Calibration - The Basics

UU097-rev05

Français Retrouver ce guide en français au site Web www.raymarine.com.

Deutsch Eind deutsche Ausgabe dieser Anleitung finden Sie bei www.raymarine.com.

Español Para obtener una versión en español de esta guia, vaya a www.raymarine.com.

Italiano Per la versione in lingua italiana di questa guida, vedere www.raymarine.com

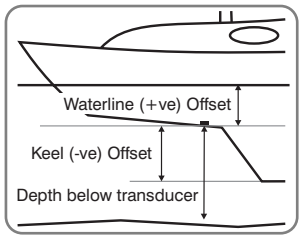
Nederlands Ga voor een Nederlandse versie van deze handleiding naar www.raymarine.com

Raymarine has taken great care to keep calibration simple, - but it does require a little effort. For the best results, please follow this guide carefully in the order listed.

Refer to your individual product guides for details on using the setup functions.

Carry out calibration in steady conditions, with light wind, calm water and slack tide.

Depth Offset



By adding an appropriate +ve or -ve offset the system can be configured to show depth below the waterline or depth below the keel respectively.

The factory default is a keel (-ve) offset of 3.5 feet.

For inshore sailing you may wish to use a keel offset; offshore, a waterline offset may be preferred.

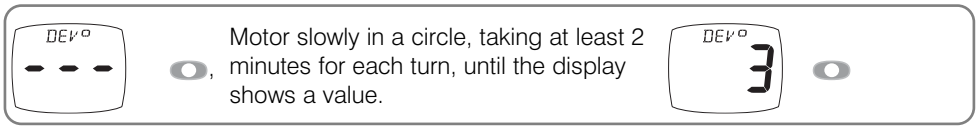
Use the ***Keel/Waterline Offset*** page in Setup.

sets a keel offset of 1.5m

Compass Deviation

To ensure that inaccuracies caused by metallic and magnetic objects on the boat are kept to a minimum it is essential to calibrate the compass for deviation:

Use the ***Compass Deviation*** page in Setup.



Motor slowly in a circle, taking at least 2 minutes for each turn, until the display shows a value.

Compass Heading Alignment

To ensure the compass is correctly aligned fore and aft. Accurate calibration is critical for safe navigation and for the calculation of tidal parameters by the system.

First use the ***Heading Format*** page in Setup to ensure your system is set to display headings as magnetic. Then use the ***Compass Heading*** page in Setup

aligns to a known heading of 175 degrees.

Only use a magnetic steering compass to provide a known heading if you are certain it has been checked and compensated.

Boat Speed

Boat speed measured by the transducer can be affected by the water flow around the hull. After installation, the Speed should be calibrated using a GPS.

Use the ***Speed Calibration*** page in Setup

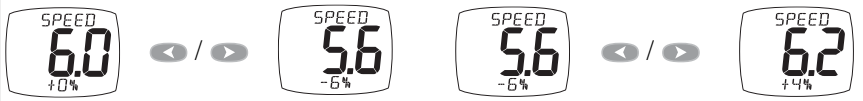
With the boat under power, steer directly into the tide. Allow the boat speed to settle to a constant value. Check the GPS is showing a constant SOG.

Adjust the speed displayed in the calibration page to match the SOG. Note the displayed correction factor.

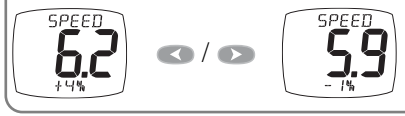
Repeat the above process with the boat steering directly with the tide.

Finally, adjust the displayed correction factor to the average of the two correction factors noted above.

Uptide SOG = 5.6. Downtide SOG = 6.2



Average correction factor = (-6 + 4) divided by 2 = -1



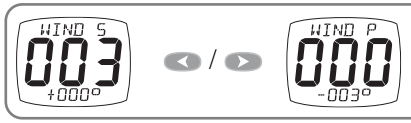
If you are unable to carry out this procedure due to strong tides or poor GPS data, go to www.raymarine.com for information on speed calibration using a measured distance.

Wind Angle

The measured wind angle may be inaccurate if the wind transmitter arm is not accurately aligned fore and aft. After installation calibrate the wind angle as follows:

Use the ***Wind Angle*** page in Setup

On a calm day, motor the vessel directly into the wind. Adjust the displayed wind angle to 000°.



