

OPERATOR'S MANUAL

**Electronic Vessel Control (EVC^{MC})
for Gas Engines**

IMPORTANT!

This kit with its accompanying instructions is produced for Volvo Penta's service workshops, boat-builders, machine manufacturers and other authorized workshops which have personnel with qualified professional training.

The installation instructions are only produced for professional use and are not intended for non-professional use. Volvo Penta will not assume any liability whatsoever for damage incurred, either damage to materials or personal injury, which may result if the installation instructions are not followed or if the work is carried out by non-professional personnel.

WICHTIG!

Dieser Satz mit vorliegender Einbauanleitung ist für Volvo Penta Kundendienst-werkstätten, Werften, Maschinenbauer und für andere ermächtigte Werkstätten mit beruflich geschultem Personal vorgesehen.

Die Einbauanleitung ist nur für den berufsmäßigen Gebrauch vorgesehen und nicht für unprofessionelle Anwendung gedacht. Volvo Penta übernimmt nicht die geringste Haftung für irgendwelchen Schäden an Personen oder Sachen, die als Folge einer Nichtbefolgung der Einbauanleitung oder wegen Ausführung der darin beschriebenen Arbeiten durch nicht beruflich geschulte Personen entstehen.

IMPORTANT!

Ce kit, avec instructions de montage, est destiné aux ateliers de service Volvo Penta, aux constructeurs de bateaux et autres ateliers de construction agréés avec un personnel qualifié.

Les instructions de montage sont exclusivement conçues pour une utilisation professionnelle. Volvo Penta se dégage de toute responsabilité pour d'éventuels endommagements, corporels ou matériels, résultant du non respect des instructions ou d'un travail effectué par un personnel non compétent.

IMPORTANTE!

El presente juego con las instrucciones de montaje se destina a los talleres de servicio Volvo Penta, constructores de embarcaciones y máquinas y a otros talleres autorizados que cuentan con personal capacitado.

Las instrucciones de montaje están destinadas únicamente para uso profesional, por lo que Volvo Penta no aceptará responsabilidad alguna por cualquier daño, tanto personal como material, resultado de no haber seguido las instrucciones de montaje o de haber sido efectuado el trabajo por personal que no está debidamente capacitado.

IMPORTANTE!

Questo kit e le relative istruzioni di montaggio sono stati realizzati per le officine di servizio Volvo Penta, i cantieri, i fabbricanti di macchine e tutte le altre officine autorizzate il cui personale ha ricevuto un addestramento qualificato e specializzato.

Le istruzioni di montaggio sono state redatte esclusivamente per uso professionale e non sono adatte all'uso non professionale. La Volvo Penta non si assume alcuna responsabilità per eventuali danni alle cose o alle persone, derivanti da trascuratezza nel seguire le istruzioni di montaggio oppure dall'esecuzione dei lavori da parte di personale non qualificato.

VIKTIG!

Denna sats med föreliggande monteringsanvisning är framtagen för Volvo Pentas serviceverkstäder, båtbyggare, maskintillverkare och övriga auktoriserade verkstäder som har personal med kvalificerad fackutbildning.

Monteringsanvisningen är enbart framtagen för yrkesbruk och är inte avsedd för icke yrkesmässig användning. Volvo Penta påtager sig inget som helst ansvar för eventuella skador, såväl materiella som personskador, som kan bli följden om monteringsanvisningen ej följs, eller om arbetet utförs av icke yrkeskunnig personal.

VIGTIGT!

Dette sæt med tilhørende monteringsvejledning er blevet udviklet for Volvo Pentas serviceværksteder, bådbyggere, maskinproducenter og andre autoriserede værksteder, som har medarbejdere med kvalificeret, faglig uddannelse.

Monteringsvejledningen er udelukkende beregnet til professionel anvendelse og ikke til hobby- eller fritidsbrug. Volvo Penta påtager sig intet som helst ansvar for eventuelle skader på såvel materiel som personer, som kan være en følge af at monteringsvejledningens anvisninger ikke blev overholdt, eller hvis arbejdet blev udført af ikke-professionelt personale.

TÄRKEÄ!

Tämä sarja ja asennusohje on tarkoitettu Volvo Pentan huolto-korjaamoille, veneenrakentajille, konevalmistajille ja muille valtuutetuille korjaamoille, joiden henkilökunta on saanut pätevän ammattikoulutuksen.

Asennusohje on tarkoitettu ainoastaan ammattikäyttöön. Volvo Penta ei vastaa mahdollisista materiaali- tai henkilövahingoista, joita asennusohjeen laiminlyöminen tai ammattitaidottoman henkilökunnan suorittama asennustyö voi aiheuttaa.

BELANGRIJK!

Deze set met de bijgevoegde montage-aanwijzing is ontwikkeld voor de werkplaatsen van Volvo Penta, botenbouwers, machinefabrikanten en overige bevoegde werkplaatsen, die personeel hebben met een gekwalificeerde vakopleiding.

De montage-aanwijzing is alleen ontwikkeld voor professioneel gebruik en is niet bedoeld voor niet-professioneel gebruik. Volvo Penta neemt geen enkele verantwoordelijkheid op zich voor eventuele schade, zowel materiële schade als persoonlijk letsel, die het gevolg kan zijn als de montage-aanwijzing niet wordt gevolgd, of als het werk wordt uitgevoerd door niet-vakkundig personeel.

IMPORTANTE!

Este jogo, juntamente com as respectivas instruções de montagem, foi concebido para as oficinas de serviço da Volvo Penta, construtores navais, construtores de máquinas e outras oficinas autorizadas, com pessoal devidamente formado.

As instruções de montagem foram concebidas unicamente para utilização profissional e não se destinam a utilização não profissional. A Volvo Penta não se responsabiliza por quaisquer danos eventuais, tanto materiais como pessoais, que possam resultar no caso de as instruções de montagem não serem seguidas, ou se os trabalhos forem executados por pessoal não profissional.

ΠΡΟΣΟΧΗ!

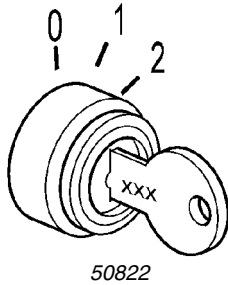
Το περιεχόμενο αυτού του πακέτου μαζί με τις οδηγίες συναρμολόγησης που το ακολουθούν είναι ειδικά επιλεγμένο για συνεργεία σέρβις της Volvo Penta, ναυπηγεία, κατασκευαστές μηχανών και για λοιπά εξουσιοδοτημένα συνεργεία που διαθέτουν εξειδικευμένο προσωπικό.

Οι οδηγίες συναρμολόγησης προορίζονται μόνο για επαγγελματική χρήση και δεν αποσκοπούν για χρήση από μη επαγγελματίες. Η Volvo Penta δεν αναλαμβάνει απολύτως καμία ευθύνη για πιθανές ζημιές, τόσο υλικές όσο και προσωπικές, που μπορούν να προκληθούν επειδή δεν ακολουθούνται οι οδηγίες συναρμολόγησης ή επειδή η εργασία εκτελείται από μη εξειδικευμένο προσωπικό.

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This chapter describes the instrument and control panels, sold by Volvo Penta, for your engine. If you want to supplement the instrumentation, if your boat is equipped with instruments not described here, or if you are unsure about the functionality of your instrumentation, please contact your Volvo Penta dealer.



Ignition Switch

The ignition switch has three positions (these positions are not marked):

- 0 The key can be inserted and taken out.
- 1 Operating and running position. System voltage connected.
- 2 Starter position (spring-loaded). The starter motor is engaged.

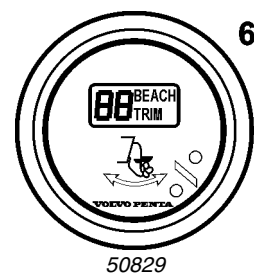
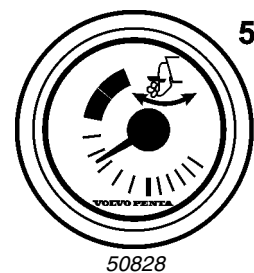
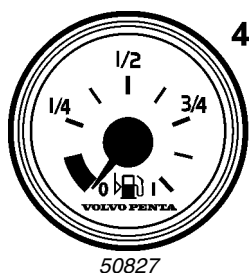
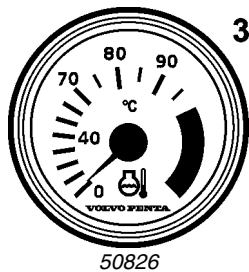
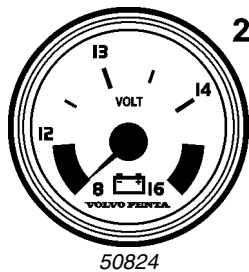
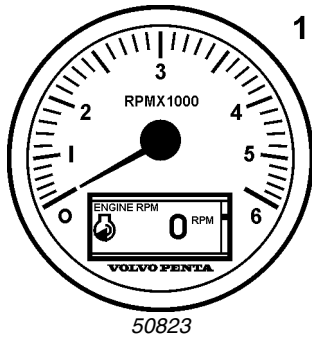
NOTE! Please refer to your engine operator's manual for starting instructions.

Gauges

- 1. EVC system tachometer (with display)

Optional Instruments

- 2. Voltmeter
- 3. Coolant temperature gauge
- 4. Fuel level gauge
- 5. Power trim gauge (analog)
- 6. Power trim gauge (digital)





Alarm Display (Optional)

The following warning lamps should never light up during normal operation. However, the warning lamps do light up when the starter key is first turned to the drive position. Check that all lamps function. When the engine has started, all lamps should have gone out. The lamps flash if the diagnostic function has registered a malfunction. When the fault has been acknowledged, the lamp gives continuous light.

NOTE! Warning lamps should never light up during normal operation.

General Warning: Red or Amber Indicator

Red Warning Indication: Serious Fault

If the red warning indication is shown during operation, a serious fault has occurred.

For additional information, please see *Troubleshooting* on page 27.

Amber Warning Indication: Fault

If the amber alarm indication is shown during operation, a fault has occurred.

For additional information, please see *Troubleshooting* on page 27.

Oil Pressure: Red Indicator

If the oil pressure lamp lights up during operation, the oil pressure in the engine is too low. Stop the engine at once.

- Check the oil level in the engine. Please refer to your engine Operator's Manual for additional information.
- Also check that the oil filter is not blocked. Please refer to your engine Operator's Manual for additional information.

For additional information, please see *Troubleshooting* on page 27.



