Speedometer log sensor

Paddlewheel

Product reference : 90-60-457

USER GUIDE
and
INSTALLATION GUIDE

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1   USING

1.1   Presentation

The *speedometer log* sensor is fitted via a through-hull. It can be removed via the through-hull.

It is connected to the *depth-finder log interface* of your *TOPLINE* installation. This sensor provides on the one hand the information on speed and distance covered by the boat, and on the other, the water temperature.

Architecture of the installation
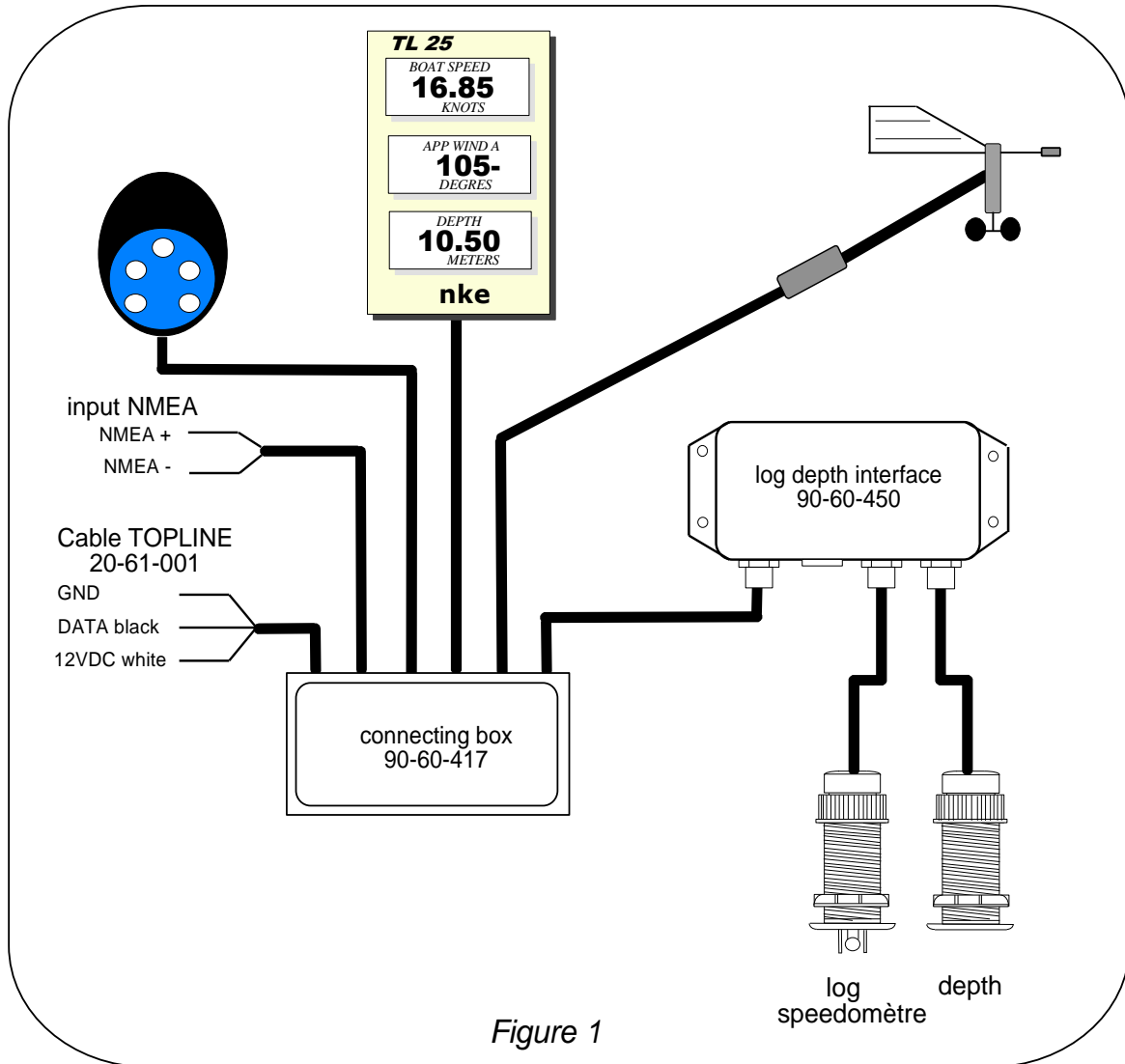
Figure 1

IMPORTANT :

-   Some products, for cleaning, painting or other, contain powerful solvents, which can severely damage the plastics and O-rings of the sensors.

