

# REGATTA Compass Sensor

Product reference: 90-60-396



## USER MANUAL & INSTALLATION GUIDE

Version 1.0

**nke** – Sail racing

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# 1 OPERATION

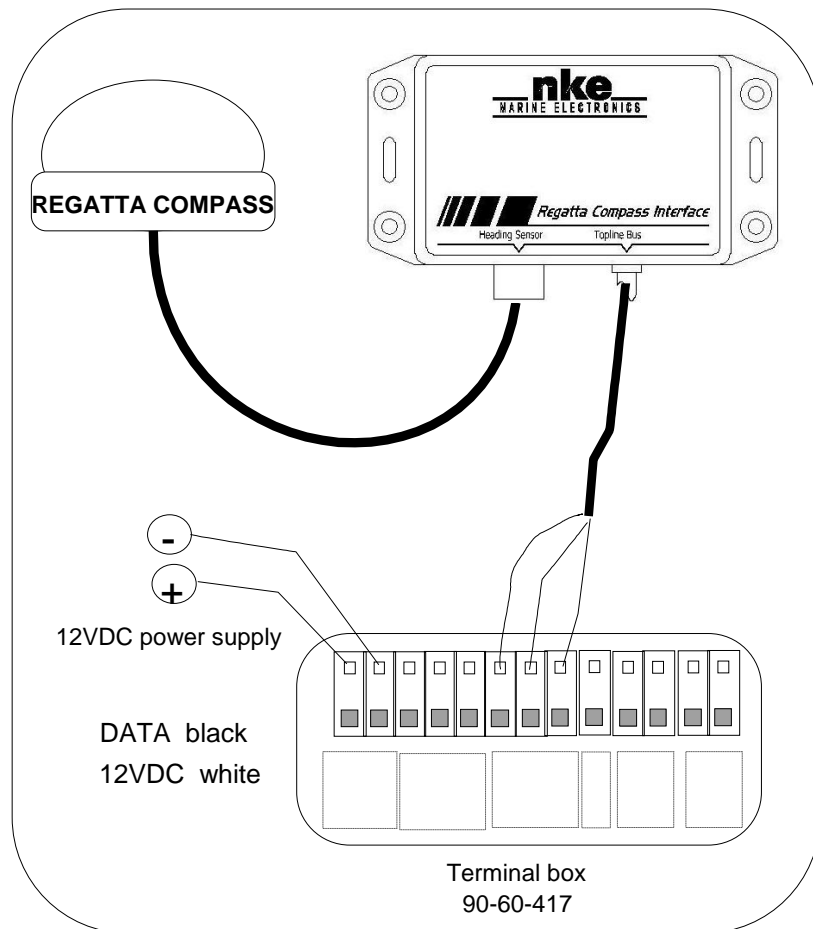
## PRESENTATION

The **Regatta Compass** sensor is a measuring instrument that provides the magnetic heading, heel and pitch of the boat.

It is connected to the **Regatta Compass interface** of your **TOPLINE** installation.

The sensor is equipped with a 10-meter cable, a mounting bracket, two screws and the Regatta Compass interface.

### architecture of the installation



### IMPORTANT

Please read this guide completely before starting the installation.

Any electrical connection on the **TOPLINE bus** must be carried out using terminal box 90-60-121. Only use **TOPLINE bus** cable 20-61-001.

Any intervention on the **TOPLINE bus** must be carried out with the installation power switched off.

For channel settings, please refer to the user guide of your **TOPLINE** display.

## LIST OF CHANNELS DISPLAYED

The **Regatta compass**, connected to the **TOPLINE bus** of your installation, creates the channel below. They are accessible from the displays of the **TOPLINE** range.

Channel	Display	Unit
Magnetic heading	MAGN HDG 245°	Degree
Heel	HEEL	Degree
Pitch	PITCH	Degree

## ALARMS SETTING

The setting of an alarm enables you to monitor the **magnetic heading** you are following. When the preset angle range is exceeded, a warning message is displayed and an audible alarm is activated.

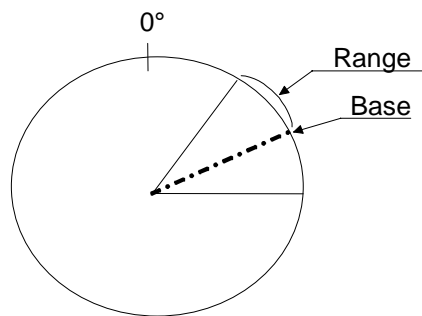
There is no alarm for heel and pitch.

### Procedure

Display the **magnetic heading** channel.

