

ESSC model for Portsmouth Number Cruiser Handicaps

The assigned handicap number is $HN = FN + FA + CA$

FN = number generated by a formula based on boat measurements

FA = features adjustment based on variations to the 'standard design'

CA = adjustment based on past performance and/or characteristics of the boat that seem unaccounted for in the formula.

The formulae

Fin/IB2 :
$$FN = 1709 - 99.9d^2 - 861 \frac{B}{LWL} - 36.5\sqrt{LWL} + 1306 \frac{SA}{D}$$

Twin keel/IB2 :
$$FN = 2211 - 1389d + 431d^2 - 137 \frac{B}{LWL} - 54.9\sqrt{LWL} + 455 \frac{SA}{D^{2/3}}$$

where d = draft, LWL = waterline length, B = beam, SA = sail area, D = displacement (metric measurements, all to at least 3 significant figures).

(Note: These formulae cannot be 'unpicked', in the sense of viewing each term individually. This is due to the fact that the terms are not independent of each other)

FA adjustments

Engine related	3 blade propeller	+20
	folding propeller	-10
	outboard engine (when positioned outboard)	-20
Further keel factors	3 keel bilge	+10
	drop keel	-15
	long keel (variable adjustment)	-50 to -30
Rig features	twin mast ketch	+30
	high-tech sails	-9
	in-mast reefing	+20

The models were initially developed using submitted measurement data for those ESSC cruisers for which there is a PN or PN-equivalent (e.g. Byron) handicap number. This base data set was very small in statistical terms, but the models developed fit the established PN numbers very closely, and are statistically sound. We have then used the models to estimate PN numbers for other ESSC boats.

The working data sets have now been expanded, using further information on ESSC boats and data gathered more widely. During 2008 the Fin/IB2 model will be reviewed with the aim of refining some aspects of accounting for the many variations in keel design and rig, whilst maintaining a high degree of simplicity in the formulae.

For the 2007 season, we moved to using a percentage based, rather than flat rate, 'no-spinnaker' allowance (+4%). As it happens, the RYA have now moved to recommending percentage based allowances for different keel, propeller and rig configurations in calculating Portsmouth numbers. The effect of our similarly modifying the FA adjustments above will be looked at in conjunction with any model refinement, for implementation in 2009.