-   Plastic through-hulls are recommended for assembly on hulls made of fibre, aluminium or metal. For assembly on a wood hull, use a bronze through-hull.

-   The sensor is equipped with a 6 meter cable, with a moulded waterproof connector at its end : do not cut this cable, as this would reduce the characteristics and reliability of the sensor.

-   For channels settings, please refer to the guide of your TOPLINE display.

1.2 List of channels displayed

The **speedometer log sensor,** connected to the **TOPLINE bus** of your installation, automatically creates the channels below. They are accessible using the displays of the **TOPLINE** range.

Channel	Display	Unit
Surface speed	Surf spd **0.00**Kt	km/hr or knot
Daily log	Day log **0.00**NM	Nautical mile
Total log	Total log **0.00**NM	Nautical mile
Bus voltage	Bus volt **12.5** V	Volt
Water temperature	Water temp **15.4°**	°C or °F

1.3 Alarms setting

The setting of an alarm enables you to monitor the value of a channel. When the preset threshold is exceeded, a warning message is displayed and an audible alarm is activated. For example, you can set an upper threshold and a lower threshold on the **surface speed** channel.

The upper alarm is activated when the display is higher than the programmed threshold.

The lower alarm is activated when the display is lower than the programmed threshold.

To cancel the alarm of a channel, enter the value **0** in the upper alarm and the lower alarm.

Thus, the setting of an alarm on the **speed, bus voltage or water temperature** channels will allow you to supervise your **TOPLINE** installation effectively, as well as the good operation of your boat.

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

CAUTION : The **water temperature** channel has a distinctive feature. To cancel the alarm of this channel, enter the value **0,** when the unit is the degree Fahrenheit, or **-17.7,** when the unit is the degree Celsius.

1.4 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 speed 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 carry out the filter setting.

1.5 Choice of the unit

You have the option to choose the display units of the channels:

- Speedometer : in knots or in km/hr,

- Water temperature : in degree Fahrenheit or in degree Celsius.

Please refer to the user guide of your display to carry out this change of units.

1.6 Zero setting of the daily log and total log

The channels *daily log* and *total log* are at your disposal on your display.

You will use the daily log to count the number of nautical miles completed during a sailing leg. The value is kept in memory when the power supply of your installation is cut off. Resetting the *daily log* channel to zero will allow you to count the number of nautical miles of the following sailing leg.

The *total log* indicates the number of nautical miles completed since the installation of your *depth-finder log interface*. Only a complete initialisation of your *depth-finder log interface* allows to reset the *total log* to zero. It is performed by initialising the *surface speed* channel.

> **CAUTION** : If you perform a complete initialisation, you also initialise the settings of **filtering, calibration, alarm, offset, daily log and total log.** In that case, you apply the default factory settings to the *depth-finder log interface* : filtering = **8** ; calibration coefficient = **1** ; Offset = **0**.

To set the *daily log* or the *total log* to zero, please refer to the user guide of your display.

1.7 Technical specifications

- Tightness : IP67
- 6 meter cable fitted with a moulded connector.
- Weight : 700 g
- Operating temperature : -10°C to +50°C
- Storage temperature : -20°C to +60°C
- Speed measurement range : 0 to 50 knots
- Temperature measurement range : 0°C to +50°C

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2   SENSOR CALIBRATION

Every *nke* sensor is adjusted at the factory. However, a calibration is required to adapt to the specificities of your boat and to obtain an optimum measurement accuracy. Follow the calibration procedure below, by visualising the settings on a display. To perform these settings, please refer to the user guide of your display.

2.1   Principle of calibration :

It consists in executing a course with your boat, with a true distance, **D** miles, that is known, and taking down the number of miles indicated by the log, **L** miles. Then, you calculate the calibration coefficient according to the formula : **D / L**.

Example:

The course measured on the chart between two sea-marks is : **D** = 1.43 MILES
The number of miles indicated by your log for this course is : **L** = 1.10 MILES
The calibration coefficient calculated is 1.43 / 1.10 = **1.30**.
To ensure the calibration is effective, you will execute a return journey, to cancel the effects of the current, and in excess of 1 mile.