CAUTION! Continued operation when the oil pressure is too low can cause serious engine damage.



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Water in Fuel

Not active for gasoline engines.

Battery: Amber Indicator

The battery lamp lights up if the alternator is not charging. Stop the engine if this lamp lights up during operation. If the lamp lights up, this can be due to a fault in the electrical system or because the alternator drive belt is slack.

- Check the alternator drive belt. Please refer to your engine Operator's Manual for additional information.



CAUTION! Do not continue operation if there is any problem with the alternator drive belts. This could cause serious engine damage.

- Check that there is no poor contact/broken wires.

Coolant Temperature: Red Indicator

The coolant temperature lamp lights up when the coolant temperature is too high. Stop the engine if this lamp lights up during operation.

- Check the coolant level. Please refer to your engine Operator's Manual for additional information.



WARNING! Do not open the coolant filler cap when the engine is warm. Steam or hot fluid could spray out.

- Check that the sea water filter, if installed, is not blocked. Please refer to your engine Operator's Manual for additional information.
- Check the impeller in the sea water pump. Please refer to your engine Operator's Manual for additional information.

For additional information, please see *Troubleshooting* on page 27.

Coolant Level

Not active for gasoline engines.

Oil Level

Not active for gasoline engines.

EVC Control Panel

The control panel is used in combination with the EVC-system tachometer. The tachometer display shows operating information and menus that can be navigated from the control panel. The EVC control panel is available in two versions, for single or twin engine installations.

Navigation Wheel (1)

Used to navigate through the menus shown on the EVC-system tachometer display. Navigate through the menus by turning the wheel. Depress the wheel to confirm a selection.

Tachometer Display Selection (2)

Twin installation, port or starboard tachometer: Used to select which of the engine's menu systems should be navigable from the control panel. The menu is shown on the display of the corresponding engine's tachometer. Select port or starboard.

Indication (red/green):

Off: Not possible to navigate in menu.

Lit: Possible to navigate in menu for selected engine, port (red), starboard (green).

Multifunction Button (3)

Used to increase or decrease the instrument's and panel's backlighting.

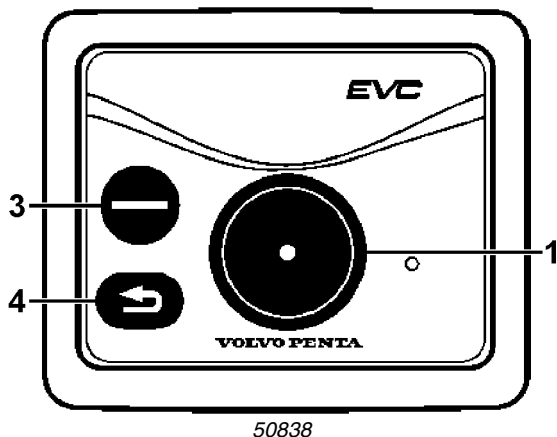
Depress the button for at least 1 second to turn the backlighting on or off. The backlighting can be adjusted in five stages by pressing the multifunction button.

If the button is pressed on an inactive control panel, operating information is shown on the display(s) and it is possible to navigate in the menus.

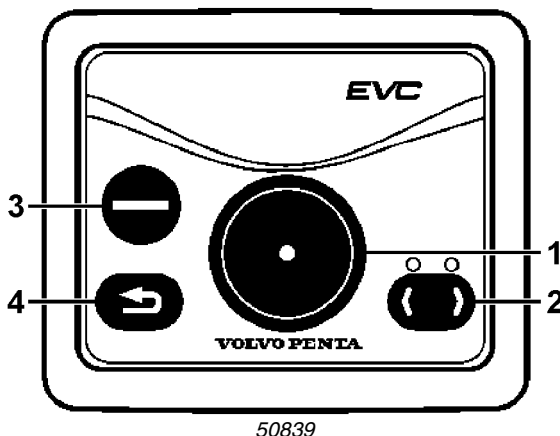
Back Button (4)

Used to back up a step in the menu.

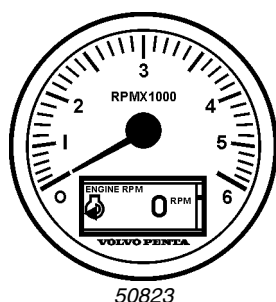
NOTE! Always press the buttons firmly and for at least one second each time.



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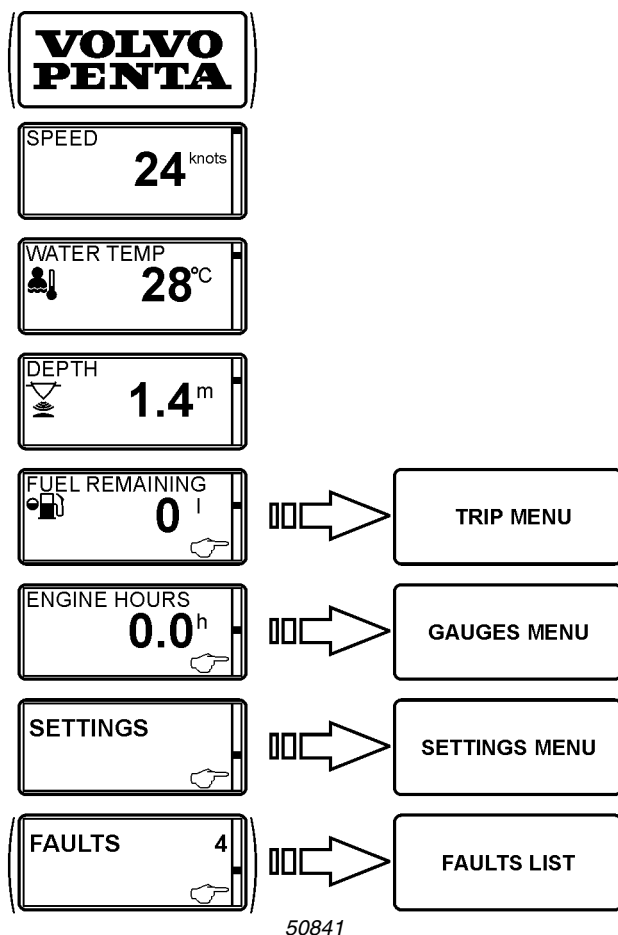


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Main Menu Structure



EVC System Tachometer

Volvo Penta EVC System Tachometer presents relevant boat and engine information to the helmsman. Information is presented on a display in the tachometer.

Information depends on engine model, number of sensors, and type of accessories.

Using the Instrument

Startup Screen

This is the startup screen for the EVC System Tachometer. After a few seconds the first item in MAIN MENU will appear.

Main Menu

Navigating the Menus

Navigate the menus by turning NAVIGATION WHEEL clockwise or counter-clockwise. Views with a POINTING HAND symbol indicate SUB-MENU items. To enter a SUB-MENU, push NAVIGATION WHEEL.

Speed (Optional)

Boat speed. Requires multisensor or GPS.

Water Temp (Optional)

Water temperature. Requires multisensor.

Depth (Optional)

Water depth. Requires multisensor.

Trip Menu (Optional)

Shows trip information. Requires the following:

- Multisensor or NMEA 0183/NMEA 2000 compatible component (plotter, GPS, paddle wheel, etc.).
- Fuel level sender.
- Trip computer software.

Gauges Menu

Shows data parameters.

Settings Menu

The SETTINGS MENU allows the user to set various options for the EVC System and to calibrate various parameters.

Faults List

Number after word FAULTS indicates number of faults stored in FAULTS LIST. List is reset when system is rebooted.

NOTE! Faults list is not shown if no faults are registered.

Trip Menu (Optional)

In the TRIP MENU the user gets trip information from the EVC System and the user is allowed to select which view should be presented in the EVC System Tachometer's MAIN MENU as trip information. To get trip information, the following are required:

- Multisensor or NMEA 0183/NMEA 2000 compatible component (plotter, GPS, paddle wheel etc.)
- Fuel level sender
- Trip computer software

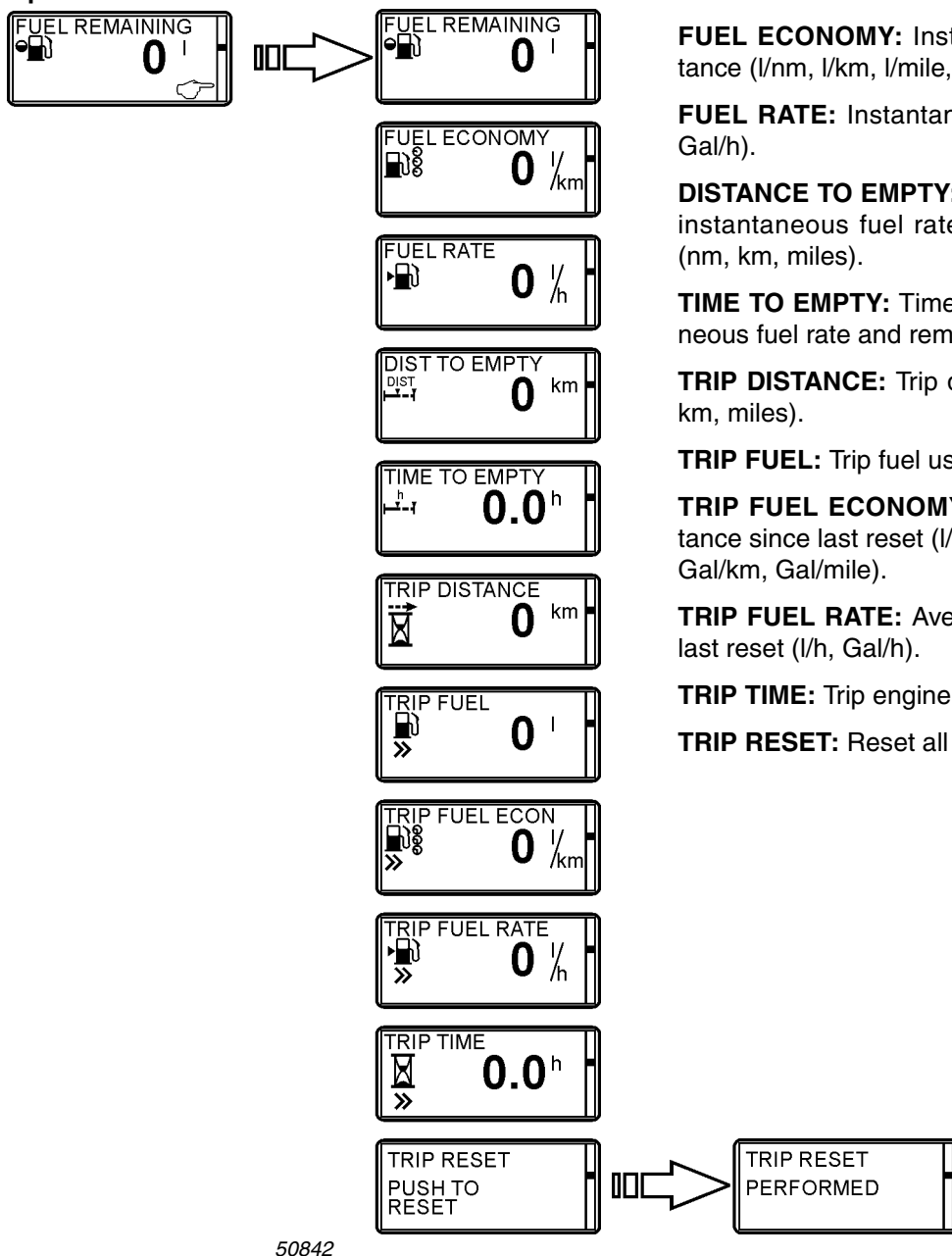
NOTE! The accuracy of trip information concerning, and based on, remaining fuel volume depends on which method the user has chosen for calibrating the fuel tank.

