1 **Portsmouth Numbers (PN)** are measures of performance. They represent times over a common but unspecified distance, and are expressed as whole numbers.
- 3.2 **Primary Yardsticks (PY)** are Portsmouth Numbers published by the RYA and well attested by many clubs over several years.
- 3.3 **Secondary Yardsticks (SY)** are Portsmouth Numbers published by the RYA but not as consistently attested as *Primary Yardsticks*.
- 3.4 **Recorded Numbers (RN)** are Portsmouth Numbers published by the RYA on the basis of limited information.
- 3.5 **Club Numbers (CN)** are Portsmouth Numbers allocated by clubs. They can be Numbers derived from *Trial Numbers*, or Numbers based on the RYA lists, club adjusted where necessary.
- 3.6 **Trial Numbers (TN)** are Portsmouth Numbers allocated by clubs until a *Club Number* is assessed.
- 3.7 **Portsmouth Certificates** are documents which should be issued by a club allocating a *Club Number* to a boat. The Certificate must specify any allowance for, and details of variations from, *Base Rig*. The Certificate should be accepted by any other club which, nevertheless, may need to adjust the Number to suit local conditions. Certificates become invalid if any alteration is made to the boat which would affect her performance and thereby her Number. (See Appendix II for a *Portsmouth Certificate*).
- 3.8 **Yardstick Returns** are forms issued annually by the RYA which clubs should complete and return. The *Yardstick Returns* provide the information on which the lists of published *Portsmouth Numbers* are based.
- 3.9 **Recommended Numbers** are those numbers entered on the *Yardstick Returns* by returning clubs. They are the Numbers judged by the club to be the most appropriate for its returned classes racing to *Base Rig* on its waters. Any allowances (plus or minus) must have been eliminated before returning a *Recommended Number*.
- 3.10 **Base Rig** is the physical configuration of rig upon which a boat's *Portsmouth Number* is assessed.

The configuration is either:

a) a boat rigged to its full performance potential and carrying on board all sails permitted by its Class Rules where such Rules exist (Class Rules must necessarily be those Rules applying during the year in which the Returns are made. Any change subsequent to the Return date may need to be reflected in the allocation of a *Trial Number* at the beginning of the following season);

or, where a) does not apply:

b) a Bermudan sloop boat with its largest headsail having its shortest clew to luff dimension between 1.3 and 1.5 times the J dimension and with a symmetrical spinnaker having its centre height approximately 0.95 times the I dimension and its maximum girth approximately 1.8 times the J dimension or equivalent size asymmetric spinnaker and with boom(s) to suit. The J dimension is the distance between the headsail tack and the mast and the I dimension is the distance along the mast from the deck to the hounds. Engine/propeller and keel configurations are dealt with in paragraphs 5.1 to 5.3.

- 3.11 **Crew Skill Factor** is the influence on the speed of a boat that is attributable to the efforts of the people racing the boat. This influence can be found in tuning, sailing and tactical skills. It is a subjective judgement expressed as plus numbers, for below average crews, or minus numbers for above average crews. A badly handled boat will have a true Number arithmetically lower than that to which it actually performs, while an exceptionally well handled boat may be given a Number arithmetically higher than that to which it performs.

4 VARIATIONS FROM BASE RIG

- 4.1 Where a cruiser does not conform to *Base Rig* for its class or type, allowances up to the following **maxima** may be applied on a trial basis:
- | | |
|---|-----|
| Boat with all headsails smaller than <i>Base Rig</i> | +4% |
| Boat with no spinnaker | +4% |
| Boat with mainsail other than Bermudan | +2% |
| Boat with cruising chute and no spinnaker | +2% |
| Boat with all spinnakers smaller than <i>Base Rig</i> | +2% |
- 4.2 Any variation from *Base Rig* not covered by the above list, such as high tech sailcloth, may justify an allowance (excluding *Crew Skill Factor*). If it is considered that the above allowances should be different, clubs should decide on a suitable number and, if of general application, inform the RYA.