2.2   Setting procedure of the calibration coefficient :

To achieve a successful calibration, follow the indications below :

- Sail with the engine, on calm sea, with no wind and at slack water.

- Execute a return journey over a perfectly known distance.

1. Select the sub-channel **calib offset** of the channel **surface speed.** By default this coefficient is **1.00**. If that is not the case, enter the value **1.00**
2. Select the channel **Daily log** of the display and set the log to zero.
3. Execute a return journey between the two selected sea-marks.
4. Read the total distance (return journey) measured by the log.
5. Perform the required calculation in order to determine the calibration coefficient **D / L**.
6. Select the **calib coef** parameter of the **surface speed** channel once again.
7. Enter the new calibration coefficient calculated and validate by pressing the *enter* key. The new setting will be saved to the memory.

CAUTION : The **calib coef** parameter is a multiplier coefficient. This value must never be equal to zero. By default this coefficient is set to **1.00**. If it is not the case, before starting a calibration enter the value **1.00.**

2.3   Offset setting procedure (by default the offset value is **0.00**) :

Example : When stationary, the speedometer indicates **0.58.** The speedometer offset to set is thus **- 0.58.**

1. Select the sub-channel **calib offset** of the **surface speed** channel.
2. Enter a **- 0.58** offset and validate by pressing the *enter* key. The new setting will be saved to the memory.

3   INSTALLATION

3.1   Packing list

The installation kit includes :

- the sensor, equipped with a 6 meter cable and a waterproof connector,
- the through-hull fitting and its nut,
- one seal,
- one stopper,
- one tube of silicon grease and one safety wire.

3.2   List of accessories

- Speedometer log sensor, paddlewheel : 90-60-463
- Log through-hull kit, stopper and tube of silicon grease : 31-35-001
- Spare vaned rotor : 31-35-003

3.3   Specific tools required for the installation

The drilling of the hole for the through-hull is performed using a Ø 51mm crown saw drill bit fitted with a guide pin.

3.4   Choice of the location

The choice for the location of the speedometer log sensor is crucial to achieve optimal performances. Turbulences caused by the water flow under the boat can significantly disrupt the operation of the speedometer.

The sensor must be :

- as vertical as possible, not more than 10° off the vertical,
- as close as possible to the axis of the boat,
- sufficiently far from the keel,
- always immersed, no matter what the heel,
- away from any source of electrical disturbance,
- accessible so it can be cleaned from the inside of the boat.

It is imperative that the water streams get to the sensor unperturbed.

On a sailing boat : the ideal position of the sensor is in front of the keel, along the axis of the boat.

