

## **KURNELL CATAMARAN CLUB INCORPORATED YARDSTICKS**

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### **INTRODUCTION**

KCC Catamaran yardsticks are prepared to provide the fairest possible calculation of results for mixed fleet "Off the Beach" catamaran racing. The yardsticks have again been comprehensively reviewed for the 2017/18 season.

### **SMALL CATAMARAN HANDICAP RATING SYSTEM (SCHRS)**

World Sailing has adopted the SCHRS (Australia is represented on the World Council of the SCHRS) as the preferred system of rating (or allocating yardsticks) for small "off the beach" (OTB) racing catamarans. This system has significant merit in simplifying, improving and reducing the time and effort required in the calculation/validation of yardsticks for small OTB catamarans. However, earlier versions of the SCHRS formulae/class measurement system had several problematic anomalies when calculating ratings (yardsticks) for some popular Australian classes, especially for smaller, light weight cat rigged versions of some popular classes, as well as problems assessing the performance differential of spinnaker boats and, more lately, lifting foils. Indications are that the generally greater average wind strengths on Australian southeastern coastal waters (compared to Europe/UK) may be a prime driver behind some of these anomalies, as well as "average" crew weights adopted across all classes, irrespective of boat size/design. There is also an issue with course configurations - where regattas in Australia are more often around triangular and/or in combination with wind/leeward courses, in Europe course marks of major catamaran regattas are often fixed geographical points, irrespective of wind direction.

The SCHRS ratings formulae are extensively reviewed each year, to address these and other issues identified during debate by the SCHRS World Council and Technical Committee. Some of the anomalies regarding Australian classes were addressed, in whole or part, by the adopted 2013 and 2014 amendments. However, more recent reviews were not as helpful and could be considered regressive in this respect. There remain, at time of this publication, several issues in respect of some variants of Australian classes as well as questions surrounding the performance benefits of spinnakers, not to mention foils, preventing full adoption of the SCHRS ratings system at KCC. However, the 2017/18 KCC yardsticks are still calculated/validated with a significant weighting to SCHRS ratings for many classes. It is probable that this current "hybrid" performance + measurement SCHRS/YV yardsticks system will remain the predominant catamaran yardstick system for use at KCC for the immediate future.

## **NEW OTB CATAMARAN CLASSES - PROVISIONAL RATINGS**

For new OTB Catamaran Classes, a rating under SCHRS is calculated, based on published class rules/restrictions and/or supplemented by measurements taken from available prototype (or preferably production) boats for input to SCHRS. The SCHRS rating is then converted to a "Tentative" KCC yardstick. Existing validated class measurement data from International SCHRS measurers is used where available (provided the International class is demonstrably the same as the Australian variant – this is not always the case).

Similarly, where an existing class modifies class rules/restrictions, and these changes potentially have an effect on performance (and can be readily input under SCHRS), a revised (or additional) KCC yardstick has or can be calculated (e.g. - square top mainsails, total weight and/or sail area reduction/increases, changes to centerboards/rudders measurement/design, addition of spinnaker in class rules etc).

Note: All such new and/or modified yardsticks are regarded as "Tentative" until verified and/or amended by subsequent consistent and extensive mixed fleet regatta race data.

## **APPLICABILITY OF CATAMARAN YARDSTICKS**

KCC Yardsticks for OTB Catamarans have been determined, for most popular classes, based on results of mixed fleet racing at major regattas and/or club racing, generally over a wide range of wind/wave/tidal conditions, but predominately in moderate to fresh winds on southeastern Australia coastal and/or estuary waters.

## **USE OF THE YARDSTICK**

The aim of KCC yardsticks is to provide a basis for various catamaran classes to compete fairly when sailed well. The yardstick is not intended to compensate for differences in skills, competence or talent of individual crews (that is a handicap). The yardsticks are determined and maintained on a measurement and/or performance based statistical basis and, within broad limits, remains valid for a variety of wind strengths and courses sailed. Comparison of catamarans of various classes sailing different courses is outside the scope of the current yardstick system.

Yardsticks are based on the current design of a class or class variants, unless noted otherwise. Where recent design/measurement changes have occurred within class rules/restrictions, the Class Association/Manufacturer should inform the KCC Race Secretary ([racesecretary@kcc.asn.au](mailto:racesecretary@kcc.asn.au)) of these changes and provide the necessary rules/restrictions and/or measurement data to enable a review of the Class yardstick to be undertaken in a timely manner.

