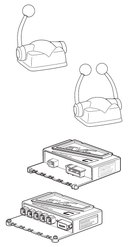
Components and cables

Controls
Single engine control
- Aluminum
- Stainless steel

Twin engine control
- Aluminum
- Stainless steel



PCU
Power train Control Unit
180x160x65 mm (7.1x6.3x2.6 in.)

HCU
Helm station Control Unit
180x160x65 mm
(7.1x6.3x2.6 in.) 1B), 2B),

Key switch, main station
Kit, one key switch 1A)
Kit, two key switches 3A)

EVC control panel
Single installation kit 1A), 1C)
Twin installation kit 2A), 2C)

Start/stop control panel, secondary station
Single installation 1C)
Twin installation 2C)

Multisensor
Hull mounted
Transom mounted

NMEA 0183 interface
NMEA 2000 interface
Incl. cables 0.5 m (1.4 ft.)

4–20 mA interface, input
4–20 mA interface, output
Incl. cables

Aux. dimmer unit (ADU)
Incl. cables 0.5 m (1.4 ft.)

Relay for external accessories
12V, 24V

Instruments
Instruments can be ordered with black or white dial.

Rings and nuts are not included
Ordered separately.

EVC system tachometer
Diameter 85 mm (3.35 in.)
110 mm (4.33 in.)
0–4000 rpm

Speedometer
Diameter 85 mm (3.35 in.)
110 mm (4.33 in.)
0–40 kn, 0–23 mph
0–60 kn, 0–69 mph

Alarm instrument (optional)
Diameter 52 mm (2.05 in.)

Coolant temp
Diameter 52 mm (2.05 in.)
C°, F°

Volt meter
Diameter 52 mm (2.05 in.)
12 V, 24 V

Fuel level
Diameter 52 mm (2.05 in.)

Engine oil pressure
Diameter 52 mm (2.05 in.)
bar, psi

Turbo pressure
Diameter 52 mm (2.05 in.)
bar, psi

Rudder indicator
Diameter 52 mm (2.05 in.)

Fresh water level
Diameter 52 mm (2.05 in.)

Front ring kit (nut)
Diameter 52 mm (2.05 in.)
Black/Chrome

Diameter 85 mm (3.25 in.)
Black/Chrome

Front ring kit (clamp)
Diameter 52 mm (2.05 in.)
Black/Chrome

Diameter 85 mm (3.25 in.)
Black/Chrome

EVC system display
Display incl. cable 1.5 m (5 ft)

Buzzer (optional)

Sender

Fuel level sender	3–180 ohm
Fuel level sender	240–30 ohm
Water level sender	3–180 ohm
Rudder angle sensor	3–180 ohm

Cables

Pos.	Feet	Meter	Part no.
1. Engine–PCU cable,			
	10	3.0	3808579 3)
	16	5.0	3808580
1a. Transmission cable ZF	10	3.0	3808581 3)
1b. Transmission cable MG	10	3.0	3819944 3)
2. Standard EVC bus cable PCU–HCU, 6 pin*			
	16	5.0	874789
	23	7.0	889550
	30	9.0	889551
	36	11.0	889552
	42	13.0	889553

*) One cable per engine has to be ordered.

3. Y-connector, EVC bus cable – secondary helm station, 6-pin	1.6	0.5	3588972 1B), 2C)
4. Y-split multilink Tachometer, EVC system display, syncronization, multisensor, NMEA interface, 6-pin	1.6	0.5	3588206 2A), 2B)
5. Display cable, 6/12-pin	3	1.0	3588207*

*) Incl. in display kit 3884818

6. Multilink/Tachometer and syncronization cable, 6-pin	5	1.5	3886666 2A), 2C)
7. Control lever cable, 6-pin	5	1.5	874676 1A),1C),2A),2C)
8. Key switch and relay cable, 6-pin	3	1.0	888004 1A), 2A)
8a. Relay cable, start-stop control panel, 2/6-pin	3	1.0	881786
9. Y-connector, 12-pin and 8-pin, 4–20 mA interface output	0.7/70.	2/2.0	3884709
10. Instruments, panels and auxiliary cable (optional)	5	1.5	3808852 1A), 1B), 2A), 2B)

