

# **OPERATOR'S MANUAL**

**D3**

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## Service and spare parts

Volvo Penta marine engines are designed for high reliability and long life. They are built to withstand a marine environment, but also to have the smallest possible environmental impact. Through regular service and use of by Volvo Penta approved spare parts, these qualities are retained.

Volvo Penta's world-wide network of authorised dealers is at your service. They are Volvo Penta product specialists, and have the accessories, original spares, test equipment and special tools needed for high quality service and repair work.

Always observe the maintenance intervals in the Operator's manual, and remember to note the engine/transmission identification number when you order service and spare parts.

## Certified engines

If you own or operate an emission certified engine it is important to be aware of the following:

Certification means that an engine type has been checked and approved by the relevant authority. The engine manufacturer guarantees that all engines made of the same type are equivalent to the certified engine.

**This makes special demands on the care and maintenance you give your engine, as follows:**

- Maintenance and service intervals recommended by Volvo Penta must be complied with.
- Only Volvo Penta original spares may be used.
- Service on injection pumps, pump settings and injectors must always be done by an authorised Volvo Penta workshop.
- The engine must not be converted or modified, except for the accessories and service kits which Volvo Penta has approved for the engine.
- Installation changes to the exhaust pipe and engine air inlet ducts must not be done.
- No seals may be broken by unauthorised personnel.

The general advice in the Operator's manual about operation, care and maintenance apply.

Late or inadequate maintenance/service or the use of spare parts not approved by Volvo Penta will invalidate AB Volvo Penta's responsibility for the engine specification being in accordance with the certificated variant.

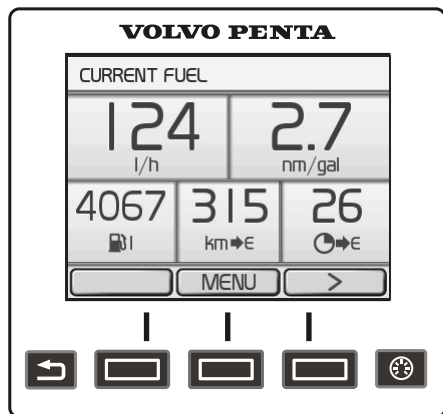
Volvo Penta accepts no responsibility or liability for any damage or costs arising due to the above.

## Fuel

This is the boat's trip computer and information is shown in two windows, Current Fuel and Average fuel. Switch between screens by pressing the arrow buttons.

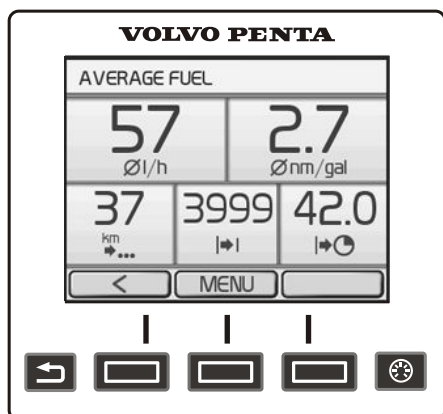
### Current Fuel

- **Instant fuel rate** Current fuel consumption per hour.
- **Instant fuel economy** Based on current fuel consumption.
- **Remaining in tank** Amount of fuel remaining in the tank.
- **Distance remaining** Trip distance with fuel remaining in the tank based on current fuel consumption.
- **Time to empty** Operating time with fuel remaining in the tank based on current fuel consumption.



