VODIA

User's guide

VODIA

Contents

The VODIA Web

What is VODIA?

Today, many of Volvo Pentas products have control and monitoring systems. VODIA is a handheld diagnostic tool which enables mechanics to conduct professional service and repairs on these products.

VODIA is short for **VO**lvo **DIA**gnostics.

The VODIA concept includes both hardware and software and is best described as two parts, the **VODIA Web** and the **VODIA Tool**. The two parts can be used for separate operations like "chassis ID info from VDA" on the VODIA Web or the "Error codes" test on the VODIA Tool or together like a "ECU programming" where both the VODIA Web and the VODIA Tool must be used.

To give a quick overview, the following full page illustration depict the available products and engine combinations when using the VODIA Tool. There are several different VODIA PDA generations and this User's Guide is focused on the **VORP**, **VO**DIA **R**ugged **P**DA. See illustration to the right.

The VORP

Which engines and control units does the VODIA Tool support?

The VODIA application is used for D3 - D16 and Petrol engines 3.0 - 8.1. It supports EDC7, EDC15, EDC17 and EMS which are newer diesel engine control units and EGC for newer petrol engines. VODIA also supports EVC (Electronic Vehicle Control) systems and Industrial control units like DCU and CIU. The EDC1 application is used for engines with the old control units, the EDC4 for EDC4 engines (Cologne engines) and MEFI for older Petrol engines.

Getting started

Requirements

Before the VODIA hardware is assembled, please make sure you have everything you need. If something is missing in your VODIA package, please contact your local Volvo Penta support.

Your VODIA package should contain the following:

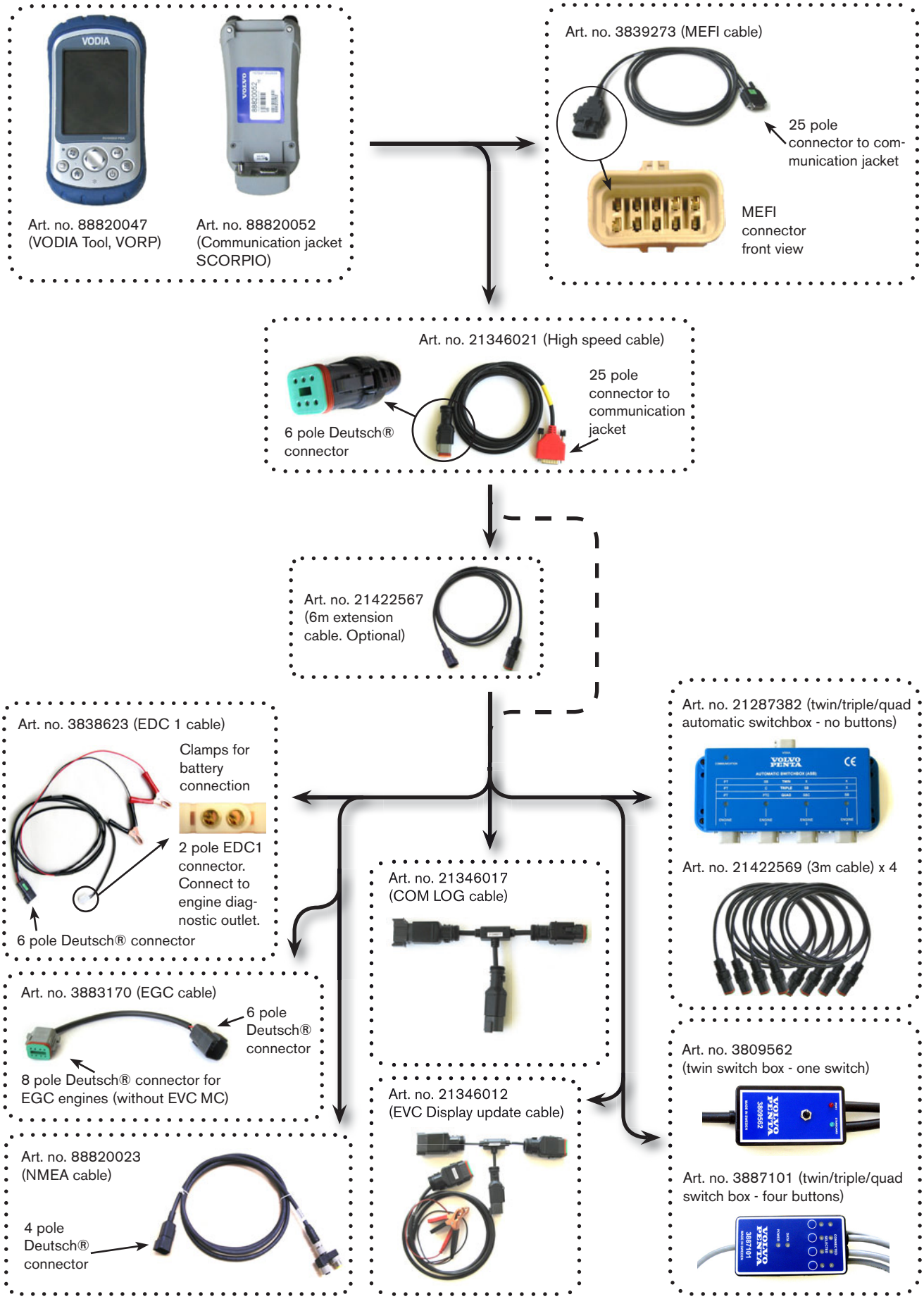
Minimum requirements for VORP with communication jacket:

1. Art. no. 88820047, VODIA Tool with SD card.
2. Art. no. 88820052, communication jacket SCORPIO **S**erial **CO**mmunication **R**ugged **P**DA **I**nput/**O**utput). Used with VODIA Tool (art. no. 88820047).
3. Art. no. 21346021, High speed cable with Deutsch® connector. Used with the communication jacket (Art. no. 88820052).
   Or art. no. 3838622, standard cable (low speed).

Additional equipment depending on engine application:

4. Art. no. 3839273, MEFI cable.
5. Art. no. 3838623, EDC adapter with external power supply. Used with communication jacket (art. no. 88820047) and a high speed cable (art. no. 21346021) to the 2-pin socket on the engine.
6. Art. no. 3883170, EGC cable for petrol engines.
7. Art. no. 88820023, NMEA cable.
8. Art. no. 21287382, Automatic switch box with cables, see next page.
9. Art. no. 21346017, COM LOG cable.
10. Art. no. 21346012, EVC Display update cable.

VODIA connection options



Assemble the VODIA hardware

To be able to initiate the program on the VODIA Tool, the hardware needs to be assembled.

Connecting the communication jacket to the VODIA Tool

Place the VODIA Tool on the jacket and gently but firmly press the VODIA Tools connectors towards the jackets connectors, using a hand as support under the jacket. See illustrations.

Use the two screws in the back of the jacket gently to secure the VODIA Tool. See illustration.

VODIA Tool (VORP) and communication jacket (SCORPIO).

Screws in the back of the jacket.

Connecting the VODIA Tool to the engine application

In an EVC system installation the Standard cable or high speed cable is used. Connect the Deutsch® connector to the diagnostics outlet between the PCU and Engine ECU.

Connect to EDC7, EDC15, EDC17, EGC (petrol), EDC1 or EDC4 engines using the cables in the illustrations to the right. The MEFI cable alternative (art. no. 3839273) is also available.

The EDC1 cable illustrate the connector for older EDC systems. It is used with the Standard cable or High speed cable and is connected to the engines two pin diagnostic connector.

Industrial engines uses the Standard cable or High speed cable for connection with vodia except for EMS1 engines. EMS1 engines uses the same two pole connector as the EDC1. However, the ComLog cable is a better option for this.

High speed cable with Deutsch® connector.

EDC1 cable.

MEFI connector.

Requirements for PC hardware and software

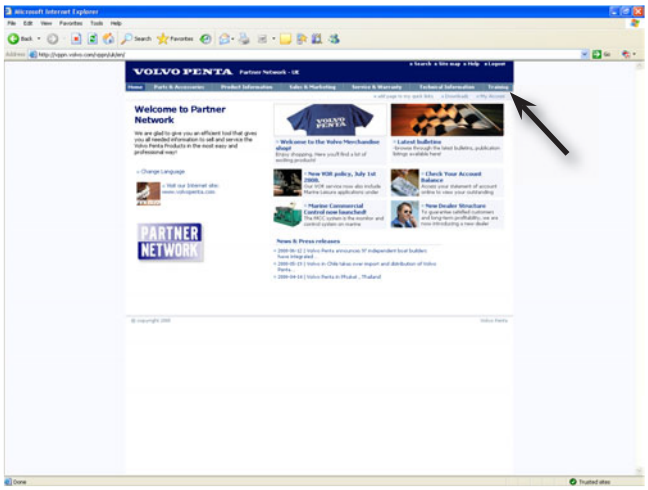
- IBM-PC compatible personal computer.
- Microsoft Windows® Vista or XP. (Vista 64 bit is not supported)
- Microsoft Internet Explorer 6.0 or later with 128-bit encryption.
- USB port.
- VGA graphics card or compatible video graphics adapter at 256 colour or higher.
- Keyboard.
- Microsoft Mouse or compatible input device.
- Hard drive with at least 200 MB of available hard disk space.
- Internet connection at a minimum speed of 0.5 Mbit/sec.

How to get the VODIA Tool to function

In order to use the VODIA Tool, the software needs to be installed or updated. This is done on the VODIA Web page on the VPPN (Volvo Penta Partner Network) www.vppn.com. Follow the instructions on the following pages to install VODIA.
Access to VPPN and authority to use the VODIA Tool is required.

Visit **Volvo Penta global Training Academy** on www.vppn.com and click **Training** (see illustration) for all necessary information on how to use the VODIA Tool.

Note! It is not possible to use or run the VODIA Tool without having completed VODIA training. A **VPPN user ID** is also essential to be able to enter the VPPN web pages. If you don't have a **VPPN user ID**, please contact your local Volvo Penta support.



Training on VPPN

Using the VODIA Tool for the first time

Important! The first time the VODIA application is started on a VODIA Tool, the AC adapter shall be used. See illustrations.

AC adapter and D-sub/DC jacket adapter for VORP.

Charging via the communication jacket using the D-sub/DC jacket adapter.

Performing a soft reset

A soft reset can be compared to restarting a computer. This is helpful for instance if a communication problem has occurred.

To perform a soft reset:

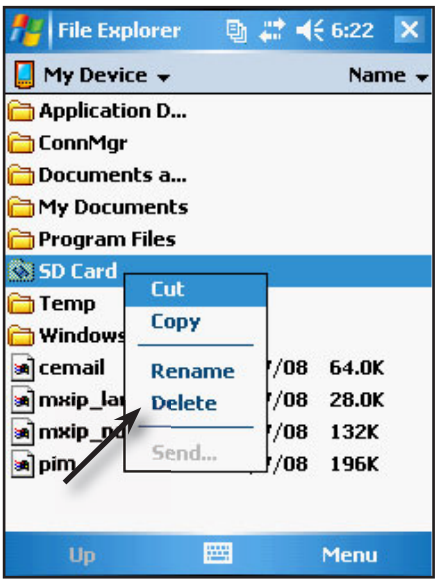
Press the power button for ten seconds or until the screen goes dark. The VORP resets after a few seconds.

Performing a clean reset

Note! A clean reset clears all user-installed settings, programs and data, and it restores the VODIA Tool to factory settings. Save the files you want to keep on an external disk or the computer.

To perform a clean reset and return to factory settings for the VODIA Tool:

1. Empty the SD card manually either in File Explorer on the VODIA Tool by "tap and hold" on the **SD card** folder and press delete. See illustration. Or by removing the SD card and use a card reader to empty it.
2. Press and hold the power button until the VODIA Tool reboots. When the green activity LED is on, press and hold the following **three** buttons:
3. Hold down until the ultra-rugged field PC splash screen appears.
4. Follow the instructions on the screen until you are back at the Today screen.

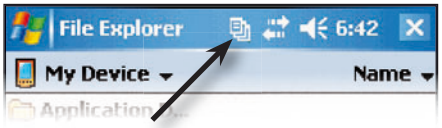


Empty the SD card.

Important! Make sure that the time and date are set correctly in the PDA. Otherwise the wrong time and date will be written in the job cards.

Using the PDA

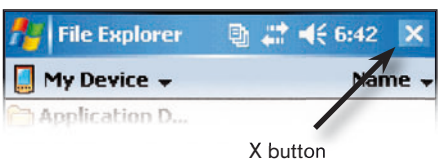
A program can be closed by going to the **Memory settings** dialogue window. Tap the Application manager icon, see illustration, select the program to closed and then tap **Close**. To close all programs, tap **Close All**.



Application manager icon.

Another way to close all running programs is to perform a **soft reset**.

Note! When pressing the X button in the upper right corner of the VODIA Tool display (see illustration), the program is not closed like in Windows XP and Vista etc, it is only minimized.

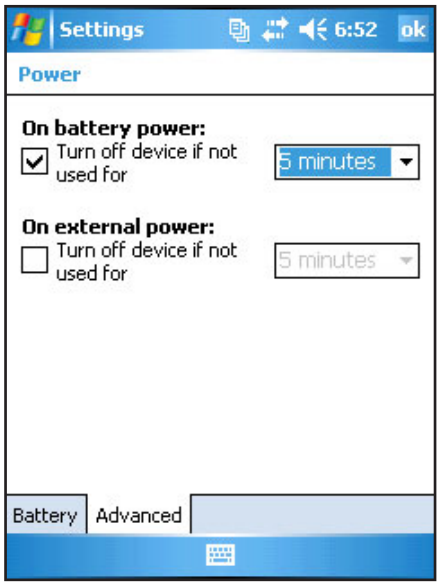


X button

Changing power settings

Important! Before you update the VODIA Tool you must change the power settings to ensure that the PDA doesn't go to suspend mode during the update. If not the installation might stop and the VODIA Tool could end up not working correctly.

1. Tap **Start** - **Settings** - **System tab** - **Power**.
2. Tap the **Advanced** tab.
3. Change the On battery power time to **5 min**.
4. Uncheck the Turn off on external power check box.



Change power settings

Connecting the VODIA Tool to a PC with Windows XP

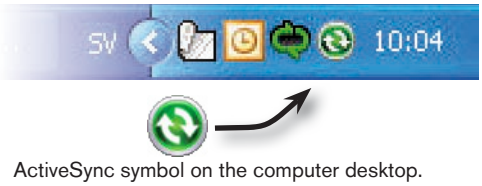
Setting up ActiveSync

Install Microsoft ActiveSync from the included CD on the PC according to the instructions provided by the manufacturer.

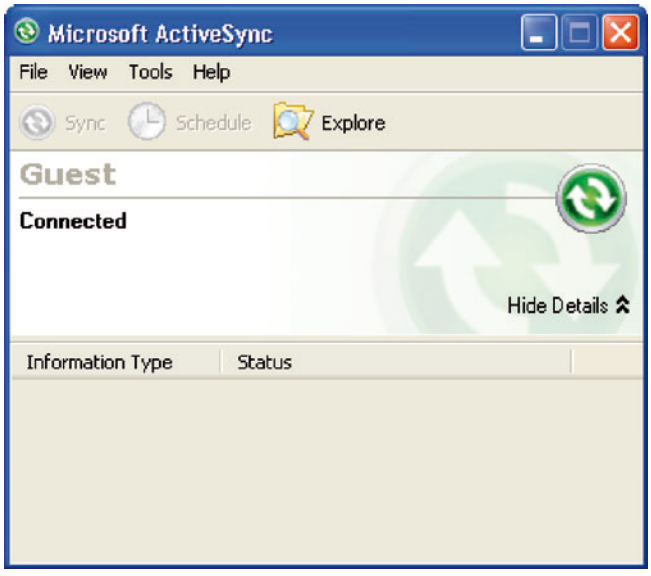
Important! Do not connect the VODIA Tool to the PC prior to installing ActiveSync. If so, old drivers will be used.

Perform the following steps to connect the VODIA Tool to the PC:

1. Make sure you have installed Active Sync.
2. Check that ActiveSync is started on the PC and connect the cable to the left (black) USB mini-B connector on the VODIA Tool. See illustrations. ActiveSync will automatically connect to the VODIA Tool.
3. Connect the sync cable to a USB port on the PC.
4. When the device is found, ActiveSync will ask if a partnership should be created. Select **Yes**.
5. When selecting to setup a partnership, there is an option to synchronize with only the current PC or with more PCs. Select to only synchronize with **one PC**.
6. The next window is the **Select sync**. Settings, click next for now.
7. ActiveSync has now set up an active partnership between the PC and the VODIA Tool. It is now time to install VODIA. (Remember to not disconnect the VODIA Tool from the PC or the active connection to the PC is lost and it is not possible to synchronize information to and from the VODIA Tool.)



ActiveSync symbol on the computer desktop.



ActiveSync

Connect the sync cable to the left (black) USB mini-B connector marked 'B'.

Connecting the VODIA Tool to a PC with Windows Vista

Perform the following steps to connect the VODIA Tool to a PC with Windows Vista.

Note! Active Sync is replaced by Windows Mobile Device Center in Windows Vista.

1. Log in as administrator, this is necessary to be allowed to install ActiveX control RAPIX, which is used on the VODIA Web.
2. Download and install **Windows Mobile Device Center** from www.microsoft.com.
3. Connect the VODIA Tool according to the instructions in the application.
4. Add http://vppn.volvo.com and http://vppneuapps.volvo.com to Trusted sites. Make sure you have unchecked the "**Enable protected mode**" check box.

