

HANDICAPS AND HOW THEY ARE APPLIED AND CALCULATED AT DARWIN SAILING CLUB

1. APPLICATION

For OTB classes the Yardstick is first applied to give a **Yardstick Corrected Time (YCT)**. This is calculated as:

$$YCT = \frac{\text{Elapsed Time} \times 100}{\text{Yardstick}} \text{ eg. } 1:18:52 = \frac{1:25:11 \times 100}{108} \text{ for a Tasar}$$

The handicap is then applied to give the **Corrected Time (CT)**. This is calculated as:

$$CT = YCT \times \text{Handicap} \quad \text{eg. } 1:07:12 = 1:18:52 \times .852$$

For Divisions 0, 1, 3 & 4 the **Corrected Time** is:

$$CT = \text{Elapsed Time} \times \text{Handicap.}$$

The Table below shows this process for Division 2.

Place	Sail No	Boat Name	Elapsd	HC	YS	YCT	Cor'd T	Skipper
1	1767	29er	0:33:32	0.671	96.5	0:34:45	0:23:19	John Lynch
2	AUS864	Evolution	0:36:04	0.876	96.5	0:37:22	0:32:44	Kyle Bonney Jed
3	277	Eye of Ra	0:40:58	0.792	96.5	0:42:27	0:33:37	Cruickshank Sam
4	555	No Name	0:51:23	0.961	96.5	0:53:15	0:51:10	Brownscombe

2. HANDICAP CALCULATION

After each race in a series, a new handicap is calculated for the next race. The steps involved are:

- A standard corrected time (SCT) is selected. This can be the CT of the third boat, the average CT of the fleet, or some of the fleet, or many other possibilities. DSC uses the CT of the boat which finishes 45% down the fleet. The number of finishers is multiplied by 0.45 and rounded to the whole number. In the Table above, $4 \times 0.45 = 1.8$ so the second boat is used. For 5 boats $5 \times 0.45 = 2.25$ so again the second boat is used. For 6 boats $6 \times .045 = 2.7$ so use third and so on.
- A Back Calculated Handicap (BCH) is calculated for each boat. This is the handicap each boat would need to dead heat with the standard boat. It is calculated by:
For OTB Boats - $BCH = SCT/YCT$ for keelboats – $BCH = SCT/ \text{Elapsed Time}$.
In the above table, for Eye of Ra, $BCH = 0.771 = 0:32:44/0:42:27$.

If a boat does exceptionally well (or exceptionally badly) in a race compared to the rest of the fleet, the calculated BCH will be much greater (or less) than the boat's handicap for the race. For this reason BCH's are limited to between +6% and -4% of handicap. Topyacht refers to these as CBCH (constrained BCH)

- Finally the new handicap (called the Calculated Handicap CHC) is determined using one or more CBCH's or the existing HC and the latest CBCH.

For the **weighted average** method, the CHC is the average of the last 3, 4 or 5 CBCH's. Topyacht recommends 4.

For the **exponential** method $CHC = 2/3HC + 1/3 CBCH$. The fraction can be varied from 2/3, 1/3 to 3/4, 1/4 or any required value. DSC uses the **exponential** method with 2/3, 1/3.

The following Table shows the results for the Taser fleet in Race 8 of the 1st Pointscore Series. It can be seen from this table that:

- The "standard boat" for 8 finishers is the 4th boat and its handicap does not change.
- Boats finishing 1, 2 & 3 have their handicaps increased.
- Boats finishing 5 to 8 have their handicaps reduced.
- For all but the last 2 finishers the BCH and CBCH is the same. For the last 2 boats the calculated BCH is outside the limit of +6% -4% of handicap so the limit value is applied.

Place	Sail No	Boat Name	Elapsed	AHC	YS	YCT	Cor'd T	BCH	CBCH	CHC	Fin Tim
1	2319	Lumiere	0:40:12	0.772	108	0:37:13	0:28:44	0.814	0.814	0.786	11:59:12
2	2899	Tequila Sunrise	0:35:35	0.883	108	0:32:57	0:29:06	0.919	0.919	0.895	11:54:35
3	2930	Too Shifty	0:34:31	0.944	108	0:31:58	0:30:10	0.947	0.947	0.945	11:53:31
4	1047	Something in the Water	0:38:37	0.847	108	0:35:45	0:30:17	0.847	0.847	0.847	11:57:37
5	2846	Whammy!	0:36:44	0.916	108	0:34:01	0:31:09	0.890	0.890	0.907	11:55:44
6	2904	Crackerjack	0:39:43	0.854	108	0:36:46	0:31:24	0.824	0.824	0.844	11:58:43
7	2126	Euphoria	0:48:40	0.706	108	0:45:04	0:31:49	0.672	0.678	0.697	12:07:40
8	1962	Zillow	0:51:02	0.727	108	0:47:15	0:34:21	0.641	0.698	0.717	12:10:02