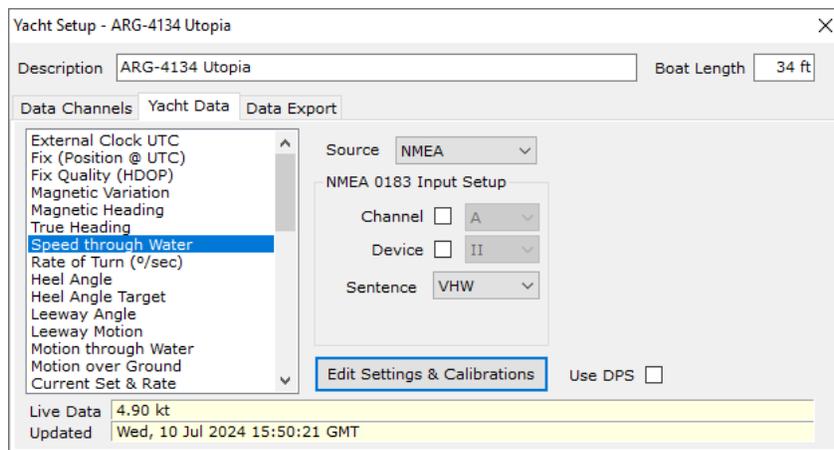


Boat Speed Calibration - B&G H5000 or Hercules Version

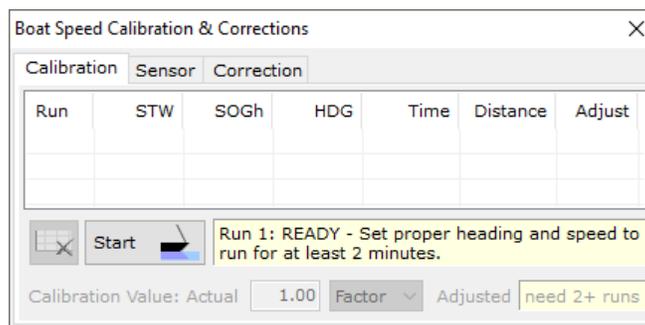
The following procedures are intended to calibrate the boat speed, obtaining the percentage of adjustment to be entered into a B&G H5000 or Hercules instrument system.

Method

This procedure is carried out under engine power, using the boat speed calibration tool, which can be accessed through the menu "Evolution > Yachts > Setup Active [Yacht Data] Speed Through Water" and the "Edit Settings & Calibrations" button.



The system will present a specific form for calibrating and correcting boat speed.



The procedure is straightforward. You will sail a distance at a constant speed of approximately 5 knots, maintaining a fixed course for 2 minutes or longer. Then, without changing your speed and turning to head in the opposite direction (180°), you will sail the second leg. The system will average the adjustments in both directions, neutralizing the effect of the current.

Preparation

1. On the B&G H5000 or Hercules processor
 - a. Set the adjustment factor of the boat speed to 100%.
 - b. Set the entire "Heel Correction" table to 0, and record the existing values beforehand.
2. In EVOLUTION
 - a. In the "*Boatspeed Calibration & Corrections*" form in the "*Sensor*" and "*Corrections*" tabs, make sure that the "Apply..." buttons are turned off.



These factors should never be activated, as it is the H5000 or Hercules processors that make the corrections to the sensor and apply the linearity adjustments (Heel Correction). In this scenario, EVOLUTION assumes that the speed it receives is that of the instrumentation and does not require additional adjustments.

Acceptable Conditions for Calibration

1. Clean the speed sensor thoroughly, removing any organic growth and ensuring it is in perfect physical condition.
2. Clean the bottom of the boat, particularly in the area directly in front of the sensor.
3. Perform the calibration on a day with stable sea conditions, minimal wind, and calm waves.

Calculate the % of Boat Speed Adjustment

This method compares the speed of the boat referenced to the sea bottom (as measured by GPS) with the speed through the water (as measured by a sensor).

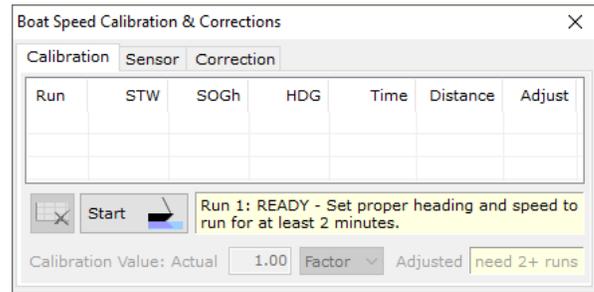
To eliminate the influence of the current, two runs are navigated in opposite directions to average the recorded adjustment values for each run.

To complete the runs without inconvenience, take the boat out on the engine to a calm-water location where it can sail for at least half a mile and maintain a constant speed and course for a minimum of two minutes. It is advisable to avoid areas with swirling currents.

Important: Before navigating the runs, enter the H5000, or Hercules, for 100% boat speed correction.

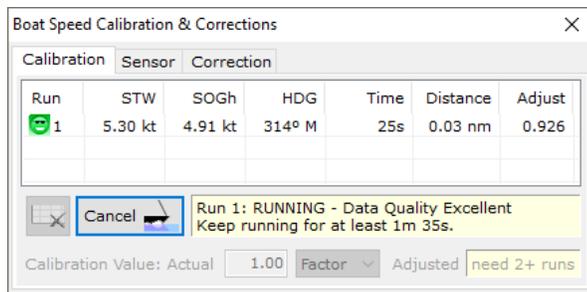
Step 1 – Open the Speed Calibration Tool.