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Current Fuel

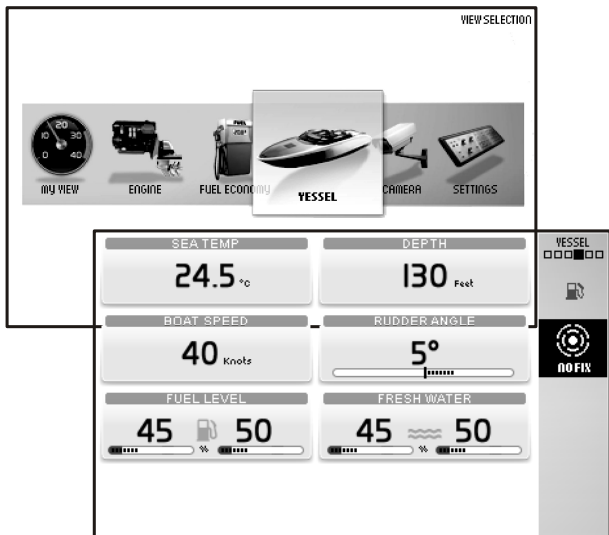


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Average fuel

### Average fuel

- **Average fuel rate** Average fuel consumption since the last trip computer zero reset.
- **Average fuel economy** Average since the last trip computer zero reset.
- **Trip distance** Average fuel consumption per unit of distance since the last trip computer zero reset.
- **Trip fuel**, fuel consumption per unit since the last trip computer zero reset.
- **Trip hours** Time travelled since the last trip computer zero reset.



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## Vessel

Information concerning boat installations is displayed in this view.

Depending on the functions installed in the boat, the following can be displayed:

- **Sea water temperature**
- **Depth**, to set the echo sounder refer to *Depth Alarm* in the *Settings Menu page 109* chapter.
- **Boat Speed**
- **Rudder angle**
- **Fuel level**
- **Freshwater level**
- **ACP Info**, for further ACP information, refer to the *ACP* chapter.

The information in this view cannot be changed.

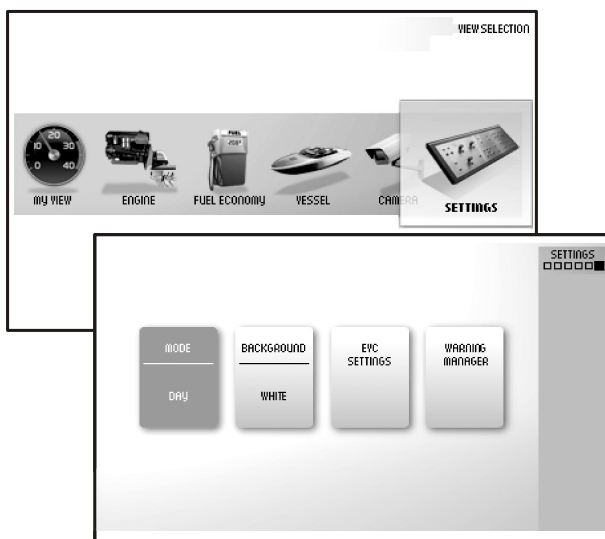


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## Camera

It is possible to connect a camera to the screen (e.g. for monitoring the engine compartment or swimming platform).

If a camera is installed, images will be displayed in this view.



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## Settings

Screen settings and different function settings are made in this view. Turn to the desired menu and press **OK** to access the submenus.

### Mode

Choose between the modes **Day** ((dark text on a white background) or **Night** (light text on a dark background). Press **OK** switch between modes.

### Background

Choose between the background colors Gray, Aqua, White, Carbon and Red.