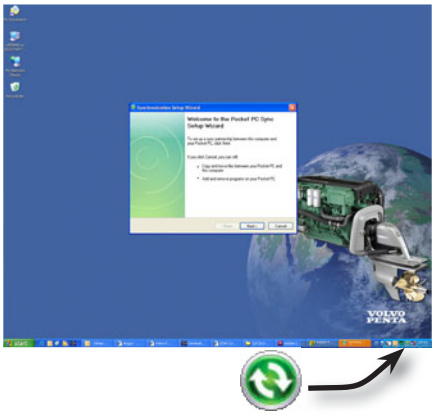
Windows Mobile Device Center

Install or update the VODIA Tool via the VODIA Web page

Before getting started

Important! The ActiveSync software must be installed on the computer before the VODIA Tool can be updated. See illustration.

1. Make sure that the SD card is unlocked and placed in the slot under the cap on the VODIA Tool. See illustrations.



The green ActiveSync symbol above indicates that the software has been installed and that communication with the VODIA Tool has been established.

2. The cap on the VORP can be removed by unscrewing the two screws on top of the VORP

Remove cap. The SD card in position under the cap.

The SD card in unlocked position.

3. Connect the VODIA Tool to the computer with the sync cable and press the power button

Note! To save battery life. Press and hold the power button for about 4 seconds. A menu appears. Tap **Power off**. To power on again, press the power button again.

4. Log in on the VODIA Web page on Volvo Penta Partner Network, www.vppn.com. Go to "Service and warranty" and click on VODIA. See illustration.
5. The update can be started.

Service and warranty on VPPN.

Update the VODIA application

Important! Make sure that the VORP is on external power and that you have the correct power settings before updating. See Changing power settings, page 9.

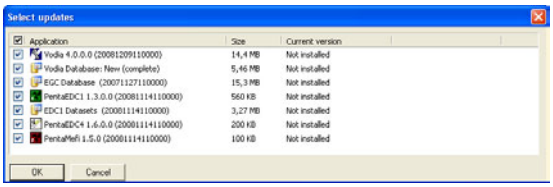
1. When you enter the VODIA Web you will be asked if you want to check for updates. Click **yes**.
   If you are already in the VODIA Web
   Click **Update VODIA Tool** in the menu on the VODIA Web page. Then click **Check for updates** on the next page.
   See illustrations.
2. A window with the different software components appears. The check boxes will be checked if the component needs to be updated.
3. Click **OK** to start downloading. The first 50% of the progress bar indicates the downloading progress from The VODIA Web to the PC. The last 50% indicates the transfer between the PC and the VODIA Tool. See illustration.

Important! The application package is approximately 40 MB and it will take a while to download the. This also depends on the speed of the internet connection.

4. When all software packages are downloaded a dialogue will appear. Click **Yes** to start the installation on the PDA.
5. Follow the instructions on the VODIA Tool to install the applications. There are several steps. Use the default install locations and tap **ok** when asked. The reason for the many steps is the security features in Windows Mobile® 5.0.

Menu options

Update VODIA screen



Update dialogue

Update users

The next step is to update the user settings for the VODIA Tool. This is necessary to acquire the functionality fitted for a specific VODIA user group.

The different ID:s

Client ID - The unique ID of the VODIA Tool
User ID - Your personal ID
Partner ID - The "group" ID of your Dealer

The Client ID and User ID are registered to a Partner ID. All User ID:s under the same Partner ID can use all Client ID:s registered under the same Partner ID. This means that a VODIA Tool is never registered to a specific person but to a group.

If you update the users for the first time this function also registers the Client ID to your Partner ID.
You will be asked to read and accept the licence agreement for VODIA.

1. Go to **Update users** under VODIA in the menu on the VODIA Web. Read the instructions.
2. Click the **Update users** button. The VODIA application user groups have now been updated.

VODIA overview

The VODIA Today and TOOLS menu

VODIA Today is an item on the so called Today screen on your VODIA Tool. This is the VODIA "start menu".

It consists of five buttons:
The first big blue VODIA button and the first three coloured buttons EDC1, EDC4 and MEFI each represents one or more of Volvo Pentas control systems. Tap on one of the buttons and the diagnostics application will start.

The black TOOLS button will open a new menu with more applications: The COM LOG, NMEA log, EVC system LCD update and interface update. It also contains an info button that will show information about application releases, client ID, databases etc. Read more about the tools applications in the TOOLS menu section.

Note! For a PentaEDC1 manual, start the EDC1 application and press ?.

VODIA Today

A grey button indicates a problem with the program or that the program is not installed correctly See illustration. Update VODIA to download the missing applications.

The illustrations on the next page shows which engine models are associated with which button and what the applications does.

Grey buttons

The VODIA Today functions

VODIA Today screen

VODIA
3.0 - 8.1 Petrol
D3 Marine propulsion
D4 - D6 Marine propulsion
D6 - D16 Genset (MG/GE)
D6 - D16 Versatile (VE)
D9 - D16 Marine propulsion
QL EST
Unknown

EDC4
TD 420VE
TAD 420/520/620/720/721/722 VE
TD 520/720 GE
TAD 530/531/532/730/731/732/733 GE

EDC1
KAD 44P/300
TAD 740 1231 VE
TAMD 72/73/74/75
DH10 (Railpack)
TAMD 122P
KAMD 44/300

MEFI
Gi engines
GXi engines
GSi engines

TOOLS
Takes you to the TOOLS menu below.

TOOLS

COM LOG
Log and record data on the J1939 bus on Industrial engines.

EVC SYSTEM LCD UPDATE
Updates the software in EVC display to the latest version.

NMEA LOG
Log and record data on NMEA 2000 bus for marine engines.

INTERFACE UPDATE
Updates software in interface jacket. Also used for function check.

INFO
Information about the Application releases, client ID, databases etc.

BACK
Takes you back to the Today screen (above).

The TOOLS menu

Overview

As shown on page 13, The TOOLS menu contains five applications. All applications except INTERFACE UPDATE and INFO can also be accessed from inside the VODIA application under Options - Tools.

COM LOG

With the COM LOG application you can log and record data on the engine bus for industrial engines with SAE J1939 250k.

Note! The COM LOG cable, art. no. 21346017 is essential for this procedure.

1. Connect the COM LOG cable between the Engine ECU and the Vehicle computer, for example the DCU.
2. Connect the VODIA Tool to the diagnostics connector on the COM LOG cable.
3. Start the COM LOG application.
4. Tap play ▶ to start logging.
5. Tap on the letter icon ✉ to mark the signals to log. Max two signals can be logged at a time.
6. Tap on a marked letter icon ✉ to stop logging the signal and choose another signal.

Record the log to a file:

1. Make sure the log is stopped.
2. Go to Options – Settings.
3. Check the Enable log box.
4. Type in a file name in the text box.
5. Tap **Create File**.
6. If you want to end the recording in a specific time mark the check box and specify a time.
7. Tap **ok** and follow the logging procedure above.

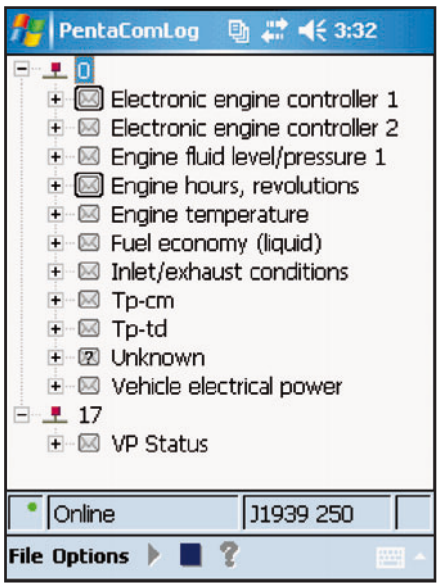
Note! The files get large quickly. 1 min ≈ 620kB

The file is saved in the PentaComLog folder on the SD card. The file is a text file and can be viewed in notepad or can be played back in real time in canalyser.

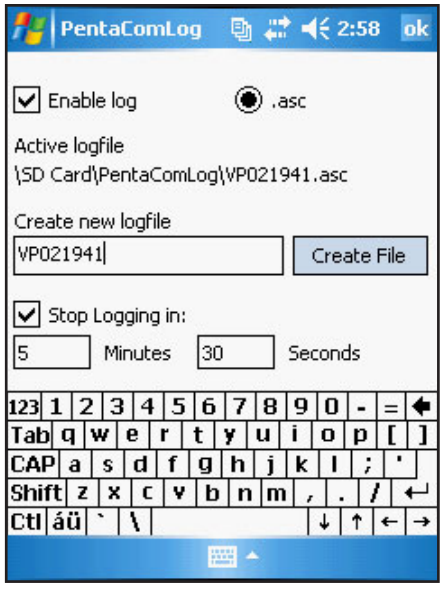
EVC System LCD Update

With the EVC System LCD Update application you can update the software in EVC-B, and later, displays to the latest version. This will make the display compatible with EVC-C2 and later EVC systems.

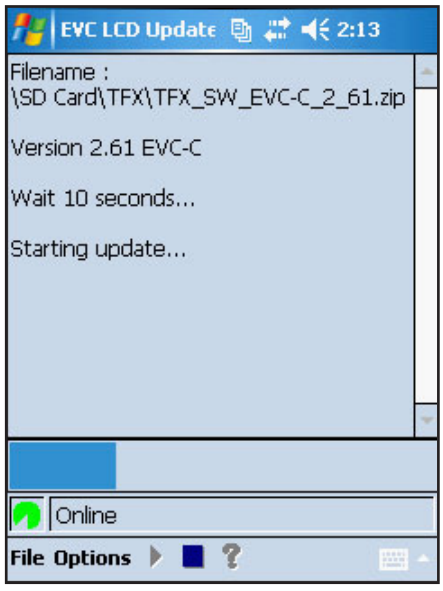
1. Connect the EVC Display update cable between the display and the multilink cable. Alternatively, for updating displays not connected to the system, you can use an external 12V power supply with the alligator clip cable.
2. Connect the VODIA Tool to the diagnostics connector on the EVC Display update cable.



Penta COM LOG



Penta COM LOG



EVC System LCD Update

3. Start the EVC Display update application.
4. Press play ▶ to start updating.

NMEA LOG

With the NMEA LOG you can log and record data on the NMEA 2000 bus for marine engines.

NMEA 2000 is the type of protocol which navigational instruments use for communication. In a VODIA installation this is used to verify that all components communicate with each other. In case of failure, the Penta NMEA functionality will signal error codes.

> **Note!** The NMEA cable, art. no. 88820023, is essential for this procedure.

1. Connect the NMEA cable between the NMEA gateway and the NMEA unit, for example a plotter.
2. Connect the VODIA Tool to the diagnostics outlet on the NMEA cable.
3. Start the NMEA LOG application
4. Tap play ▶ to start logging.

Record the log to a file:

1. Make sure the log is stopped.
2. Go to Options – Settings.
3. Check the Enable log box.
4. Type a file name in the text box.
5. Tap **Create File**.
6. Tap **ok**.
7. Tap play ▶ to start logging.

The file is saved in the PentaNMEA folder on the SD card. The file is a text file and can be viewed in notepad.

INTERFACE UPDATE

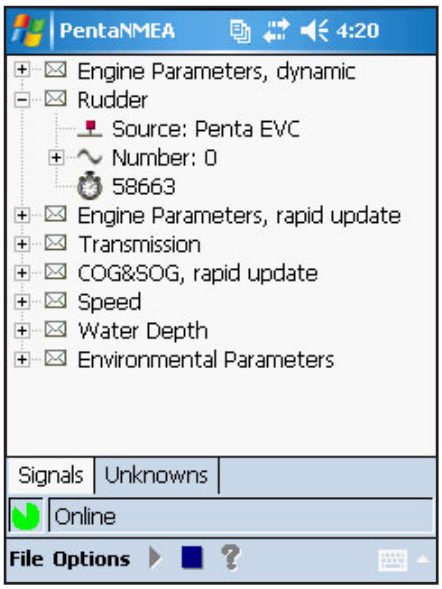
The INTERFACE UPDATE application updates the software in the communication jacket to the latest version.

This application can also be used for function check of the jacket. If the flash fails the jacket is most likely broken.

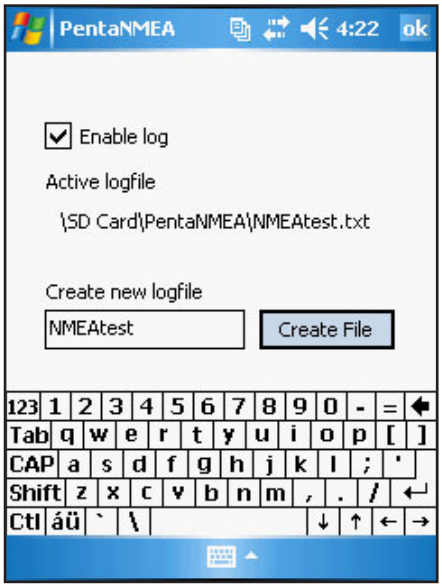
1. Make sure that the jacket is connected to an external power source, and that the blue LED on the jacket is on. Either connect to an engine with the high speed cable or using the AC adapter and D-sub/DC jacket adapter.
2. Start the INTERFACE UPDATE application.
3. Tap **File** - **Flash Interface**.
4. Tap on the file name to start the update.

INFO

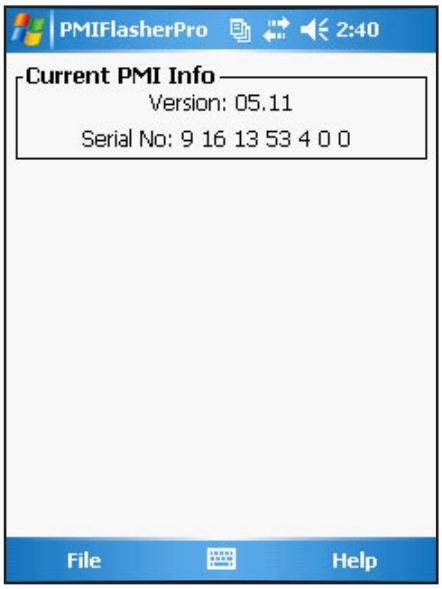
The INFO page will present information like Partner ID, Client ID, PDA serial no, VODIA-version + build date, Database date, EGC date, PentaEDC1 version + build date, PentaEDC1 datasets date, PentaMEFI version + build date, PentaEDC4 version + build date, Hotfix version.



Penta NMEA LOG



Penta NMEA LOG



INTERFACE update

Application dialogues

Enter VODIA for the first time

VODIA login

Initiate the VODIA application by tapping on the **VODIA** button on the VODIA Today Screen.

1. Select a **User identity** from the drop down menu. The list contains all users registered to your partner ID.
2. Enter the password in the **Password** field and tap **OK**.

Note! When using VODIA for the first time after downloading a user file from Volvo Penta Partner Network, the default password is **volvo**.

Changing the VODIA application password

1. Select the **User identity** in the drop down menu .
2. Enter the current password, "volvo" by default, in the password field and tap **Change password**.
3. Enter and verify the new password.
4. Tap **OK.**
5. Tap **Yes** to accept or no to enter VODIA without changing the password.

Run VODIA in simulator mode

To get familiarized with the VODIA Tool it is possible to run it in Simulator mode. This will allow you to try all the vodia functions without connecting to an engine.

Initiate and close simulator mode

Note! The respective VODIA, PentaEDC1 and PentaEDC4 applications are possible to run in simulator mode. The PentaMEFI application however, does not support this function.

1. Tap **VODIA** to start.
2. Tap **Options** and select **Simulate** to initiate the Simulator mode or deselect to stop the Simulator mode.

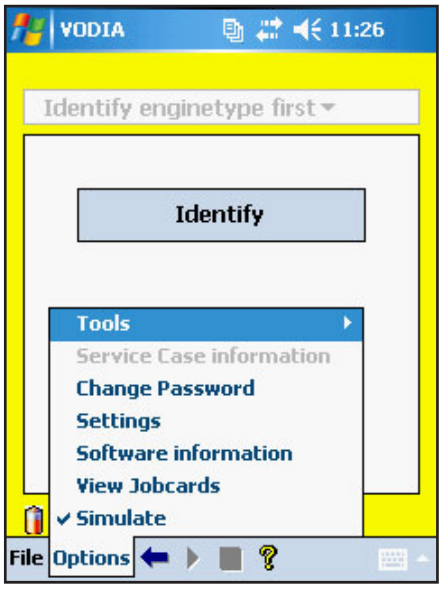
Simulator mode is indicated by a yellow frame and the text **Simulator** being highlighted in the mid lower part of the screen. See illustration.

Note! If you can't deactivate the simulator mode you might have to update the users, if that does not help you have not got the authority level to run VODIA. If so, contact your Volvo Penta trainer who arranges Vodia classes and can authorize a higher user level.

User groups

There are fourteen user groups optimized for different user roles. The levels 0 - 8 are normal dealer user levels. 9 - 13 are Volvo internal user groups.

VODIA application dialogue window on the VODIA Tool.

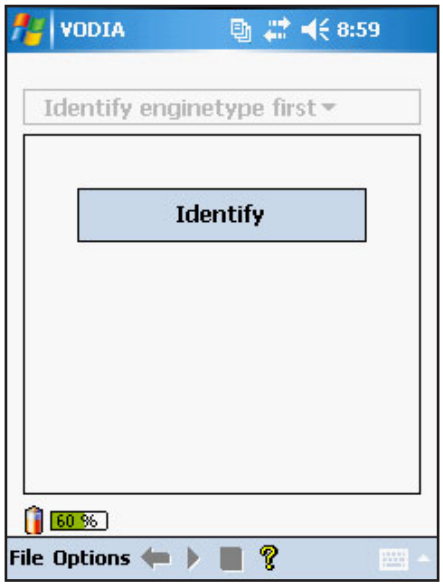


VODIA application in Simulator mode.