Figure 2 : recommended location
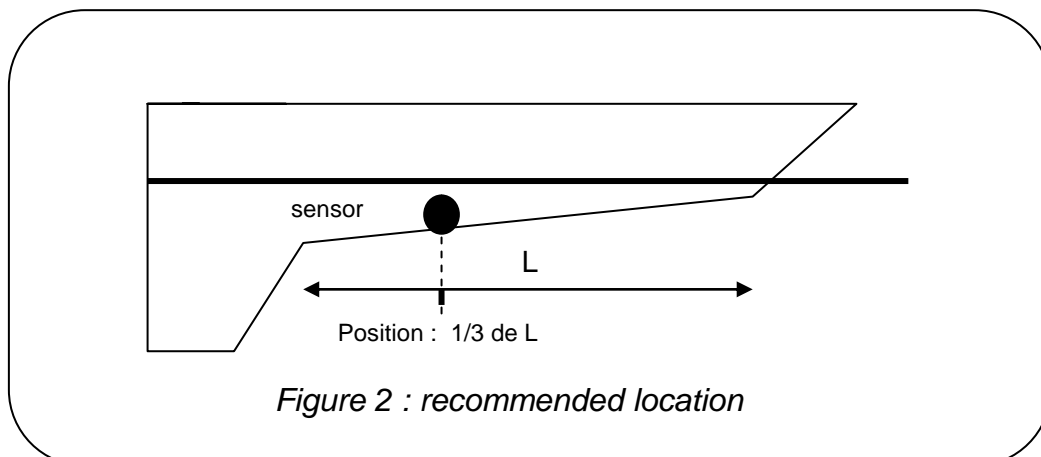
On a motorboat : the sensor must be approximately 50 cm back from the squat limit. It may be necessary to prepare a 10 to 15 mm streamlined plate so that the vaned rotor is located beyond the turbulent water layers.
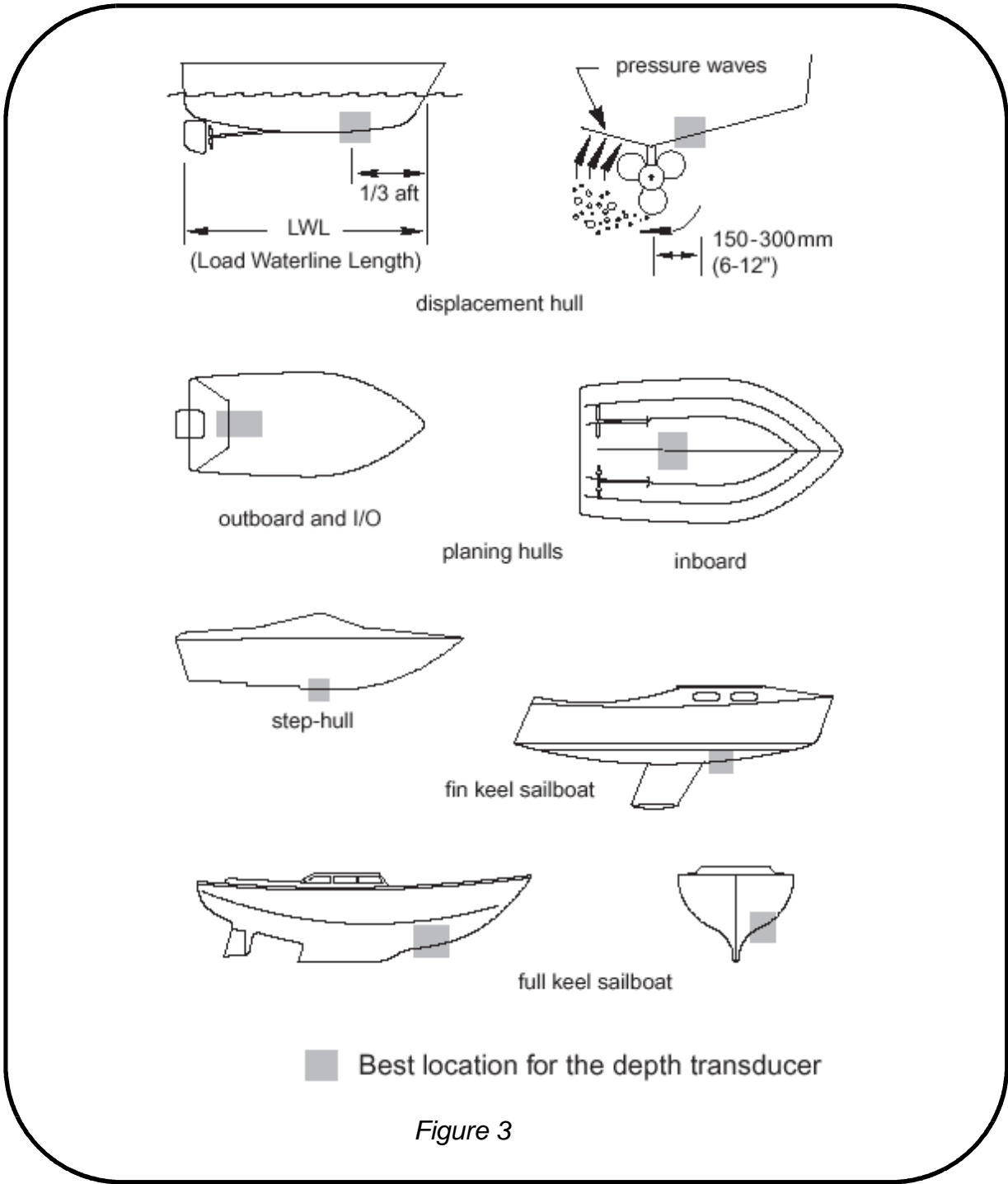

Figure 3

3.5 Installation of the through-hull

Once the location of the sensor is determined, follow the procedure below :

- From the inside of the boat, drill the pre-drilling hole, then from the outside, drill a 51 mm diameter hole using the crown saw.