Select the **BASE** sub-channel and enter the value of the reference heading selected for the alarm.

Select the **RANGE** sub-channel and enter the tolerance on either side of the reference heading.



To cancel the alarm, enter the value **0** in the **RANGE** sub-channel.

Thus, the setting of an alarm on the **compass** will allow you to effectively monitor the heading consistency of your boat.

To activate the alarms, please refer to the user guide of your display.

## FILTERING OF THE CHANNELS

The level of **filtering** of a channel determines the frequency of update of the data displayed. For example, in rough sea when the boat moves significantly, it is useful to increase the filtering of the **magnetic heading** channel to stabilise the value displayed. Conversely, in calm sea, low filtering will be preferable to obtain a fast response of the display.

**Filtering** is adjustable between **1** and **32**, and the default value is **8**. The lower this value is, the higher the frequency of update is.

Please refer to the user guide of your display to adjust the filter setting.

## Technical specifications

Power supply: 10 to 16VDC

Power consumption: <200mA (Compass & Interface)

Resolution: 0.1°(with Processor)

Roll and pitch measurement range: +/- 50°

Tightness: IP67

Weight: 270g

Operating temperature: -10°C to +50°C

Storage temperature: -20°C to +60°C

## DIAGNOSTIC FOR 1<sup>ST</sup> LEVEL TROUBLESHOOTING.

This chapter can help you rapidly resolve minor problems which do not require the intervention of a specialist. Before contacting technical support, please check the troubleshooting table below.

Problem	Possible causes and solutions
The <b>Topline</b> installation does not detect the compass.	The bus cable is not or is badly connected to the terminal box : check the plugging inside the terminal box. Check the state of the cables : they must not show any sign of wear or cut.
The magnetic heading displayed is very different from that indicated by the steering compass.	Check that no equipment likely to disrupt the steering compass of your boat or the fluxgate compass is in the vicinity: please consult the list in the installation chapter. Check that the steering compass of your boat is compensated. Carry out a calibration of the compass.

If you do not manage to solve the problem, please contact your distributor.

## 2 SENSOR CALIBRATION

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The **Regatta Compass** is adjusted at the factory. However, an offset adjustment is required to adapt the sensor to the specificities of your boat and to obtain an optimum measurement accuracy. Follow the calibration procedure below, while visualising the settings on a display: please refer to the user guide of your display.

### OFFSET SETTING

#### 2.1.1 Principle

After the installation, it is necessary to adjust the **OFFSET** of the **Regatta Compass** so that the **magnetic heading** displayed is identical to the true magnetic heading. In order to do that, you must carry out an actual test at sea with your boat. Take the GPS unit of your boat as reference, and make sure there is no current and the sea is calm in the area chosen for this test. Follow a set bottom (magnetic) heading and note the heading shown by the **magnetic heading** channel of your display. Then, deduce the difference between the steering compass and the **magnetic heading** displayed : this value is the correction **offset** of the **Regatta compass**.

#### CAUTION:

- If your steering compass is taken as reference, it must be compensated (calibrated) so that the calibration is correct.
- Before setting the offset, you must adjust the mechanical position of the **compass**: refer to the installation chapter.

#### 2.1.2 Procedure for setting the offset coefficient (the default offset value is 0):

- Select the **calib offset** sub-channel of the **magnetic heading** channel.
- Enter the new calculated **offset** coefficient and validate using the **enter** key. The new setting will be saved to the memory.

#### 2.1.3 Procedure for setting the heel offset (the default offset value is 0):

- Select the sub-channel **offset calib** of the **Heel** channel.
- Enter the new **offset** coefficient and confirm by pressing **enter**. The new setting will be saved to the memory.

#### 2.1.4 Procedure for setting the pitch offset (the default offset value is 0):

- Select the sub-channel **offset calib** of the **Pitch** channel.
- Enter the new **offset** coefficient and confirm by pressing **enter**. The new setting will be saved to the memory.

Please refer to the user guide of your display to perform the setting.

## COMPASS AUTOCOMPENSATION

On some boats, the **Regatta Compass** may be strongly disrupted by its environment. Despite a careful installation and an offset properly adjusted, an important difference remains between the **magnetic heading** displayed and the true magnetic heading, throughout the measurement range between **0** and **359°**. In this case, you can perform an autocompensation of the **Regatta Compass** to achieve an acceptable level of accuracy.

### 2.1.5 Autocompensation principle

The operation consists in executing a perfect circle with your boat **at a rigorously constant speed**. Thus, your **Regatta Compass** will be accurately corrected between **0** and **359°**.