Connecting to the engine

When identifying, VODIA collects information about the system and its control units. All information about the control units and software is saved in the job card.

1. Make sure that the Vodia is connected to the **engine** and that the power is turned on.
2. Tap on the **Identify** button.



Identify

Create a new job card

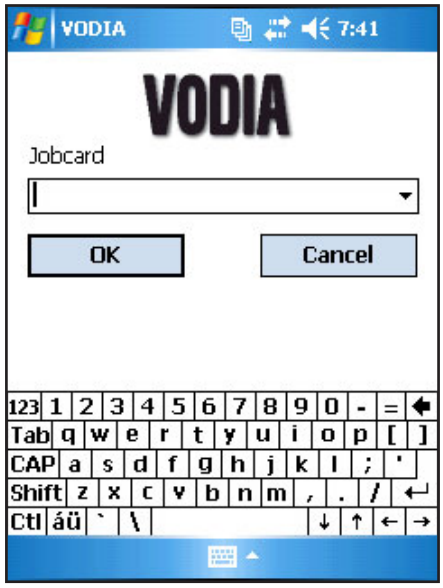
A **job card** is a kind of receipt of every VODIA operation that is performed on an engine. A job card can be used more than once if not finalized.

Create a new **job card** or select an existing one in the drop down menu.

1. Tap on the empty text field.
2. Activate the software keyboard and choose name for the Job card.
3. Tap **OK** to create the new job card.

To select an existing job card:

1. Activate the drop down menu.
2. Select the preferred **job card** from the list.
3. Tap **ok** to open the selected job card.



Job card

Job cards on the VODIA Web

Job cards can also be viewed and managed from the VODIA Web site, www.vppn.com. For example, parameter settings of an engine can be printed out.

1. Go to **Job card** under VODIA in the menu.
2. Press **View job card** for a list of the job cards on your VODIA Tool.
3. Each job card can be **viewed**, **deleted** or **saved** centrally on the VODIA Web page.

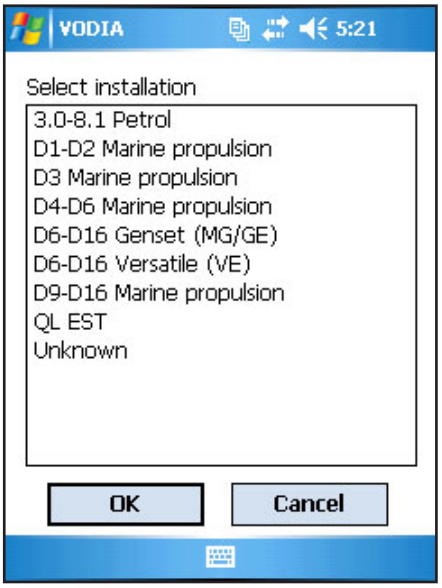
   Note! If a job card is saved centrally on the VODIA Web page it will automatically be erased from the VODIA Tool.
4. Under **Find job card** it is possible to search and view job cards saved by a specific dealer.

   Note! It is recommended to report the job card centrally if it is related to warranty operations.

Select installation

Choose the type of the engine installation from the list and tap **OK**. See illustration.

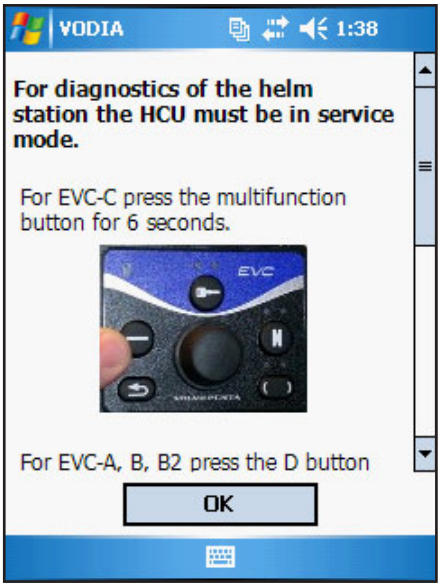
Explanation of abbreviations:
MG = Marine Genset
GE = Genset
VE = Versatile



Select installation

If the installation includes an EVC system you will be asked to set the HCU in service mode before you proceed. Do that by following the steps described on the display.

Note! You can scroll down to see the older types of EVC system.



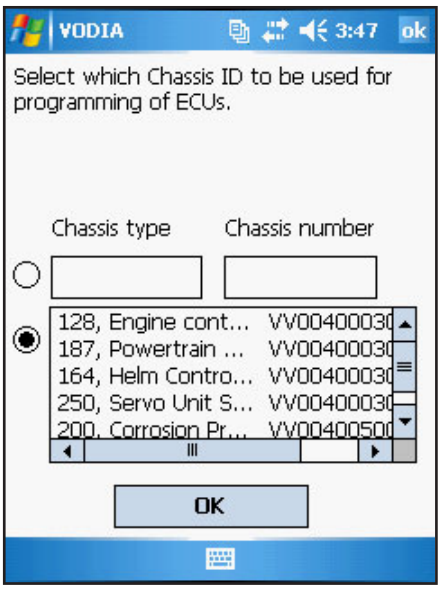
HCU service mode

Select chassis ID

If the identified control units have different chassis IDs VODIA displays the control units and what chassis IDs they currently have.

Choose the chassis ID that belongs to the current installation.

Important! If choosing wrong chassis ID and reprogramming all ECUs, you won't be able to change back to the old chassis ID again.



Select chassis ID

The menu structures

VODIA Main menu

Note! The buttons shown on the right illustration are only visible after you have logged in and the VODIA application has started.

File
Identify – identifying the vehicle/machine
About VODIA – shows current version and last database update.
Exit – exits the VODIA application

Options
Fault tracing process: Displays a flow chart on how to use the VODIA Tool for fault tracing. From connecting the tool to reading out fault codes and take the necessary actions.

Tools: Contains the same applications as the TOOLS menu on the VODIA Today screen. See the TOOLS menu on page 14.

Service case information: Enter contact information and CCC, Complaint, Cause, Correction. All information entered to the service case protocol will be saved to a job card. This information can also be edited on the VODIA Web page. See more information about job cards in the following section. This function can only be used after the identification, see next page.

Change password: The VODIA application password can be changed while running the application. This is a local password for the users on this particular VODIA Tool. (Users with administrator privileges can change other users passwords). The passwords can also be reset on the VODIA Web.

Settings: VODIA is delivered with the option to select different languages. The unit output can be set to either metric or U.S.

Note! The language data may be incorrectly displayed if the settings are changed while connected to an engine.

Software information: When software is downloaded to the VODIA Tool you can see it here. Information about Chassis ID, MIDs software numbers, hardware numbers and download dates can be viewed.

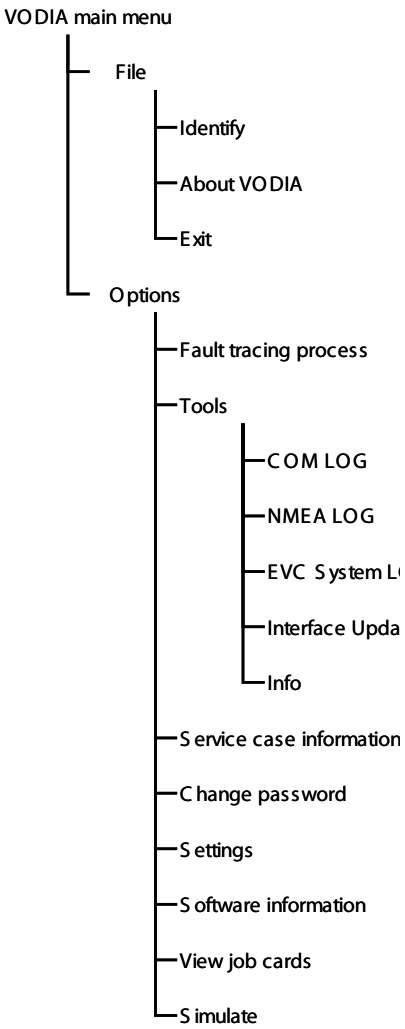
View Job card: Shows the job card in the VODIA Tool. The current "active" job card has a "A" in the icon. 

Finished job cards has a padlock in the icon and cannot be used again. 

Other job cards has just a notebook as icon. 

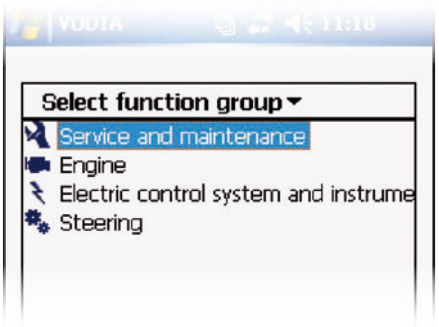
Simulate: It is possible to run VODIA in **simulator mode**. This is useful for learning how the VODIA application works. See section "Run VODIA in simulator mode".

VODIA Menu



VODIA Function group menu

The four function groups contain the different VODIA operations used to perform tests, calibrations, programming etcetera on engines and related systems.



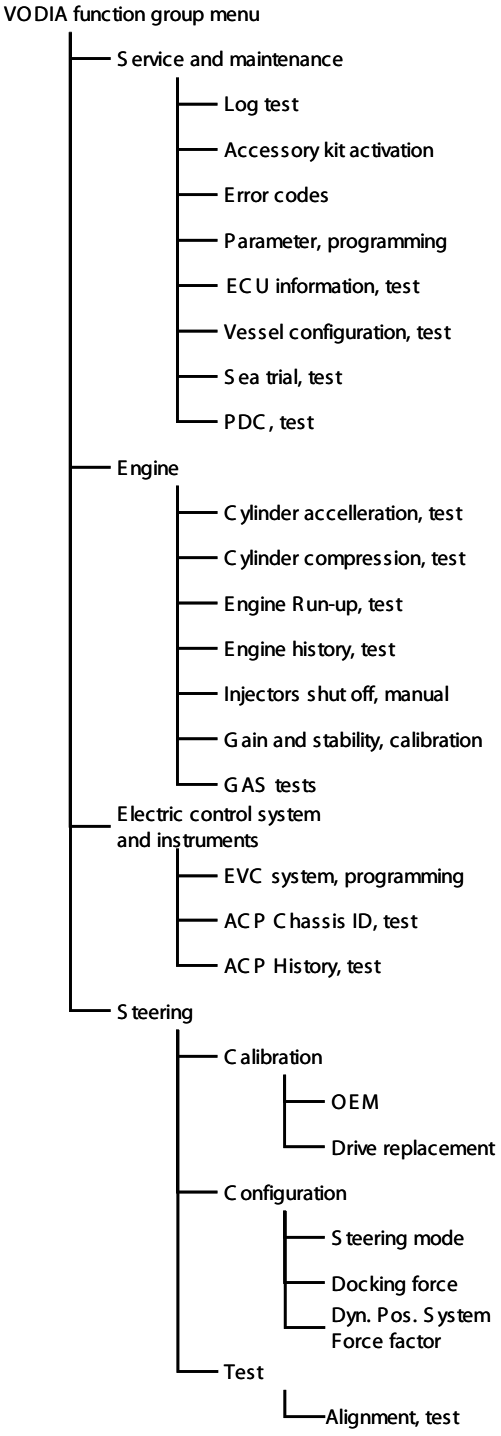
VODIA Function group menu

Operations

The operations which can be carried out depend on the vehicle/machine connected to the VODIA Tool and the authorization of the user. Because most operations are built up of standard components, the same method can be used for all operations. Instructions for undertaking individual tests are available in the application by pressing the Help button.

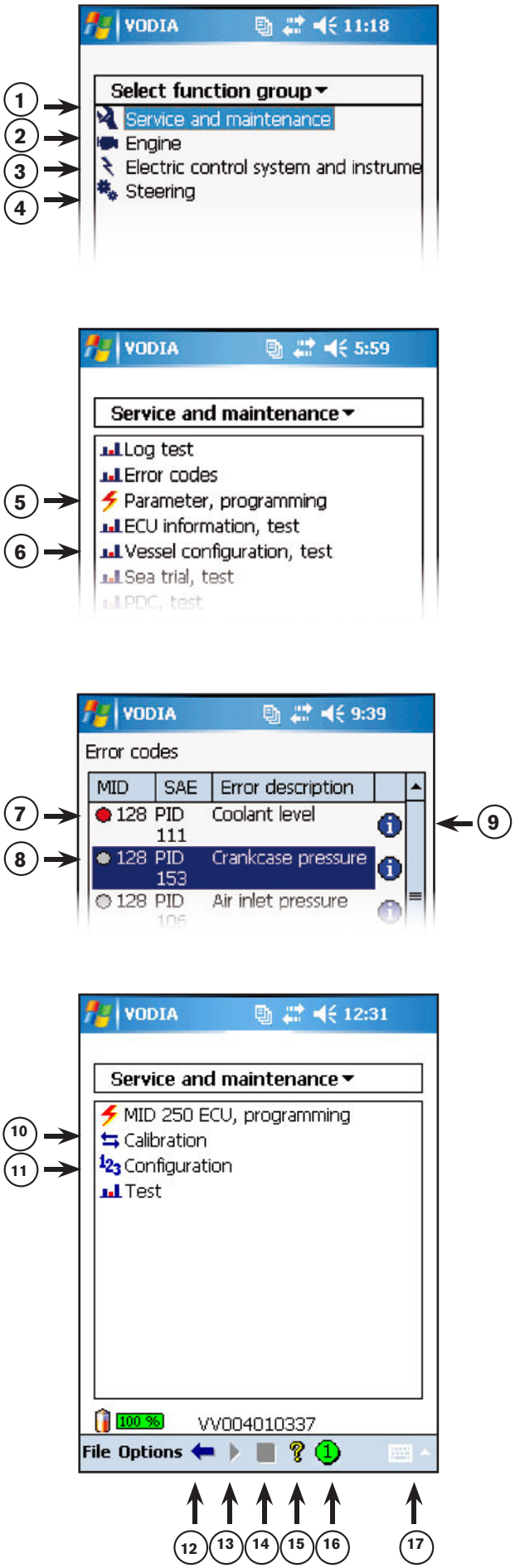
In the beginning of an operation which requires communication with control units, the application will read information from the control units. This may take a minute or two. If the installation is unknown to VODIA it may still be possible to run the operations **vehicle information log test** and **error codes**.

The different operations will be described later.



VODIA application icons

1. **Service and Maintenance –** Function group. See function group section.
2. **Engine –** Function group. See function group section.
3. **Electronic control system and instruments –** Function group. See function group section.
4. **Steering –** Function group. See function group section.
5. **Programming –** icon for programming operations.
6. **Test –** icon for test operations.
7. **Active error code –** Red icon indicating that an error code is active.
8. **Inactive error code –** Grey icon indicating that an error code is inactive.
9. **Error code information –** icon indicating more detailed information for each error.
10. **Calibration –** icon for calibration operations.
11. **Configuration –** icon for configuration operations.
12. **Back –** tap this icon to stop an operation and return to the previous view.
13. **Start –** tap this icon to start the current operation.
14. **Stop –** tap this icon to stop the current operation.
15. **Help –** icon indicating that a help text is available.
16. **Automatic switchbox** – icon for switching drive leg. This is only available with the automatic switchbox. The number represents the connected drive leg.
17. **Software keyboard** – icon for activating the built in software keyboard.



Select function group

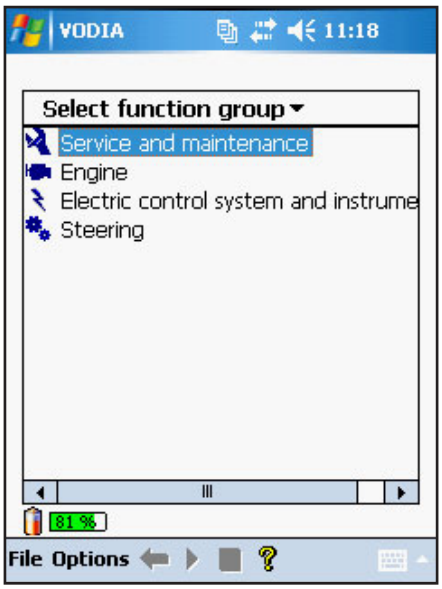
This is the VODIA "main menu". Tap on the **function group** name. To return to the main selection screen, tap on the selected function group name in the drop down menu above the group selections or use the back arrow.

Service and maintenance - General tests and fault tracing for the entire system.

Engine - Tests and programming related to the engine and the engine ECU.

Electric control system and instruments - Tests and programming related to the EVC system and CIU or DCU in industrial systems.

Steering - IPS and Sterndrive Joystick programming, settings and calibrations.

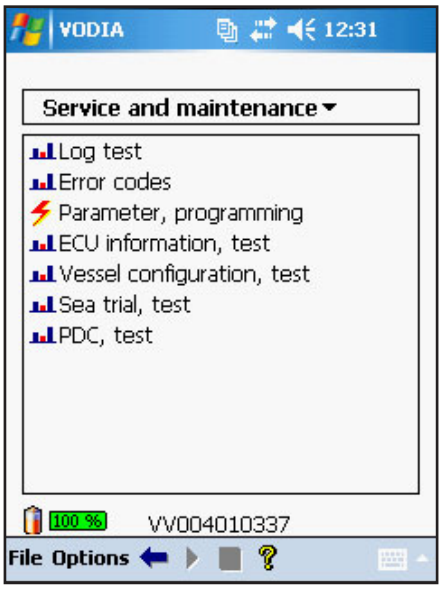


Select function group

Function group - service and maintenance

The Service and maintenance function group contains general operations for the entire system and some useful tests.