11. Extension cables, 6-pin
EVC bus cable
EVC control panel
Multilink connections
HCU–Start/stop control panel
HCU–Key switch cable
Sync. cable
EVC system display, multisensor
NMEA interface 0183 and 2000

Feet	Meter	Part no.
5	1.5	3889410
10	3.0	3842733
16	5.0	3842734
23	7.0	3842735
30	9.0	3842736
36	11.0	3842737

12. Extension cable, 3-pin
Instruments

Feet	Meter	
3	1.0	874759
10	3.0	3807043

EVC kits

Single engine installation
1A) Main helm station, kit
1B) One additional stn, HCU-kit
Two additional stn, HCU-kit
Three additional stn, HCU-kit
1C) Additional station, EVC-kit

Twin engine installation
2A) Main helm station, kit
2B) One additional stn, HCU-kit
Two additional stn, HCU-kit
Three additional stn, HCU-kit
2C) Additional station, EVC-kit

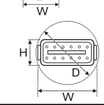
3) Included in engine specification

Connector dimensions:

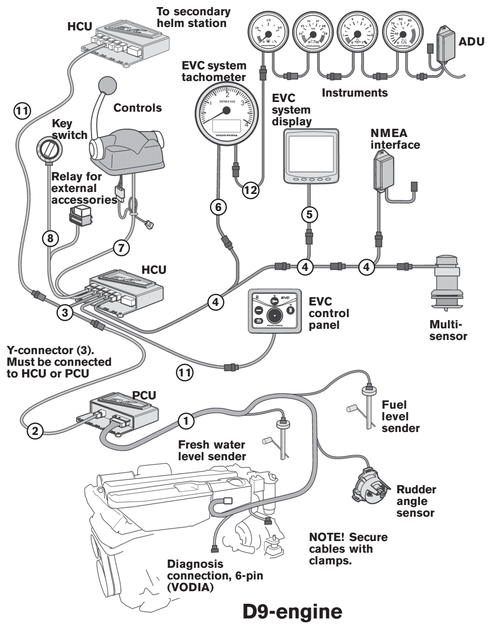
3-pin
H = 18 mm (0.71 in.)
W = 26 mm (1.02 in.)
D = 26 mm (1.02 in.)

6-pin
H = 21 mm (0.82 in.)
W = 23 mm (0.88 in.)
D = 32 mm (1.26 in.)

12-pin
H = 23 mm (0.88 in.)
W = 41 mm (1.62 in.)
D = 48 mm (1.90 in.)

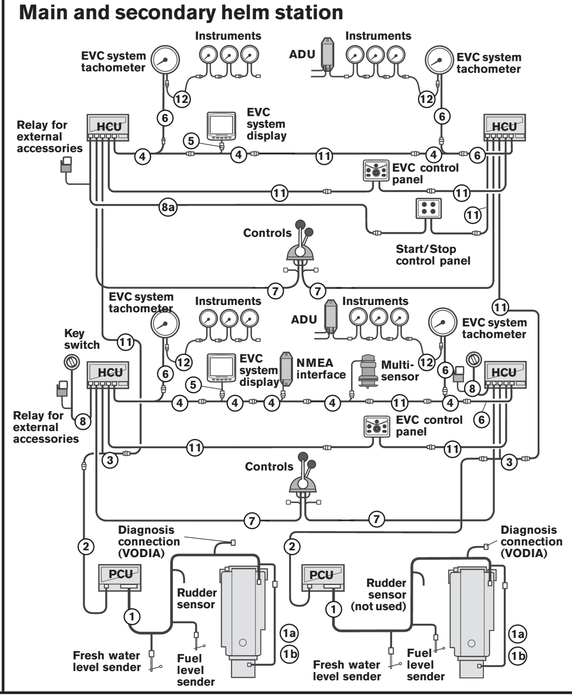


Single installation



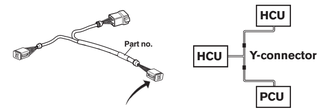
D9-engine

Twin installation
Main and secondary helm station



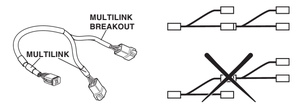
Cables and color coding

Y-connector



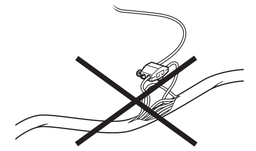
NOTE! This end on Y-connector must be installed directly, without extension, to the PCU or HCU

Y-split multilink



NOTE! Do not connect another Y-split to the MULTILINK BREAKOUT. If more than one Y-split is needed connect them in chain, MULTILINK to MULTILINK.