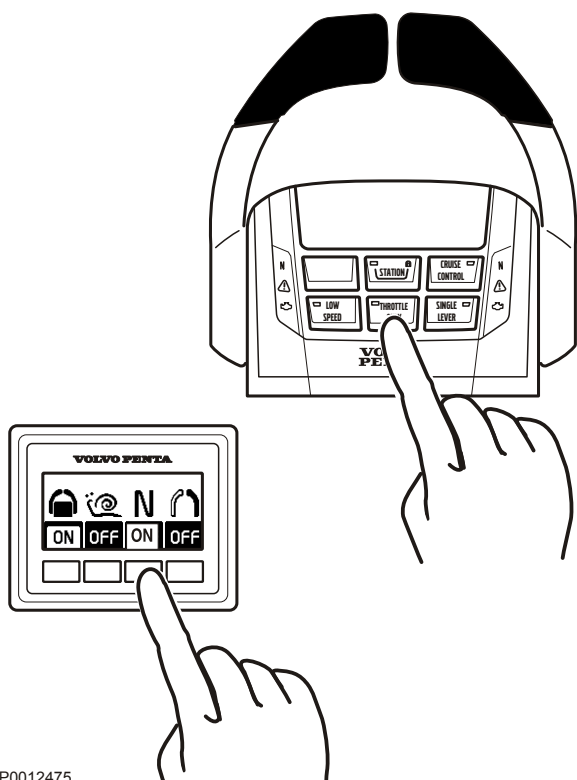
- 6 TRIM ASSIST (optional)  
The Power Trim Assistant, PTA, adjusts the trim angle automatically according to engine speed (rpm), see *Power Trim Assistant page 34* for information.
- 7 THROTTLE ONLY  
Disconnects the shift function so that the control lever only affects engine speed; refer to "Disengaging shift function" in this chapter for further information.
- 8 Neutral interlock  
The neutral interlock prevents accidentally moving the throttle out of neutral.  
Depress the interlock button to move control out of neutral.  
The neutral interlock will automatically re-engage when the control handle is returned to the neutral position.

## Disengaging the Shift Function

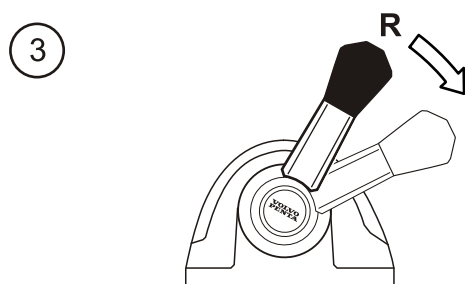
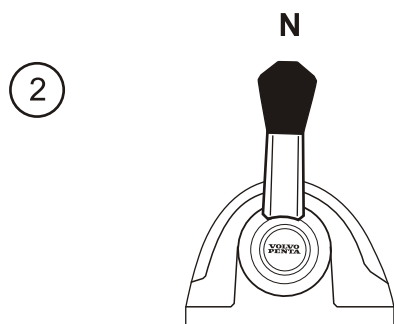
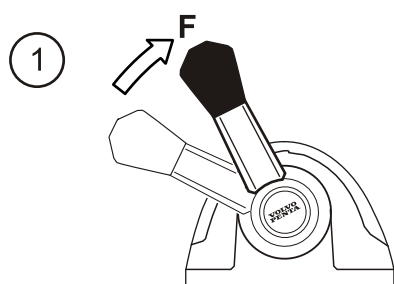
The gearshift function can be disconnected so that the control lever only operates the throttle.

- 1 Put the control levers in neutral.
- 2 Press the control "Throttle Only" button or the neutral button (N) on the helm station panel.
- 3 Release the button. The N symbol on the control will light up as confirmation that the gearshift function is disengaged and that the lever will only affect engine revolutions.

To exit neutral mode, press the button again.



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## Maneuvering

Shifting between forward and reverse should be done at idling. Shifting at higher engine speeds can be uncomfortable for passengers and cause unnecessary stress on the transmission or cause the engine to stop. If you attempt to shift gear at an excessive engine speed, a safety function cuts in automatically, and delays shifting until engine speed has fallen to 1500 rpm.

### Always do a forwards/reverse operation as follows:

- 1 Reduce engine speed to idle and let the boat more or less lose way.

#### **WARNING!**

Never shift to reverse when the boat is planing.

- 2 Move the control lever to neutral with a rapid, distinct movement. Make a brief pause.
- 3 Then move the control lever to reverse with a rapid, distinct movement and increase engine speed.

#### **IMPORTANT!**

It is important all engines are running during reversing maneuvers, to avoid the risk of water entry via the exhaust pipe into the stationary engine.