The Sea trial and PDC tests have separate instructions.



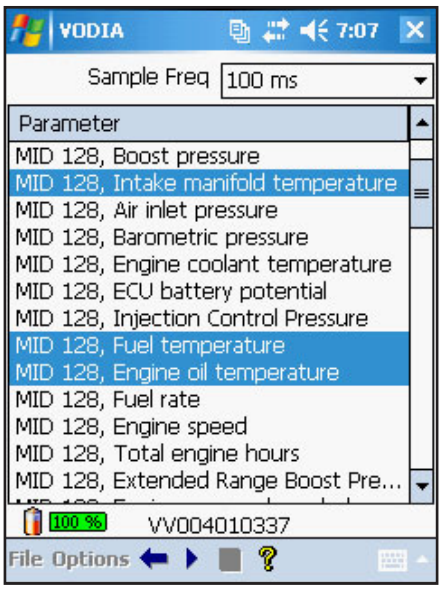
Service and maintenance

Log test, industrial or marine

This operation is used for logging parameters (PID/PPID) over time. If a request fails a star (*) is displayed instead of the value. The reasons for a failed request can be that the installation does not have the parameter or that the reply of the ECU is too slow. The rate of requests is determined by how many parameters have been chosen in the list. The results are stored on the job card.

1. Select PIDs or PPIDs to test and tap on the start button ▶ to start the test.
2. When the preferred PID or PPID have been tested, tap on the stop button ■ to end the test.

Each test value can also be displayed as a graph. Tap and hold to select the parameters to be shown in real time in a diagram.

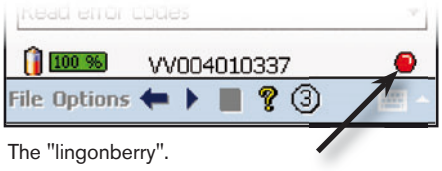


Log Test

Error codes

The purpose of this test is to read error codes stored in the control units. There are two different types of error codes, active and inactive. Active error codes indicates present errors. Inactive error codes indicate errors that have been registered at any occasion but are no longer present. Inactive error codes can be erased all together or individually.

An indication that the connected system has an active error code is a little red dot in the lower right corner, the so called "lingonberry". It is visible from anywhere in the VODIA menus. See illustration.



The "lingonberry".

When read, all error codes are stored on the job card.

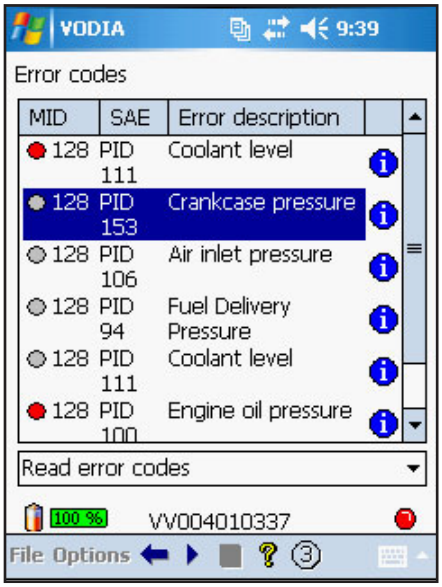
> **Note!** All logged error codes are erased when parameters are programmed or read when using VODIA. The error codes should be identified and then saved to a job card to ensure that the error code information will be available later on.

1. Tap the start button to read out the error codes.

Active codes are marked with a red icon on the left hand side of the error code.

Inactive codes are marked with a grey icon on the left hand side of the error code.

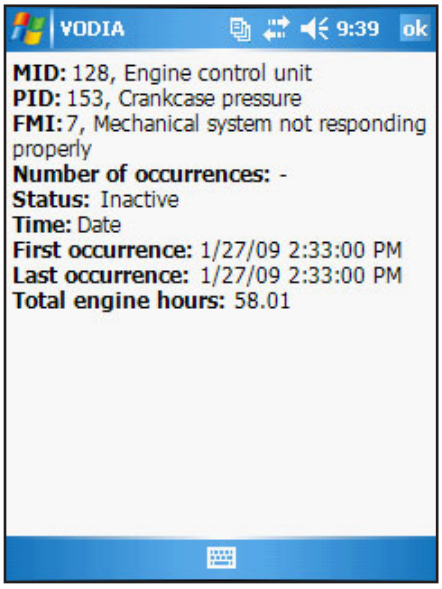
2. To get detailed information about an error code, tap the icon next to the error code.



Error codes

The following information is presented:

- MID (Message Identification Description): The control unit, which transmitted the error code message. The designation of the control unit is also displayed in plain text (Engine control unit for example).
- PID (Parameter Identification Description): The Parameter which the error code applies to (Fuel delivery pressure for example).
- PPID (Proprietary Parameter Identification Description): Volvo unique PID, see above.
- SID (Subsystem Identification Description): The component the error code applies to.
- PSID (Proprietary SID): Volvo unique SID, see above.
- FMI (Failure Mode Identifier): Type of error.
- Number of occurrences.
- Status: Active or inactive.
- First occurrence: The date and time when the error code was first stored.
- Last occurrence: The date and time when the error code was last stored.
- Total engine hours: The total number of hours the engine has been run.



Info page

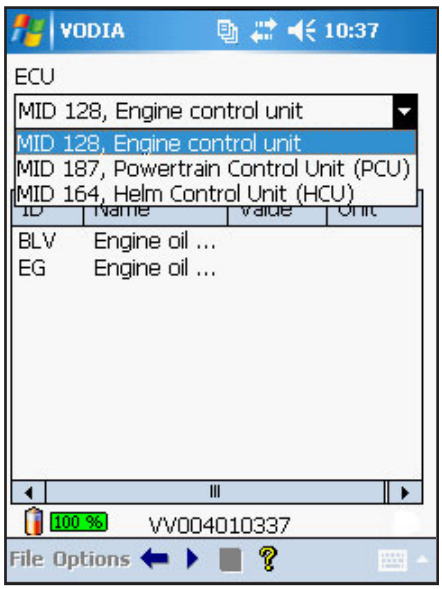
Erase Error codes

Either all or single inactive error codes can be erased.
To erase a single inactive error code:

1. Tap the drop down list and select **Erase single error code**.
2. Select the error code by tapping on it.
3. Tap ▶ to erase.

To erase all inactive error codes:

1. Tap the drop down list and select **Erase error codes**.
2. Tap ▶ to erase.
3. To return to the service and maintenance menu, tap the back arrow ⬅.



Parameter programming - Choose MID

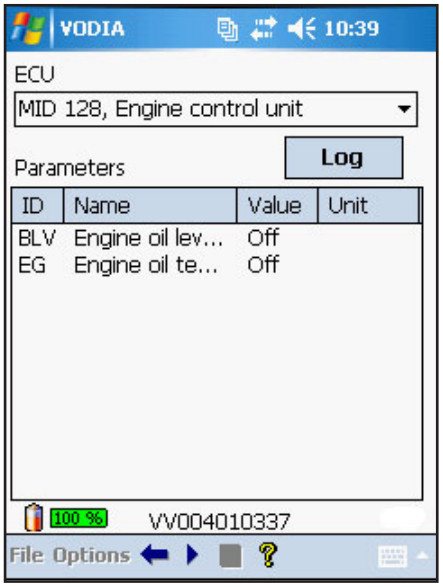
Parameter, programming

The VODIA user is responsible for ensuring that programming is carried out correctly according to the requirements of the vehicle/machine owner or other authorized persons.

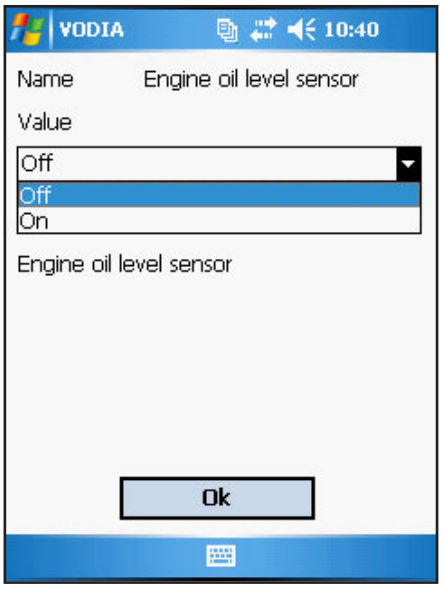
1. Select an **ECU** from the drop down list.
2. Tap the start button ▶
3. Tap the **Parameter** to modify it.
4. Change the **parameter value state** from a drop down menu or, depending on the parameter type, write it using the software keyboard.
5. Tap **Ok** to implement the change and to return to Parameter, programming main screen.
6. (Optional). Tap the **Log** button to write the displayed parameters to the job card. Changed parameters will be written to the job card automatically.

Note! The parameter programming operation may require that the main switch is turned off for ten seconds. Or, if EMS, the key is turned off. Otherwise, the engine may not start.

7. Tap the back arrow ⬅ to return to the Service and maintenance menu.



Parameter programming



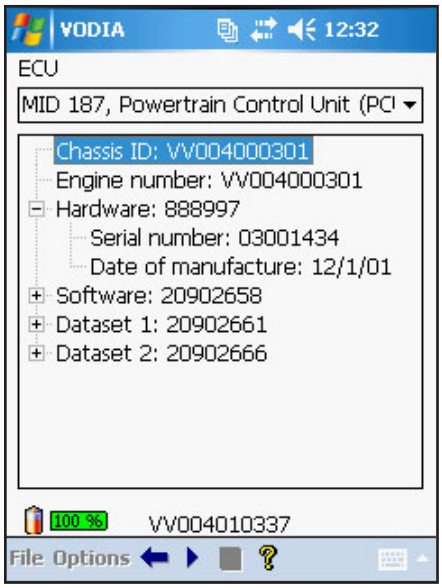
Parameter programming - Change value

ECU information, test

This operation reads out the software information from the control units.

The information available is Chassis ID, Engine number, Hardware number, Serial number, Date of manufacture, Software (MSW, Main software), Dataset 1 (DS1), Dataset 2 (DS2) and Engine hours.

1. Choose an ECU from the drop down list.
2. Tap the start button.



ECU information, test

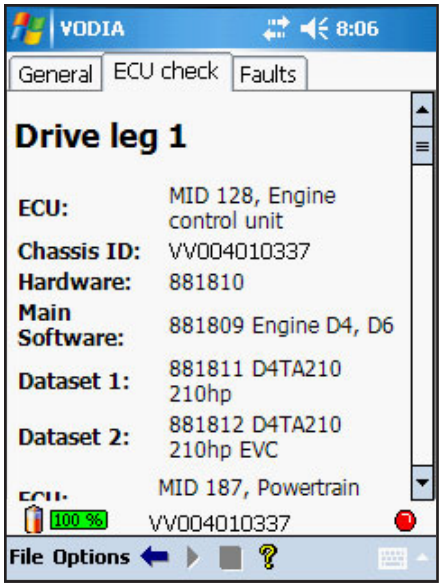
Vessel configuration, test

Note! This operation requires a switch box.

Vessel configuration is used to check the status on all drive lines in a boat with more than one driveline. It will read out the following information: Hull ID, total number of ECUs, indication of differences between ECUs and drive legs, some parameters and accessories, software information from the ECUs, serial numbers on drives, IPS calibration settings, fault code indications on all drivelines.

1. Start by tapping the play button
2. Choose the number of drivelines.
3. Choose **Yes** if you want information from the helm stations.
4. Follow the guide and set the HCUs in service mode.
5. Continue the wizard and switch drivelines when asked for using the switchbox.

Use the tabs to view the different data that was read out.



Vessel configuration, test

Sea trial, test

The Sea trial operation is a test to measure the performance of boats with Volvo Penta engines. The test should be performed in an open test area at sea with the VODIA PDA connected to the diagnostic outlet. The test results should then be reported to the Volvo Central Systems.

It is possible to use boat templates created on the VODIA Web. See the VODIA Web chapter on page 42.

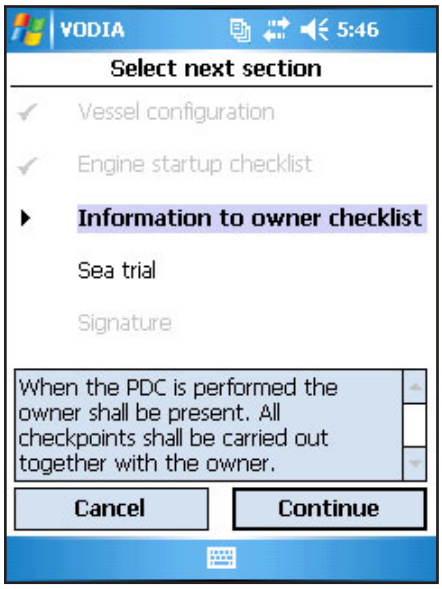
Download separate Sea trial manual from the VODIA Web. See page 46.

PDC, test

The Pre Delivery Commissioning (PDC) test is used to verify Volvo Penta engine installations. The test is performed before or during the delivery of the boat/engine to the customer. The test shall be reported to the Volvo central system where it is possible to print a report. The report is to be given to the customer as a reference. It is recommended that the PDC report is kept together with the driver manual or Warranty and Service book.

The Sea trial boat templates can also be used in the PDC operation.

For more info refer to the Warranty and Service book.



PDC, test

Function group - Engine

The Engine function group consists of many different operations, depending on engine installation.
Some tests are only executed once and then stopped automatically.

Cylinder acceleration, test

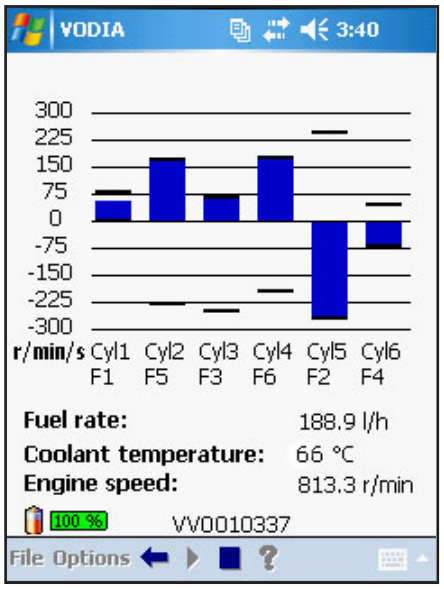
D6 - D16 Genset (MG/GE)
D6 - D16 Versatile (VE)
D9 - D16 Marine

This test displays the acceleration of the crankshaft, which can be used to investigate the collaboration of cylinders and the injectors. The value for a cylinder varies depending on the engine speed, load and firing order. No ignition or low ignition results in a negative value. The "Cylinder compression" test must be run for an accurate evaluation.

Depending on your selection the result will be presented in either cylinder identity order or firing order.

Cyl = Cylinder identity
F = Firing order

1. Start by tapping the play button
2. Choose how to present the results , Cyl or F
3. Check the preconditions.
4. Tap to stop the test.
5. Tap to return to the Engine menu.



Cylinder acceleration, test

Cylinder compression, test

D4 - D6
D6 - D16 Genset (MG/GE)
D6 - D16 Versatile (VE)

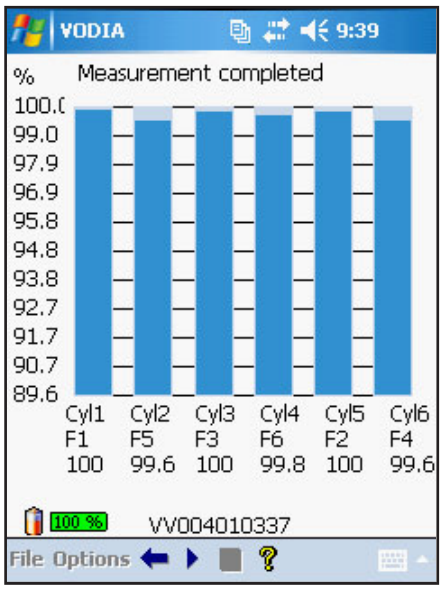
This test indicates if there is any deviation in compression in any cylinder in relation to the other cylinders. For the values to be accurate, the test must be carried out with the engine at operating temperature.

> **Note!** When the test and evaluation are completed, the ignition key must be turned to 0 and then back to the driving position to start a new test or to restart the engine.

Depending on your selection the result will be presented in either cylinder identity order or firing order.

Cyl = Cylinder identity
F = Firing order

1. If asked, choose the number of cylinders. (D4/D6)
2. Start by tapping the play button
3. Choose how to present the results, Cyl or F
4. Check the preconditions
5. When told, start cranking the engine
6. Read the results.
7. Tap to return to the Engine menu.
8. If asked, switch the power off for 10 seconds. (D4/D6)



Cylinder compression, test

Engine run-up, test

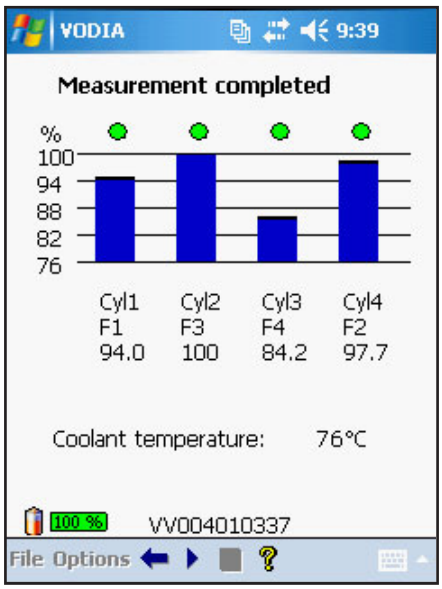
D4 - D6

The test indicates deviations in the power capability of individual cylinders. The cylinders are shut off sequentially and the engine is accelerated. The time required to accelerate the engine is measured. If the time deviates much for the cylinder which is shut off, it can be assumed that there is a defect in the cylinder or it's injection equipment. For the values to be accurate, the test must be carried out with the engine at operating temperature.