## KCC CATAMARAN YARDSTICKS 2017 - 2018

	RELIABLE *	PROBABLE *	TENTATIVE *	STARTING DIVISION	NOTES
<u>A</u> Class (Flying) $\Theta$			63.5	1	*** Includes all <u>A</u> Class catamarans (with a valid current measurement certificate) that do not comply with the restrictions of the Classic or Vintage Divisions
<u>A</u> Class (Classic)		65.5		1	*** All hull designs inclusive of foils that are <u>straight</u> , parallel or canted or with a constant curvature or "C" shape (other foil designs, including but not limited to "J", "L" or "Z" shapes, are not permitted), with or without "T/L" rudder winglets or similar
<u>A</u> Class (Vintage)	71.5			1	*** Typically "vintage" hull designs inclusive of <u>straight</u> , parallel/non canted, <u>low aspect</u> foils (<700mm max projection below hull and minimum average width of 250mm) - no curved or lifting foils, "T/L" rudder winglets or similar
Arafura			101	1	1 up trap (+3 no trap) Class approved Square Top Main, +1 for Pin Head Main
Arrow		89		1	1 up trap (Class approved Square Top Main, +1 for Pin Head Main)
Capricorn (AHPC) $\Phi$		66.5		3	Sloop - 2 up trap (F18 compliant)
Cobra Cat			83.5	1	1 up trap (Class approved Square Top Main, (+1 for Pin Head main)
Cobra Sloop			80	1	2 up trap (Class approved Square Top Main, (+1 for Pin Head main)
Dolphin			85	1	1 up trap
F16 Cat			70.5	3	(F16 Box Rules)
F16 Sloop			67.5	3	(F16 Box Rules)
<b>F18</b>	<b>65</b>			3	<b>Standard Class for SCHRS/KCCYS conversions (F18 Box Rules)</b>
Flying Phantom			56	3	Sloop - 2 up trap ("L" foils and "T" rudders)
Hobie Tiger $\Phi$		67		3	Sloop - 2 up trap (F18 compliant)
Hobie 14		96.5		1	1 up (trap -2)
Hobie 14 Turbo		90.5		1	1 up trap
Hobie 16		81		1	Sloop - 2 up trap
Hobie 16 Spin			76	3	Sloop - 2 up trap (Spin of 17.5 m <sup>2</sup> )
Hobie 17			80	1	SE - 1 up trap: cat rigged with "wings"
Hobie 18		76		2	Sloop - 2 up trap
Hydra 16			82	1	Sloop - 2 up trap
Maricat 4.0 Sloop			94	1	1 up (-2 trap)
Maricat 4.3 Cat	96			1	1 up (+1 for GRP Hulls **)
Maricat 4.3 Sloop		91		1	2 up (+1 for GRP Hulls **)
Maricat 4.3 Super Sloop		89		1	1 up trap (+1 for GRP Hulls **)
Maricat 5.0			81	1	Sloop - 2 up trap
Mosquito Cat (Mk1)	82.5			1	1 up trap
Mosquito Cat Spin	77			3	1 up trap - (Spin of 14.1m <sup>2</sup> )
Mosquito Sloop (Mk11)		79		1	2 up trap
Mosquito Sloop Spin			75	3	2 up trap - (Spin of 14.1 m <sup>2</sup> )
Nacra 14 sq		85		1	Class approved Pin Head main (-0.5 for Square Top Main of same area)

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	RELIABLE *	PROBABLE *	TENTATIVE *	STARTING DIVISION	NOTES
Nacra 15			67.5	3	Sloop + Spin - 2 up trap (World Sailing (ISAF) Youth Multihull)
Nacra 15 (foiling)			65	3	Sloop + Spin - 2 up trap with foils (World Sailing (ISAF) Youth Multihull)
Nacra 16 sq		79.5		1	(Class approved Square Top Main, +1 for Pin Head main)
Nacra 16 sq Spin			75	3	(Class approved Square Top Main, +1 for Pin Head main)
Nacra 17			62.5	3	(IOC Olympic Class)
Nacra 17 (foiling)			60	3	Full foiling variant (IOC Olympic Class)
Nacra F20 Carbon			55	3	Sloop - 2 up trap
Nacra F20 FCS			53.5	3	Nacra 20 Carbon with "J/L" foils and "T" rudders (Flight Control System)
Nacra 350 Sloop			107	1	2 up - 1 trap
Nacra 350 Super Sloop			105	1	1 up trap
Nacra 430 Sloop			95	1	2 up - 1 trap
Nacra 430 Super Sloop			91.5	1	1 up trap
Nacra 430 Super Sloop Spin			86.5	1	1 up trap
Nacra 4.5 Sloop			90.5	1	2 up - 1 trap
Nacra 4.5 Super Sloop			87.5	1	1 up trap
Nacra 4.5 Super Sloop Spin			81.5	1	1 up trap
Nacra 5.0 Cat			85	1	1 up trap
Nacra 5.0 Sloop			80	1	2 up trap
Nacra 5.2			77.5	2	Sloop - 2 up trap
Nacra 5.8		73.5		2	Sloop - 2 up trap (Small jib/no foil bridle)
Nacra 5.8NA		71		2	Sloop - 2 up trap (Class approved Square Top Main + Large jib/foil bridle, +0.5 pin head main)
Nacra 5.8NA Spin			66	3	Sloop - 2 up trap - Spin of 24m <sup>2</sup> ) (Class approved Square Top Main + Large jib/foil bridle, +0.5 pin head main)
Nacra F16 Cat			71.5	3	1 up trap (F16 Compliant)
Nacra F16 Sloop			68	3	2 up trap (F16 Compliant)
Nacra F17 Cat			72.5	3	1 up trap
Nacra F17 Sloop			68.5	3	2 up trap
Nacra Inter 17 Cat			73	3	1 up trap
Nacra Inter 17 Sloop			69	3	2 up trap
Paper Tiger	92.5			1	1 up
Prindle 15			89	1	1 up trap
Prindle 16			83	1	Sloop - 2 up trap
Prindle 18			79	2	Sloop - 2 up trap
Stingray Mk11			72.5	3	Sloop - 2 up trap with wing mast + Sq top main (+2.5 Mk1 rig)
Taipan 4.9 Cat	76			2	1 up trap
Taipan 4.9 Cat Spin			72	3	1 up trap - (Spin of 17.5 m <sup>2</sup> )
Taipan 4.9 Sloop	72.5			2	2 up trap
Taipan 4.9 Sloop Spin			69	3	2 up trap - (Spin of 17.5 m <sup>2</sup> )