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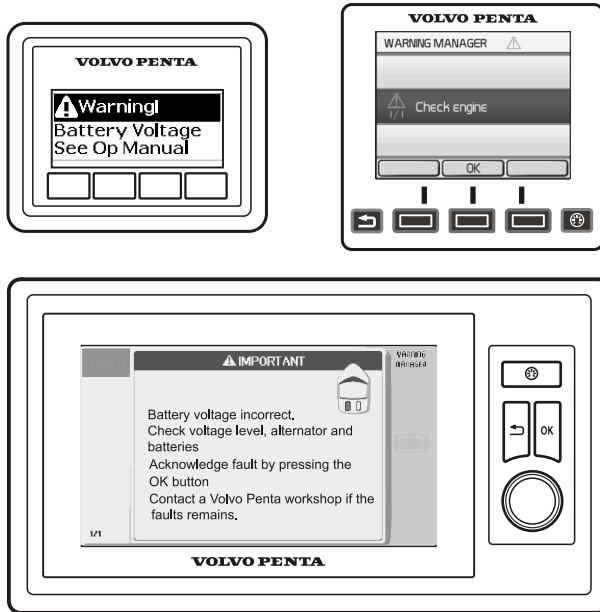
# Fault Code Register

## CAUTION!

Read the safety precautions for maintenance and service in the Safety Information chapter before starting work.

When a malfunction is discovered the helmsman is warned by a sound alarm and at the same time a message is shown in the display.

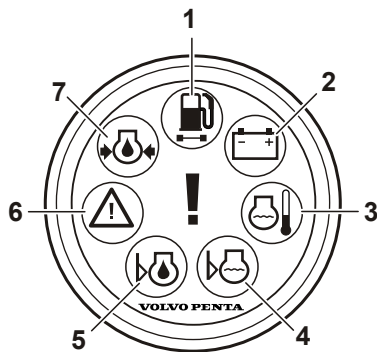
This chapter gives a more detailed description of the messages together with suggested actions to take.



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## Message

If a malfunction is discovered a message is shown on the display. The message is presented in the list below together with a description of how the system might be affected and suggested actions to take.



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## Alarm Display (optional)

If a lamp in the alarm monitor flashes a malfunction is detected.

- 1 Is the orange "water in fuel" lamp lit there is too much water in the water separator on the fuel pre-filter.
- 2 Is the charging lamp lit the alternator has stopped charging.
- 3 Is the coolant temperature lamp lit the coolant temperature is too high.
- 4 Is the orange coolant level lamp lit during operation the coolant level is too low.
- 5 Is the orange oil level lamp lit during operation the engine oil level is too low.
- 6 Is the red warning lamp lit during operation a serious malfunction has been discovered.  
Is the orange warning lamp lit during operation a malfunction has been discovered.
- 7 Is the red oil pressure lamp lit during operation the engine oil pressure is too low.

**E**

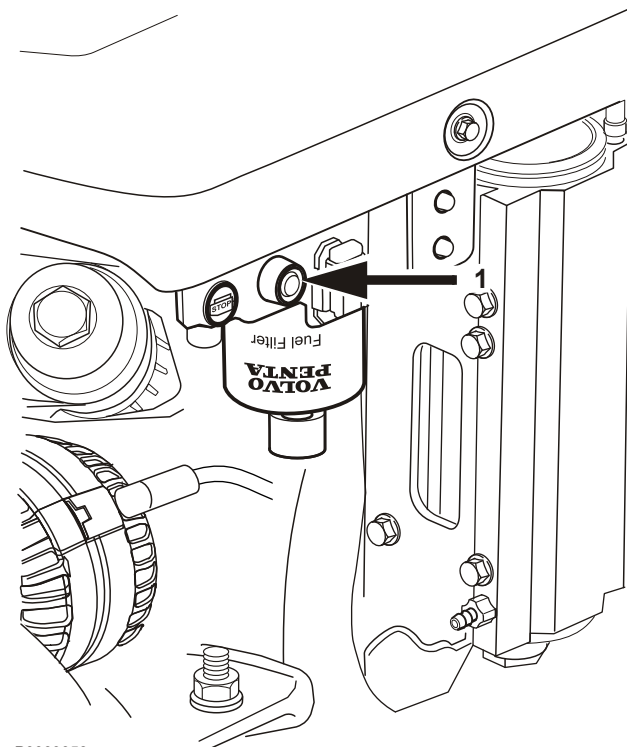
<b>Every 1200 hours / at least every 5 years</b>	
Control cables and seals	<b>R</b>
Outboard drive, disassemble and check for wear. Safety and function check. <sup>(1)</sup>	<b>I</b>

**F**

<b>Every 1400 hours / at least every 8 years</b>	
Timing belt, Change	<b>R</b>

---

1. Every 1200 hours



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## Fuel system, bleeding

The fuel system is self venting but may still require venting after e.g. fuel filter replacement, when the fuel tank has been run dry or after long breaks in operations.