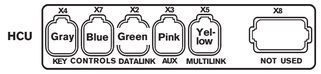
Colour coding of cables:
Starboard – green
Port – red



⚠ IMPORTANT! Never cut or modifiy the Volvo Penta EVC cable harnesses. For extra power supply use the Volvo Penta relay for external accessories.

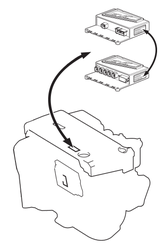
PCU/HCU configuration
See labels on units

X2	Green	Data-link – EVC bus cable
X3	Pink	Engine and transmission



X2	Green	Data-link – EVC bus cable
X3	Pink	Auxiliary bus – EVC control panel
X4	Grey	Key switch alt. start/stop panel
X5	Yellow	Multilink – Tachometer/instruments, engine synchronization, EVC system display, NMEA-interface, multisensor
X7	Blue	Controls
X8	–	Not used, plugged

PCU/HCU identification



ENGINE CHASSIS ID.
VP 000000
ENGINE SERIAL NO.
0000000000

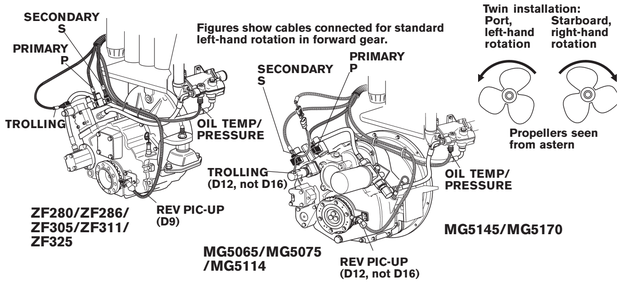
⚠ IMPORTANT! The chassis no. on the PCU/HCU must correspond with the engine chassis no.

A Reverse gear

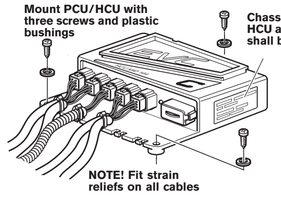
Twin installations: Check propeller rotation. Shift cable connectors on gear shift solenoids.
Port engine: Left hand rotation
Starboard engine: Right hand rotation

Standard–left hand rotation:
Connector PRIMARY to solenoid P
Connector SECONDARY to solenoid S

Twin installation:
Port, left-hand rotation
Starboard, right-hand rotation

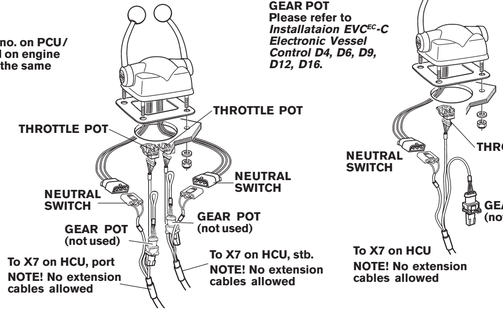


B Mount PCU and HCU. Connect and clamp cables



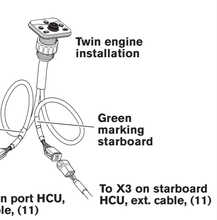
C Connect "THROTTLE POT" and "NEUTRAL SWITCH" to control

GEAR POT
Please refer to *Installataion EVC^{EC}-C Electronic Vessel Control D4, D6, D9, D12, D16.*

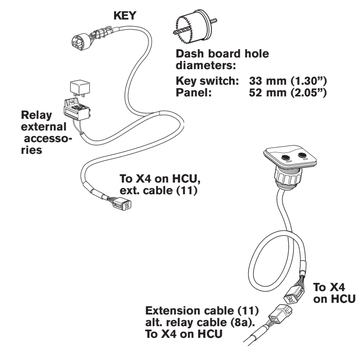


D Mount and connect the EVC control panel

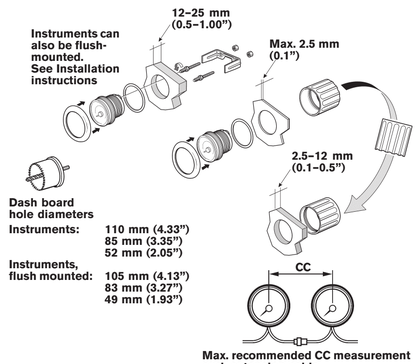
Panels can also be flush-mounted. See Installation instructions.