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	RELIABLE *	PROBABLE *	TENTATIVE *	STARTING DIVISION	NOTES
Taipan 5.7			69.5	2	Sloop - 2 up trap
Taipan 5.7 Spin			64.5	3	Sloop - 2 up trap (Spin of 23 m <sup>2</sup> )
Tornado International			64	3	*** Post 2001 Class Rules Amendments
Tornado Classic			64.5	3	*** As above but no carbon spars
Tornado Vintage		72		2	*** Pre 2001 sail measurements – No spin, 1 trap
Viper Cat			71.5	3	1 up trap (F16 Compliant)
Viper Sloop		68		3	2 up trap (F16 Compliant)
Weta 4.4 Trimaran (SQ Foam)			86	1	1 up (+3 for 2 up) 8.3 m <sup>3</sup> Pin Head Main +3 GRP Hulls +2 Provided for Race Officer's guidance only. Tentative rating based on limited data – use with caution. SCHRS measurement data is not applicable. Observation of data suggests that there is a wide disparity between light and moderate/heavy air performance, relative to most catamarans
Windrush 4.3 Cat	94.5			1	1 up (Class approved Square Top Main, +1 for Pin Head main)
Windrush 4.3 Sloop		90.5		1	2 up (Class approved Square Top Main, +0.5 for Pin Head main)
Windrush 4.3 Super Sloop	88			1	1 up trap (Class approved Square Top Main, +0.5 for Pin Head main)
Windrush 4.3 Super Sloop Spin			84.5	1	1 up trap (Class approved Square Top Main, +0.5 for Pin Head main)
Yvonne 20			77	3	2 up 1 trap

\* The validity of yardsticks is divided into three categories, which are of statistical and/or historical significance only.

**RELIABLE:** At least several years of extensive, good quality race data is available from major regattas over a wide range of wind/wave conditions and the SCHRS rating is within  $\pm 1.5\%$  of assessed race data.

**PROBABLE:** As for "RELIABLE", but the race data may be of lesser quality/quantity and/or there is a significant discrepancy between the SCHRS rating and assessed race data. There may be a significant bias towards the SCHRS rating.

**TENTATIVE:** The class is new/revised and/or race data is nonexistent and/or unreliable or of questionable quality. The yardstick is largely determined based on SCHRS measurement data.

\*\* Where there is any doubt, Foam Sandwich Hulls are assumed.

- \*\*\* The A Class and Tornado classes have been divided into multiple divisions, as defined in the respective notes. This has been provided primarily for racing at Club level, to reflect that many older examples of these classes, uncompetitive with contemporary designs, or made so as a result of changes to class rules/restrictions, are still sailing in significant numbers.
- Φ Refers to one of 2 recognised "Vintage" F18 designs (generally uncompetitive with more contemporary F18 designs) which have been rated separately under SCHRS measurement data as a "one design" class.
- θ The International A-Division Catamaran Association (IACA) continues to preside over a major "development" design phase, following the introduction of "Foiling" designs at the 2014 World Championships. . "Foiling" designs are evolving rapidly and the listed A Class (Flying) yardstick is rated as "tentative", as designers continue to explore and challenge the limits of the technology within class rules and crews adapt to the physical and technical challenges. The "Flying" and "Classic" divisional terminology under KCC yardsticks is consistent with that of SCHRS for the A Class.