Tech Tool

2.03.00 Help File

March 2014

The Tech Tool help file will be presented as a PDF in English for a couple of weeks due to complications with Internet Explorer 10 and 11 and depending systems. The ordinary help file will be back after week 21 and installed with one of the planned network releases.

Welcome to the Tech Tool help

The Tech Tool help will explain the functions and features in Tech Tool and to show you how to have full benefit of the tool. The help is shown in Internet Explorer and you can use the browser's keyboard shortcuts to navigate.

Print the help

To print a section of the help file, click somewhere in the section and press CTRL + P, or right click the section you want to print and select Print. Then the Print dialogue will open where you can make selections to get a printout.

Search in the help

To find a word or phrase in the help file click somewhere in the section you want to search in and press CTRL + F. Then the Find dialogue will open and you can perform a search.

Help contents

The Tech Tool help contains these sections:

About Tech Tool describes the menus, workflow overview, keyboard commands, how to log in and settings.

View product information explains how to identify a specific product or a general category of products and view information about it.

View product history presents the session logs for the current product or recently used products.

Diagnose describes how to diagnose a product.

Test and calibrate describes how to run test and calibration operations.

Program describes how to run programming operations.

Administrate software describes how to order software, accessory kits and languages.

Communication unit 888 series includes information about how to install the communication unit and how to set up the communication.

Communication unit monitor presents the application that monitors if the software and driver of the communication unit matches.

Client update presents the application used to update Tech Tool with network releases.

About Tech Tool

Tech Tool is a tool that supports the repair and diagnostic process, developed in order to make the work in the workshops easier and more efficient.

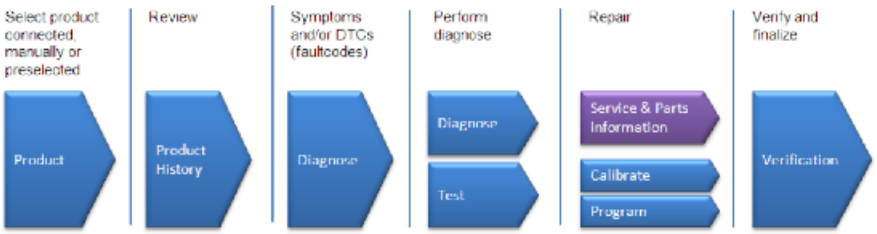
Tech Tool can be used online or offline (i.e. connected to central systems or not) in the workshop, out on the field, at the roadside or during test drives.

Tech Tool is an application for diagnostic with possibility to use plug-ins to cover the whole repair process. With Tech Tool you can diagnose, test, calibrate and program a product. A product could be a vehicle, engine or a machine.

Tech Tool also provide functions for updating the tool, and communication with the product and other external applications such as links to external websites or plug-ins.

The set of plug-ins, user authorisations, and available languages is adjustable to provide every user with what they need.

Workflow overview



The basic workflow in Tech Tool is the same for all products.

Steps in Tech Tool	Description
Product	Identify a product. See View product information for details.
Product History	View information history. See View product history for details.
Diagnose	Diagnose a selected product. See Diagnose for details.
Test	Test a selected product. See Test and calibrate for details.
Program	Program a selected product. See Program for details.
Calibrate	Calibrate a selected product. See Test and calibrate for details.

Tech Tool menu

These menu options are available in the **Tech Tool** menu.

Menu option	Description
Connect to Central Systems or **Work Offline**	Depending on if you are working online or offline you are able to connect to or disconnect from central systems.
Update Product Information	Update the product information data.
Administrate Software...	Order different types of software. Electrical system dependent.
Administrate Software New...	Order different types of software. Electrical system dependent.
Settings	Change settings for product and network communication. See Configure Tech Tool for details.
User Preferences	Change language and unit settings. See User preferences for details.
Print Label...	Print engine labels for available chassis IDs.
Print	Print the displayed information.
Log off	Log off the current user.
Exit	Exit the application.

Links menu

Only the external applications you are authorized to use are visible in the **Links** menu. These external applications could be either plug-in applications or links to websites relevant for brands you are working for, for example BST (Bus Service Tips), VBC Remote, FST (Field Service Tips), V-Mac Online and Impact.

If an external application is visible in the menu, but greyed-out and not clickable, you are not able to use this application from Tech Tool. The application could for example be greyed out when you are working offline if the application only is available online.

If you believe you should have access to an external application that is missing or disabled, contact your local administrator.

Help menu

These menu options are available in the **Help** menu.