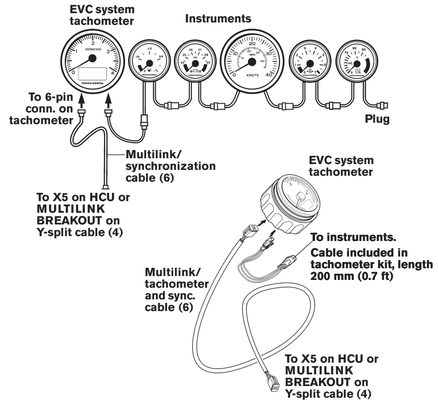
E Mount and connect key switch alt. start/stop control panel



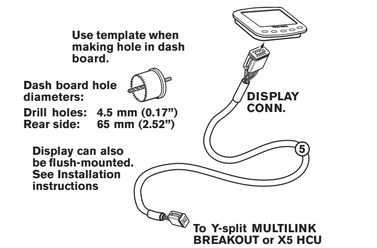
F Mount tachometer and other instruments



G Connect EVC system tachometer Connect instruments in series



H Mount and connect EVC system display



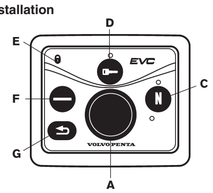
EVC^{EC}-C Installation Electronic Vessel Control D9, D12, D16

VOLVO PENTA

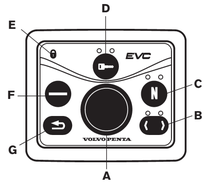
EVC^{EC}-C Calibration and settings D9, D12, D16

EVC Control Panel

Single installation



Twin installation



A. **NAVIGATION WHEEL**
Select: Turn navigation wheel to select sub menu or select setting.
Enter: Push navigation wheel to reach selected sub menu.
Confirm: Push navigation wheel to confirm setting

B. **TACHOMETER DISPLAY SELECTION**
(twin installations, port/starboard)
Indication LED(s) red (red/green)

NOTE! LED(s) indicates which EVC system tachometer/EVC system display the EVC control panel controls: Port or starboard side.

C. **NEUTRAL BUTTON**
Confirming
Volvo Penta Lowspeed/Trolling
Warming up
Indication LED(s) green
- Constant light: Neutral
- No light: FWD/REV
- Flashing: Calibration mode or Warming up mode

D. **ACTIVE STATION BUTTON**
Activate helm station
Indication LED(s) red
- Constant light: Station active
- No light: Station inactive
- Flashing: Attempt to take station not permissible

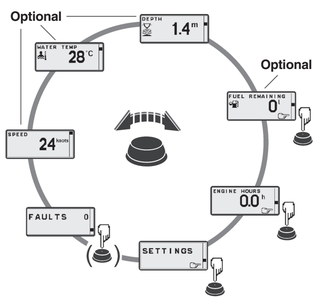
E. **STATION LOCK INDICATION**
If lit, the system is locked and the engine can only be controlled from the activated control panel

F. **MULTIFUNCTION BUTTON**
Push to increase or decrease the instrument's and panel backlighting
- Dimmer
- Auto configuration (together with BACK BUTTON)
- Montoring helm

G. **BACK BUTTON**
Push to step backwards in the menu
- Menu structure
- Auto configuration (together with MULTIFUNCTION BUTTON)

Menu system

At power-up Volvo Penta logotype will be shown in display. After a few seconds MAIN MENU will appear.



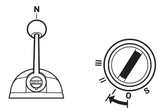
NOTE! If there are no faults registered, the FAULTS LIST will not be available in the MAIN MENU.