### IMPORTANT!

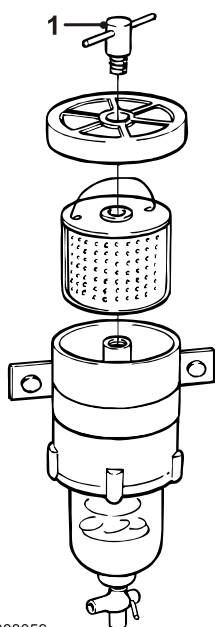
Never disconnect the delivery pipes.

- 1 Pump up fuel by pressing the fuel feed button (1) for around 5 seconds.
- 2 Start the engine and check that no fuel leaks are present.

## Fuel Pre-filter, Change

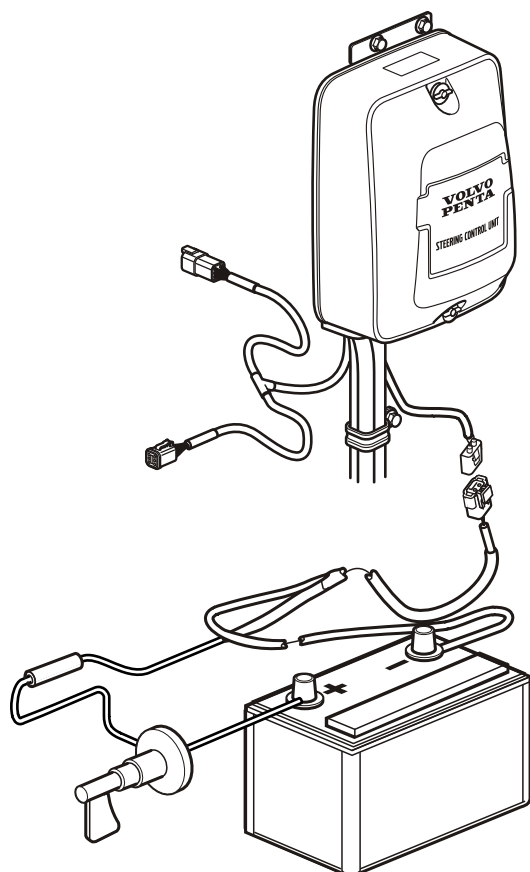
### ⚠ WARNING!

Working with or going close to a running engine is a safety risk. Watch out for rotating components and hot surfaces.



P0003059

- 1 Close the fuel stop cock on the fuel tank. Place a container beneath the fuel filter.
- 2 Remove the cover by loosening screw (1).
- 3 Replace the insert and refit the cover.
- 4 Open the fuel stop cock and bleed the fuel system, see section "Fuel system, bleeding".
- 5 Start the engine and check for leaks.
- 6 Hand in the scrapped filter at a recycling depot.



P0013413

## Electronic Steering System

Engines fitted with a drive with electronic steering are equipped with a circuit breaker for the SCU (Steering Control Unit). The circuit breaker is located near the battery or the engine's main battery switch.

The circuit breaker cuts the power if the electrical system for the SCU is overloaded.