When in TRIP MENU, select view by turning NAVIGATION WHEEL. To select view as favorite, push NAVIGATION WHEEL. System returns to MAIN MENU.

Push BACK BUTTON to return to MAIN MENU without setting a new favorite.

Units are user selectable. For additional information, please see *Select Units and Language* on page 12.

Trip Menu Structure



FUEL REMAINING: Fuel remaining (l, Gal).

FUEL ECONOMY: Instantaneous fuel rate per distance (l/nm, l/km, l/mile, Gal/nm, Gal/km, Gal/mile).

FUEL RATE: Instantaneous fuel rate per hour (l/h, Gal/h).

DISTANCE TO EMPTY: Distance to empty based on instantaneous fuel rate, remaining fuel and speed (nm, km, miles).

TIME TO EMPTY: Time to empty based on instantaneous fuel rate and remaining fuel (h).

TRIP DISTANCE: Trip distance since last reset (nm, km, miles).

TRIP FUEL: Trip fuel used since last reset (l, Gal).

TRIP FUEL ECONOMY: Average fuel rate per distance since last reset (l/nm, l/km, l/mile, Gal/nm, Gal/km, Gal/mile).

TRIP FUEL RATE: Average fuel rate per hour since last reset (l/h, Gal/h).

TRIP TIME: Trip engine hours since last reset (h).

TRIP RESET: Reset all trip data.

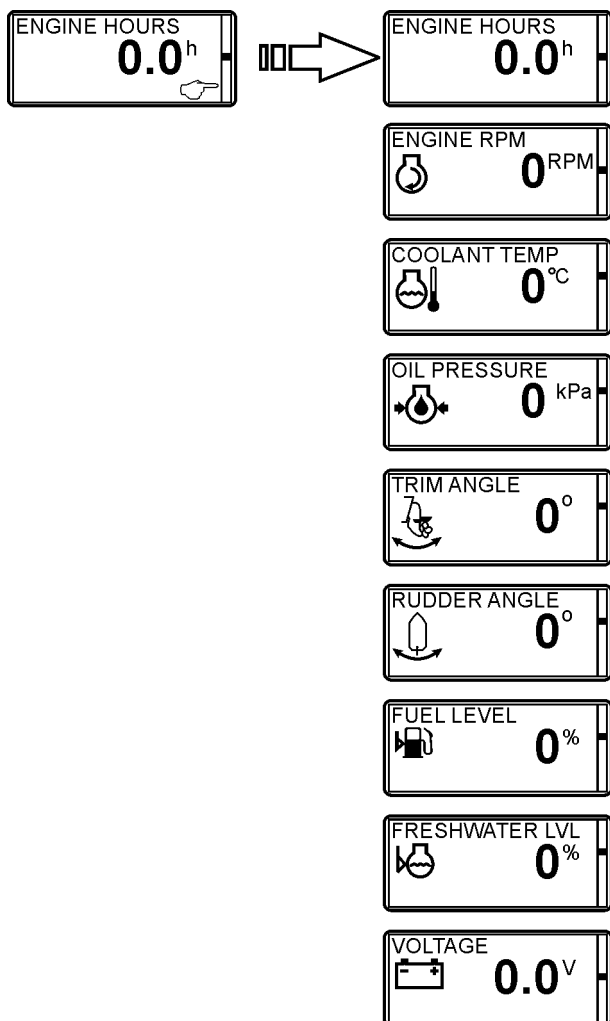
Gauges Menu

In GAUGES MENU the user gets information from analog senders placed on the engine. If the data is not available, the parameter will not be displayed.

When in GAUGES MENU, select view by turning NAVIGATION WHEEL. To select view as favorite, push NAVIGATION WHEEL. System returns to MAIN MENU.

Push BACK BUTTON to return to MAIN MENU without setting a new favorite.

Gauges Menu Structure



ENGINE HOURS: (h)

ENGINE RPM: (RPM)

COOLANT TEMP: (°C, °F)

OIL PRESSURE: (kPa, PSI)

TRIM ANGLE: (°)

RUDDER ANGLE: (°)

FUEL LEVEL: (%)

FRESH WATER LEVEL: (%)

VOLTAGE: (V)

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Settings Menu

In the SETTINGS MENU the user is allowed to set various options for the EVC system and to calibrate various parameters.

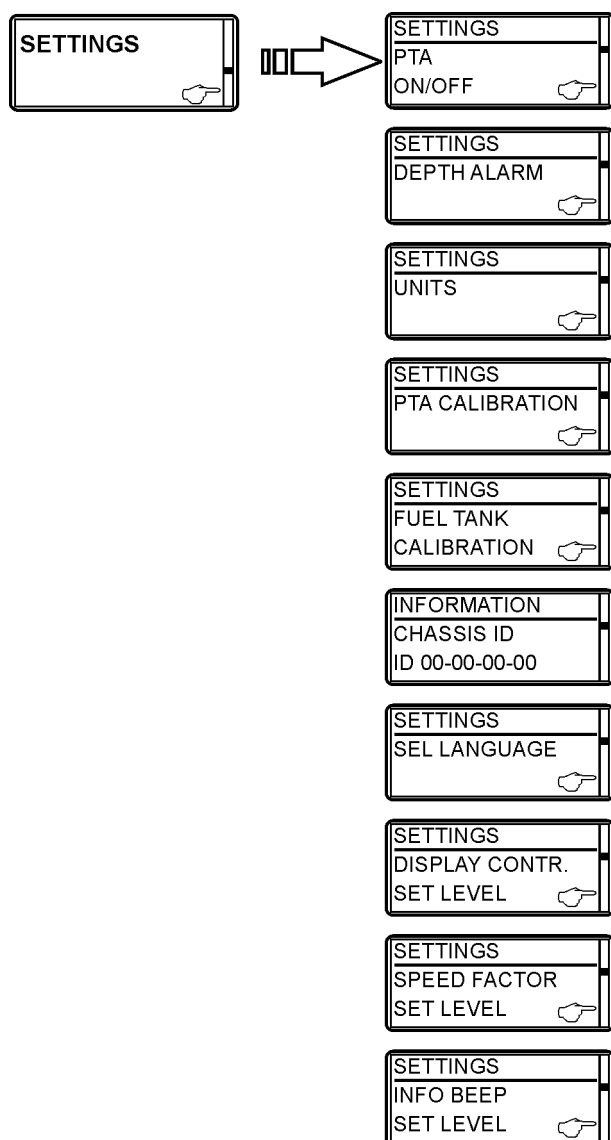
NOTE! For all settings and calibration procedures: Activate helm station by pushing the ACTIVATION BUTTON.

NOTE! For twin installations always perform the settings on the port side system. Port side is the master side.

When in SETTINGS MENU, select view by turning NAVIGATION WHEEL. Views with a POINTING HAND symbol indicate SUB-MENU items. To enter a SUB-MENU, push NAVIGATION WHEEL.

Push BACK BUTTON to return to MAIN MENU.

Settings Menu Structure



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PTA (Optional): Power Trim Assistant (On/Off)

DEPTH ALARM: Settings for depth alarm functions.

UNITS: Choose which units to display. Set US or metric and units for distance, nm, km, miles.

PTA CALIBRATION (Optional): Calibration of the Power Trim Assistant.

FUEL TANK CALIBRATION: Calibration of the fuel tank.

CHASSIS ID: Not active for gasoline engines.

SEL LANGUAGE: Select language (10 different).

DISPLAY CONTRAST: Adjust the contrast of the display.

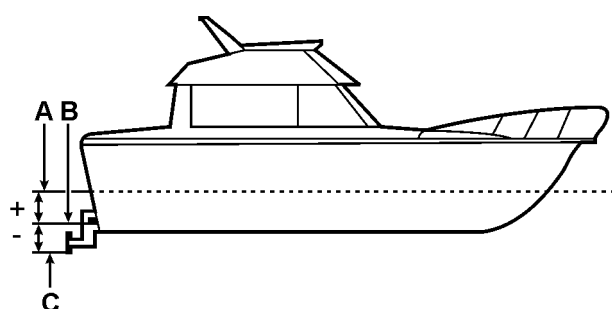
SPEED FACTOR: Set the calibration factor for the boat's paddle wheel speed sensor.

INFO BEEP: Set info beep sound level for the built-in buzzer in EVC tachometer.

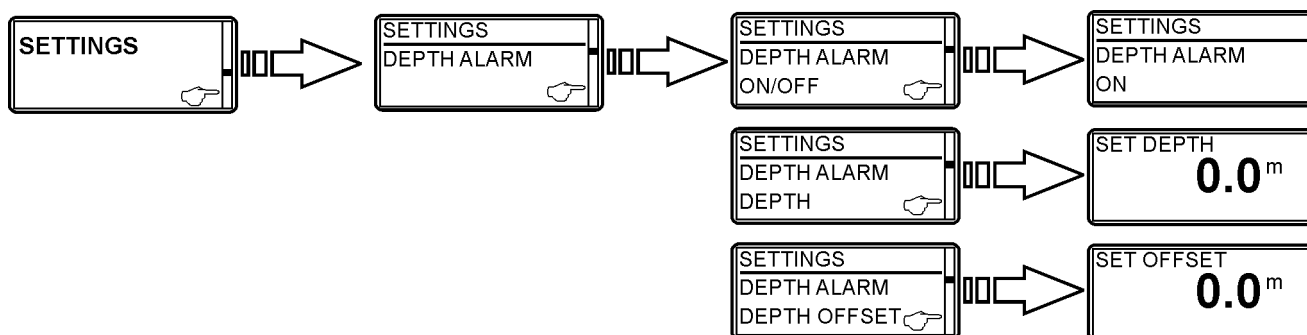
Depth Alarm (Optional)

All depth alarm functions are accessed through this menu. A multisensor needs to be installed.