Depending on your selection the result will be presented in either cylinder identity order or firing order.

Cyl = Cylinder identity
F = Firing order

1. Start by tapping the play button ▶
2. Choose how to present the results, Cyl or F.
3. Check the preconditions.
4. Read the results.
5. Tap ⬅ to return to the Engine menu.



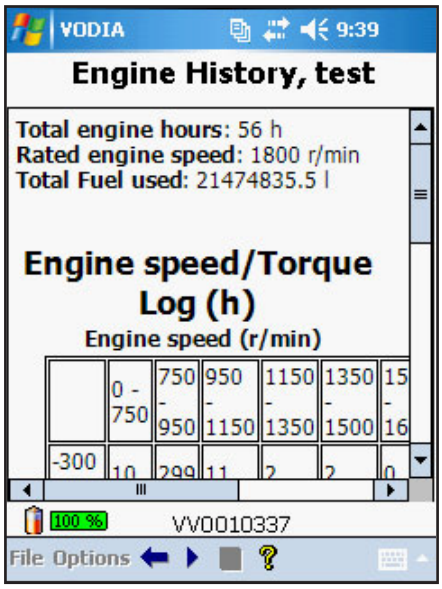
Engine run-up, test

Engine history, test

D6 - D16 Genset (MG/GE)
D6 - D16 Versatile (VE)
D9 - D16 Marine

This operation reads out the engine operating history. It displays Total engine hours, Rated engine speed, total fuel used and a chart with Engine speed/Torque in hours.

1. Start by tapping the play button ▶
2. Read the table.
3. Tap ⬅ to return to the Engine menu.



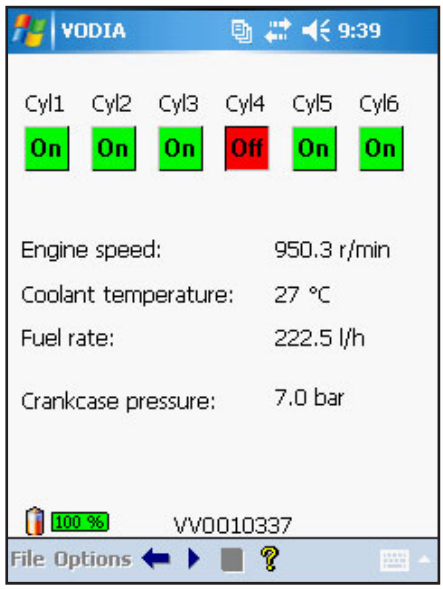
Engine history, test

Injectors shut off, manual (Diesel)

D6 - D16 Genset (MG/GE)
D6 - D16 Versatile (VE)
D9 - D16 Marine

With this test you can shut off injectors manually. Shut of the suspected faulty injector. Listen to the engine. Run the test at the engine speed at which the misfire occurs. Start the injector again by tapping the icon. At maximum three injectors can be shut of at a time.

1. Start by tapping the play button ▶
2. Check the preconditions.
3. Tap the suspect injector button to shut the injector off.
4. Listen to the engine.
5. Tap ⬅ to return to the Engine menu.



Injectors shut off, manual (Diesel)

MID 128 ECU, programming

3.0 - 8.1 Petrol
D4 - D6
D6 - D16 Genset (MG/GE)
D6 - D16 Versatile (VE)
D9 - D16 Marine

See the **ECU programming** section on page 36 for detailed instructions.

Gain & stability, calibration

D6 - D16 Genset (MG/GE)
D6 - D16 Versatile (VE)

With this operation you can change the governor parameters to set the gain and stability of a genset or versatile engine.

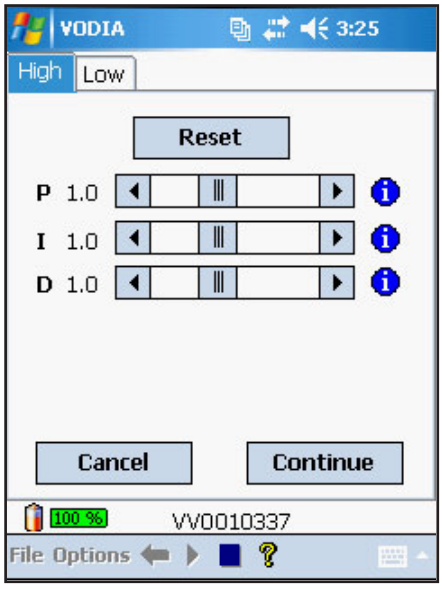
P = Adjustment factor for P-gain of the engine speed governor. Regulation parameter which is proportional to the regulation fault.

I = Adjustment factor for I-gain of the engine speed governor. Regulation parameter which integrates against the regulation fault, that is the longer there is a fault the more this parameter grows. The parameter is equal to the torque when there is no regulation fault.

D = (MG/GE only) Adjustment factor for D-gain of the engine speed governor. Regulation factor which is proportional to the changes of the fault (derivative).

1. Start by tapping the play button
2. Check the preconditions.
3. Use the tabs and sliders to set new values.
4. When finished, tap **Continue** and follow the key off/on instructions on the display.

Note! More information about this operation and detailed instructions are available in service bulletin 36–6–6.



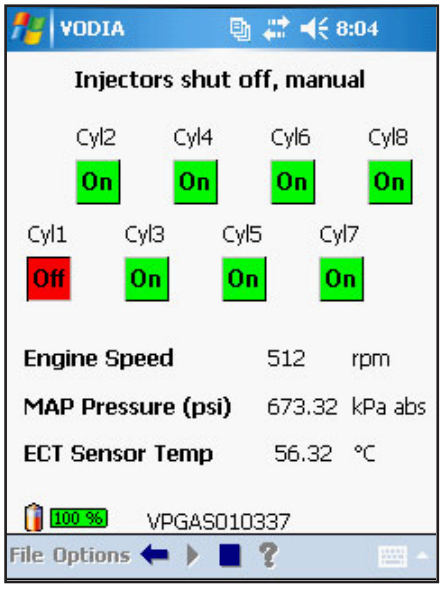
Gain & stability, test

Injectors shut off, manual (Petrol)

3.0 - 8.1 Petrol

This test is similar to the injector shut off for diesel. You stop cylinders and listen for sound changes. The difference is that you for safety reasons can only stop one cylinder at a time on petrol engines.

1. Start by tapping the play button
2. If twin installation with sync cable, choose **Master** or **Slave** engine. If single installation or twin without sync cable choose **Master**.
3. Check the operating temperature.
4. Tap the suspect injector button to shut the injector off.
5. Listen to the engine.
6. Tap to stop the test.
7. Tap to return to the Engine menu.



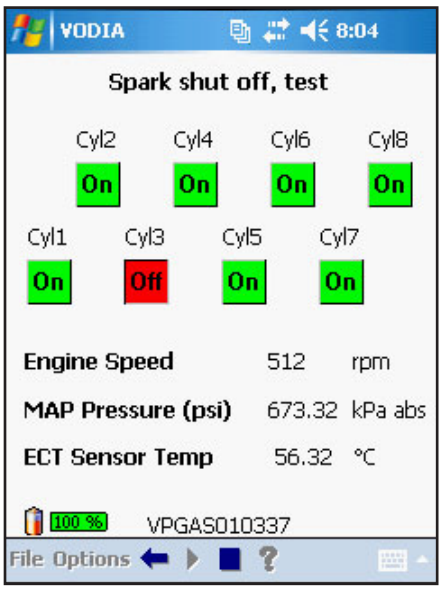
Injectors shut off, manual (Petrol)

Spark shut off, test

3.0 - 8.1 Petrol

This test resembles the injector shut off test, but with this test you disable the spark instead. Manually disable one cylinder at a time. Cylinders are numbered according to their position in the engine block, not firing order. Operate engine under load at 1500/1700 rpm. Look for an equal rpm drop from each cylinder.

1. Start by tapping the play button ▶
2. If twin installation with sync cable, choose **Master** or **Slave** engine. If single installation or twin without sync cable choose **Master**.
3. Check the operating temperature.
4. Tap the suspect cylinder button to shut the cylinder off.
5. Listen to the engine.
6. Tap ■ to stop the test.
7. Tap ⬅ to return to the Engine menu.



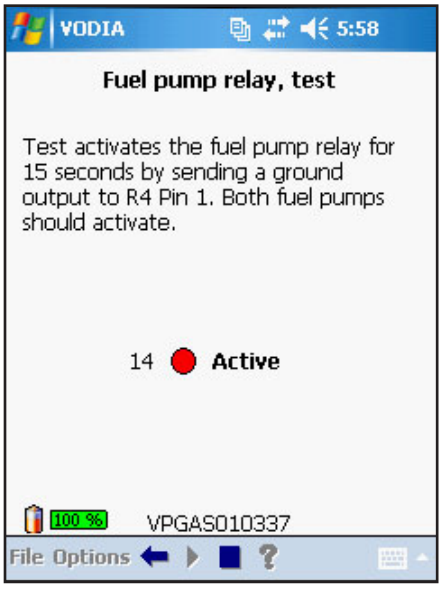
Spark shut off, test

Fuel pump relay, test

3.0 - 8.1 Petrol

This test activates the fuel pump relay for 15 seconds by sending a ground output to R4 pin 1. Both fuel pumps should activate.

1. Start by tapping the play button ▶
2. If twin installation with sync cable, choose **Master** or **Slave** engine. If single installation or twin without sync cable choose **Master**.
3. Check the preconditions.
4. Check the pumps while relay is active.
5. Tap ⬅ to return to the Engine menu.



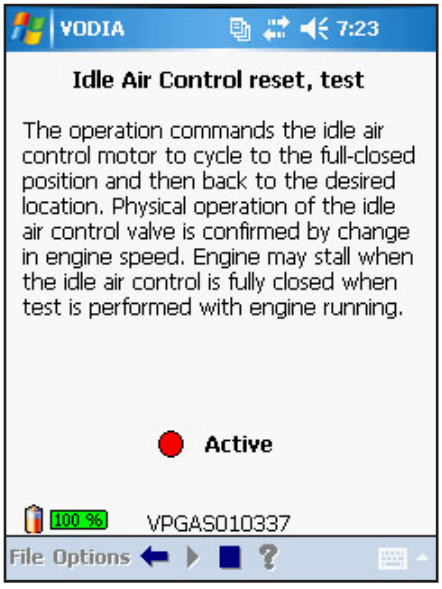
Fuel pump relay, test

Idle Air Control reset, test

3.0 - 8.1 Petrol

This operation tells the idle air control motor to cycle to the full-closed position and then back to the desired location. Physical operation of the idle air control valve is confirmed by changes in the engine speed. Engine may stall when the idle air control is fully closed when the test is performed with engine running.

1. Start by tapping the play button ▶
2. If twin installation with sync cable, choose **Master** or **Slave** engine. If single installation or twin without sync cable choose **Master**.
3. Check the preconditions.
4. Tap ⬅ to return to the Engine menu.



Idle air control reset, test

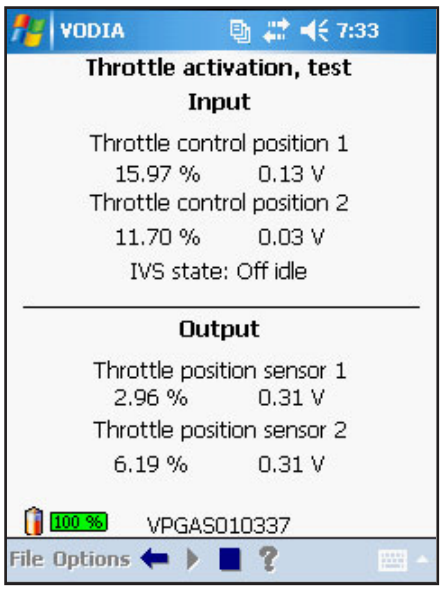
Throttle activation, test

3.0 - 8.1 Petrol

This test allows the user to control the electronic throttle when the engine is shut off to confirm proper throttle valve movement and sensor values.

> **Warning!** The throttle valve motor is very powerful and can cause personal injury. Do not touch the throttle plate at any time! Be certain that the flame arrestor is reinstalled immediately after testing.

1. Start by tapping the play button ▶
2. If twin installation with sync cable, choose **Master** or **Slave** engine. If single installation or twin without sync cable choose **Master**.



Throttle activation, test

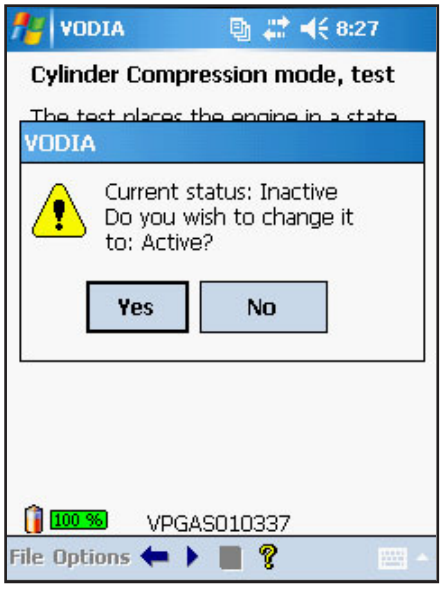
3. Check the preconditions.

Cylinder Compression mode, test

3.0 - 8.1 Petrol

The test places the engine in a state where cylinder compression tests can be performed with standard compression gauges. Injectors and ignition will be disabled and throttle plate will be commanded to the full open position.

1. Start by tapping the play button ▶
2. If twin installation with sync cable, choose **Master** or **Slave** engine. If single installation or twin without sync cable choose **Master**.
3. Check the preconditions.
4. Choose **Yes** to activate the compression mode.



Cylinder compression mode, test

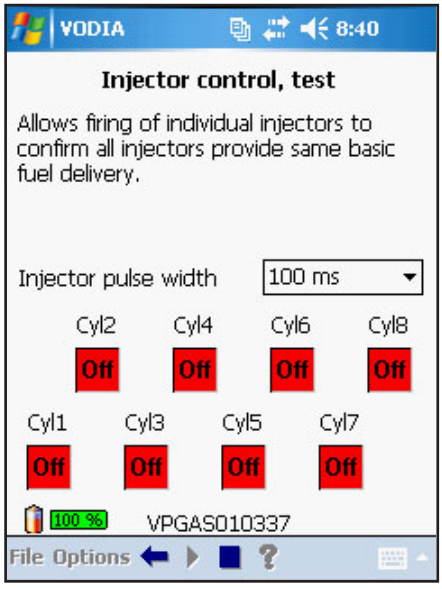
5. Perform the compression test and restart the operation to deactivate the compression mode.

Injector control, test

3.0 - 8.1 Petrol

The test allows firing of individual injectors to confirm that all injectors provide the same basic fuel delivery. Establish fuel rail pressure with a manual gauge, then fire an injector and observe the pressure drop. The engine must be cranked for ten revolutions to clear fuel, and key cycled off/on to restore fuel rail pressure before firing the next injector.

1. Start by tapping the play button ▶
2. If twin installation with sync cable, choose **Master** or **Slave** engine. If single installation or twin without sync cable choose **Master**.
3. Check the preconditions.
4. Choose the injector pulse length. **100/200 ms**.
5. Tap ◀ to return to the Engine menu.



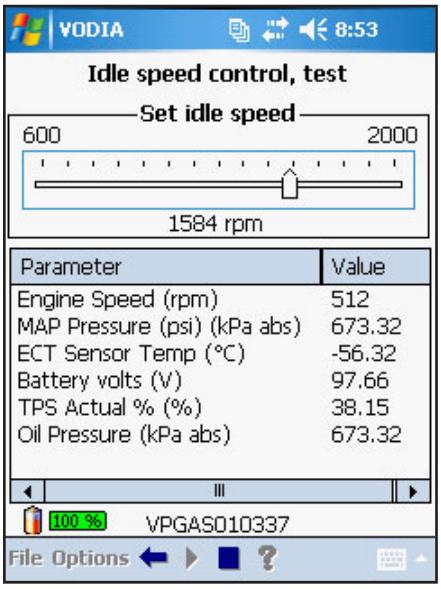
Injector control, test

Idle speed control, test

3.0 - 8.1 Petrol

This test will allow a temporary manual control of the engine idle speed in neutral up to a maximum of 2000 RPM. The engine will return to the programmed idle speed during normal operation.

1. Start by tapping the play button
2. If twin installation with sync cable, choose **Master** or **Slave** engine. If single installation or twin without sync cable choose **Master**.
3. Check the preconditions.
4. Use the slider to set the idle speed.
5. Tap or to stop the test.



