Components and cable harnesses

Twin lever control
Control, black or stainless

Steering kits
Helm steering unit incl. cables, 2.5 m (8 ft.) [1A), 1B)]
Steering wheel tilt adjuster, compl. [1A), 1B)]
Joystick, complete

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

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

Key switch, main station
Kit, two key switches [1A)]

EVC control panel
Twin installation [1A), 1B)]

Docking station panel
Twin installation

Start/stop control panel, secondary station
Twin installation [1B)]

Coil/connector, solenoid valve
Coils, 2 pcs 12 V [2)]
Coils, 2 pcs 24 V [2)]

Multisensor
Hull mounted
Transom mounted

Autopilot interface
Incl. cables 0.5 m (1.4 ft.)

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

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°

Voltmeter
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

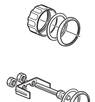
Rudder indicator
Diameter 52 mm (2.05 in.)

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

Fresh water level
Diameter 52 mm (2.05 in.)

Front ring kit (nut)
Diameter 52 mm (2.05 in.)
Black or chrome
Diameter 85 mm (3.25 in.)
Black or chrome

Front ring kit (clamp)
Diameter 52 mm (2.05 in.)
Black or chrome
Diameter 85 mm (3.25 in.)
Black or chrome

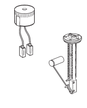


EVC system display
Display incl. cable 1.5 m (5')

Buzzer

Senders

Fuel level sender	3–180 ohm
Fuel level sender	240–30 ohm
Freshwater level sender	3–180 ohm



Cables

Pos	Feet	Meter	Part no.
1. Engine–PCU cable			
	10	3.0	3808579 [2)]
	16	5.0	3808580
2. Transmission cable harness			
	4	1.3	3594240 [2)]
3. Standard EVC bus cable PCU–HCU/SUS, 6-pin*			
	16	5.0	874789
	23	7.0	889550
	30	9.0	889551
	36	11.0	889552
	42	13.0	888013
4. Y-connector EVC bus cable – secondary helm station EVC bus cable – PCU and SUS, 6-pin			
	1.6	0.5	3588972 [1B), 2)]
5. Y-split multilink EVC system display, synchronizing, multisensor, NMEA interface, 6-pin			
	1.6	0.5	3588206 [1A), 1B)]
6. Y-split steering HCU – steering wheel and joystick			
	1.6	0.5	3885342
7. Display cable, 6/12-pin			
	5	1.5	3588207*
8. Multilink/tachometer and synchronizing cable, 6-pin			
	5	1.5	3886666 [1A), 1B)]
9. Control lever cable, 6-pin			
	5	1.5	874676 [1A), 1B)]
10. Key switch and relay cable, 6-pin			
	3	1.0	888004 [1A)]
11. Relay cable, start- stop control panel, 2/6-pin			
	3	1.0	881786
12. Instruments, panels and auxiliary cable, 6-pin			
	5	1.5	3808852
13. Extension cable, 6-pin			
EVC bus cable			
EVC control panel			
Multilink connections			
PCU – HCU/SUS			
HCU – Key switch cable			
HCU – Start/stop control panel			
Synchronizing cable			
EVC system display, multisensor			
NMEA interface 0183, 2000			
	5	1.5	3889410
	10	3.0	3842733
	16	5.0	3842734 [2)]
	23	7.0	3842735
	30	9.0	3842736
	36	11.0	3842737
14. Extension cable, 3-pin Instruments			
	3	1.0	874759
	10	3.0	3807043

*) One cable per engine has to be ordered.

EVC kits

1A) Main station
1B) Secondary station
2) Included in engine specification

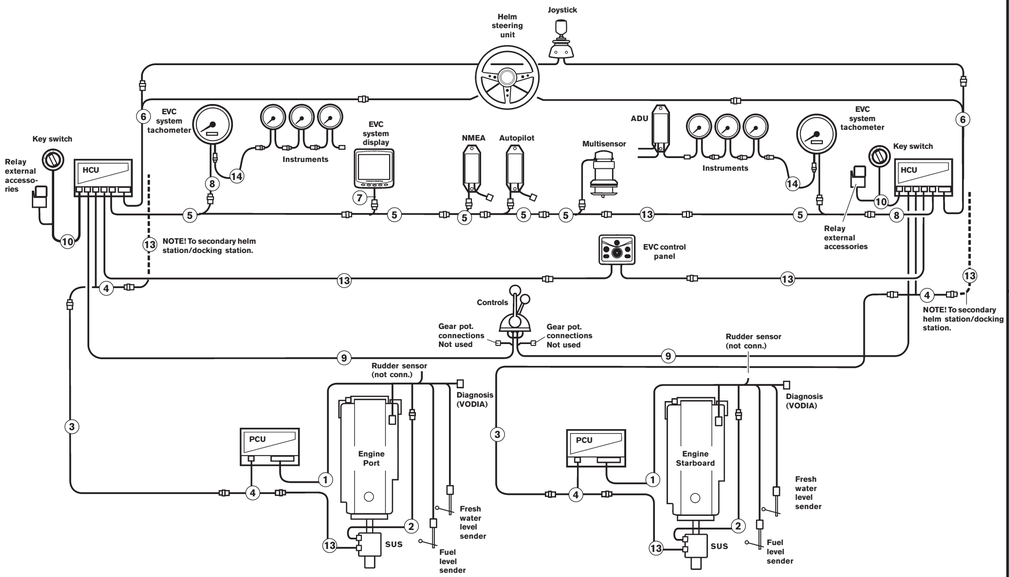
Connector dimensions:

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

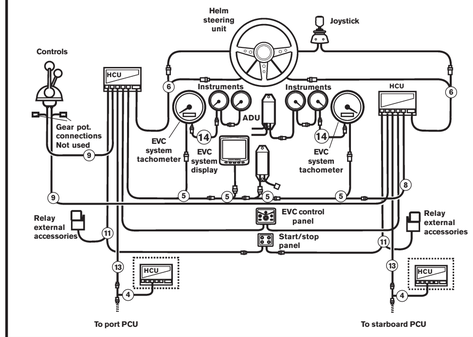
6-pin
H = 21 mm (0.82 in.)
W = 23 mm (0.88 in.)
D = 32 mm (1.26 in.)

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

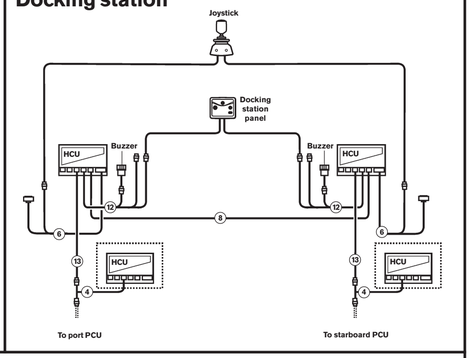
System layout
Main helm station



Flybridge/secondary helm station

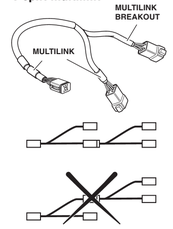


Docking station



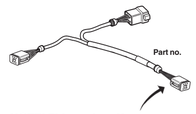
Cables and color coding

Y-split multilink

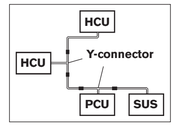


NOTE! Do not connect a HCU or another Y-split to the MULTILINK BREAKOUT. If more than one Y-split is needed connect them in chain, MULTILINK to MULTILINK.

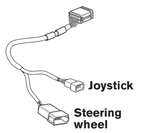
Y-connector



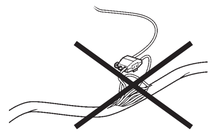
NOTE! This end on Y-connector must be installed directly, without any extension, to the PCU or HCU.



Y-split steering



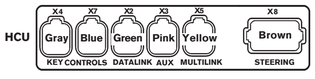
Color coding of cables:
STARBOARD – green
PORT – red



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

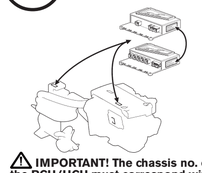
A PCU/HCU configuration
See labels inside unit

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



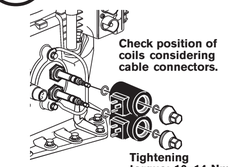
X2 Green Datalink – EVC bus cable
X3 Pink Aux - EVC control panel, auxiliary bus, instruments
X4 Gray Key - Key switch alt. start/stop panel
X5 Yellow Multilink – EVC system display, engine synchronization, NMEA-interface, multisensor
X7 Blue Controls
X8 Brown Steering - Steering wheel/Joystick

B PCU/HCU identification



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

C Mount coils 12V/24V to gear shift solenoids

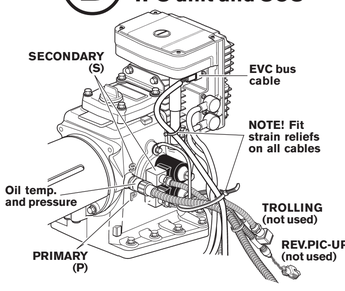


Check position of coils considering cable connectors.