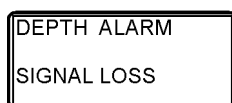
- A. Waterline
- B. Depth Sounder
- C. Lowest Point



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DEPTH ALARM, ON/OFF

Depth alarm can be switched ON/OFF.

SET DEPTH

Adjust the depth alarm value by turning the NAVIGATION WHEEL. The value can be adjusted at a resolution of 0.1 m or 1 ft.

Once adjustment value is reached, the data is stored by pushing NAVIGATION WHEEL.

DEPTH OFFSET

The depth sounder can be placed somewhere on the hull that gives another depth than the desired depth. You can then add or subtract a distance so that the display shows the depth from, for example, the lowest depth sounder point on the boat, or from the surface.

Adjust the depth offset value by turning the NAVIGATION WHEEL. The value can be adjusted at a resolution of 0.1 m or 1 ft.

Once adjustment value is reached, the data is stored by pushing NAVIGATION WHEEL.

Depth Alarm Popup

The depth alarm popup will appear when the depth is less than the depth alarm setpoint. The popup shows the actual depth.

Acknowledge depth alarm by pushing NAVIGATION WHEEL.

The depth alarm popup will reappear every 30 seconds until the depth increases and exceeds the depth alarm setpoint.

Depth Alarm Signal Loss

If the depth alarm is enabled and the depth signal is lost, for instance in the case of sensor malfunction, the depth alarm signal loss popup will appear.

Select Units and Language

Choose which units and languages to display.

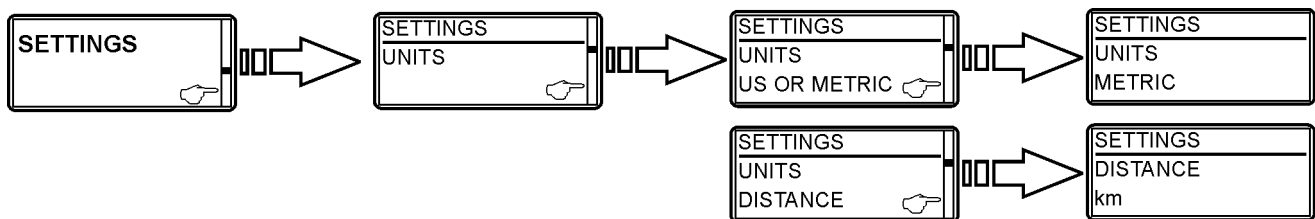
NOTE! Language and unit settings must be performed in all EVC system tachometers.

US or METRIC

1. Activate helm station by pushing the ACTIVATION BUTTON.
2. Select UNITS and push NAVIGATION WHEEL.
3. Select US OR METRIC and push NAVIGATION WHEEL.
4. Set US or METRIC units by turning NAVIGATION WHEEL and confirm by pushing NAVIGATION WHEEL.

DISTANCE

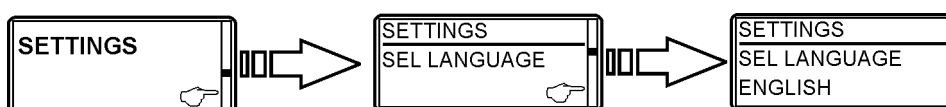
1. Activate helm station by pushing the ACTIVATION BUTTON.
2. Select UNITS and push NAVIGATION WHEEL.
3. Select DISTANCE and push NAVIGATION WHEEL.
4. Set distance unit: km, nm or miles and confirm by pushing NAVIGATION WHEEL.



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LANGUAGE

1. Activate helm station by pushing the ACTIVATION BUTTON.
2. Select SETTINGS from MAIN MENU by turning NAVIGATION WHEEL. Push NAVIGATION WHEEL to enter SETTINGS MENU.
3. Select SEL LANGUAGE and push NAVIGATION WHEEL.
4. Select language and confirm by pushing NAVIGATION WHEEL.



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Power Trim Assistant, PTA (Optional)

The Power Trim Assistant adjusts trim angle automatically according to engine speed (rpm). It is possible to set five trim angles at five different engine speeds, including idle speed.

PTA CALIBRATION

NOTE! For twin installations always perform the PTA CALIBRATION on the port side system. Port side is the master side.

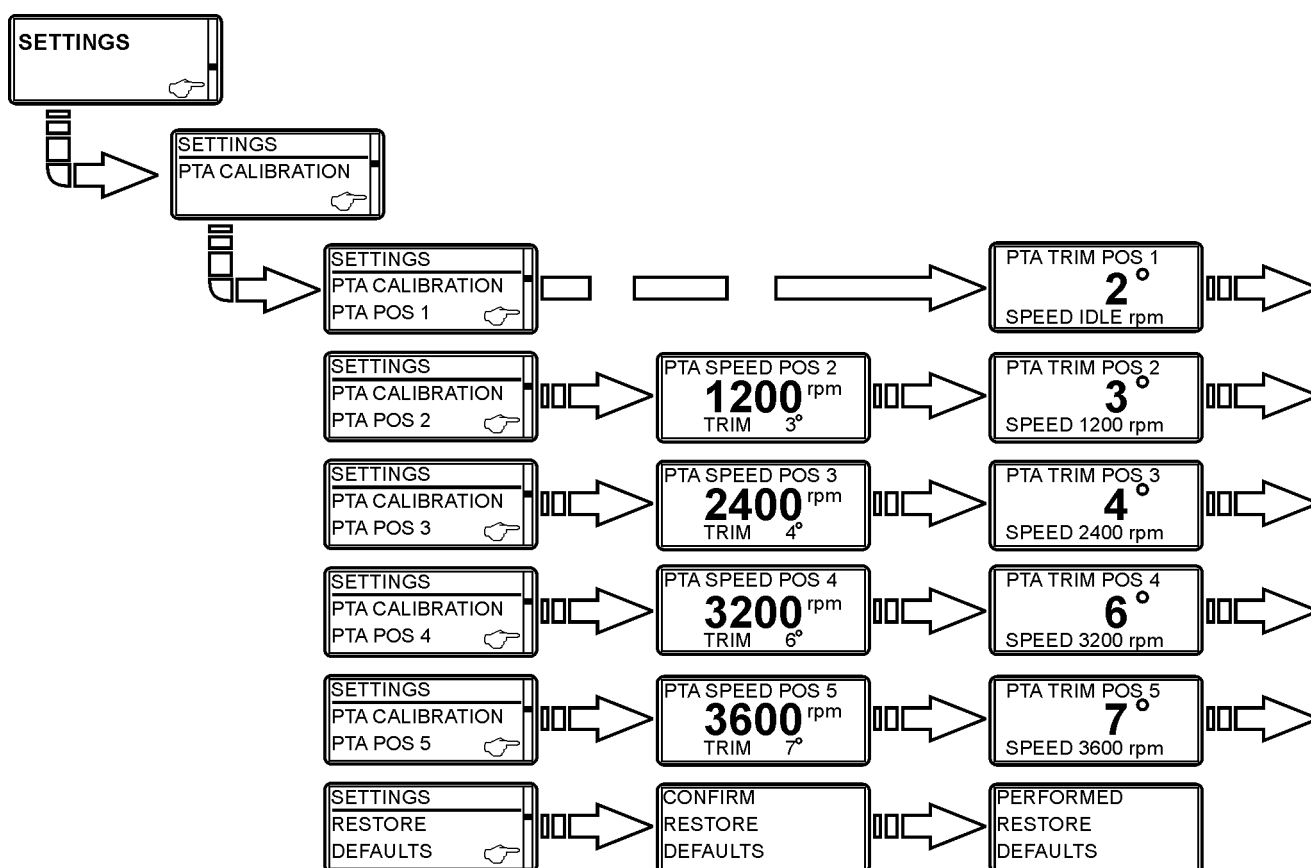
1. Activate helm station by pushing the ACTIVATION BUTTON.
2. Select SETTINGS from MAIN MENU by turning NAVIGATION WHEEL. Push NAVIGATION WHEEL to enter SETTINGS MENU.
3. Select PTA CALIBRATION and push NAVIGATION WHEEL.
4. Select PTA CALIBRATION POSITION (1-5) by turning NAVIGATION WHEEL. Push NAVIGATION WHEEL to enter selected PTA CALIBRATION POSITION.

5. Set RPM for PTA CALIBRATION POSITION by turning NAVIGATION WHEEL and confirm by pushing NAVIGATION WHEEL.

NOTE! RPM can not be set for PTA CALIBRATION POSITION 1, idling speed.

6. Set TRIM ANGLE for selected PTA CALIBRATION POSITION by turning NAVIGATION WHEEL and confirm by pushing NAVIGATION WHEEL.

Use the same procedure for all PTA CALIBRATION POSITIONS (2-5). Push BACK BUTTON to return to SETTINGS MENU.



50851

Fuel Tank Calibration

There are two possible calibration methods for the fuel tank, FULL TANK CALIBRATION (approximate) and FUEL MULTIPOINT CALIBRATION (more precise). A fuel level sender needs to be installed.

NOTE! If FUEL TANK CALIBRATION is not shown in SETTINGS MENU, please contact your Volvo Penta dealer.