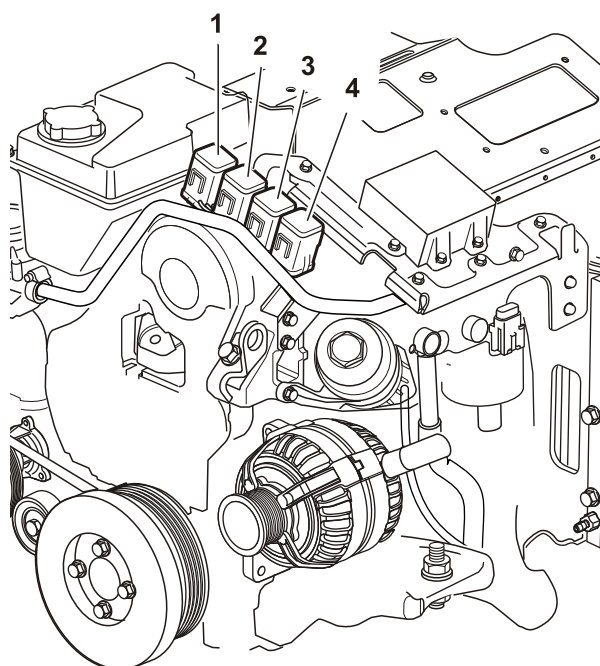
### IMPORTANT!

Always investigate the cause of the overload. If the fuse trips frequently, contact an authorized Volvo Penta workshop.

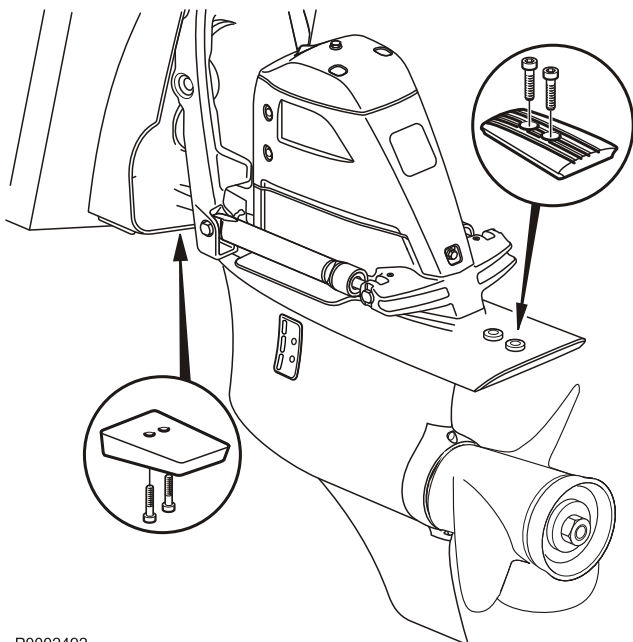
## Relays

The engine has four relays. If the engine. If it is not possible to start a relay can be broken and need to be changed.

- 1 Main relay
- 2 Fuel pump relay
- 3 External stop relay
- 4 Starter relay



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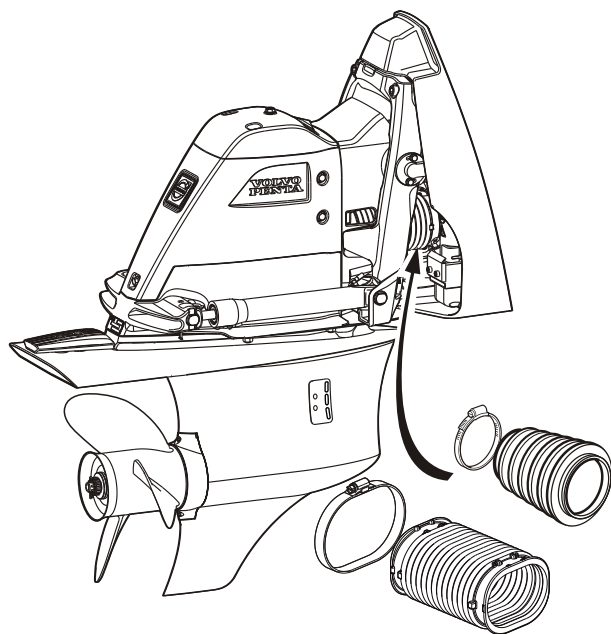
## Replacement of anodes

- 1 Remove the anode retaining screws.
- 2 Clean the contact surface.
- 3 Install the new anodes and tighten them so that they make good contact with the underlying metal.