Idle speed control, test

Spark Fire, test

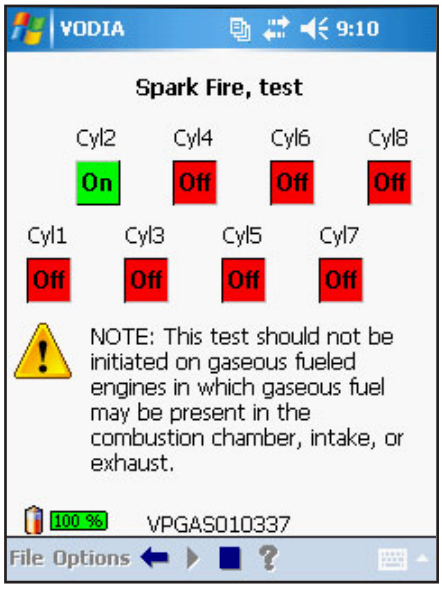
3.0 - 8.1 Petrol

The spark fire test enables the technician to manually fire each individual ignition coil for up to 10 seconds. This is a key on, engine off test. This test combined with a KV (Kilovolt) spark tester allows the technician to quickly check the ability of the ECM to fire the ignition coil and see the resulting spark level output to the spark plug or distributor cap.

Stay clear of all rotating parts as this test may cause the crankshaft to move slightly if the ignition coil ignites uncombusted fuel. If motion is detected from the CKP (Crankshaft Position Sensor) during the test, the test will be aborted.

> **Warning!** This test should not be initiated on engines in which gaseous fuel may be present in the combustion chamber, intake or exhaust.

1. Start by tapping the play button
2. If twin installation with sync cable, choose **Master** or **Slave** engine. If single installation or twin without sync cable choose **Master**.
3. Tap a cylinder to test the spark.
4. Tap or to stop the test.



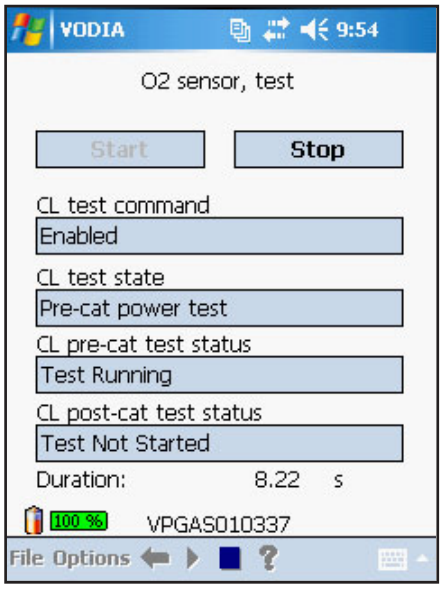
Spark fire, test

O2 sensor, test

3.0 - 8.1 Petrol

The O2 sensor test will first test the functionality of the upstream O2 sensors and then the downstream O2 sensors. Failure of any sensor during the test will set a fault code. If a test failure is indicated, the fault code operation should be used to track down the actual problem. If either upstream sensor fails, that failure must be repaired before the downstream sensors can be tested. If either downstream sensors fails, that failure must be repaired before the test can be restarted.

1. Start by tapping the play button
2. If twin installation with sync cable, choose **Master** or **Slave** engine. If single installation or twin without sync cable choose **Master**.
3. Check the preconditions.
4. Tap **Start** to start the test of the O2 sensors.
5. Tap **ok** when the first test is done.
6. Tap to return to the Engine menu.



O2 sensor, test

Misfire reset, test

3.0 - 8.1 Petrol

Misfire reset is used to reset the misfire counter for all cylinders to zero.

Reset Misfire - Misfire counters for all cylinders will be set to zero. This should be done for example after an ignition or injection fault has been repaired which initially caused the misfire.

Reset adaptives - All adaptive learn misfire parameters will be reset to zero for all cylinders. This should be done for example when a damaged propeller has been repaired or replaced regardless of whether is it caused a misfire or not.

1. Start by tapping the play button
2. Check the preconditions.
3. Tap **Ok** in the question dialogue.
4. Choose **Reset misfire count** or **Reset adaptives** in the drop down menu.
5. Tap **Reset.**
6. Tap **Yes** at the warning dialogue.
7. Tap to return to the Engine menu.

Misfire reset, test

ECU programming

The control units in a Volvo Penta Engine installation are for an example **Engine ECU**, **PCU** and **HCU**. The software for each individual unit is unique and they are tied together with a chassis ID which ensures their compatibility.

The **Chassis ID** consists of two strings: **Chassis Type** and **Chassis Number**. Examples of Chassis Types are VV, VP, VPGAS, VV003, VV004 or VV006.

Volvo Pentas diagnostic data bus is called SAE J1587. On a SAE J1587 bus each unit is identified with a **Messenger Identifier (MID)**. The following table illustrates the SAE names for the Volvo Penta electrical systems:

Volvo Penta description names	MID/SAE
Engine ECU	128
Powertrain Control Unit (PCU)	187
Helm Control Unit (HCU)	164
Servo Unit Steering (SUS)	250
Steering Control Unit (SCU)	250
Helm interface unit (HIU)	140
Corrosion Protection Module (CPM)	200
Display Control Unit (DCU)	144
Customer Interface Unit (CIU)	144

Central Systems

All information about the engines regarding the software are stored in a central system called VDA. Every change, parameter change, ECU programming or calibration made by VODIA must be reported back to VDA. This is done via the VODIA Web. See page 44 for more information regarding reporting.

Programming multiple installations

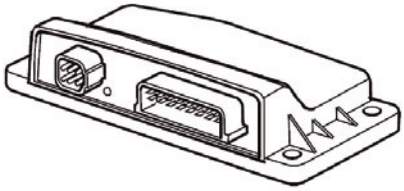
On marine twin engine installations there are two chassis IDs - one for each powertrain. It is recommended that all corresponding units on a boat are re-programmed at the same time, for example the Engine ECUs of both port and starboard side, to ensure that both drive lines have the same software. A switchbox, described on page 4 and 5 is recommended when programming more than one engine at a time.

The procedure

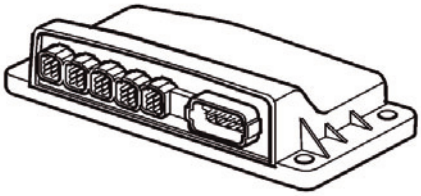
The procedure for ECU programming may differ depending on which control unit is to be programmed, but the basic procedure is **always** as follows:

1. **Download software**
2. **Program**
3. **Report back**

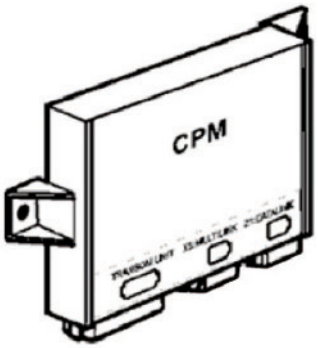
Engine ECU (EDC7) - MID 128



PCU - MID 187



HCU - MID 164



CPM - MID 200

DCU - MID 144

Detailed procedure

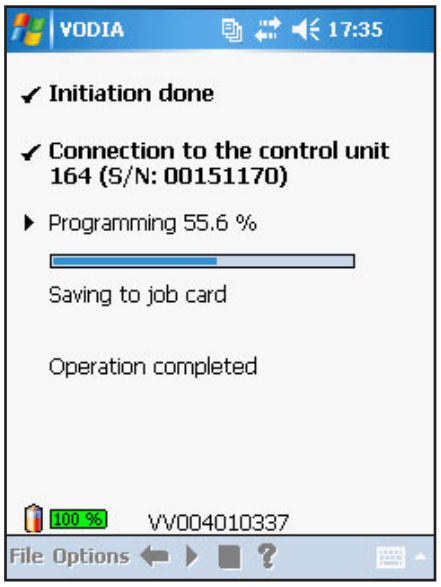
1. Download the software from the VODIA Web to the VODIA Tool. See ECU Programming on page 43 in the VODIA Web chapter.
2. Enter the programming operation. Available from either the Engine function group to program the engine ECU, or the Electronic control system and instruments, for programming the EVC system or CIU or DCU.
3. Start by tapping the play button ▶
4. If you want to replace any ECU during the programming tap **Yes.**
5. When the programming operation comes to the ECU you which to replace, switch the power off, replace the hardware and switch the power on again. Then tap **OK**.
6. Repeat step 5 for all units that will be replaced.
7. Tap **ok** at the auto configuration note.
8. When the programming is completed, the software has to be reported back to the VODIA Web within **28 days**. Tap **ok**.
9. Connect the VODIA Tool to the computer, log in to the VODIA Web and report the software back. See page 43.

Important! If the downloaded software is not reported back after **28 days** an invoice will be automatically generated. See Invoices on page 44.

Important! When the VODIA dialogue informs about switching the power off it is vital that the main power is switched off for ten seconds. **It is strictly forbidden to just unplug the Vodia.**

Important! The VODIA user is responsible for ensuring that programming is carried out correctly according to the requirements of the boat/machine owner or other authorized persons.

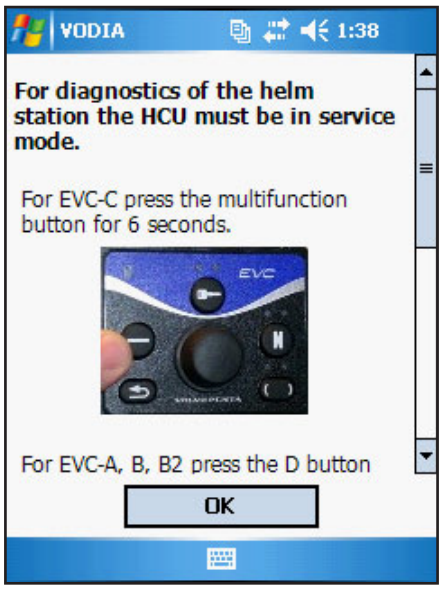
Warning! Under no circumstances may control units be switched between vehicles/machines for error tracing or repairs without reprogramming them. Incorrect control unit settings can result in personal injury or damage to the boat/machine.



EVC system programming

HCU in service mode

In order to program a MID 164 HCU (Helm Control Unit) it must be set in service mode. For EVC-A, B and B2; press the D button on the control panel for 6 seconds. For EVC-C, C2 and C3; press the multifunction button (-) for 6 seconds. A flashing yellow light confirms that the HCU is in service mode.



HCU in service mode

Campaign programming

Campaign programming is similar to ECU programming. It is totally free of charge but you must still report back afterwards. In all other aspects the campaign operations are identical to the ECU programming.

Function group - Electric control system and instruments

The Electric control system and instruments function group contains operations for the EVC system on marine engines and DCUs and CIUs on industrial engines.

MID 144 ECU, programming

D6 - D16 Genset (MG/GE)
D6 - D16 Versatile (VE)

Programming of CIUs and DCUs
See the ECU programming section on page 36.

EVC system, programming

D4 - D6
D9 - D16 Marine

Sequence programming of the entire EVC system
See the ECU programming section on page 36.

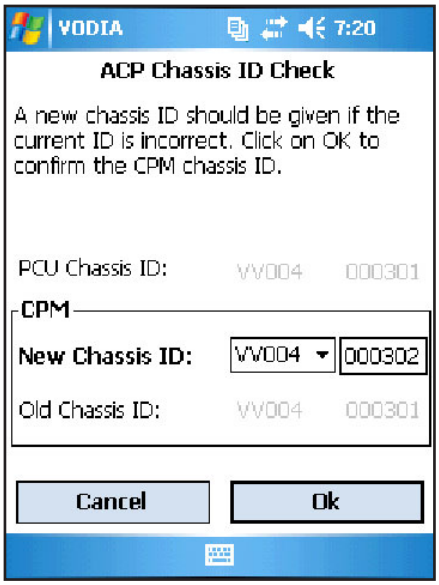
ACP Chassis ID, test

D4 - D6

The ACP (Active Corrosion Protection) Chassis test is for validation of the chassis ID being used for the CPM, Corrosion Protection Module MID 200.

The CPM chassis ID will be updated as soon as the result is reported back to the VODIA Web and the new software with updated chassis ID is downloaded for reprogramming of the CPM unit.

1. Make sure that the VODIA Tool is connected to the **port drive leg** with the CPM unit installed.
2. Start by tapping the play button
3. Check the preconditions.
4. Compare the chassis ID of the CPM with the PCU, change it if necessary.
5. Tap **Ok** when done.
6. Report the chassis ID to the VODIA Web.
7. Reprogram the CPM unit using the **ECU programming** for the EVC system.
8. Re-identify and check that the CPM chassis ID is changed.



ACP Chassis ID, test

ACP History, test

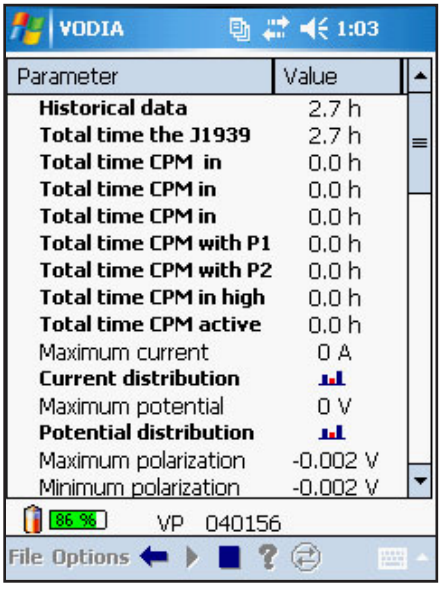
D4 - D6

This test reads out the ACP operating history.

Time Parameters are displayed in bold. Tap on the parameter to view detailed information.

Graph icons next to the parameters in the main table indicates that the parameter is an array of time values. Array parameters are visualized both in a graph and in a table.

1. Make sure that the VODIA Tool is connected to the **port drive leg** with the CPM unit installed.
2. Start by tapping the play button
3. Read the information
4. Tap to return to the menu.



ACP History, test

Function group - Steering

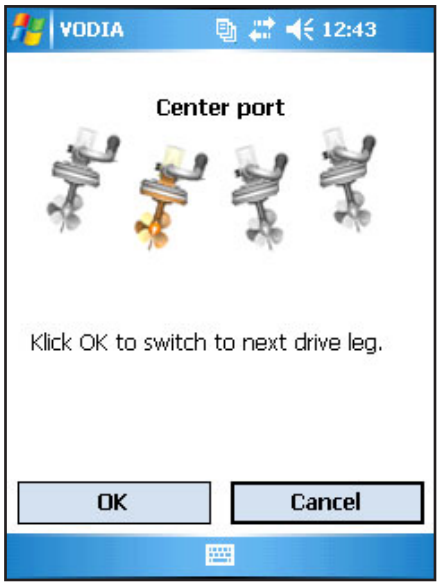
The Steering function group is only available when a SUS or SCU, MID 250 has been identified. That means it is only available on IPS boats and Sterndrive installations with electronic steering.

In contrast to the other function groups, Steering has three sub groups, Configuration, Calibration and Test. See the Menu structure on page 21.

The available operations will vary depending on installation and which VODIA level you have.

Note! The Steering operations described in this guide require the automatic switchbox art. no. 21287382. You can still use the old Steering operations in classic mode with the old switch boxes.

Important! All calibrations and configurations must be reported back to the VODIA Web.



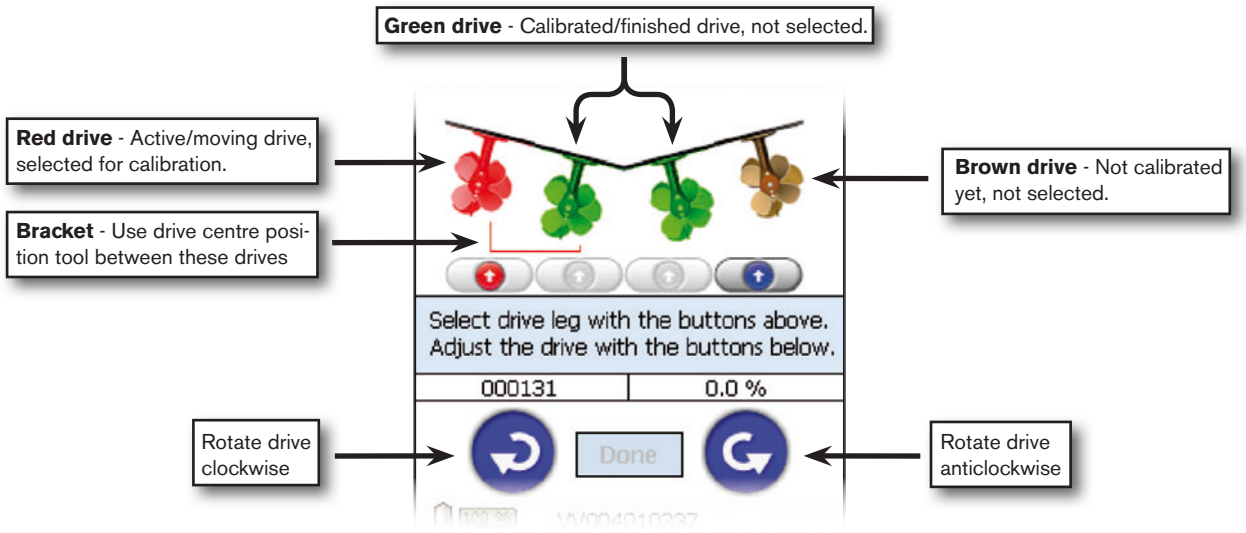
Switch drive leg

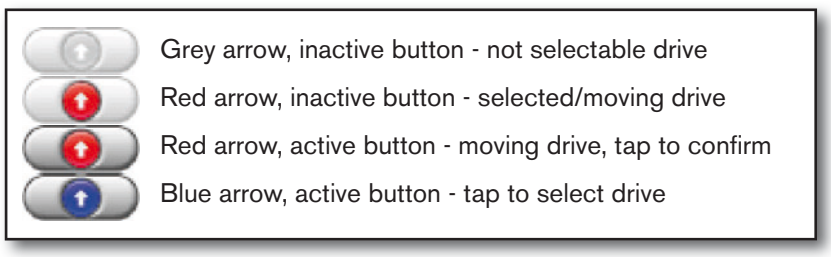
Switching drive leg with the Automatic switchbox

When not in an operation you can switch between the drive legs manually. The icon indicates the current connected drive leg.