FUEL MULTIPOINT CALIBRATION

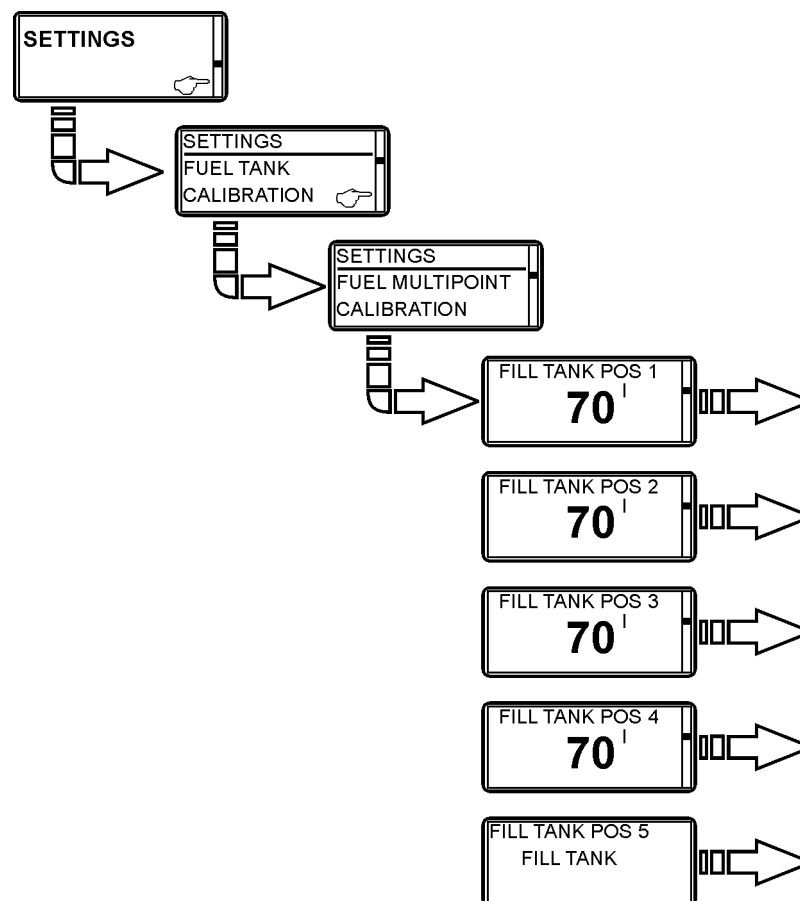
NOTE! If FUEL MULTIPOINT CALIBRATION is not shown in FUEL TANK CALIBRATION MENU, please contact your Volvo Penta dealer.

When FUEL MULTIPOINT CALIBRATION is selected, the fuel level sender is calibrated in five equally divided steps: 20% full, 40% full, 60% full, 80% full and 100% full.

1. Activate helm station by pushing the ACTIVATION BUTTON.

2. Select FUEL TANK CALIBRATION and push NAVIGATION WHEEL.
3. Select FUEL MULTIPOINT CALIBRATION by turning NAVIGATION WHEEL. Push NAVIGATION WHEEL to enter FUEL MULTIPOINT CALIBRATION.
4. Fill fuel tank with displayed volume and push NAVIGATION WHEEL. Repeat procedure until the fuel tank is full.

Push BACK BUTTON to return to SETTINGS MENU.

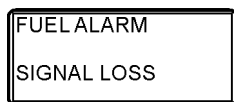
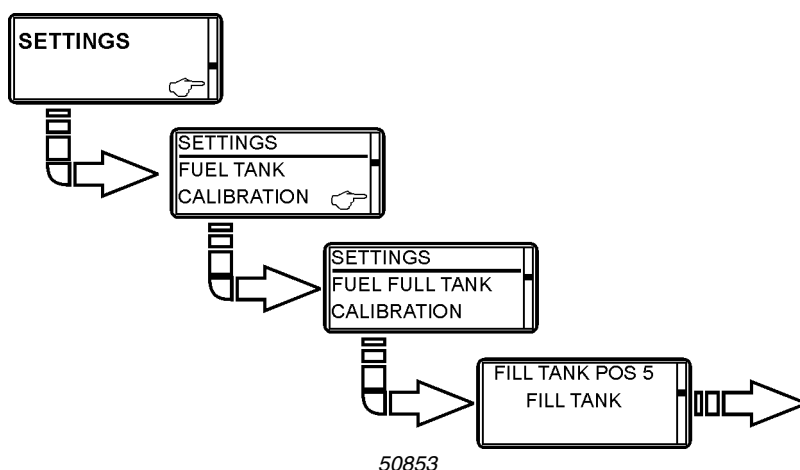


50852

FUEL FULL TANK CALIBRATION

When FUEL FULL TANK CALIBRATION is selected, the fuel level sender is calibrated in one step. This only gives an approximated value of the fuel level. Therefore all trip data, concerning and based on, remaining fuel volume should be recognized as approximated values only.

1. Activate helm station by pushing the ACTIVATION BUTTON.
2. Select FUEL TANK CALIBRATION and push NAVIGATION WHEEL.
3. Select FUEL FULL TANK CALIBRATION by turning NAVIGATION WHEEL. Push NAVIGATION WHEEL to enter FULL TANK CALIBRATION.
4. Fill fuel tank and push NAVIGATION WHEEL. Push BACK BUTTON to return to SETTINGS MENU.



50854

Approximated Trip Data

This popup will be shown every time after startup if FUEL FULL TANK CALIBRATION is performed.

Fuel Alarm Popup

The fuel level alarm popup will appear when the fuel level is lower than fuel alarm setpoint. The popup shows the percentage of fuel remaining.

Acknowledge fuel alarm by pushing NAVIGATION WHEEL.

Fuel level alarm popup will reappear every 10 minutes until the fuel level in tank is higher than fuel alarm setpoint.

Fuel Level Signal Loss

If the fuel level has been set and the fuel level signal is lost, for instance in the case of sensor malfunction, the fuel level alarm signal loss popup will appear.

Speed Factor

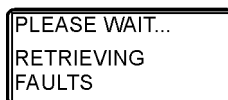
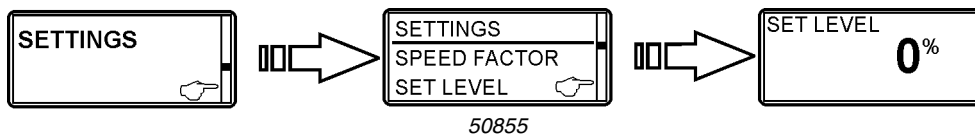
The speed factor for the boat's paddle wheel speed sensor can be adjusted at a resolution of 1% and is used by the EVC to apply a correction to the output from the speed sensor.

Set Speed Factor

Set speed factor while driving the boat. Compare displayed speed with speed data from GPS (or other boat) and adjust the speed factor until they correspond.

Adjust the speed factor by turning the NAVIGATION WHEEL.

Once adjustment value is reached, the data is stored by pushing NAVIGATION WHEEL.



50856

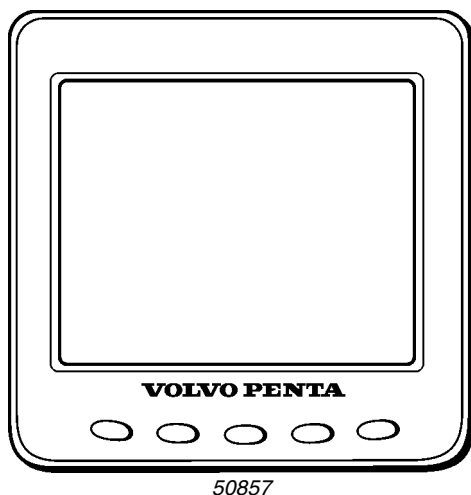
Information Message

Approximated Trip Data

This popup will be shown every time after startup if FUEL FULL TANK CALIBRATION is performed.

Retrieving Faults

The EVC system is retrieving faults from its nodes.



EVC System Display (Optional)

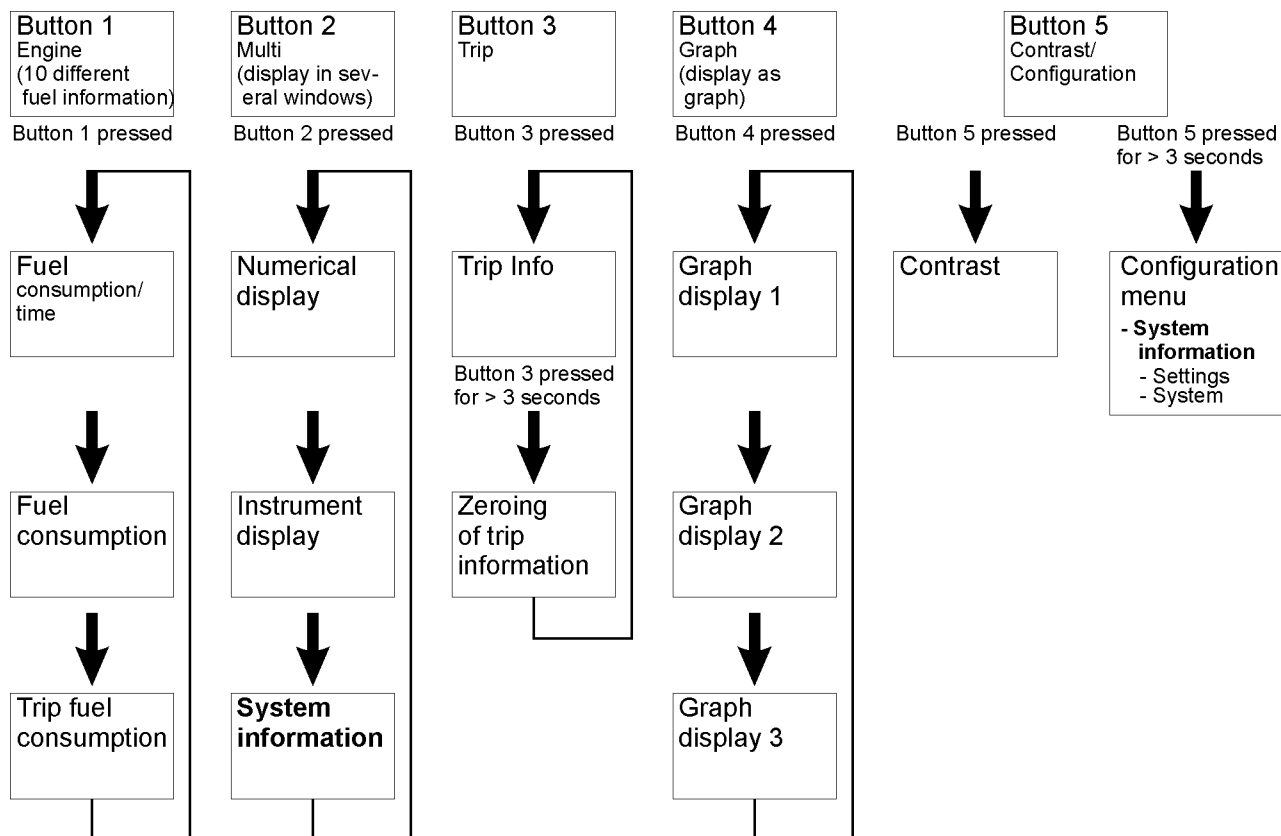
The Volvo Penta EVC system display is an instrument which displays operating information about the engine and allows you to communicate with the engine's electrical system.