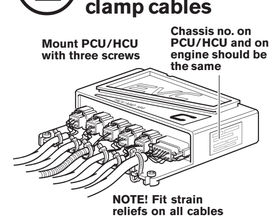
Tightening torque: 10–14 Nm (7–10 lb.ft)

Two O-rings on each coil. Note O-ring dimension.

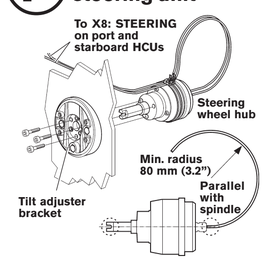
D Connect cables to IPS unit and SUS



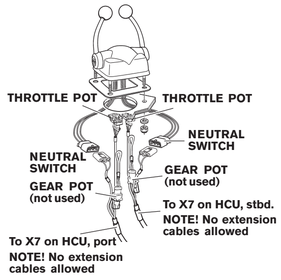
E Mount PCU and HCU. Connect and clamp cables



F Mount and connect steering unit



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



H Mount and connect the EVC control panel / Docking station panel

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

J Mount tachometer and other instruments

K Connect EVC system tachometer
Connect instruments in series

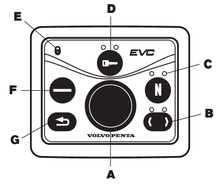
L Mount and connect EVC system display

EVC^{EC}-C Installation Procedure Electronic Vessel Control, Volvo Penta IPS

VOLVO PENTA

EVC^{EC} -C Calibration and settings Volvo Penta IPS

EVC Control Panel



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/stb.)
Indication LEDs (red/green)

NOTE! LEDs indicates which EVC system tachometer/EVC system display the EVC control panel controls, port or starboard side.

C. **NEUTRAL BUTTON**
Confirming
Warming up
Indication LEDs (green)
- Constant light: Neutral
- No light: FWD/REV
- Flashing: Calibration mode or Warming up mode

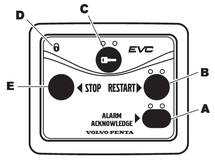
D. **ACTIVE STATION BUTTON**
Activate helm station
Indication LEDs (red)
- Constant light: Station active
- No light: Station inactive
- Flashing: Atempt to take station not permissible

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)

Docking station panel



A. **ALARM ACKNOWLEDGE BUTTON**
Acknowledge alarm
Indication LEDs (red)
Lit: Alarm (acknowledged)
Flashing: Alarm (not acknowledged) or Service mode

NOTE! Enter Service mode by pushing the ALARM ACKNOWLEDGE BUTTON for at least 5 sec.

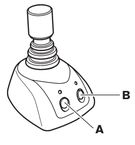
B. **RESTART BUTTON**
Push to start port/starboard engines.
Indication LEDs (white)
Off: Engine off
Lit: Engine running
Flashing: Ignition on but engine off

C. **ACTIVATION BUTTON**
Activate helm station
Indication LEDs (red)

D. **PADLOCK SIGN**

E. **STOP BUTTON**
Push to stop port/starboard engines.

Joystick

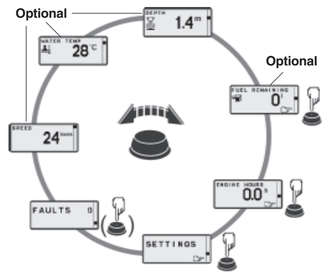


A. **DOCKING BUTTON**
Push to enable docking function.
Indication LED (red)

B. **BOOST BUTTON**
Push to enable boost mode.
Indication LED (red)

Menu system

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



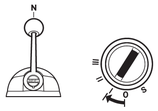
NOTE! If there are no faults registered, the FAULTS LIST will not be available in the MAIN MENU.

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(es) 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/LEDs flashing and pop-up screen in tachometer 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 on 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 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.

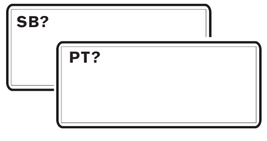
4. Self identification and software download starts. The procedure may take **several minutes** depending on software download to the tachometer display/EVC system display.

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.

Tachometer configuration

5. 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.

6. The other tachometer display will read "**SB?**" (starboard engine) Confirm by pushing NAVIGATION WHEEL.
"**SBIS**" is shown in display.

7. Wait until "**PTIS**"/"**SBIS**" disappers from tachometer display and MAIN MENU appears.

Additional helm station(s)

Repeat step 5-7 for each additional helm station.

8. 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).

Starboard engine

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).

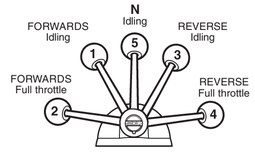
3. Lever calibration

Electronic lever control

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.