### 2.1.6 Autocompensation procedure for the Regatta Compass

In order to achieve a successful autocompensation, you must sail:

- On a smooth sea, with no current,
- Away from large magnetic masses such as cargo ships, buoys, metallic pontoons,...
- At a constant speed of about 2 or 3 knots.

**CAUTION:** the autocompensation operation of the Regatta Compass requires precision in the execution of the circle: it must be done in less than 5 minutes at a constant speed of 2 to 3 knots. If you cannot maintain these two criteria, the autocompensation will not be successful.

1. Display the **magnetic heading** channel.
2. Launch the “autocompensation” mode according to the procedure described in the user guide of your display.
3. Start to describe the circle then launch the autocompensation procedure.
4. One circle is enough to perform the autocompensation correctly.
5. The display then sends out a message to the user indicating that the autocompensation is successful. The number **3** for the **Gyropilot** and the number **3000** alternately with **dashes** for the other displays (**Performance, TL25 and SL50**).
6. Exit the autocompensation mode.

Please refer to the user guide of your display to perform the autocompensation procedure.

Should there be a problem during autocompensation, the display will notify the user of the cause of the fault indicating alternately, for 5 seconds, the message **PANNE** with the following code :

- code 11: Failure through timeout (> 5 minutes) or excessively slow rotation (< 30 sec / 45°).
- code 12: Failure through excessive heel.
- code 13: Any other error.

In case of autocompensation error, the measurements are not saved to the memory and the sensor resumes its normal operating mode.

### 3 INSTALLATION

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Before starting the installation, take the time to select the most appropriate location for the sensor. Indeed, the **Regatta Compass** and its **TOPLINE** interface, just like the steering compass of your boat, is sensitive to metal masses, the movements of the boat and the disturbances caused by electrical appliances. Although it can be autocompensated, the installation must be carefully carried out in order to achieve an optimum level of accuracy.

#### LIST OF ACCESSORIES

- TOPLINE Terminal box: 90-60-121
- TOPLINE bus cable: 20-61-001

#### INSTALLATION PRECAUTIONS

The location of the sensor must be:

- as close as possible to the pitch and roll centres of the boat; the closer it is to the centre of gravity, the more stable the measurement will be.
- more than one metre away from onboard magnetic compasses (to avoid a mutual disturbance).
- as far as possible from onboard magnetic masses.
- With the least amount of vibration.
- Do not install the compass inside boats with a steel hull. A position on the mast can be considered on this type of boat.

Below is a list of equipment likely to disrupt a fluxgate compass:

- The keel of the sailing boat (when it is made out of cast iron or steel).
- The radio and radar equipment.
- The boat's engine.
- Generators and battery chargers.
- Voltage regulators.
- Electrical motors.
- Tool boxes and anchors.
- The electrical windlass.
- High voltage electrical cables.

Before installing the **Regatta Compass**, you can check that the location will not be disrupted by following the procedure below:

Place a bearing compass at the selected location. Then, with your boat, execute a full 360° circle in order to compare the information provided by the steering compass and the boarding compass. If the variations are less than 10°, the location is suitable.

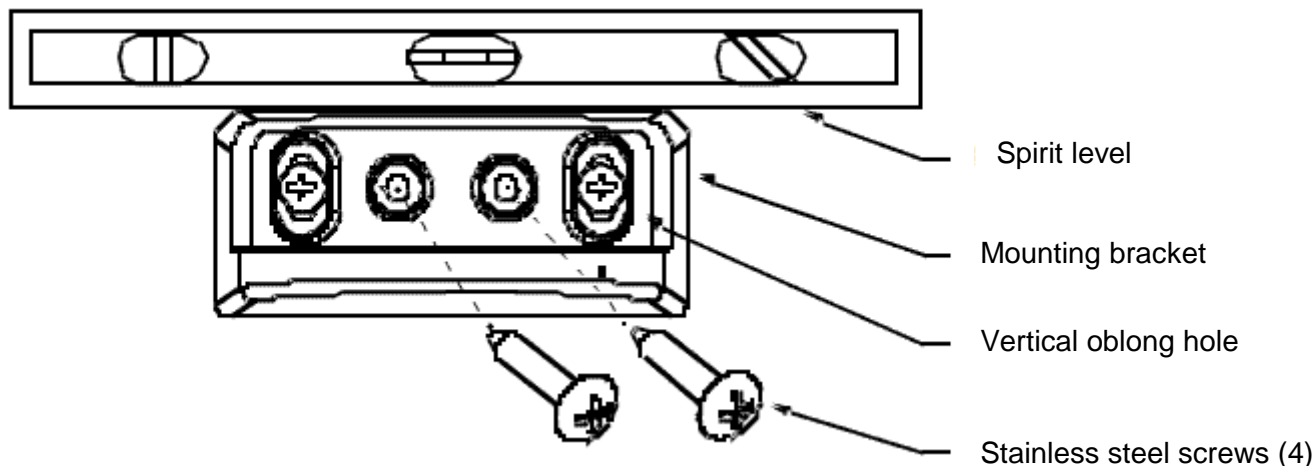
Also make sure you will be able to run the cable without being too close to the high amperage cables, such as those of the generator motor and batteries. Keep a distance of at least 1 metre between the cables.