1. Tap the Automatic switchbox icon
2. Choose installation type (Only needed once)
3. Select a drive leg.
4. Tap **OK**

Explanation of buttons and illustrations





Calibration

OEM

The OEM calibration should be done by the OEM. It consists of two parts: **Drive leg position,** which tells the drive leg it's position in the boat relative the other drive legs, and **Drive Alignment,** which with help of the drive centre position tool, calibrates the drive legs parallel to each other and to the keel.

1. Choose the correct type of installation, tap **OK**.
2. Check the preconditions. Tap **OK**.

Part: 1/2 Drive leg position

3. Start by tapping the play button.
4. Tap the big play button.
5. If the correct drive leg is moving, tap **YES**. If the wrong drive leg is moving, tap **NO**, rearrange the cables in the switchbox and restart the operation.
6. Repeat step 5 for all drive legs.
7. Turn the main power off for 10 seconds.
8. Tap **OK** on the report dialogue.

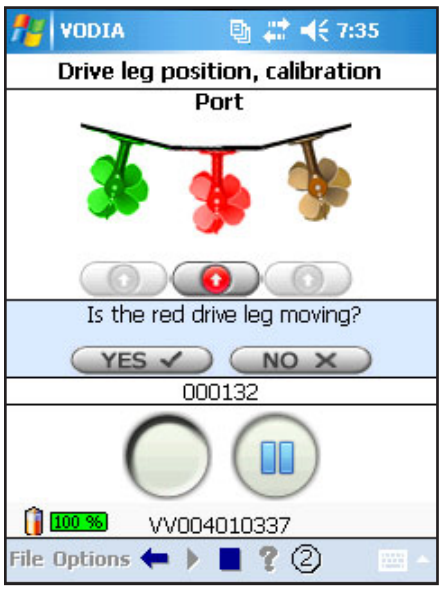
Part 2/2 Drive alignment

9. Start by tapping the play button.
10. Tap **Yes** if the Hull ID is correct or **No** to type in a new Hull ID.
11. Select the drive leg you wish to move first by tapping on the corresponding button.
12. Use the blue arrows to turn the drive leg clockwise or anticlockwise.
13. Check the drive alignment with the drive centre position tool.
14. Repeat step 11-13 until the drive legs are parallel.
15. Tap **Done**.
16. Tap **Yes** to confirm that the drive legs are aligned.
17. Make sure that the drive centre position tool is removed from the drive legs and tap **OK**.
18. Turn the main power off for 10 seconds.
19. Tap **OK** on the report dialogue and report the calibration back to the VODIA Web.

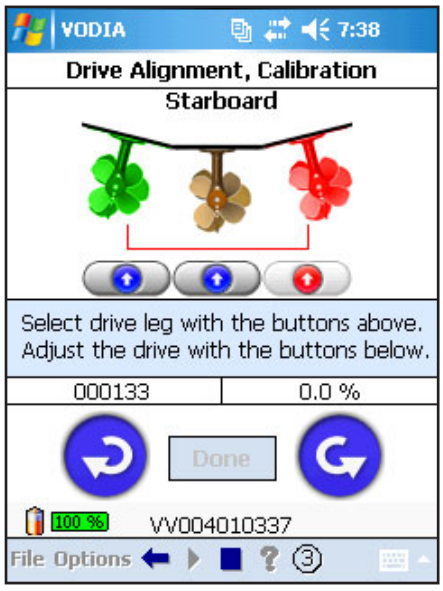
Resolver replacement

This operation is used to calibrate the drive when a new resolver/upper gear has been installed.

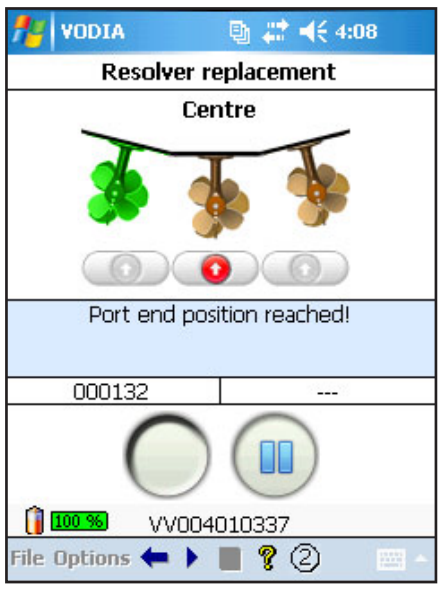
1. Choose the correct type of installation. Tap **OK**.
2. Check the preconditions. Tap **OK**.
3. Start by tapping the play button.
4. Tap the big play button.
5. Choose the drive on which the resolver has been replaced by tapping the button.
6. The drive leg will start moving to its end positions and finally centre itself.
7. Turn the main power off for 10 seconds.
8. Tap **OK** on the report dialogue and report the calibration back to the VODIA Web.



OEM Calibration Part 1, Drive leg position



OEM Calibration Part 2, Drive alignment



Resolver replacement

Drive replacement

This operation is used when one or more drives have been replaced. It consists of three parts: **Drive leg position,** which tells the drive leg it's position in the boat relative the other drive legs, **Drive leg factory settings,** which calibrates the end positions of the drive legs and **Drive Alignment,** which with use of the drive centre position tool, calibrates the drive legs parallel to each other and to the keel.

1. Choose the correct type of installation. Tap **OK**.
2. Check the preconditions. Tap **OK**.

Part 1/3 Drive leg position

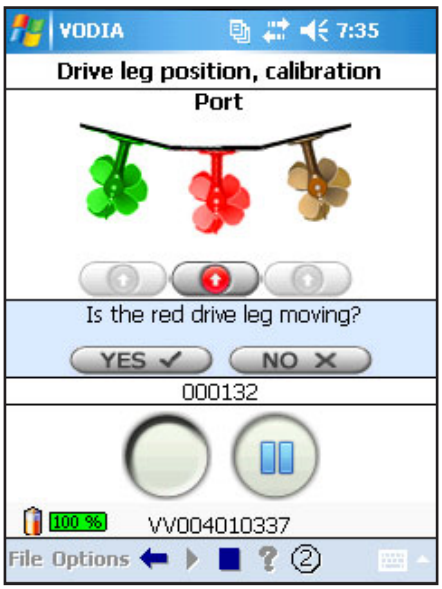
3. Start by tapping the play button.
4. Tap the big play button.
5. If the correct drive leg is moving, tap **YES**. If the wrong drive leg is moving, tap **NO**, rearrange the cables in the switchbox and restart the operation.
6. Repeat step 5 for all drive legs.
7. Turn the main power off for 10 seconds.
8. Tap **OK** on the report dialogue.

Part 2/3 Drive leg factory settings

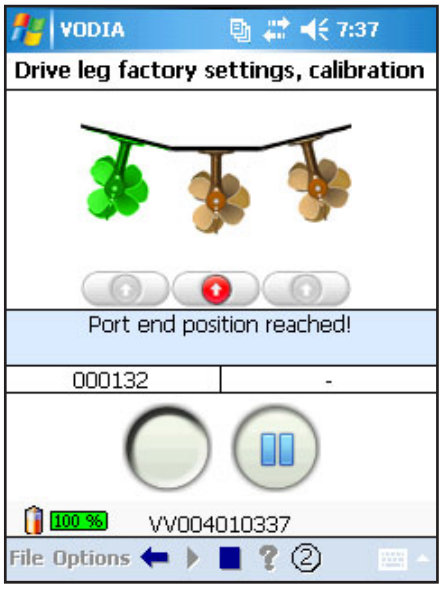
9. Start by tapping the play button.
10. Tap the big play button.
11. Tap **Yes** if correct serial number or **No** to enter the new number.
12. The first drive leg will start moving to its end positions and finally centre itself. Tap **Yes** if the drive leg is in its centre position.
13. Repeat step 12 for all replaced drive legs.
14. Tap **OK** on the report dialogue.
15. Turn the main power off for 10 seconds.

Part 3/3 Drive alignment

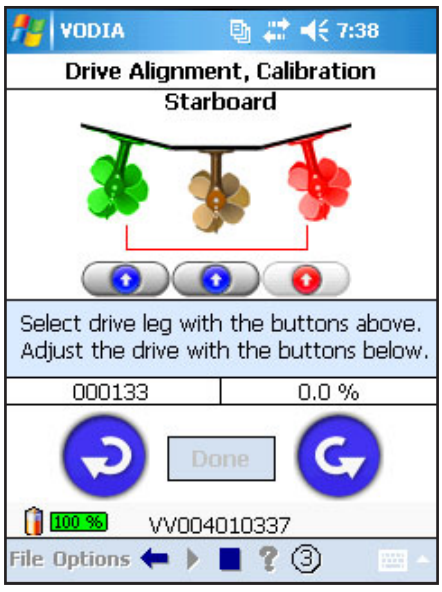
16. Start by tapping the play button.
17. Tap **Yes** if the Hull ID is correct or **No** to type in a new Hull ID.
18. Select the drive leg you wish to move first by tapping on the corresponding button.
19. Use the blue arrows to turn the drive leg clockwise or anticlockwise.
20. Check the drive alignment with the drive centre position tool.
21. Repeat step 18-20 until the drive legs are parallel.
22. Tap **Done**.
23. Tap **Yes** to confirm that the drive legs are aligned.
24. Make sure that the drive centre position tool is removed from the drive legs and tap **OK**.
25. Turn the main power off for 10 seconds.
26. Read the report and tap **OK**.
27. Report the calibration back to the VODIA Web.



Drive replacement Part 1, Drive leg position



Drive replacement Part 2, Drive leg factory settings



Drive replacement Part 3, Drive alignment

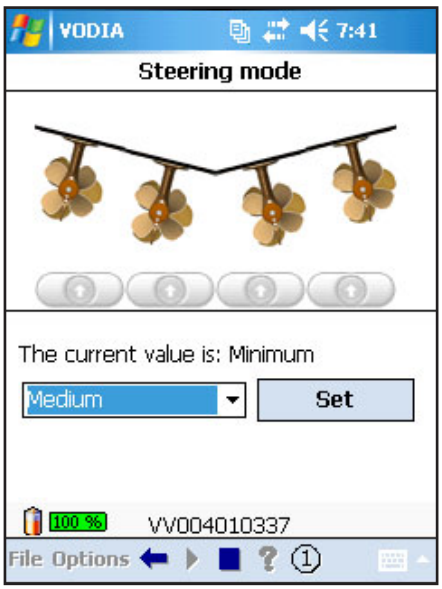
Configuration

Steering mode

The steering mode sets the steering angle of the IPS units or the drives if Joystick Sterndrive. The parameter is set based on the properties of the boat hull and affects the turning radius of the boat. Minimum is default and will give a large turning radius. Medium and Maximum will give a smaller turning radius. The parameter should be set so that the boat turns in a safe, reliable and comfortable way. This operation is available on both IPS and Joystick Sterndrive installations.

Note! It is the boat builders responsibility to set the steering mode correctly.

1. Choose the correct type of installation. Tap **OK**.
2. Check the preconditions. Tap **OK**.
3. Start by tapping the play button.
4. Tap the drop down list and choose a new setting.
5. Tap **Set.**
6. Read the warning and tap **OK**.
7. Tap **Yes** to set the parameter.
8. The automatic switchbox switches drive legs so VODIA can write the parameter to all drive legs.
9. Turn the main power off for 10 seconds.
10. Read the report and tap **OK** to exit the operation.
11. Report the settings back to the VODIA Web.

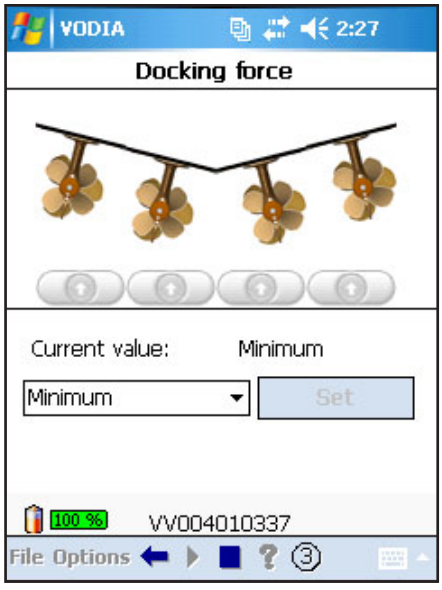


Steering mode

Docking force

The Docking force configuration is used when the force moving the boat sideways must be changed. Both the normal force and the high force mode will be changed with the same factor. Choose between Minimum, Medium and Maximum. This operation is available on both IPS and Joystick Sterndrive installations.

1. Choose the correct type of installation. Tap **OK**.
2. Check the preconditions. Tap **OK**.
3. Start by tapping the play button.
4. Tap the drop down list and choose a new setting.
5. Tap **Set.**
6. Read the warning and tap **ok**.
7. Tap **Yes** to set the parameter.
8. The automatic switchbox switches drive legs so VODIA can write the parameter to all drive legs.
9. Turn the main power off for 10 seconds.
10. Read the report and tap **OK** to exit the operation.
11. Report the settings back to the VODIA Web.

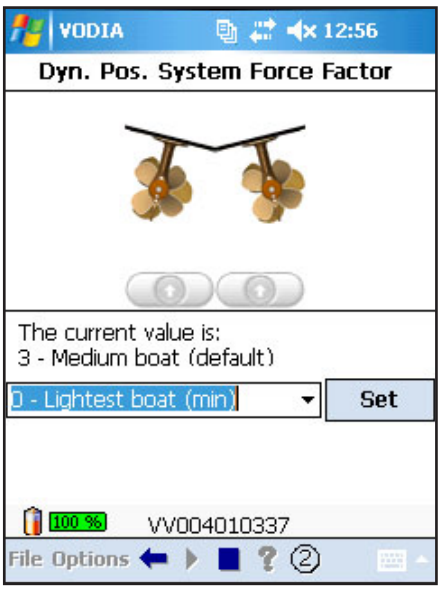


Docking force

Dyn. Pos. System Force Factor

This operation is used to change the force moving the boat sideways for the Dynamic Positioning System. Both the normal force mode and the high force mode will be changed with the same factor. Choose a value between 0 (Lightest boat) to 7 (heaviest boat). This operation is available on both IPS and Joystick Sterndrive installations.

1. Choose the correct type of installation. Tap **OK**.
2. Check the preconditions. Tap **OK**.
3. Start by tapping the play button.
4. Tap the drop down list and choose a new setting.
5. Tap **Set.**
6. Read the warning and tap **ok**.
7. Tap **Yes** to set the parameter.
8. The automatic switchbox switches drive legs so VODIA can write the parameter to all drive legs.
9. Turn the main power off for 10 seconds.
10. Read the report and tap **OK** to exit the operation.
11. Report the settings back to the VODIA Web.



DPS Force factor

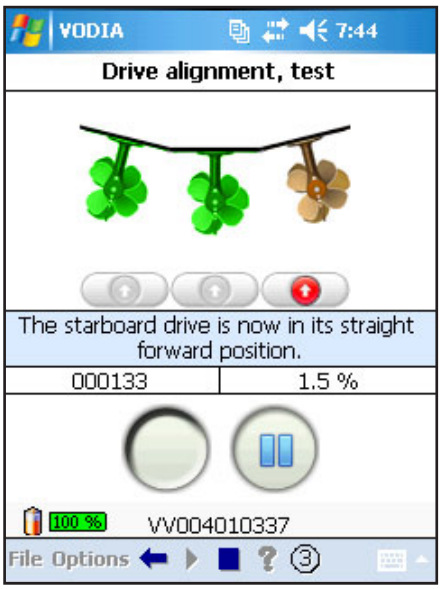
Test

Alignment test

This operation is used to align the drives to the keel to enable visual inspection of the calibration settings.

Note! The boat must be out of the water and you need the special drive centre position tool.

1. Choose the correct type of installation. Tap **OK**.
2. Check the preconditions. Tap **OK**.
3. Start by tapping the play button.
4. Tap the big play button.
5. The drives will move, one by one, to their centre position.
6. Use the centre position tool to check that the drives are aligned and tap **Ok**.
7. Tap **OK** on the report dialogue.
8. Turn the main power off for 10 seconds.



Alignment test

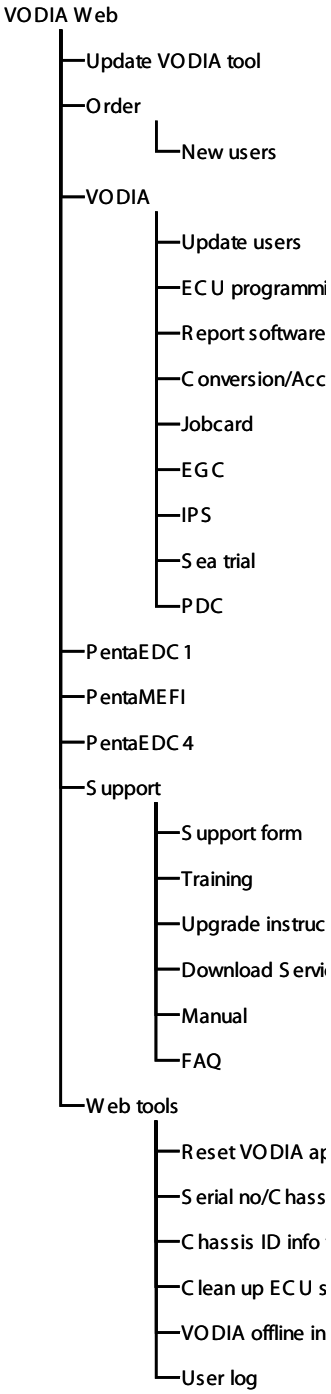
The VODIA Web

Overview

As mentioned in the first section, VODIA consists of two parts: The **VODIA Tool** and the **VODIA Web**.