Menu option	Description
Tech Tool Help	View the help file.
Send Concern Report	Send a concern report to report an error or suggest an improvement.
Contact Helpdesk	View contact information for helpdesk.
Remote Session Tool	Open **Remote Session Tool** when you are in contact with helpdesk.
What's New...	View information about news and updates in Tech Tool.
View Contract...	View and read details about your valid contracts. An open contract can be printed.
About Tech Tool	View information about the application.

Keyboard commands

These are the access and shortcut keys for the Tech Tool application.

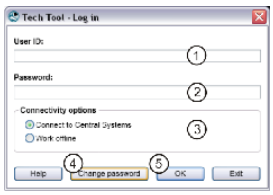
Keyboard command	Description
Alt + F4	Close the active item, or quit the active application.
Alt + letter key	Select or carry out the corresponding menu command or control.
Alt + Tab	Switch between open windows.
Ctrl + Tab	Open the next tab. (Not top main menu.)
Ctrl + Shift + Tab	Open the previous tab. (Not top main menu.)
Backspace	Step back.
Tab	Tab forward between controls or between items in a checkbox list.
Shift + Tab	Tab up/backward.
Arrow keys	• Move between and select radio buttons • Move between and open/close tree view nodes • Move between rows in tables • Select item in a drop down list
Ctrl + C	Copy
Ctrl + V	Paste
Ctrl + P	Print
Ctrl + R	Open concern report dialogue.
F1	Show the help.
F5	Refresh
F6	Move between panes.
F10	Activate the menu bar and enter menu mode.
Alt	Activate the menu bar and enter menu mode.
ESC	Depending on what is in focus: • Close an open menu • Cancel procedure
Enter	Carry out the default command of the dialogue box or command of the selected control.
Delete	Delete selected item
Spacebar	• Toggle the status of a checkbox • Select an item in a tree view • Scroll one page

Log in

You can log in online or offline, that is, connected to central systems or not. The online option requires a static password. The offline option does not require any password. The computer must have been used online, at least once, in order for any user to log in offline.

You have to connect to central systems on a regular basis. If you have not been connected to central systems within a certain time you will not be able to log in offline. The next time you log in you will be requested to connect to central systems.

It is also possible to change connection from offline to online and vice versa in the Tech Tool menu



Log in online

1. Enter your **User ID** (1).
2. Enter your **Password** (2).
3. Click **OK** (5).

Log in offline

Note: The computer must have been used online, at least once, in order for any user to log in offline.

Note: If you travel between different time zones it is recommended to set the time by changing time zones. If you set the time by adjusting the clock, you may not be able to log in offline.

1. Enter your **User ID** (1).
2. Click **OK** (5).

Connectivity options

You can select to work online or offline, that is, be connected to central systems or not (3).

If you are using a network that requires that credentials are entered before you can connect to central systems, you can log in to Tech Tool offline with User ID **config**. Select **Settings** in the **Tech Tool** menu, select the **Central Communication Settings** tab and enter your credentials. For more information see Configure Tech Tool.

Change password

The static password must consist of seven or eight characters and must be a combination of both letters and numbers. It may not contain national characters, only the characters a-z, A-Z and 0-9 are allowed. The password is case sensitive. The last eight passwords are remembered so they cannot be reused.

To change your static password:

1. Enter your **User ID** (1).
2. Click **Change password** (4).
   In the dialogue that opens:
3. Enter your old password.
4. Enter your new password.
5. Confirm your new password.
6. Click **OK** (5).

Configure Tech Tool

In **Settings** you are able to configure Tech Tool. You will find **Settings** in the **Tech Tool** menu.

Select communication unit

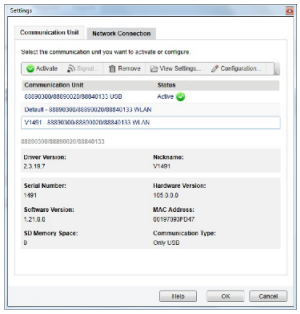
In this tab you can select which communication unit that should be active. It is possible to have several communication units configured on the same computer.

1. Select which communication unit that should be active in the list. The communication units that are installed on the computer are visible in the list.
2. Click **OK** to save the settings and close the window.

Configure communication unit

In this tab you can configure your communication unit.

Communication unit 88890020/88840133/88890300



There are three different ways of connecting the communication unit; via USB cable, directly to communication unit (wireless) or via an access point (wireless). The connection type is by default via USB cable.

All settings must be made connected via USB cable. When the settings are completed, the USB cable can be disconnected if a wireless connection type is chosen.