<p><b>CAUTION:</b> the metal spanner that you use when screwing the nut disrupts the compass. Move the spanner away from the compass when you check the magnetic heading displayed.</p>
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## INSTALLING THE COMPASS ON A VERTICAL SURFACE

- Using a spirit or electronic level, mark the mounting holes of the mounting bracket at the chosen location.
- Drill the 4mm holes and screw the self-tapping stainless steel screws.
- Drill 6mm holes for the mounting bracket centre screws.



## Sensor preparation

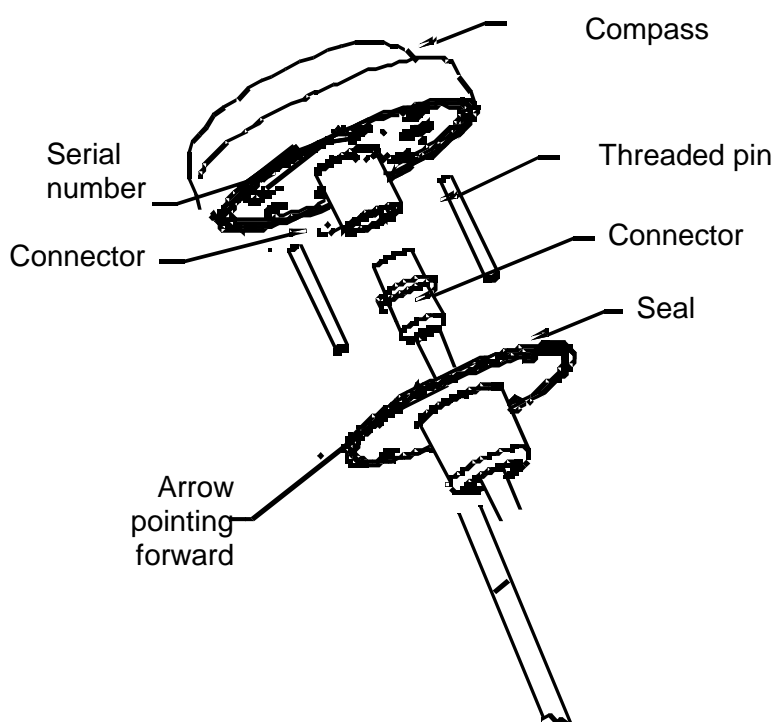
There are two ways to install the sensor:

### Using threaded pins:

This method is easier for the user because it allows the position of the compass to be adjusted. However, these screws will protrude under the sensor by about 20mm, which can prevent the compass from being installed in a limited space.

Install the cable and the seal on the compass.