Operation information is shown on an LCD display. The driver can select the display mode with the aid of the five buttons on the front of the instrument.

The four buttons on the left are used to display operating information in different ways. The rightmost button is used to adjust the display contrast and to access the configuration menu. Various settings can be made in the configuration menu. You can also use this menu to reach the display mode SYSTEM INFORMATION, which can also be reached via button 2 (please refer to the illustration below). This display mode functions in the same way as the display in the tachometer. For additional information, see *EVC System Tachometer* on page 7.

Before the display is used, it may be necessary to modify the way that the display shows operating information, to comply with user requirements. For additional information, see *Configuration Menu (Button 5)* on page 19.

Structure of the Display Functions



50858



50859

Start Image

This is the starting image that is shown on the display for a brief period after starting.

If the unit gives a constant audible warning after starting, the self-test has failed. The unit will still work, but may behave in an unexpected manner.

Symbols for Operating Information



Engine speed



Coolant temperature



Engine temperature



Oil pressure (current)



Coolant temperature



Speed



Fuel consumption/time



Intake Manifold Air Temperature



Voltage



Fuel level

Figure for single engine installation:

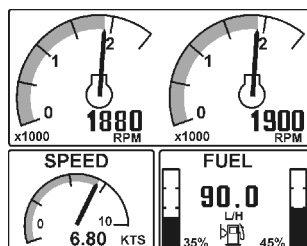
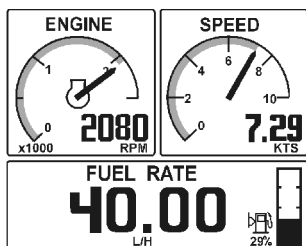
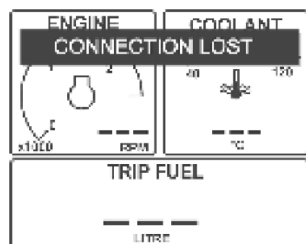


Figure for twin engine installation:



50860



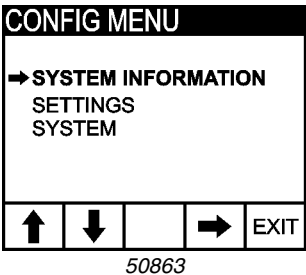
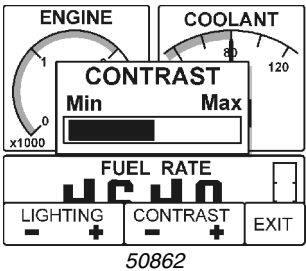
50861

Display After Starting Screen

Display mode ENGINE (button 1) is always shown after the starting screen when the display is first started up (more information about this display mode can be found below in the instructions). Once the display has been used, it will always show the last display mode viewed before it was last switched off.

Connection Fault

If the display does not register transfer of operating information from the electrical system, the popup window will flash CONNECTION LOST. When operating information has been registered/reset, the popup window disappears.



Set Display Contrast

Press button 5 (rightmost) to set display contrast. Press the appropriate buttons to alter the levels, then save the settings by pressing EXIT. The display unit has 5 contrast settings.

Configuration Menu (Button 5)

NOTE! Must be pressed for longer than 3 seconds.

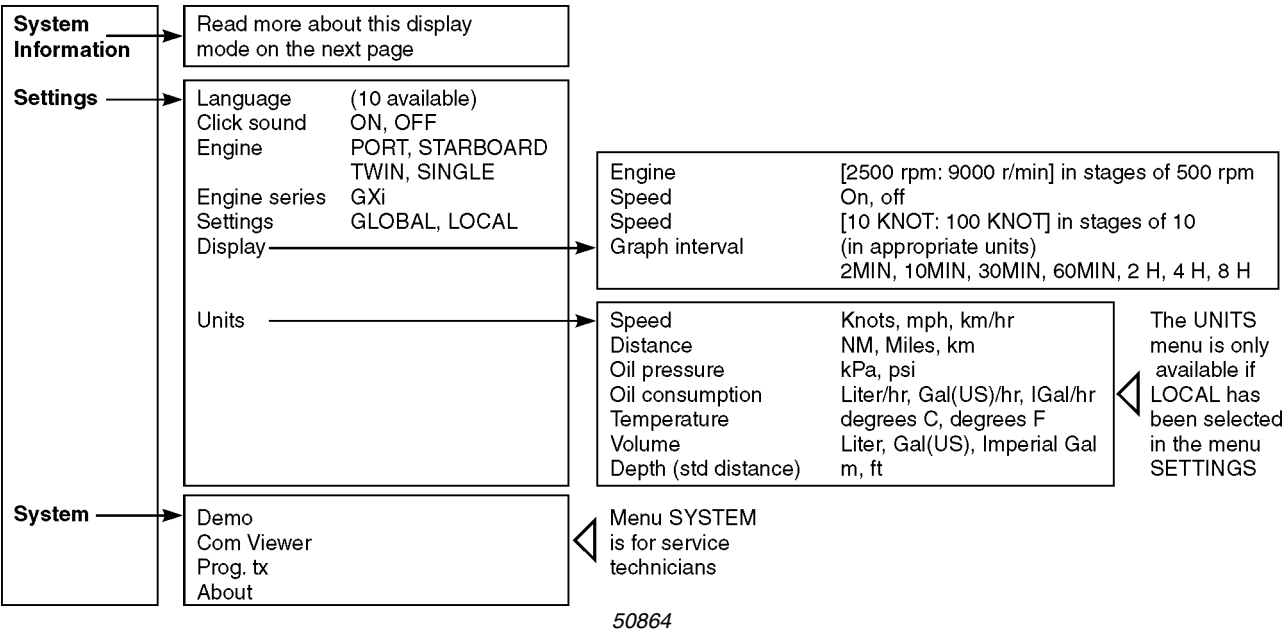
The configuration menu is used to:

- Access the display mode SYSTEM INFORMATION.
- Change various display settings.
- Reach information and functions for servicing the display.

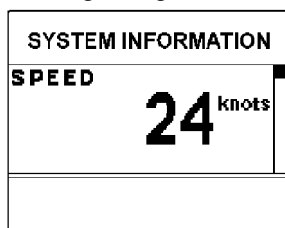
Please refer to the configuration menu structure below and read the following section, which explains each item in the menu.

NOTE! The port engine or both engines must have the ignition switched on when display settings are changed.

Configuration Menu Structure

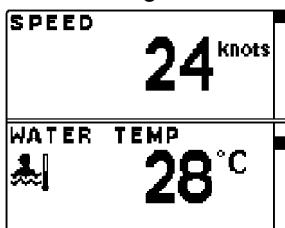


SYSTEM INFORMATION display mode for single engine installations:



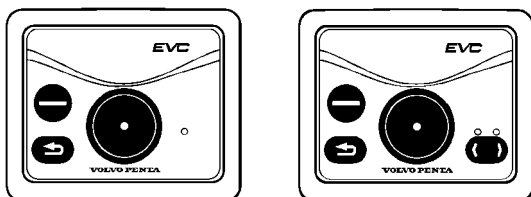
50865

SYSTEM INFORMATION display mode for twin engine installations:



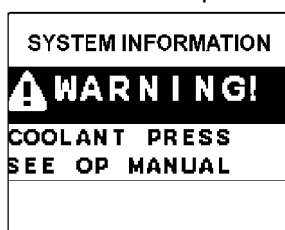
50866

Control Panel

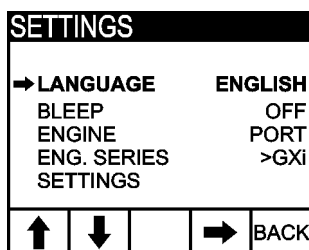


50867

Alarm Example



50868



50869

Display Mode System Information

SYSTEM INFORMATION is a display mode that functions in the same way as the display in the tachometer (EVC System Tachometer). You navigate around these functions using the buttons on the free-standing control panel.

In display mode SYSTEM INFORMATION there are several functions:

- Display of operating information, information messages and alarms (**NOTE!** The display is adapted to suit the size of the panel in the tachometer).
- Settings for displaying operating information in this display mode.
- All calibrations.

Detailed instructions for the functions in display mode SYSTEM INFORMATION are found in *EVC System Tachometer* on page 7.

Information Message and Alarm

The display automatically switches to display mode SYSTEM INFORMATION when the electrical system needs to show information messages or alarms. Instructions about how information messages and alarms should be handled are found in *Troubleshooting* on page 27.

Settings

Menu SETTINGS is used to change various display settings.

LANGUAGE: This is where you select the language that the display should use (10 different languages are available).

BLEEP: This is where you select whether a beep should be heard when any button is pressed. Set to ON or OFF.

ENGINE: This is where you select the engine for which operating data will be displayed: SINGLE, PORT, STARBOARD, or TWIN.

ENGINE SERIES: This is where you select the engine model for which the display has been installed.

UNITS	
SPEED	KM/H
→ DISTANCE	KM
OIL PRESSURE	kPa
VOLUME	LITER
FUEL RATE	L/H
↑	↓
→	BACK

50870

DISPLAY: This is where you set the measurement intervals of the speedometers and tachometers. Rpm engine: [2500 rpm to 9000 rpm] in stages of 500 rpm.

- Speed: Change speed display (ON/OFF)
- Speed: [10 KNOT to 100 KNOT] in stages of 10 (in the appropriate speed intervals)
- Graph Interval: 2 MIN, 10 MIN, 30 MIN, 60 MIN, 2 H, 4 H, 8 H

UNITS: This menu is only displayed if LOCAL has been selected in menu SETTINGS. This is where you select the measurement units to be used to display operating information. GLOBAL is pre-set, which means that the units of measurement are pre-set, but they can be changed if LOCAL is selected in menu UNITS.

- Speed: KNOT, MPH, KM/H
- The distance is adjusted to suit the speed unit: NM, MILE, KM
- Oil pressure: kPa, PSI
- Volume: LITER, GAL, Imperial GAL
- Fuel consumption/time: Adjusted to suit the volume unit (L/H, GAL/H, IGAL/H)
- Temperature: °C (CELSIUS), °F (Fahrenheit)

System

Menu SYSTEM is intended to provide the necessary functions and information for service technicians.

DEMO: Switches between demo mode ON/OFF. The unit is in normal operation mode when Demo is OFF.

COM VIEWER: Shows the latest messages received on the communication inputs.