## Drive Unit Bellows

### **WARNING!**

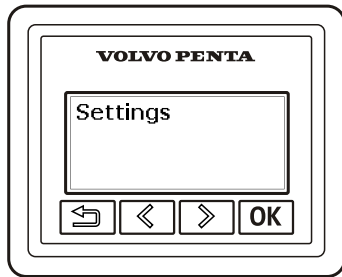
Secure the drive unit in a raised position in such a way that it cannot fall when working on the drive bellows. A falling drive may cause serious injury.



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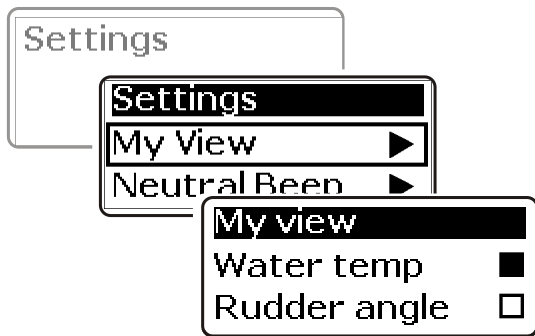
- Check that there are no splits or damage to the bellows. Replace bellows as necessary. Keep the surfaces clean; fouling on the bellows may puncture them.
- Inspect the inside of the bellows for signs of contact with the universal joint when the drive is removed. Internal wear is a sign that the engine has been run at too high rpm with the sterndrive in an inclined position.
- Check that the clamps are correctly installed.

# Calibration and Settings



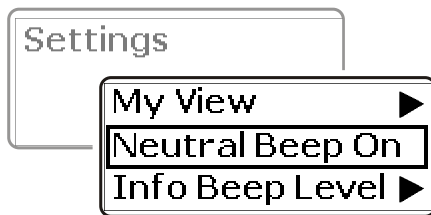
P0012801

Settings



P0012518

My View



P0012519

Neutral Beep

## Settings Menu

Settings and calibrations are managed in the Settings menu.

- 1 Navigate to the **Settings** menu.
- 2 Press **OK** to open the settings menu.
- 3 Navigate backwards and forwards in the settings menu by pressing **←** **→**.



Return to the previous menu by pressing the button. Hold the button down for more than 3 seconds to get to the main menu.

## My View

Information shown in the main menu can be adapted to suit personal preferences in **My View**.

- 1 Navigate from the settings menu to **My View**. Press **OK** to get to the submenu.
- 2 Navigate through the menu using **←** **→** to see available operating information.
- 3 Press **OK** to add or remove information for display in the main menu.

## Neutral Beep

The neutral beep is an audible signal that sounds when the control is in the neutral position. The setting must be entered at each helm station.

- 1 Navigate to **Neutral Beep** in the settings menu.
- 2 Press **OK** to switch the audible signal **On** or **Off**.

# Technical Data

## Engine

Type designation	After market designation	Crankshaft power kW (hk) <sup>(1)</sup>	Propeller shaft kW (hk) <sup>(2)</sup>
D3-110i	D3-110i-E	82 (110)	79 (106)
D3-150i	D3-150i-E	111 (150)	107 (144)
D3-170i	D3-170i-E	127 (170)	122 (163)
D3-200i	D3-200i-E	149 (200)	143 (192)
D3-220i	D3-220i-E	164 (220)	157 (211)
D3-140A	D3-140A-E	104 (140)	99 (133)
D3-170A	D3-170A-E	127 (170)	120 (161)
D3-200A	D3-200A-E	149 (200)	142 (190)
D3-220A	D3-220A-E	164 (220)	156 (209)

1) According to ISO 8665

2) According to ISO 8665

No. of cylinders	5
Bore	81 mm (3.19")
Displacement	2401 cm <sup>3</sup> (146 in <sup>3</sup> )
Stroke	93,2 mm (3.67")
Compression ratio	16,5:1
Engine, dry weight	260 kg (573 lbs)
Idling speed	700 rpm

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