5 LISTED CONFIGURATIONS AND ALLOWANCES

- 5.1 Listed engine/propeller configurations are identified as follows:
- | | |
|--|-----|
| Inboard with feathering/folding propeller | IBF |
| Inboard with fixed two-blade propeller | IB2 |
| Inboard with fixed three-blade propeller | IB3 |
| Any arrangement that allows the propeller to be removed from the water, or no engine | OB |
- 5.2 Recommended **trial** allowances for different engine/propeller configurations are as follows:

from	to			
	OB	IBF	IB2	IB3
OB	0	+1%	+2%	+4%
IBF	-1%	0	+1%	+3%
IB2	-2%	-1%	0	+2%
IB3	-4%	-3%	-2%	0

- 5.3 Listed keel configurations are identified as follows:
- | | |
|------------------------------|---|
| Central or Drop keel | 1 |
| Twin bilge keels | 2 |
| Central and twin bilge keels | 3 |
- 5.4 Recommended **trial** allowances for different keel configurations are as follows:

from	to		
	1	2	3
1	0	+5%	+6%
2	-5%	0	+1%
3	-6%	-1%	0

- 5.5 In some cases the same class of cruiser will have more than one published *Number* relating to different configurations of engine/propeller and/or keel. In such cases the published *Number* should be used in preference to the use of allowances.
- 5.6 For boats other than cruisers, the above allowances may not be applicable or suitable. For a dinghy without a symmetric spinnaker, for example, an allowance of +2% may be suitable.
- 5.7 Listed crew, rig and spinnaker configurations are identified as follows:

Number of persons aboard

1, 2, 3

Rig

U = Una (single sail)
S = Sloop (mainsail and headsail)
M = Ketch or Yawl (mainsail, headsail and mizzen)

Spinnaker

0 = No spinnaker
C = Conventional spinnaker
A = Asymmetric spinnaker

Where no identifying key is shown the class is to *Base Rig*.

- 5.8 Should an Owner decide to race his boat to anything other than *Base Rig*, he should declare the difference to the club and the club should allocate a *Trial Number* for the boat. In such cases the boat shall not change from its declared state during a series of races. If no difference is declared the club should apply the lowest Number applicable for the class during a series of races.

6 FORMULAE AND ROUNDING

6.1 Corrected times (used for race results) and performance numbers (used for race assessment) are calculated by using the following formulae:

6.2 Calculation of corrected times for race results:

$$\text{Corrected Time (C)} = \frac{\text{Elapsed Time (E)}}{\text{Portsmouth Number (N)}} \times 1000$$

6.3 Calculation of performance numbers used for race assessment:

$$\text{Performance Number (P)} = \frac{\text{Elapsed Time (E)}}{\text{Standard Corrected Time (S)}} \times 1000$$

Times are usually expressed in seconds.

6.4 When, after calculations, rounding of figures is required:

figures with decimals of or greater than 0.5 shall be rounded to the next higher whole number; e.g. 1201.5 becomes 1202.

figures with decimals less than 0.5 shall be rounded by deleting the decimals; e.g. 1201.4 becomes 1201.

7 MANAGEMENT OF PORTSMOUTH YARDSTICK RACING

7.1 A club which intends to run a race under the Portsmouth Yardstick Scheme should include in the Notice of Race and in the Sailing Instructions clauses based on the following:

1 The RYA Portsmouth Yardstick Scheme as set out in the current YR2 will be used.

2 *Portsmouth Numbers* will be those published in the current YR2 for each class, adjusted as necessary for variations from *Base Rig*.
or

2 *Portsmouth Numbers* will be those published by the Race Committee n minutes prior to the start of the first*/each* race.
or

2 *Portsmouth Numbers* will be those listed hereunder:-

3 Boats without *Portsmouth Numbers* published in the current YR2 will be allocated an estimated *Trial Number*.
or

3 Boats without *Portsmouth Numbers* published in the current YR2 will be allocated Numbers by use of the method described in Specimen Race 4 in the current YR2.

4 *Portsmouth Numbers* will not be adjusted during the series.
or

4 *Portsmouth Numbers* will be adjusted by the method set out in Specimen Race n in the current YR2 after every nth race of the boat*/class*/series*.

n = Enter number * = Delete as appropriate

7.2 When deciding upon which of the Sailing Instructions listed at 2 above they should use, the club should remember that the listed *Portsmouth Numbers* are derived from *Yardstick Returns* of racing on all kinds of water: sea, estuary, river and lake. The Numbers are therefore an average and thus, particularly with dinghies, may not necessarily be applicable to any one club. Accordingly, if after racing, a listed *Portsmouth Number* appears to be inequitable a club should not hesitate to change the *Number*, including *Yardstick Numbers*, particularly for dinghies and when racing mixed category fleets (e.g. dinghy and keelboat, keelboat and cruiser etc.). However *Primary Yardsticks* should only be changed in exceptional circumstances, such as to maintain a fair relationship between Numbers of *Primary Yardstick* classes, and *Secondary Yardsticks* only with considered reluctance. All such changed *Portsmouth Numbers* rank as *Trial* or *Club Numbers*.