PROG TX: Transfers the contents of the application program in the flash memory to other CANtrak units on the same CANbus link.

ABOUT: Shows the following information:

- ID No: Display serial number
- Eeprom: No. of writes to the EEPROM
- Vers: Software version number
- Chk: Flash memory checksum
- Part no: Volvo's part number for the software
- Source: Shows the source of the received data
- Label: Label allocated on the bus. Each unit on the same bus must have its own unique label

SYSTEM	
DEMO	ON
COM VIEWER	
PROG. TX	
→ ABOUT	
↑	↓
→	BACK

50871

Figure for single engine installation:

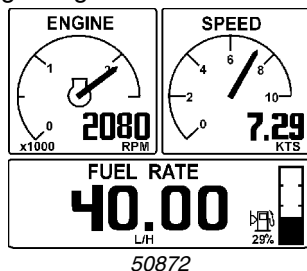
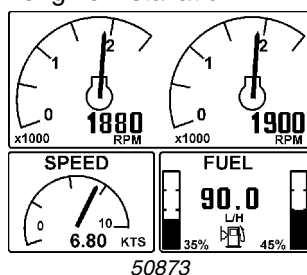


Figure for twin engine installation:



Display Mode Engine (Button 1)

This display mode shows the engine speed and boat speed in the form of standard instruments, together with a trip computer and fuel level gauge. The fuel level gauge and fuel rate are only displayed if there is a tank sender. The trip computer shows various types of information if you repeatedly press the button ENGINE (button 1). Please refer to the trip computer menu below.

NOTE! Trip information is only displayed if following are installed:

- Multisensor or NMEA 0183/NMEA 2000 compatible component (plotter, GPS, paddle wheel, etc.).
- Fuel level sender.
- Software for trip computer (order and download from VODIA website).

NOTE! Only metric values are displayed, but other units can be displayed if they have been chosen in the configuration menu.

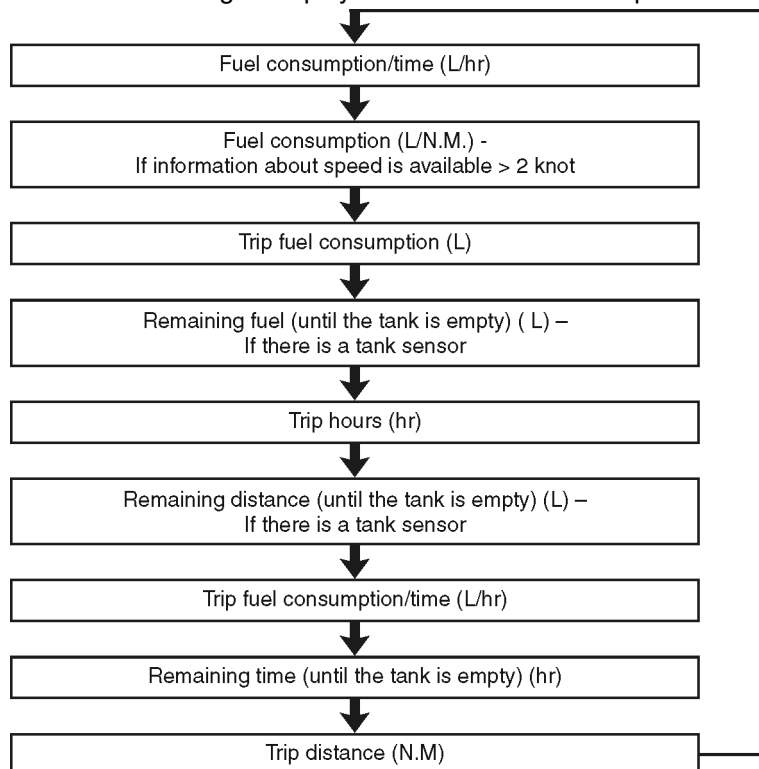
The scale values for maximum engine speed and maximum speed can be set in the configuration menu.

If information about boat speed is not available, the display shows coolant temperature instead.

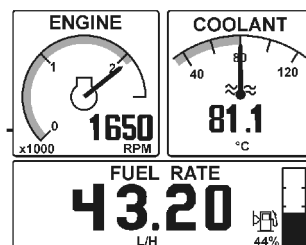
Menu, Trip Computer

Button 1

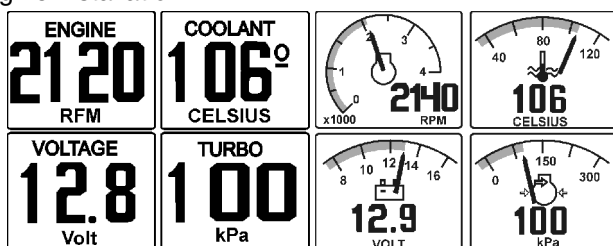
Changes display each time the button is pressed



50874

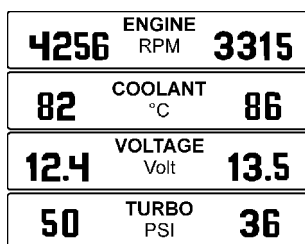


Example of display in several windows for single engine installation:

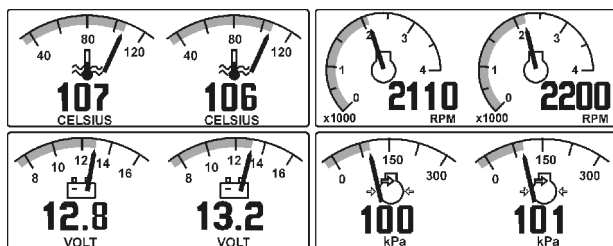


50875

Example of display in several windows for twin engine installation:

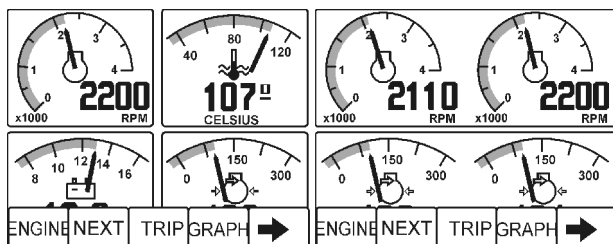


50876



50877

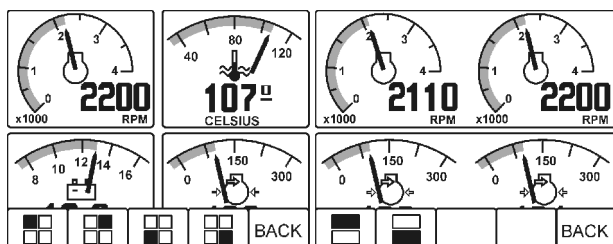
Figure for single engine installation:



50878

Press button 5 to choose setting mode

Figure for single engine installation:



50879

Buttons 1 to 4 are used to adjust the corresponding window (please refer to the black markings)

Display Mode Multi (Button 2)

This display mode shows operating information in four different windows (see below). The user can choose the operating information to be displayed in each window.

The information can be displayed as figures or as standard instruments. Display indication shifts between the two modes when you press button 2 repeatedly.

If an item of operating information is not available, the unit displays "—" and the analog gauge needle is not shown.

From this display mode MULTI, you can also reach display mode that functions in the same way as the smaller display in the tachometer. Read more about this display mode SYSTEM INFORMATION in the configuration menu section.

Set the Appearance of the Display Mode Multi

Display mode MULTI has a mode to set the operating information to be displayed in each window.

The setting mode is reached by pressing button 5 (rightmost), when you are in the display mode MULTI. Please refer to the illustrations below.

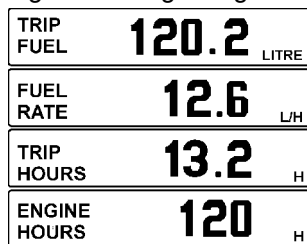
NOTE! The type of operating information available depends on the electrical system in the boat and the sensors with which the boat is equipped. Optional sensors include depth gauge, water temperature, speed, trim angle, and rudder angle.

NOTE! This applies to the graphic display:

The maximum engine speed range can be set on the configuration menu.

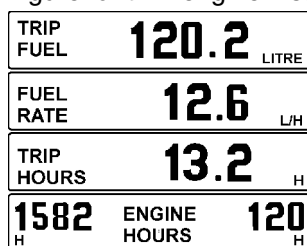
The voltage interval can be [8V: 16V] or [16V: 32V] and is changed automatically, depending on the latest data value.

Figure for single engine installation:



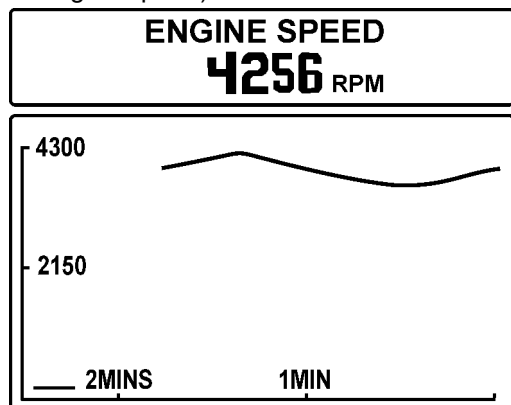
50880

Figure for twin engine installation:



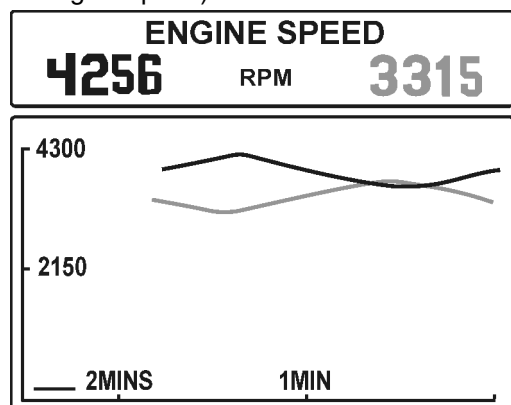
50881

Window with curve for single engine installation (shows engine speed)



50882

Window with curve for twin engine installation (shows engine speed)



50883

Display Mode Trip (Button 3)

This display mode shows:

- Fuel used after last zeroing.
- Instantaneous fuel consumption (amount of fuel used per hour). If speed information is available, instantaneous fuel consumption can also be calculated in relation to distance.
- Operation time after last zeroing.
- Total operating time (can not be zeroed).

If you want to zero the trip values (trip fuel consumption and trip operating time), keep button 3 depressed for 1 second. The unit beeps and the values are zeroed.