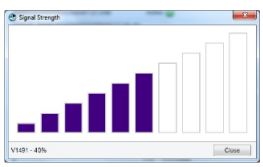
Through the **Communication Unit** tab you can view the **Signal...** strength, **Remove** the settings and **View Settings...** or the selected communication unit. You can also perform **Configuration** of a connected communication unit or change the settings.

The **Nickname** refers to a chosen identification of a configured communication unit. Tip! Mark the communication unit with the chosen nickname for easy identification. To create a new nickname or change other existing settings, click **Configuration**, see Configure communication unit 88890020/88840133/88890300 for more information.

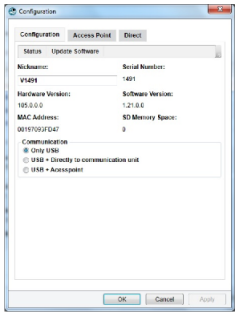
1. Select communication unit.
2. Information about the selected communication unit is presented.
3. The type of communication used is shown. Click **View Settings...** to see the specific settings for the type of communication in question.
4. Click **Signal...** to see signal strength. For more information see Check signal strength.
5. To change your basic settings click **Configuration**. For more information see Configure communication unit 88890020/88840133/88890300 .

Check signal strength

By clicking the button **Signal...** a window is opened showing the strength of the signal.



Configure communication unit 88890020/88840133/88890300

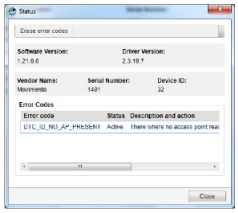


In the **Configuration** window you can update the settings for the selected communication unit. You can also update the communication unit software (so called firmware).

- Enter the **Nickname**. The nickname is used to identify the communication unit that you wish to configure.
- Select the type of **Communication** the communication unit will use in the future. When the communication unit is connected via USB, the communication will always be via USB and not via wireless communication, even if there is one configured. When the communication unit is not connected via USB, the communication will be the selected here.
- Click **Status** to see the **Software Version** and **Driver Version** of the communication unit, the **Vendor Name**, **Serial Number** and **Device ID** of the WLAN dongle, and error codes.
- Click **Update Software** to see if there are updates of the communication unit software (so called firmware) available. See Update communication unit software for further information.
- Click **OK** to configure the communication unit and close the window. The settings are saved to the computer.

Note: Re-identification of a product must be performed to make the settings active.

View communication unit status



In the **Status** window you see the **Software Version** and **Driver Version** of the communication unit, the **Vendor Name**, **Serial Number** and **Device ID** of the WLAN dongle. You can also see error codes here, for more information see Known problems.

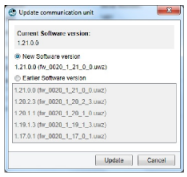
- Click **Erase error codes** if you want to delete the error codes.
- Click **Close** to close the window.

Update communication unit software

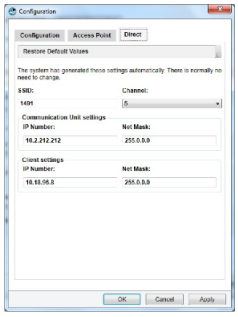
The communication unit includes software (so called firmware) that is updated on a regular basis. The updates are provided on the Tech Tool DVD or in the network releases. Older versions of the software will be saved on the computer, in case the new software contains faults that prevent operation of the communication unit. To ensure that the communication unit will work properly the new software should normally always be used and be downloaded to the communication unit.

When you click the button **Update Software** a window will open in the application to instruct you through the update, see figure below.

Note: The communication unit must be connected to both the computer and a product when updating the software.



Settings for connection directly to communication unit



In the **Direct** tab you can see the settings that the system has generated automatically. These settings only need to be changed if there is a conflict with other WLAN units. Resetting of the automatically generated settings can be done with button **Restore Default Values**.

- You can make changes to **SSID** and the **Channel** for both the communication unit and the computer.
- You can change the **IP Number** and **Net Mask** for the communication unit.
- You can change the **IP Number** and **Net Mask** for the client.
- Click **OK**to save settings and close window.

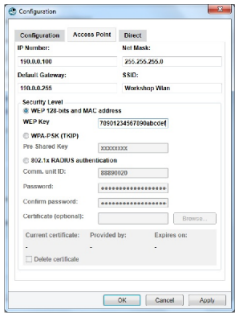
Note: If it is not possible to establish communication after installation, contact the local IT-support or network technician.

Directly to communication unit, Computer settings

In the Windows dialogue **Wireless Network Connection Properties** the checkbox **Use Windows to configure my wireless network settings** should be selected when directly to communication unit is selected. No so called Utility programs that are included with the WLAN card are to be installed. Only the Drivers shall be installed. In the Windows dialogue **Wireless Zero Configuration Properties (Local Computer)** Wireless Zero Configuration must have started when **Directly to communication unit** is chosen. Startup type shall be Automatic and Service status: Started.