7.3 FOR A CLUB TO REFUSE THE ENTRY OF A BOAT BECAUSE IT HAS NO LISTED NUMBER IS CONTRARY TO THE PURPOSE OF THE PORTSMOUTH YARDSTICK SCHEME.

Where a boat is not listed, or a club is unable to adjust a listed *Portsmouth Number* to suit, the entry should be accepted and the club should estimate a *Trial Number*. Exceptionally, the club might require the boat to sail its first race without a *Portsmouth Number*, and the procedure in that case is set out in Specimen Race 4. A

decision on this point is needed in order to choose the appropriate Sailing Instruction 3.

7.4 Sailing Instruction 4 above will necessitate a club deciding how often adjustment to Portsmouth Numbers should be made, and here the answer may depend upon whether cruisers, keelboats, multihull or dinghies are involved and the number of boats of each class racing. Guidance on this is given in 9.1 below.

8 SPECIMEN RACES

Each specimen is based on an actual race and so the Portsmouth Numbers and their Status used will not necessarily be the same as published in the current Lists. All the specimen races illustrate Portsmouth Number adjustment.

Specimen Race Zero is a dinghy race with few classes each with several finishers. It gives entry level race analysis to allow clubs to make a simple start on the review and adjustment of Portsmouth Numbers. The method will not provide ideal Numbers but allows experience to be gained before moving to more sophisticated methods.

Specimen Race One is similarly a dinghy race with few classes each with several finishers. It gives a more sophisticated post race analysis although Crew Skill Factor (see 3.12), because of the nature of the fleet, is assumed to even out and is ignored.

Specimen Race Two is a dinghy race with a limited numbers of boats in each class together with one-offs and when special care must be taken to apply the correct Crew Skill Factor. The method requires new boats to be allocated an estimated Trial Number.

Specimen Race Three is similar to Specimen Race Two but with cruisers.

Specimen Race Four is the same race as Specimen Race Three but illustrates retrospective Trial Number allocation.

9 PORTSMOUTH NUMBER ADJUSTMENT AND CLUB RECORDS

9.1 Two types of Number review and, if appropriate, adjustment are recommended - Trial Number and Periodic.

Trial Number review should be undertaken after every race and the Number adjusted, as calculated, for the next race. A Trial Number will normally become relatively stable (i.e. the calculated adjustment will be small) after about four races at which time a club should consider changing the Number status to a Club Number which is included in periodic reviews. However if a Trial Number is not considered stable then it's status should not be changed and the Trial Number review should continue.

Periodic review and, if appropriate, adjustment, should be undertaken for all Numbers other than Trial Numbers.

It would never be wrong for a club to undertake a periodic review after every race. However, it is recommended, particularly in the case of cruisers, that a periodic review is carried out after every fourth assessable race completed by any boat or class.

With dinghies, a club may choose to sail to the published Portsmouth Numbers throughout the year, and only undertake a periodic review and adjustment at, say, three monthly intervals, or sail all year on the basis of their previous year's return to the RYA.

When a periodic review is to be made after n races, the club must specify in the Sailing Instructions whether that is n races by the individual boat, the class or the series. Failure to specify this, the method of adjustment, or any deviation from a specified method, is likely to give rise to dissatisfaction or even applications for redress.

9.2 Records of all races and *Portsmouth Numbers* used during the season should be kept and used in compiling the *Yardstick Return* made each year. Even if a club does not adjust Numbers during the year, it should nevertheless calculate adjusted *Portsmouth Numbers* and return its findings (after correction: see 9.3) to the RYA on the *Yardstick Return*. Very often, especially in centreboard racing, the adjusted *Portsmouth Numbers*, derived from annual races in which all the usual class racing fleets take part, may be of more use in determining *Portsmouth Numbers* than those from a 'one of a kind' fleet, which will be heavily weighted by *Crew Skill Factor*.

9.3 All allowances for variations from *Base Rig* and *Crew Skill Factor*, must be removed before making a *Yardstick Return* recommending a Number.