Raymarine® Calibration for Racing

All racing calibration should be done in steady conditions, calm water and slack tide; ideally with overcast cloud to minimise environmental effects, e.g. thermal gusts and shifts. Repeat each calibration until no further correction is required.

Wind Angle

The wind speed should be in the range 8 to 15 knots. Do not attempt this calibration if there is any possibility that wind shear is significant. Wind shear will cause the mainsail to be twisted differently on port and starboard tacks and will create a difference in masthead apparent wind angles on port and starboard tacks.

Use the ***Wind Angle*** page in Setup.

Sail close hauled on port tack using optimum trim settings, note the displayed wind angle.

Tack and sail close hauled with the same trim settings, note the displayed wind angle.

Finally, adjust the displayed wind angle to the average of the noted values.

Port Tack Starboard Tack Average angle = (027 + 033) ÷ 2 = 030

Boat Speed - Tack to Tack Correction

The measured boat speed may read differently on port and starboard tack, due, for example, to the transducer being off the centre line of the boat.

Use the ***Tack to Tack*** page in Setup (only on the Maxi, Dual Maxi and Race Master).

Sail the boat close hauled on port tack. Allow the boat speed to settle to a constant value. Note this value.

Tack onto Starboard and sail at the same apparent wind angle and with the same sail trim settings. Adjust the displayed speed to the value noted on Port Tack.

Port Tack. Starboard Tack

Airflow correction

The measured wind direction is subject to errors due to aerodynamic effects on the sails, and to heel and leeway. Typically these errors are seen as false shifts in wind direction on opposite tacks when tacking/gybing. There may also be a false change in the wind speed when going from a beat to a run.

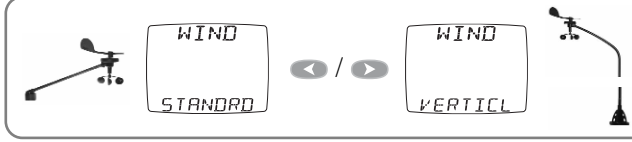
The Maxi Display provides a sophisticated set of default corrections.

Use the ***Airflow Mode*** page in the Maxi Setup to turn Airflow Correction ON.

Then use the ***Airflow Wind*** page to select your Wind Transmitter rod type.

For the most stable results, fitting a vertical rod is recommended.

Changing the rod type will remove all Airflow fine tuning corrections, take care before changing the rod type.



All compatible displays will now show corrected wind data. In the event of problems, check with your dealer that you have the correct software version installed.

If the default corrections are insufficient for your specific boat, manual adjustments can be applied as detailed below:

The Airflow fine tuning process must be carried out separately in each of the wind ranges less than 10 knots, 10 to 20 knots and greater than 20 knots. The system stores and interpolates between all three sets of corrections.

Fine tuning upwind airflow corrections for wind angle

Set your Remote Display to display a graph of True Wind Direction (WINDIR) with a time base of 30 minutes.

Sail several close hauled legs with the same crew position and sail trim settings. Inspect the graph after each tack. If WINDIR on the current tack is reading high or low, apply a correction in the ***Airflow Angle Upwind*** page of Maxi Setup.

WINDIR previous tack = 125, WINDIR current tack = 131, correction = -6.

Current tack WINDIR high, correction negative; WINDIR low, correction positive.

The system automatically takes account of the tack on which you are sailing.

The Airflow calibration pages always open showing a value of zero because the calibration process produces a correction based on the current reading from the system (which already includes any previous corrections). When this correction is entered, any previously stored calibration data is automatically adjusted to take account of the new correction.

Fine tuning downwind airflow corrections for wind angle

Proceed as for Upwind Angle, but sailing downwind, gybing between legs.

Apply corrections using the ***Airflow Angle Downwind*** page.

Fine tuning wind speed airflow corrections

Set your Remote Display to show a graph of True Wind Speed (TWS) with a time base of 30 minutes.

Sail upwind, allowing the boat speed to come to a steady value. Turn to sail downwind, modify the sail plan (e.g. hoist the spinnaker) as appropriate for the conditions and again allow the boat to come to a steady speed. If TWS is reading high or low on the current course, apply a correction using the ***Airflow Speed*** page.