Navigate MAIN MENU by turning NAVIGATION WHEEL clockwise or counter clockwise. Views with pointing hand-symbol indicates SUB MENU. Push NAVIGATION WHEEL.

⚠ **IMPORTANT!** For all setting procedures:
Activate helm station by pushing the ACTIVE STATION BUTTON on the EVC control panel.

1. Calibration mode

Preparations

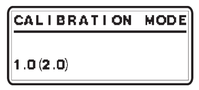


– Turn main switch(s) on.
– Turn starter key(s) to position **I**.
– Control lever(s) in neutral position.

Enter calibration mode

Procedure is the same for single/twin installations and for main/secondary helm respectively.

1. Push and hold NAVIGATION WHEEL and BACK BUTTON until a signal from buzzer is heard and calibration mode pop-up screen is shown in tachometer display/EVC system display.
   Release buttons.



2. Calibration mode is indicated with NEUTRAL BUTTON LED(s) flashing and pop-up screen in tachometer display/EVC system display.

NOTE! When entering calibration mode in an EVC^{EC}-C system with a never before used EVC system display, the text "**CALIBRATION MODE**" will not appear in the display. The text "**INCORRECT DATABASE**" will be shown on the EVC system display.

NOTE! The first digit varies depending on system configuration.
1.0 indicates a single lever control.
2.0 indicates separate throttle/gear or additional trolling levers.

NOTE! The system exits from calibration mode after 45 seconds if no actions occur.

2. Auto configuration

EVC system tachometer

Auto configuration is the EVC system self-identification. Auto configuration should be performed when the system is started for the first time or after system updates.

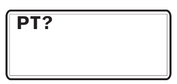
NOTE! A twin installation requires one auto configuration to each engine. **Start with port engine**.

NOTE! In a twin installation when using both EVC system tachometer and EVC system display, please refer to section **Auto configuration - EVC system display** before auto configuration is performed.

1. Turn starter key to position **I** (**ignition on**).
   Twin installation: Start with port engine (**starboard engine - ignition off**)
2. Enter calibration mode.
3. Push and hold BACK BUTTON and MULTIFUNCTION BUTTON until buzzer signal and LEDs light up.
   Release buttons.

4. Self identification and software download starts.
   The procedure may take **several minutes** depending on software download to the tachometer display/EVC system display.

NOTE! The EVC system starts to download software to all tachometers followed by the EVC system displays. When downloading software no information will be presented in the displays and all LEDs are off. If the tachometer has never been used status bars will be shown on the tachometer display. First The "**SOFTWARE**" status bar will be shown and afterwards the "**ICON**" status bar.



Wait until **PT?** appears and follow instructions in step 5–7 or 8–10.

Tachometer configuration

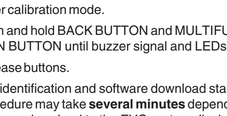
Perform step 5–7 for single installation alt. step 8–10 for twin installation.

Single installation (step 5–7)

5. The tachometer display will read "**PT?**".
   Confirm by pushing NAVIGATION WHEEL.
6. Wait until "**PTIS**" disappers from tachometer display and MAIN MENU appears.
7. Auto configuration is finished.

Twin installation (step 8–10)

8. One of the tachometer displays will read "**PT?**" (port engine).
   If this tachometer is connected to port engine:
   Confirm by pushing NAVIGATION WHEEL.



   If not: Use BACK BUTTON to move "**PT?**" to the corresponding tachometer display. Confirm by pushing NAVIGATION WHEEL.
   "**PTIS**" is shown in display.
9. The other tachometer display will read "**SB?**" (starboard engine). Confirm by pushing NAVIGATION WHEEL.
   "**SBIS**" is shown in display.
10. Wait until "**PTIS**"/ "**SBIS**" disappers from tachometer display and MAIN MENU appears.

Additional helm station(s)

Repeat step 5–7 or 8–10 for each additional helm station.

11. Auto configuration for port engine is finished.
    Turn starter key to position **0** (**ignition off**).

Starboard engine

Repeat step 1–4 for the starboard engine (**port engine - ignition off**)

NOTE! No information will be presented in the tachometer display window during auto configuration. The procedure may take **several minutes**. When the auto configuration is finished, the system returns to MAIN MENU (indicated by NEUTRAL BUTTON LED).