- Degrease the hull.

- Coat the flange of the through-hull with sealing paste. Place the through-hull in position.

- Inside the boat, lay some sealing paste around the through-hull.

- Position the though-hull by orienting the foolproofing notch towards the bow of the boat (see figure 4). Similarly, on the outside of the through-hull, an arrow indicates the orientation : position this arrow towards the bow of the boat.

- Screw the nut and tighten **moderately.**

- Grease the stopper and screw it onto the through-hull.

- Leave to dry for over 12 hours.

Paddlewheel

Cap nut

Housing

Safety wire

Washer

Hull

Marine   sealant

Figure 4
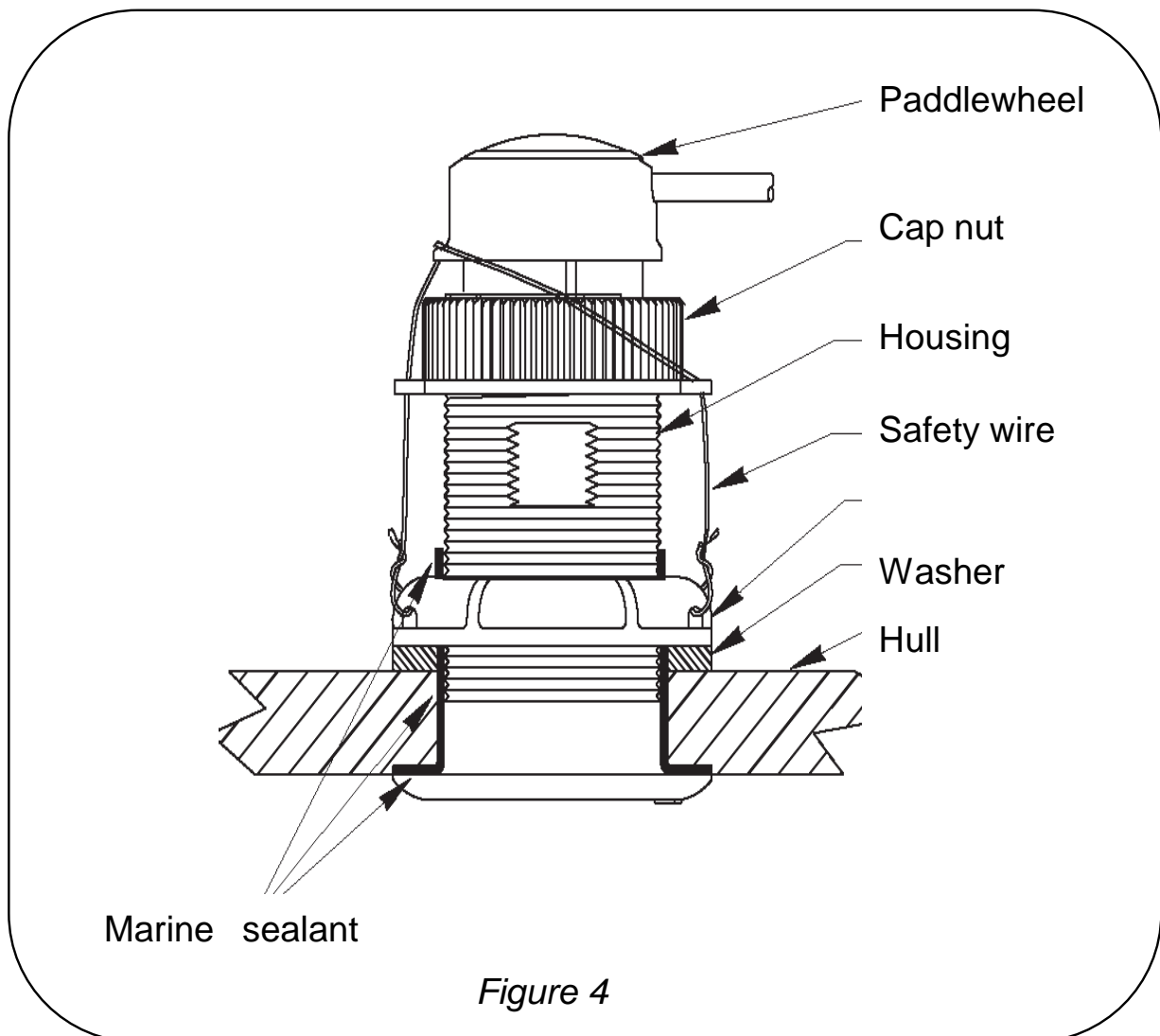
Note : a flat joint is delivered with the through-hull, to ensure the watertightness between the hull and the through-hull. However, mounting this joint is not compulsory. For a more reliable watertightness with time, we recommend you use sealing paste only.