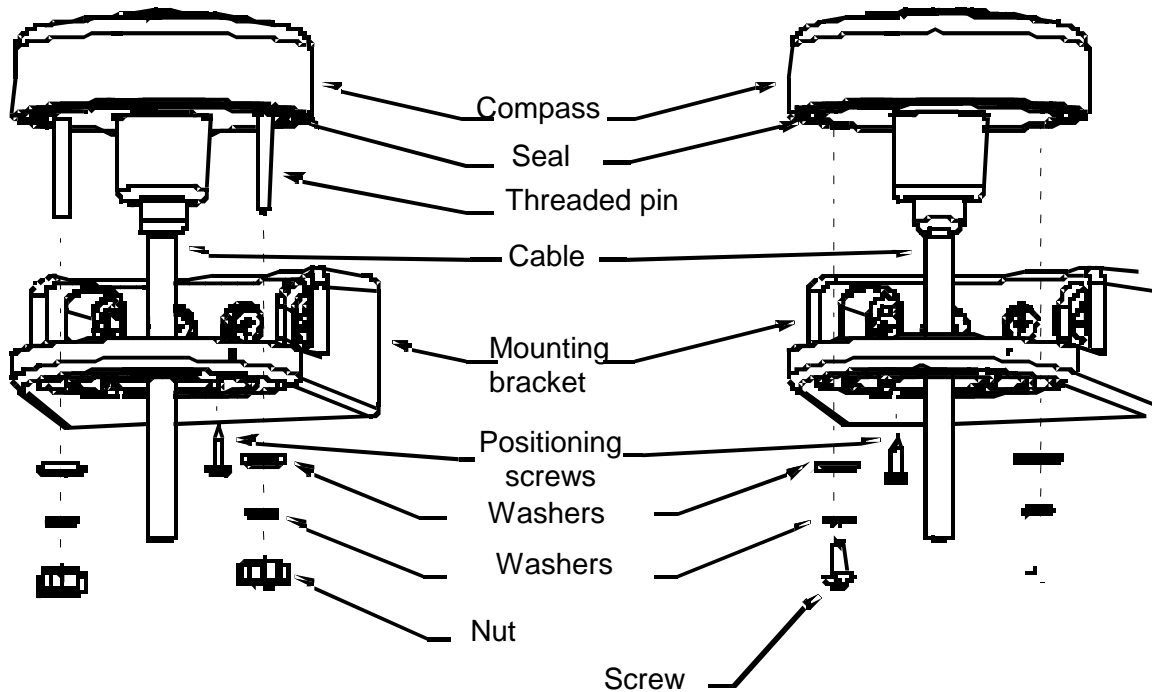
Screw the pins onto the compass.



## Using screws:

The screws allow the space needed for the compass and its mounting bracket to be optimised.

## Installation of the compass



Pass the connector of the compass through the seal.

Connect the cable to the compass.

Insert the seal onto the compass so as to match the mounting holes between the compass and the seal.

Pass the cable through the mounting bracket and place the compass onto its mounting bracket.

Line up the "Forward" arrow with the centreline of the boat.

Screw the mounting screws or nuts, depending on the chosen solution.

Make sure the axis of the compass has not moved while tightening the screws or nuts.

## Installing the compass on a horizontal surface

Pass the connector of the compass through the seal.

Connect the cable to the compass.

Insert the seal onto the compass so as to match the mounting holes between the compass and the seal.

Drill the holes for the threaded mounting pins of the compass using a  $\varnothing 6\text{mm}$  drill bit.

Drill the cable hole using a  $\varnothing 38\text{mm}$  drill bit.

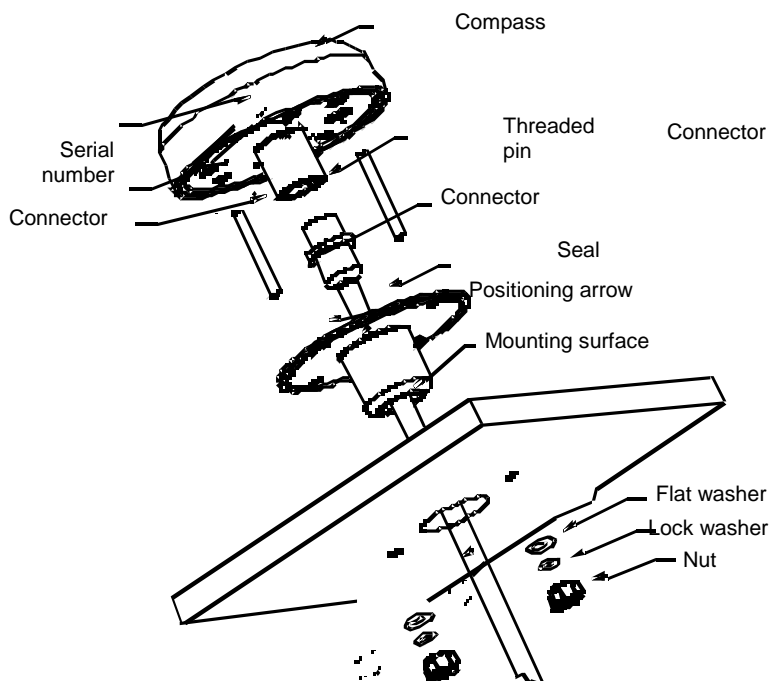
Pass the cable through the hole.

Position the compass on the surface.

Screw the threaded pins onto the compass.

Place the flat washers and lock washers on the pins.

Hand screw the nuts onto the pins.



## CONNECTION TO THE *TOPLINE BUS*

1. Run the **compass** bus cable to the **interface of the Regatta Compass** of your installation.
2. Connect the bus cable of the Regatta compass interface to a terminal box.
3. Connect the bus cable inside the terminal box:

If you reduce the length of the bus cable, strip and galvanise the wires before connecting them inside the terminal box.