EVC system display

Auto configuration is the EVC system self-identification. Auto configuration should be performed when the system is started for the first time or after system updates.

NOTE! A twin installation requires one auto configuration to each engine. **Start with port engine**.

⚠ **IMPORTANT!** In a twin installation, when using one combined EVC system display, the display must be configured as a "**TWIN**" before auto configuration is performed.

In a twin installation, when using two EVC system displays, the displays must be configured as "**PORT**" resp. "**STARBOARD**" before auto configuration is performed.

1. Turn starter key to position **I** (**ignition on**).
   Twin installation: Start with port engine (**starboard engine - ignition off**).
2. Enter calibration mode.
3. Push and hold BACK BUTTON and MULTIFUNCTION BUTTON until buzzer signal and LEDs light up.
   Release buttons.
4. Self identification and software download starts. The procedure may take **several minutes** depending on software download to the EVC system display.

NOTE! The EVC system starts to download software to all tachometers followed by the EVC system displays. When downloading software no information will be presented in the displays and all LEDs are off. If the displays have never been used the text "**UPLOADING DATABASE**" will appear on the displays.

5. When the auto configuration is finished, the system returns to MAIN MENU (indicated by NEUTRAL BUTTON LED).

Twin installation

Repeat step 1–5 for the starboard engine (**port engine - ignition off**). When the auto configuration is finished, the system returns to MAIN MENU (indicated by NEUTRAL BUTTON LED).

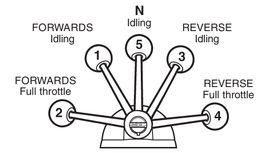
3. Lever calibration

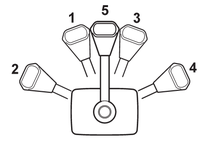
Electronic lever control – top and side mounted
Single and twin installations

NOTE! The following description applies to Volvo Penta's electronic controls.

NOTE! If the controls for two engines are calibrated, both levers should be calibrated at the same time, to give the same lever travel/positions for both engines.

1. Enter calibration mode
   1.0 is shown on the tachometer display.
   NOTE! 1.0 indicates a single lever control.





2. Move the lever to the forward idling (1).
   Release the lever and confirm the position by pushing NEUTRAL BUTTON.
   1.1 is shown on the tachometer display.
3. Move the lever to the position for full throttle forward (2).
   Release the lever and confirm the position by pushing NEUTRAL BUTTON.
   1.2 is shown on the tachometer display.
4. Move the lever to the reverse idle position (3).
   Release the lever and confirm the position by pushing NEUTRAL BUTTON.
   1.3 is shown on the tachometer display.
5. Move the lever to the reverse full throttle position (4).
   Release the lever and confirm the position by pushing NEUTRAL BUTTON.
   1.4 is shown on the tachometer display.
6. Move the control lever to neutral position (5).
   Release the lever and confirm the position by pushing NEUTRAL BUTTON.
   1.5 is shown on the tachometer display.
7. Push NEUTRAL BUTTON to exit lever calibration. The NEUTRAL BUTTON LED(s) will show steady light and the system returns to MAIN MENU.

NOTE! Other types of control levers, please refer to ***InstallationEVC^{EC}-C Electronic Vessel Control D4, D6, D9, D12, D16***.

4. Select language and units

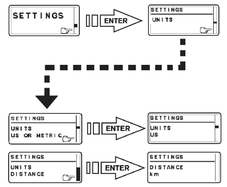
1. Activate helm station by pushing the ACTIVE STATION BUTTON on the EVC control panel.
2. Select and enter SETTINGS from MAIN MENU.

Language

3. Select and enter SEL LANGUAGE.
4. Select and confirm the appropriate language.

Units

5. Select and enter UNITS.
   Select UNITS US OR METRIC.
6. Select and confirm the appropriate unit (US or metric).



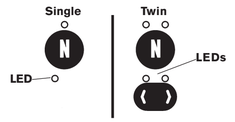
7. Select and enter UNITS DISTANCE.
8. Select and confirm the appropriate unit for distance (km, NM, MILES).
9. Push BACK BUTTON twice to return to MAIN MENU.