1. In EVOLUTION, use the menu option "Evolution > Yacht > Setup Active" to open the "Yacht Setup" form. In this form, select the [Yacht Data] tab, and from the list on the left, choose the item "Speed through Water".
2. Finally, click the "Edit Settings & Calibrations" button to open the "Boat Speed Calibration & Corrections" form.



Step 2 – Navigate each Run.

Each run must last at least 2 minutes; extending the run time to 3 or 4 minutes improves the final result. It is necessary to make at least two runs in opposite directions to eliminate any effect of the current. Completing a third run is optional and recommended only if the current flow is changing.



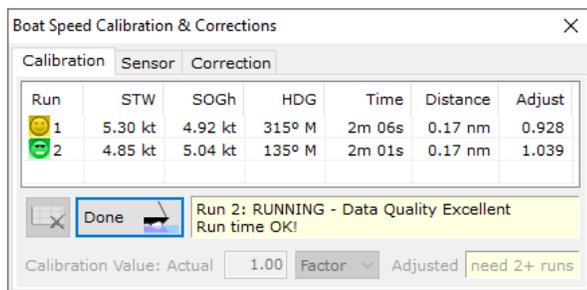
1. With the boat sailing at the desired speed and course, use the "Start" button to start the run. During navigation, this button is labeled "Cancel" and allows you to cancel the current run.
2. After sailing for more than 2 minutes, this button will display "Done", and you should click on it to complete the leg.

The form contains information on the navigation of the run, including speeds arriving from the boat speed (STW) and GPS (SOGh), heading, and time. The right-hand column (Adjust) shows the adjustment value as it is calculated.

EVOLUTION will monitor the quality of the data during the navigation of each leg. If the heading or speed is not constant, the data quality will drop from "Excellent" to "Good", "Poor", or "Failed". The first column (Run) displays the corresponding icons: 😊, 😐, 😞, and 😡.



When a run fails, the system displays a message with the problem. The run can be deleted immediately using this button. The system will not allow it to continue as long as the failed run remains.



The figure on the left illustrates an example where you only need to complete the navigation of the second run by using the "Done" button.

Both runs must have the best possible quality. If conditions are not ideal, it is advisable to postpone calibration for a better time.

Practical Tips

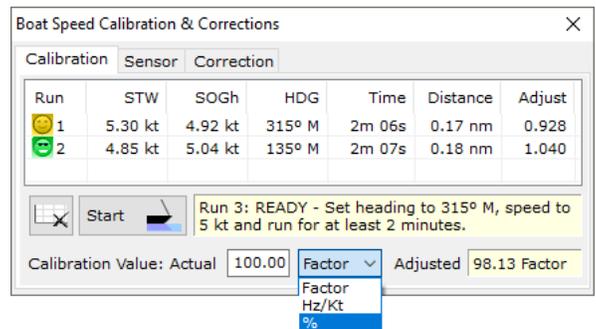
- Choose to calibrate at a speed of 5 knots; this will simplify the loading of other calibrations.
- To ensure consistency between both legs, adjust the engine RPM to the appropriate speed and run the legs perpendicular to the wind waves.

- The opposite runs should be performed in the same area and immediately after the previous one(s), while avoiding the turbulent path left by the navigation of the prior run.
- Choose an area with relatively constant currents, avoiding areas of eddies.
- For each leg, the "Adjust" column will give an idea of the discrepancy factor between the GPS (land speed) and the boat speed sensor. The value 1 indicates that there is no discrepancy; and, for example, a value of 1.1 indicates a disparity of 10%.

Step 3 – Calculate a New Value % of Fit to Enter into the B&G Processor.

After navigating two successful runs, the bottom of the form is enabled.

1. In the left box, enter the value of 100%, as this was the setting value used on the B&G H5000 or Hercules processor during leg navigation.
2. Then, in the selection list, choose "%", which is the B&G adjustment method for these processors. Now, the reading that appears in the box on the right will be the correct value in percentage (%).



Step 4 – Enter the New Boat Speed Correction Value (%)

Once you know the setting value, enter it into the H5000 or Hercules processor.

Remember to reload the values from the "Heel Correction" table, considering that the calibration value 0 corresponds to the speed you chose for navigating the runs.

If you have chosen to calibrate at 5kt, you can load the following correction table on the H5000:

Heel Correction	En kt de corrección en referencia a una calibracion base a 5 kt					
STW/HEEL	2.5 kn	5.0 kn	7.5 kn	10.0 kn	12.5 kn	15.0 kn
Heel 0º	0.30	0.00	-0.38	-0.80	-1.40	-1.95
Heel 10º	0.28	-0.05	-0.45	-0.90	-1.53	-2.10
Heel 20º	0.25	-0.10	-0.53	-1.00	-1.65	-2.25

Step 5 – Perform a Final Check

Close the speed calibration tool form and repeat the entire process (steps 1 and 2) to validate the calibration performed until you get an average adjustment between 0.98 and 1.02