All communication between the VODIA Tool and the central systems, like VDA, is handled through the VODIA Web. For example when you download software for an engine ECU, VODIA Web uses the data from VDA to give you the correct software. The VODIA Web is also used for maintenance of the VODIA Tool like updates and password resets. It can also be used without the VODIA Tool. For example viewing reported job cards, reading out chassis ID info from VDA or contacting the Volvo Penta support.

The flow chart to the right shows the structure of the VODIA Web. This chapter will describe the different functions on the web.



The VODIA Web start page

The start page contains quick links to some of the functions that will be described later in the chapter. It also has a news flow where important news about updates and other changes will be published.

> **Note!** Read the news on the start page. Important information will always be published here.

Update VODIA Tool

From this menu you update your VODIA Tool. Check for updates once a week to get the latest updates and database.

> **Important!** Make sure that the VORP is on external power and that you have the correct power settings before updating. See Changing power settings, page 9.

1. Make sure the VODIA Tool is plugged in and connected with ActiveSync.
2. Click the **Check for updates** button.
3. New updates will have the check box pre checked.
4. Click **OK** to download.

For a more detailed guide, see page 12.

Order

Here you can find the part numbers of the items in a VODIA order and information about the users connected to the same Partner ID as you, users in your "group".

VODIA

In the VODIA menu you will find tools for buying accessory kits and running conversion kits, programming ECUs, reading job cards and more.

Update users

The Update users function is used when new users has been added, VODIA has been installed again after a clean reset or when a VODIA Tool is registered for the first time, see **Update the VODIA Tool via the VODIA Web page** chapter.

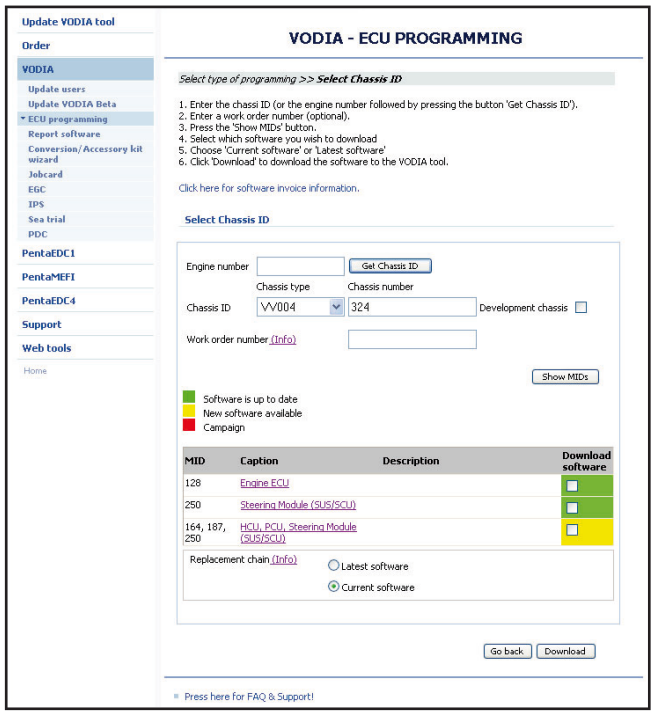
1. Make sure the VODIA Tool is plugged in and connected with ActiveSync.
2. Click the **Update users** button.

Update users

ECU Programming

This is where you download software for an engine. Regardless of the chosen ECU software to download, the procedure is the same:

1. Go to the VODIA Web page and navigate to **Vodia - ECU programming**.
2. Click the **ECU programming** radio button.
3. Click **Continue.**
4. Type in the **chassis ID** or use the **engine serial number** to get the associated chassis ID.
5. Type in a **Work order number**.
   A Work order number is a mandatory reference in 7 characters, 0-9, a-z, that must be entered when ordering ECU software. This number will be added to the contingent invoice as a reference to facilitate invoicing between the dealer and the end customer.
6. Click **Show MIDs**. A list with the associated MIDs for the chassis ID appears. See image ECU Programming.



ECU Programming

The MIDs are presented with a MID number, a clickable caption which contains more information about the MID, a description and a colour code which shows if there are newer software available.

Green - Software is up to date. This means that the MID is already programmed with the latest released software.

Yellow - New software available. New software was released for the MID after it was last programmed.

Red - Campaign. A campaign is released for the MID. The latest software has to be downloaded.

7. Replacement chain. Choose between the Latest or Current software:

Latest software will give you the latest released software available for the MID. Programming will take longer.

Current software will give you the same software that was used with the last programming. Programming will be faster.

8. Click Download.

Invoices

Invoices will be generated if the software is not reported back before 28 days regardless if it was used or not. Or if the ECU that was programmed was empty.

The automated invoices are illustrated in the table to the right.

Reported	Empty ECU	Not empty ECU	Not used SW
Before 28 days	X		
After 28 days	X	X	X

X = invoice

Definition of empty ECU:

If an EMS or EVC control unit is missing MSW, DS1 and DS2 it is considered empty.

If a EDC7, EDC15, EDC17, CIU, DCU or CPM is missing either MSW, DS1 or DS2 it is considered empty.

Report software

Here you can report back downloaded ECU software. There are two ways the reporting is carried out, manually and automatically.

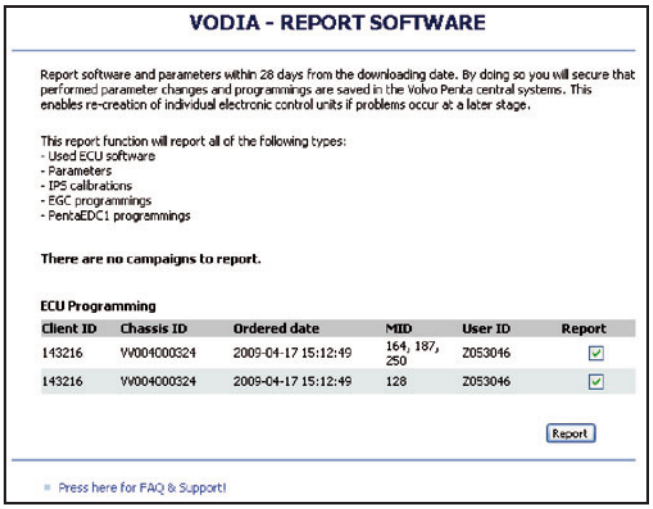
Manual reporting

- Not used ECU softwares
- Sea trials (on the sea trial page)
- PDCs (on the PDC page)

Automatic reporting

- Used ECU softwares
- Changed parameters
- IPS-calibrations
- EGC-programmings
- EDC1-programmings
- Reports from ACP Chassis Id check
- Resolver operations

Automatic reporting is made when checking for updates, either via the start page or the Update VODIA Tool page, and when reporting software manually.



Report software

To report manually:

1. Make sure that the VODIA Tool which the software is downloaded to is connected.
2. Check the check box next to the software you want to report back.
3. Click **Report**.
4. A report receipt will appear when the software is reported.

Conversion/Accessory kit wizard

Conversion kits and accessory kits are basically the same thing. Programs that makes changes on the chassis ID in VDA.

The difference is that conversion kits are used for free updates and bug fixes of the ECU softwares whereas accessory kits add software accessories to a chassis ID and are therefore sold just like hardware accessories and will generate invoices.

To run a conversion kit or accessory kit:

1. Select the engine type and click **Continue**.
2. Select the type of kit (function) you which to run and click **Continue**.
3. Select the specific kit or kits you which to run and click **Continue**.
4. Specify the chassis IDs to run the kit/kits on. You can choose two chassis at the same time.
   Type in the engine serial number and click **Get Chassis ID** or type in the chassis ID directly.
5. Click **Continue**.
6. A summary of the kits about to run appears.
7. Click **Continue**.
8. If a conversion kit was run, go to ECU programming and download the software.
   If accessory kit, click **Download software**.

Accessory kit activation

Job card

Here you can view the job cards in the VODIA Tool and upload them to the VODIA Web. You can also view your job cards. Use View Job card to see the job cards in your VODIA Tool. Use Find Job Card to search for your old uploaded job cards.

Job cards

EGC

Find EGC programming reports.

IPS

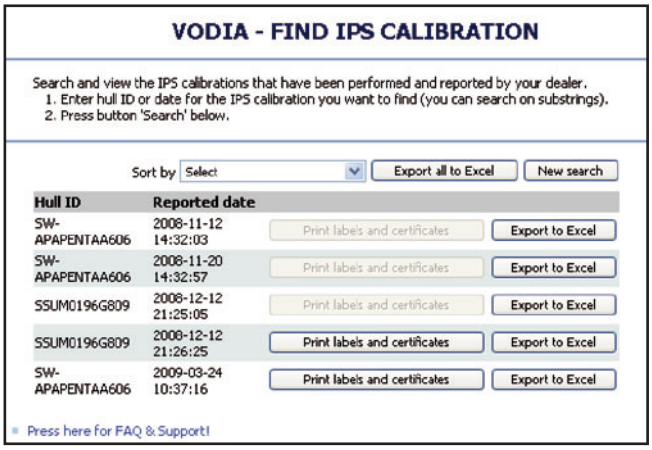
Here you can find your old IPS calibration reports. Use the search function to find the calibrations and print labels of the latest calibration or export the calibration data information to excel.

Sea trial

Report performed sea trials, create boat model templates and search for old reported sea trials.

Sea trial templates

The boat model template makes it possible to create a boat model template on the web site and download it to the VODIA PDA. Click **Create new template** and fill in all boat data and then click **Save**. The template will be stored in a list of templates. Click **Download** on the templates that you want to have in the PDA. The files can also be exported and distributed. The files can be modified by clicking **Edit**.



IPS reports

PDC

Report performed PDCs, and find old reported PDCs.

PentaEDC1

Dataset reports and job cards for EDC1 engines.

PentaMEFI

Job cards for MEFI engines.

PentaEDC4

Dataset programming and job cards for EDC4 engines.

Support

Support form

Use the support form to send questions to your Volvo Penta support. Type in as much information as possible for a quicker solution.

Training

Information about VODIA training.

On VPPN, go to Training and visit the Global Training Academy for web courses on how to use VODIA.

Upgrade instruction

Step-by-step instruction on how to update the VODIA Tool

Download Service Information

The purpose with this page is to inform about the possibility to download Service Information electronically through "Technical Information" on VPPN. The downloadable Service Information can be stored on the PDA and viewed with Acrobat Reader for Pocket PC.

Manual

Download this VODIA User's Guide and the Sea Trial manual. The warehouse manual is also available here for warehouse users.

FAQ

A Frequently Asked Questions page that will help you sort out the most common problems.

VODIA training in the Global Training Academy

Web tools

Reset VODIA application Password

Use this function to reset the all users passwords in the VODIA Tool to **volvo**.

Note! This option only resets the local passwords in the VODIA Tool. The password for VPPN will stay unchanged.

Serial no/Chassis ID converter

This is a tool that uses VDA to read out the engine serial number from a chassis ID or vice versa.

1. Select the chassis type from the drop down list.
2. Type in the chassis number.
3. Click the **Get engine number** button to read out the engine serial number.

Or

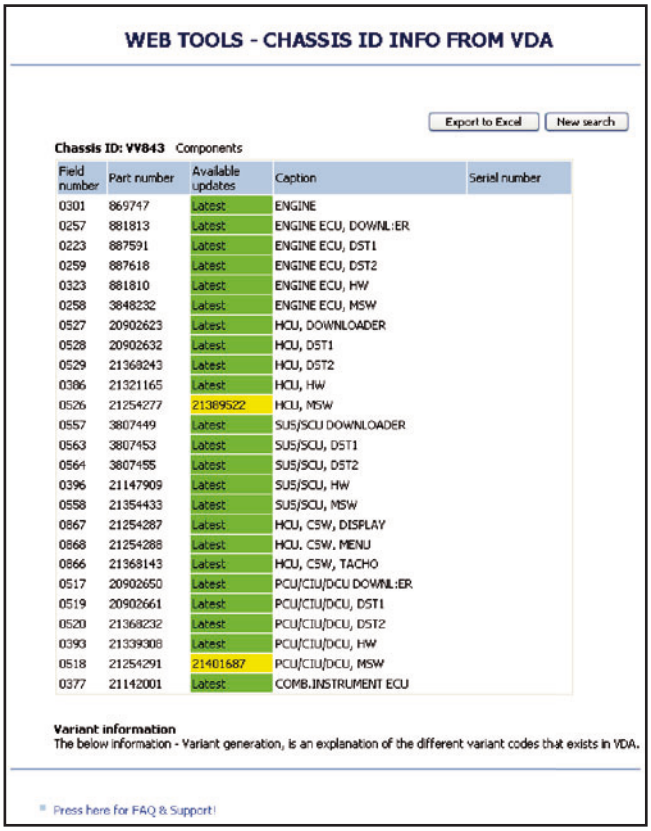
1. Type in the engine serial number.
2. Click the **Get Chassis ID** button to read out the chassis ID.

Chassis ID info from VDA

With this tool you can read out all information from a chassis ID in VDA. Softwares, part numbers and reported parameters.

1. Use the serial number converter (similar to the above operation) to get the chassis ID, or type in the chassis ID directly.
2. Select what type of information you want to view. General information, Variants, Components (software and part numbers) or Parameters.
3. Select function group. Only 2 and 3 are used:
   2 = Engine
   3 = EVC system and DCU/CIU.
   All = Both engine and EVC/DCU/CIU.
4. Click **View** to view the information directly on the web or **Export to Excel** to export all information to an Excel sheet.

There is also an **Advanced export to Excel** link that lets you choose to export more information at once.



Chassis ID info from VDA

Clean up ECU software

This is a support tool. If you are unable to report back software and your chassis ID was unlocked by the Volvo Penta support you can erase the software from the VODIA Tool using this function.

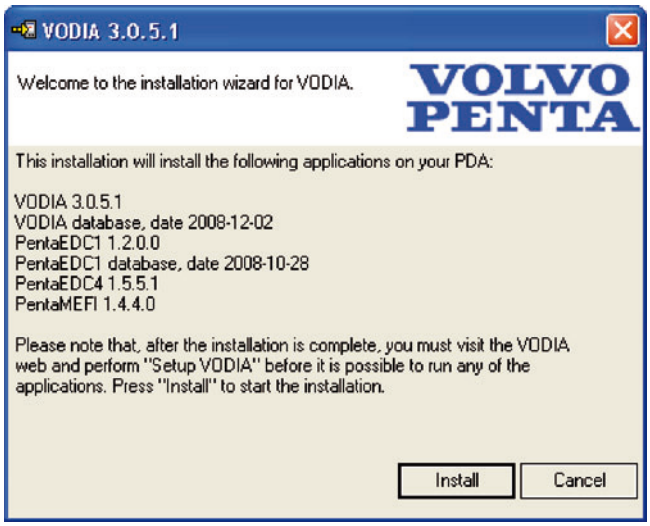
> **Warning!** Use this function ONLY if you've got your chassis ID and MID's unlocked by the Volvo Penta Support. Remember that you will be charged for the software that has been checked out.

VODIA offline installation

The VODIA offline installation is a compliment to the ordinary application downloads from the VODIA Web and contains the complete applications including database: VODIA, PentaEDC1, PentaMEFI and PentaEDC4.

It is always recommended to check for the latest updates on the VODIA Web, but if the connection speed is slow **VODIA offline installation** can be used.

To create a VODIA offline installation, download the file below from a high speed internet connection (large file size). Finally, unzip the files and burn to a CD-ROM.

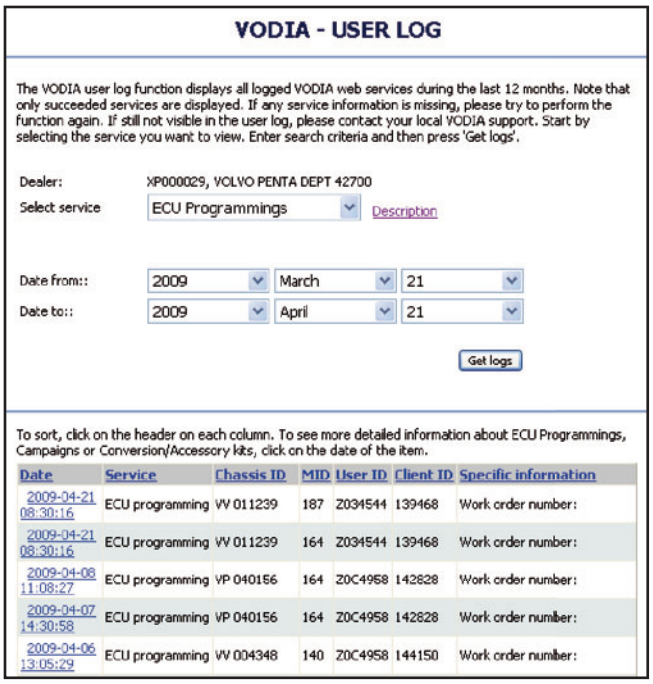


Offline installation

User log

The VODIA user log function displays all logged VODIA Web services during the last 12 months. Note that only succeeded services are displayed. If any service information is missing, please try to perform the function again. If still not visible in the user log, please contact your local Volvo Penta support.

1. **Select service** from the drop down list.
2. Enter the search criteria.
3. Click **Get logs**.



User log

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