NOTE! When the display is set for a twin engine installation, the information displayed for each engine will be the sum of the values from both engines, apart from operating time. Operation times for twin engines are shown separately.

The size of the operating hours figures shown on the display is reduced if the number does not fit in the window.

Display Mode Graph (Button 4)

In this display mode, operating information is displayed in the form of a histogram. Press button 4 repeatedly to show different operating information.

If an item of operating information is not available, that window cannot be chosen.

If contact with the relevant information is lost during display, the curve will no longer be drawn, but the line will continue to scroll across the window.

Data for the port engine or single engine information is drawn with a black line.

Data for the starboard engine information is drawn with a gray line.

The maximum time interval can be set to one of the following values in the configuration menu: 2 min, 10 min, 30 min, 1 h, 2 h, 4 h, 8 h. The interval on the Y axis is automatically adjusted for best indication.

Reading the Instruments

Read all instruments and alarm displays directly after starting, and then regularly during your voyage. All the readings on the analog instruments are also available in the Menu system on the LCD display.



50830

Check the LEDs

Each time the ignition is turned on, all LEDs on the main control panel are illuminated. Check that all LEDs function.

If the boat has more than one control panel, the LEDs on the other panel(s) are not checked until the control panel(s) is(are) activated.

Check the Tachometer Display

If a fault is registered, it will be shown in the tachometer display.

Alarm

If a fault occurs, the audible warning will sound, the relevant warning lamp on the optional alarm display will start to flash, and the tachometer display will show an alarm pop-up.

1. Reduce engine speed to idle.
2. Acknowledge the alarm by pressing the navigation wheel on the control panel once.

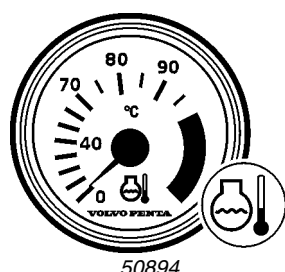
When the fault has been acknowledged, the relevant lamp remains lit and the audible warning becomes silent.

Please refer to *Troubleshooting* on page 27 for detailed information about recommended actions when responding to faults.

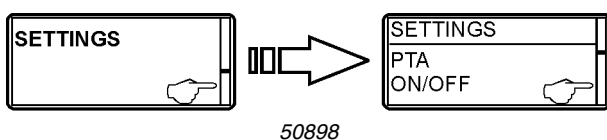
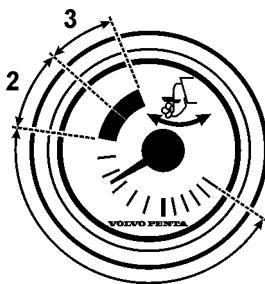
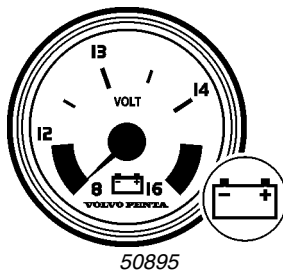
The fault will also be stored in the form of a fault code for as long as the malfunction persists. It is possible to read the fault code during a subsequent service.

Coolant Temperature (Optional)

The temperature gauge should normally indicate between 75–100°C (167–212°F) in normal operation. If the coolant temperature is too high, the audible warning will sound automatically while the warning lamp flashes.



50894



Charging (Optional)

During operation, system voltage should be about 14V. During warming of the engine the voltage is slightly higher.

If there is a charge failure the warning lamp will flash.

Trim Instrument

If a tachometer with LCD display is installed the trim angle will also be available in the Gauges menu.

Digital Trim Instrument

The display window will show TRIM while the drive angle¹ is in valid Trim range.

The display window will show BEACH while the drive angle¹ is in valid Beach range. LED 1 lights amber.

While the drive angle¹ is over +30° (tilt range), the LED 2 will light red. No text in display window.

Analog Trim Instrument

This instrument shows the current position of the drive. Beach range is marked with an amber zone and lift range with a red zone.

1. Trim range
2. Beach range (amber)
3. Lift range (red)

Power Trim Assistant (Optional)

The Power Trim Assistant adjusts trim angle automatically according to engine speed (rpm). It is possible to set five trim angles at five different engine speeds (Idle speed included). For additional information, see *EVC System Tachometer* on page 7.

The Power Trim Assistant is turned on and off in the EVC system tachometer menu SETTINGS, sub-menu PTA.

1. The number corresponds to the drive angle in relation to the horizontal (stationary boat). The lowest value shows that the drive is at max trim in and the highest value that the drive is raised to max. Observe that the lowest value can vary from boat to boat depending on the angle of the transom.

Malfunction Message: Engine and EVC-System

If the diagnostic function discovers a malfunction, the boat operator is warned by popups in the tachometer display and the warning alarm sounding.

Popups will alternate between "cause of fault" and "measures to take."

To acknowledge the alarm, press the NAVIGATION WHEEL. When the fault has been acknowledged, the alarm will become silent. Press the NAVIGATION WHEEL again. The popup will disappear and normal display window will be shown.

NOTE! To enable engine start, the alarm must be acknowledged.



50899



50900



50901

Danger Popup

If the Danger popup is shown during operation, a serious fault has occurred.

NOTE! Acknowledge the alarm and stop the engine at once, if it is safe to do so.

For additional information, please see *Fault Register* on page 29.

Warning Popup

If the Warning popup is shown during operation, a fault has occurred.

NOTE! Acknowledge the alarm and stop the engine at once, if it is safe to do so.

For additional information, please see *Fault Register* on page 29.

Caution Popup

If the Caution popup is shown during operation, a fault has occurred.

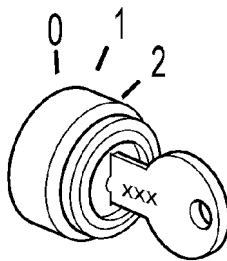
Acknowledge the alarm.

For additional information, please see *Fault Register* on page 29.

Faults are stored and malfunctions have been registered:



50902



50822

Faults List

A faults list can be viewed from the MAIN MENU, if a fault is registered.

When in MAIN MENU, select FAULTS by pushing NAVIGATION WHEEL. The number after FAULTS indicates number of faults stored in list. Show faults in the list by turning NAVIGATION WHEEL.

Shown fault popups will alternate between "cause of fault" and "measures to take."

For additional information, please see *Fault Register* on page 29.

Erasing Faults in Faults List

Any fault popups in the diagnostic function are automatically erased every time the starter key is turned to the stop position **0**.

NOTE! Stop the engine and check that the ignition key(s) is(are) in position **0** at all helm control stations.

When system voltage is switched on again, the diagnostic function checks to see whether there are any faults in the EVC system. If this is the case, new fault popups are shown.

This means that:












- Faults which have been attended to or have disappeared are automatically erased.
- Faults which have not been attended to must be acknowledged every time the system voltage is switched on.























Fault Register

⚠ WARNING! Read the safety precautions for maintenance and service in the section entitled *Safety information* in your engine Operator's Manual before starting work.

The following table is a description of possible faults, the warning lamp and color associated with the fault that will be activated, an indication of whether the audible alarm will sound, and the associated popup that will appear on the EVC tachometer display.

NOTE! If you are unsure how to proceed any time an action is required, please refer to the appropriate section in your engine Operator's Manual.

Fault Description	Lamp	Color	Alarm	EVC Tach Display
Engine Speed: Fault in engine speed sensor. EVC Action: Engine power is reduced. Operator Action: Please contact a Volvo Penta workshop.	 50831	Red	 50903	⚠ DANGER! ENGINE SPEED SEE OP MANUAL 50904
Air Temperature: Manifold air temperature too high. EVC Action: Engine power is reduced. Operator Action: Please contact a Volvo Penta workshop.	 50831	Red	 50903	⚠ WARNING! AIR TEMP SEE OP MANUAL 50905
Coolant Temperature: Coolant temperature too high. EVC Action: Engine power is reduced. Operator Action: <ul style="list-style-type: none"> Check coolant level. Check that the seawater intake is clear. Check the impeller in the seawater pump. Check that no leakage occurs. If the cooling water flow ceases, the exhaust hose should be inspected internally and replaced if the hose shows signs of damage. Please contact a Volvo Penta workshop if the fault persists. 	 50835	Red	 50903	⚠ WARNING! COOLANT TEMP SEE OP MANUAL 50906
Engine Oil Pressure: Oil pressure too low. EVC Action: Engine power is reduced. Operator Action: <ul style="list-style-type: none"> Check the oil level in the engine. Check that the oil filters are not blocked. Check that no leakage occurs. Please contact a Volvo Penta workshop if the fault persists. 	 50831  50832	Red	 50903	⚠ WARNING! ENGINE OIL PRESS SEE OP MANUAL 50907
Exhaust Temperature: Exhaust temperature too high. EVC Action: Engine power is reduced. Operator Action: Please contact a Volvo Penta workshop.	 50831	Red	 50903	⚠ WARNING! EXHAUST TEMP SEE OP MANUAL 50908

Fault Description (Continued)	Lamp	Color	Alarm	EVC Tach Display
Battery Voltage: Battery voltage too low. EVC Action: None Operator Action: <ul style="list-style-type: none"> Check battery fluid level. Check belt tension. Please contact a Volvo Penta workshop if the fault persists. 	 50831  50834	Amber	—	 50909
Primary Battery: Poor battery or charging. EVC Action: None Operator Action: <ul style="list-style-type: none"> Check battery fluid level. Check belt tension. Please contact a Volvo Penta workshop if the fault persists. 	 50831  50834	Red	 50903	 50910
Secondary Battery: Poor battery or charging. EVC Action: None Operator Action: <ul style="list-style-type: none"> Check battery fluid level. Check belt tension. Please contact a Volvo Penta workshop if the fault persists. 	 50831  50834	Red	 50903	 50911
Power Trim: Fault in power trim system. EVC Action: Cannot change trim position. Operator Action: <ul style="list-style-type: none"> Emergency Trimming. Please contact a Volvo Penta workshop if the fault persists. 	 50831	Red Amber	 50903	 50912  50913
Check EVC System: Internal fault in the EVC system. EVC Action: Engine power is reduced. Operator Action: <ul style="list-style-type: none"> Restart engine(s). If the engine cannot be operated from the chosen control panel, use an alternative control panel. Please contact a Volvo Penta workshop if the fault persists. 	 50831	Red Amber	 50903	 50914  50915
System Failure: Miscellaneous fault. EVC Action: None Operator Action: <ul style="list-style-type: none"> Restart engine(s). Please contact a Volvo Penta workshop if the fault persists. 	 50831	Red	 50903	 50916



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