Caution : to guarantee the accuracy of the sensor, the axis of the through-hull of the speedometer log must imperatively be parallel to the lubber line of the boat. A dissymmetry of the speed measurement would cause a significant error on the true wind calculation.
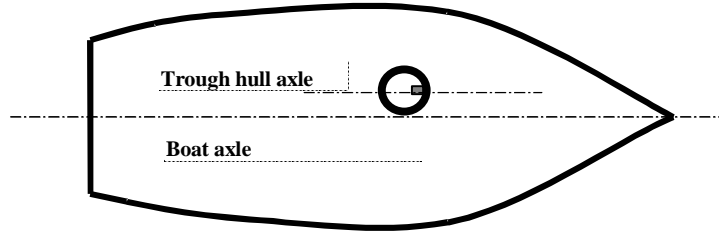
Trough hull axle

Boat axle

Figure 5

3.6 Installation of the speedometer log

- Grease the two O-rings of the sensor with the silicon lubricant.
- Introduce the sensor in the through-hull.
- Gently screw the sensor nut until you feel a slight resistance.
- Then rotate the body of the sensor to position the foolproofing notch in its slot.
- Manually tighten the nut, to the thread root.

Antifouling : the immersed surfaces of the speedometer log sensor will rapidly become covered with algae and seashells. Protect these surfaces using a thin coat of antifouling to guarantee the performance of your instruments.

CAUTION :

- Do not introduce the sensor in the through-hull without lubrication, as it may damage the seals.
- The paint and antifouling may clog the vaned rotor.

3.7 Installation of the safety wire

The metal safety wire allows to block the nut of the sensor in rotation. Install the safety wire according to the indications on figure 4.

3.8 Electrical connection

The sensor is equipped with a 6 meter cable and a moulded waterproof connector. You will connect the speedometer log sensor onto the connector socket marked ***speed sensor*** of the ***depth-finder log interface*** housing.

CAUTION :

- To guarantee the watertightness of the connectors, make sure they are properly screwed onto their connector socket.
- The connection of the sensor must be performed with the installation power switched off.

4 MAINTENANCE

4.1 Recommendations

- The sensor is coated with silicon grease. It is however **recommended to lubricate it regularly** (silicone grease only) in order to avoid locking in the through-hull.

- During boat lifting operation, remove the speedometer sensor from the through-hull and place a stopper : the lifting straps could damage the speedometer sensor.

- The immersed surfaces of the sensor will rapidly become covered with algae and seashells. Periodically clean the immersed surface of the sensor. If you do not use your instruments for a long period of time, remove the sensor from the through-hull and place a stopper.

4.2 At port, how to remove a sensor from the through-hull ?

To perform maintenance and cleaning operations, it is necessary to remove the sensor from the through-hull, when the boat is afloat. The sensor must be retrieved, then the hole of the through-hull must be rapidly blocked with the stopper. This operation may seem difficult, because water comes into the boat. However, with a bit of method and organisation, it can be performed easily. Only a few decilitres of water will come inside the boat.

Procedure :

1. Clear the area around the sensor.

2. Lubricate the stopper and keep it within your reach.

3. Unscrew the sensor nut entirely.

4. Progressively retrieve the sensor, and be ready to block the through-hull with the stopper.

5. As soon as the sensor is removed, block the hole of the through-hull with the stopper, and screw.

6. Only a few decilitres of water will come inside the boat.

Please note :

- The through-hull of the speedometer log sensor is fitted with a valve. The latter is not waterproof but restricts the water ingress before the stopper is in place.

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NOTES

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