Race Handicapping Explained

Matt Butterworth – Club Handicapper

Handicapping, in particular performance handicapping, must seem mysterious and, at times, unfair. Hopefully the following will clarify the principles of handicapping and the processes used.

Handicaps are used to calculate and adjust race results to account for the different size and design of race boats. There are two types of handicaps – Measurement and Performance.

Both apply a time correction factor to the elapsed time taken to get around the course e.g. a boat with a handicap of 0.750 with an elapsed time of 100 minutes will have a corrected time of 75 minutes.

As the name suggests, measurement handicaps like AMS, IRC and ORC involve taking physical measurements of each boat and using a formula to determine a time correction factor. Once calculated, the boat will be issued with a handicap that will remain the same for all races. This measurement handicap can be adjusted if changes are made to the boat e.g. adding or removing an asymmetric spinnaker.

Performance Handicaps are adjusted after each race and use the performance of the boat to calculate the projected pace for the next race. This allows crews of different abilities and boats of different designs to compete together on an equitable basis. The aim is to give every boat the opportunity to win if it's sailed well and in favourable conditions.

Performance handicapping for a race series starts with the Allocated Handicap (AHC), derived from historical performance data - normally the previous season's series.
Ideally, the AHC of the first race is the final corrected handicap (see below) from the final race of the previous season's series.
Boats will have differing AHC's across different series. Why? Performance often and does vary from the Two-Handed series to the Long Distance series to the Female Helm series.

If the boat is new to our club then race results from previous clubs is used and adjusted for inter-club differences. This process often includes contacting the previous club's handicapper.
And if it hasn't raced before, data is used from multiple sources such as:
- comparison to a fixed measurement handicap (AMS, ORC);
- 'Classmarks' database which gives high/low/average performance for all boat designs that raced in the previous year;
- comparing to known performance of the same boat design, particularly in our club;
- knowledge of the helmsperson's and crew's abilities, the boat's condition, sail wardrobe and any modifications.

So now we have an AHC.

After a race has been run, the **actual** performance of the boat is automatically calculated by Top Yacht software to give us a Back Calculated Handicap (BCH).

Then, using a complex but established formula, the Calculated (or Corrected) Handicap (CHC) is automatically calculated by Top Yacht.

This CHC becomes the AHC for the next race. And so on until the series is complete.

For example, in a recent Long Distance race, HBYC boat Doris Jean had an AHC of 0.755, BCH of 0.771 and CHC of 0.760. See example below. This CHC becomes the AHC for the next race in the series.

Fin Tim	Elapsd	AHC	Cor'd T	BCH	CHC	Score	ETOrd
15:13:18	04:13:18	0.818	03:27:12	0.893	0.829	1.0	1
15:16:52	04:16:52	0.824	03:31:40	0.881	0.835	2.0	2
15:18:06	04:18:06	0.843	03:37:35	0.877	0.854	3.0	3
15:53:43	04:53:43	0.755	03:41:45	0.771	0.760	4.0	6
16:00:01	05:00:01	0.742	03:42:37	0.754	0.746	5.0	8
15:50:09	04:50:09	0.780	03:46:19	0.780	0.780	6.0	5
15:44:09	04:44:09	0.817	03:52:09	0.796	0.810	7.0	4
16:21:44	05:21:44	0.734	03:56:09	0.703	0.724	8.0	10
15:53:50	04:53:50	0.812	03:58:36	0.770	0.801	9.0	7
16:23:37	05:23:37	0.743	04:00:27	0.699	0.733	10.0	11
16:07:36	05:07:36	0.811	04:09:28	0.736	0.811	11.0	9
16:57:45	05:57:45	0.741	04:25:06	0.633	0.741	12.0	12
17:32:00	06:32:00	0.678	04:25:47	0.577	0.678	13.0	13

Top Yacht is basically an advanced calculator using established formulae.

Without going into detail, a boat's CHC is its AHC adjusted by a fixed percentage towards its BCH.

There's limits to how much it's adjusted however, so that a boat that performs well above its AHC won't be overly penalised.

Likewise, a boat that performs well below its handicap won't gain too much of an advantage in the next race by having a large drop in its handicap.

In fact, a boat that performs significantly below its AHC is regarded as being outside the 'clamps' and won't have its future handicap adjusted at all i.e. the last 3 boats above.

But one of the handicapper's roles is to review the results of each race, especially the first few races of a series, to look for any boats that may have been over or under handicapped.

A manual adjustment to the handicap may be necessary as the formula takes some time to catch up. This most commonly occurs with a new entry or change of ownership.

This process occurs in the background of pursuit racing too but is less subtle as handicapping adjustments are applied in 2 minute increments.

A winning boat that wins by 2 minutes will generally have their handicap group increased by two minutes. A boat that wins by a very large margin may have its handicap group increased by 4 or even 6 minutes. But a boat that wins by a small margin may not have its handicap group increased. Boats at the back of the fleet will normally have their handicap reduced.

Clearly, the performance of a boat is affected by changes such as:
- change of helmsperson;
- significant change of crew e.g. having 'gun' crew members for a particular race or series or having a novice crew;
- hull or rig changes;
- new or different sails etc.

In order to keep the racing fair, it's important for owners to advise the club handicapper of changes like those described above.
It doesn't necessarily mean the handicap will go up. Indeed, handicaps have been reduced due to novice crew or a new helmsperson.
Please email any changes to the Sailing Coordinator, Stephen Cheney: racing@hbyc.org.au
These will be passed onto the handicapper.

I hope this article goes some way to clarifying handicapping principles and the underlying fairness of a system that has evolved and been used for decades.