Note: If it is not possible to establish communication with your communication unit after installation, contact the local IT-support or network technician.

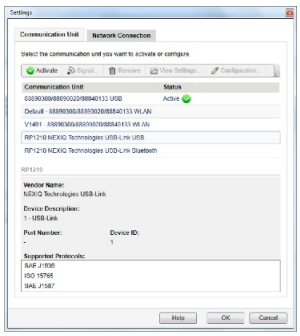
Settings for connection via access point



Connection via access point requires that Tech Tool and the communication unit are correctly configured in relation to the local network.

1. Contact your local IT-support or network technician to get the IP number, Net Mask, Default Gateway and SSID.
2. Enter the **IP Number**, **Net Mask**, **Default Gateway** and **SSID**.
3. Select security level and enter the key. Click **OK** to save the settings and close the window.

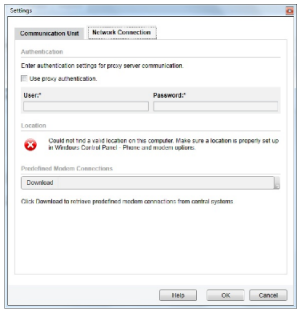
Communication unit RP1210 adapter



1. Select communication unit RP1210.
2. Select a supported protocol in the list.
3. Click **OK** to save settings and close window.
4. If a dialogue box appears, asking you to restart the external applications, click **Yes**.

Network connection

In the **Network Connection** tab you can make settings for proxy server authentication and modem connection.



Set proxy server authentication

Note: Only applicable if authentication for proxy server communication should be used.

1. Check the box **Use proxy authentication**.
2. Type your **User ID** and **Password**.
3. Click **OK** to save the settings and close the window.
4. If a dialogue box appears, asking you to restart the external applications, click **Yes**.

Set location

Special settings required on the location you are connecting from, for example, the area code.

- Click **Change** to reach the Windows dialogue Phone and Modem Options, locations may be created, edited or deleted.
- Click **OK** to save the settings and close the window.
- If a dialogue box appears, asking you to restart the external applications, click **Yes**.

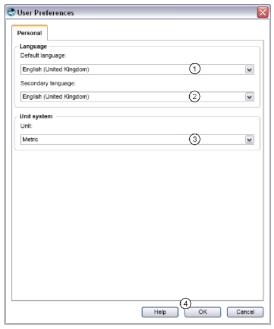
Download predefined modem connections

Here you can download predefined modem connections from central systems using the selected connection.

- Click **Download** to download preset modem connections from central systems.
- Click **OK** to save the settings and close the window.
- If a dialogue box appears, asking you to restart the external applications, click **Yes**.

User preferences

In **User Preferences** in the Tech Tool menu you can make your personal settings. The languages and units that you can select are set in central systems. Therefore the number of languages to select from, for example, may vary between different users.



Set language

1. Select **Default language** (1).
2. Select **Secondary language** (2).
3. Click **OK** (4) to save the settings and close the window.
4. If a dialogue box appears, asking you to restart the external applications, click **Yes**.

The language selected as default is used as far as possible but if for example an external application does not support the language selected as default, the secondary language will be used. If the default and the secondary languages are not available English (United Kingdom) will be used.

Set unit system

Units in Tech Tool can be displayed in metric or U.S.

1. Select **Unit** (3).
2. Click **OK** (4) to save the settings and close the window.
3. If a dialogue box appears, asking you to restart the external applications, click **Yes**.

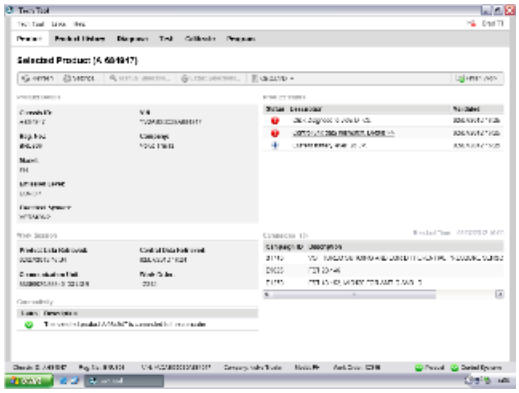
View product information

These sections describes how to identify a product to work with and how to read the information given.

Select a product by connecting directly to the product, by selecting a product manually or by selecting a product that has already been worked with. An overview of the product data, detected DTCs, mismatch between the product and central system is presented, to give a first indication of the product status. You can also see if there are any available campaigns for the product.