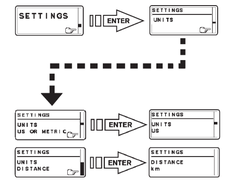
4. Select language and units

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



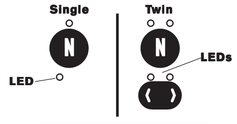
5. Select and enter UNITS.
Select UNITS US OR METRIC.
6. Select and confirm the appropriate unit (US or metric).
7. Select and enter UNITS DISTANCE.
8. Select and confirm the appropriate unit for distance (km, NM, MILES).
9. Push BACK BUTTON twice to return to MAIN MENU.

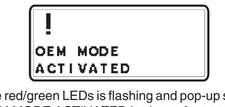
5. OEM-mode

Enter OEM-mode

NOTE! Always exit OEM-mode before changing helm station.

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





3. The red/green LEDs 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.

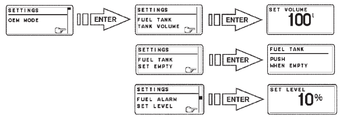
Exit OEM-mode

4. Exit OEM-mode by pushing the MULTIFUNCTION BUTTON for at least 5 seconds. The red/green LEDs 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.

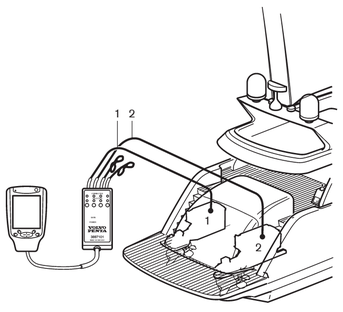
Fuel alarm (if needed)

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 Volvo Penta IPS.***

7. Calibration of Volvo Penta IPS propulsion unit positions



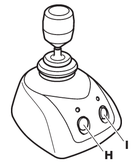
1. Connect the switch box to port side (1) and starboard side (2) engines diagnosis connections and to the VODIA tool.
2. Choose the correct type of installation in the VODIA tool.
3. Perform the Drive leg position calibration.
4. Perform the Drive leg calibration. Use the drive center positioning tool to position the propulsion units parallel and parallel to the keel of the boat.
5. Connect to VODIA website and report Volvo Penta IPS calibration.

For Volvo Penta IPS propulsion unit calibration procedures, please refer to ***Installation EVC^{EC}-C Electronic Vessel Control, Volvo Penta IPS***.

8. Joystick calibration

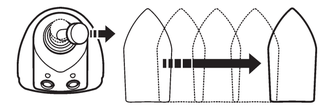
This calibration only needs to be performed if the boat movement does not corresponds to the movement of the joystick

⚠ **IMPORTANT!** When calibrating the joystick function the boat must be operated in open water and under safe conditions. Avoid performing the calibration in strong winds or sea-current as such conditions may affect the outcome of the calibration.



NOTE! Calibration only needs to be done in one direction, port or starboard

1. Enable docking function by pushing the DOCKING BUTTON (H).
2. Push both the buttons (H and I) on the joystick and hold them down for 5 seconds or more. A sound signal indicates that the system is in calibration mode. The NEUTRAL BUTTON LEDs starts to flash.



3. Move the joystick to one of its end positions. Correct the boat's incorrect movement by turning and/or moving the joystick until the boat is moving straight at side.

NOTE! Let the boat move for quite a long distance during the calibration routine. Hold the joystick in position.

4. When the boat is moving directly sideways, depress the DOCKING BUTTON (H). The new calibration is stored and is confirmed with a beep.
5. Release the joystick to neutral position. Calibration is finished. The system is in docking mode.

NOTE! It is always possible to reset the calibration as follows.

1. Enable docking function.
2. Push both the buttons on the joystick and hold them down for 5 seconds or more. A sound signal indicates that the system is in calibration mode. The LEDs above the neutral button starts to flash and the LED above the docking button lights up.
3. Push the DOCKING BUTTON (H). Calibration is reset and this is confirmed with a beep.
4. The system is in docking mode

9. Steering mode setting

The setting of the steering mode, that is the IPS propulsion units' steering angles, is depending on the properties of the boat hull. The steering angles influence the turning radius of the boat.

There are three values when setting the steering angles: MINIMUM, MEDIUM and MAXIMUM.

MAXIMUM steering angle results in the smallest turning radius.

NOTE! Perform a Steering mode setting **if needed** after sea trial.

For Volvo Penta IPS propulsion unit calibration procedures, please refer to ***Installation EVC^{EC}-C Electronic Vessel Control, Volvo Penta IPS***.

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