5. OEM-mode

Enter OEM-mode

NOTE! Always exit OEM-mode before changing helm station

1. Activate helm station by pushing the ACTIVE STATION BUTTON on the EVC control panel.
2. Enter OEM-mode by pushing the MULTIFUNCTION BUTTON for at least 5 seconds.



3 The red (red/green) LED(s) is flashing and pop-up screen **OEM MODE ACTIVATED** is shown for approx. 5 seconds.
In **twin installations** one of the tachometer display is activated. To change tachometer, push TACHOMETER DISPLAY SELECTION BUTTON.

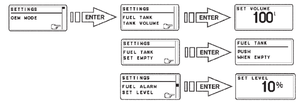
Exit OEM-mode

4. Exit OEM-mode by pushing the MULTIFUNCTION BUTTON for at least 5 seconds. The red (red/green) LED(s) stops flashing. Pop-up screen is shown in display for approx. 5 seconds.

6. Settings

Fuel tank settings

1. Activate helm station by pushing the ACTIVE STATION BUTTON.
2. Enter OEM-mode
3. Select and enter SETTINGS from MAIN MENU.
   Select and enter OEM MODE from SETTINGS.



Fuel tank volume setting

4. Select and enter FUEL TANK TANK VOLUME.
5. Set the fuel tank volume by turning the NAVIGATION WHEEL to an appropriate value and confirm by pushing.

Empty fuel tank setting

NOTE! The fuel tank must be empty.

6. Select and enter FUEL TANK SET EMPTY.
7. Confirm empty tank in the PUSH WHEN EMPTY window.

Fuel alarm (if needed)

NOTE! The default level of the fuel alarm is set to 0% of the tank volume, which means that the alarm is off. For the alarm to function, the desired alarm level must be set.

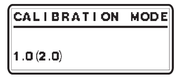
8. Select FUEL ALARM SET LEVEL. Push NAVIGATION WHEEL.
9. Set the level (in %) by turning the NAVIGATION WHEEL clockwise or counter-clockwise to an appropriate value and confirm by pushing the NAVIGATION WHEEL.

NOTE! For "Fuel multi-point calibration" and "Full tank calibration", please refer to ***Installation EVC^{EC}-C Electronic Vessel Control D4, D6, D9, D12, D16***.

7. Slip calibration (Volvo Penta Lowspeed/Trolling)

⚠ **WARNING!** This procedure requires engine running and gear engagement. Moor the boat in a proper and safety way.

⚠ **WARNING!** During the calibration sequence forward gear will automatically be engaged and disengaged for several times.



1. Enter calibration mode

2. Push and hold MULTIFUNCTION BUTTON and NEUTRAL BUTTON for 5 seconds to enter SLIP CALIBRATION.
   Display reads **CALIBRATION SLIP 6.1**

3. Start engine and engage gear. Calibration starts automatically.
   Display reads **CALIBRATION SLIP 6.2**

⚠ **WARNING!** The slip function will now be calibrated. During the calibration sequence forward gear will automatically be engaged and disengaged for several times.

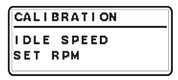
NOTE! The time the system needs for slip calibration may vary from **5–20 minutes** depending on transmission type.

4. When calibration is ready display reads **CALIBRATION SLIP 6.3**
5. Move the control lever to neutral position.
6. Push the NEUTRAL BUTTON to exit calibration mode. The NEUTRAL BUTTON LED(s) will show steady light. Push BACK BUTTON to return to MAIN MENU.

8. Idling speed calibration (if needed)

NOTE! When calibrating idling speed the Full Throttle Forwards position on the lever corresponds to maximum idling speed.

1. Activate helm station by pushing the ACTIVE STATION BUTTON.



2. Enter calibration mode.
3. Start the engine. Pop-up in display indicates **IDLE SPEED SET RPM**
4. Adjust the idling speed with the control lever. Idling speed can be adjusted to a value between:

D9 engines	500–750 rpm
D12 engines	500–700 rpm (MP)
	500–800 rpm (MH)
D16 engines	550–600 rpm

   Confirm rpm by pushing the NEUTRAL BUTTON.

5. Move lever to neutral position and stop the engine.

7745748 09-2007