When you select a product you will be requested to start your work order.

Note: You must click **Finish Work** before you can start to work with a new product, but you can always continue working with a previously selected product by searching for it through **Manual Selection** or **Latest Selections**.



Identify product

There are different ways to identify a product and to start working with it. Read the chapters Configure Tech Tool for settings and Communication unit 888 series for details on how to connect the product.

Icon	Description
Connect	Plug in the USB cable. Click Connect if the readout does not start automatically.
Settings...	Select or edit communication unit settings, and edit connection settings..
Manual Selection...	Search and select a product using Chassis ID, Reg. No., VIN, or Model.
Latest Selections...	Select a previously identified product from a table.
OBD/LVD	Read out can not be done without connection to a product.

Connect to product

1. Connect the product to the communication unit.

   Note: Click **Connect** if the readout does not start immediately.
2. Enter a work order number and click **Start Work** to start a session.

Manual selection

Search for a specific product by its chassis ID, registration number or VIN, or search for a model by selecting its specifications.

1. Click **Manual Selection...**.
2. Select one of the radio buttons to choose search criteria.
3. Enter the required information.
4. Click **OK** .
5. Enter a work order number and click **Start Work** to start a session.

Latest selections

1. Click **Latest Selections...**.
2. Select a product in the table.
3. Click **OK**.
4. Enter a work order number and click **Start Work** to start a session.

Note: You can select from your own latest selected products by clicking in the check box **Show only products selected by me** in the bottom left of the window.

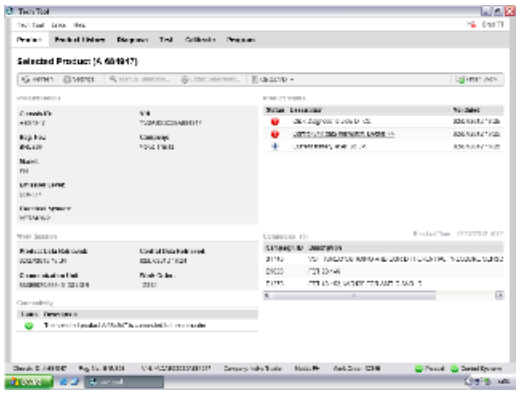
Toolbar Button	Button name	Description
	Refresh	Update the selected row with new Central Data.
	Refresh All	Update the table with new Central Data.
	Remove	Remove the selected row from the table.
	Print	Print the entire table.

Table Heading	Description
Selected	Date and time of the last time the product has been identified in the system.
Chassis ID	The products chassis ID.
Reg. No	The products registration number.
VIN	The products Vehicle Identification Number.
Company	The company the product was made by.
Electrical System	The products electrical system.
Machine Type	The machine type of the product.
Model	The product model.
Central Data	Date and time of the last time data was read from central systems.
User ID	The ID of the person who has identified the product the last time.

Selected product

This section describes the information displayed when a product has been identified.

If no product was detected, you can use the buttons in the toolbar to try again or search manually for another product.



Product toolbar

Toolbar button	Description
Refresh	Refreshes the central data from central systems and the product data of the selected product.
Settings...	Select or edit communication unit settings, and edit connection settings.
Manual selection...	Search and select a product using Chassis ID, Reg. No., VIN, or Model.
Latest selections...	Select a previously identified product from a table.
OBD/LVD Data	Read OBD/LVD data.
Finish Work	Ends the current work session and closes the product session log. Only visible when a product is identified.

Product details

The **Product Details** section contains specified information about the selected product.

Heading	Description
Chassis ID	The products chassis ID.
VIN	The products Vehicle Identification Number.
Reg. No.	The products registration number.
Company	The company the product was made by.
Model	The product model.
Machine Type	The machine type of the product.
Emission Level	The products emission level.

Heading	Description
Mileage	The products total driving distance.
Electrical System	The products electrical system.

Work session

The **Work Session** section contains specified details about the session.

Heading	Description
Product Data Retrieved	The date and time when the product data were read. Only available when connected to a product.
Central Data Retrieved	The date and time when the central data were read.
Communication Unit	The name of the connected communication unit.
Work Order	The work order number.

Connectivity

The **Connectivity** table shows information about the connectivity between the product and the communication unit.

Status	Description
	The selected product is connected to the computer.
	The selected product is not connected to the product.
	Additional details about the connection.

Product status

The **Product Status** section displays the status of DTCs, control units, chassis IDs, and the battery level.

Control unit data mismatch

If the product data and the central system data do not match, the mismatch is presented as a link in the list in **Product Status**. Click the link to view detailed information about the mismatches.

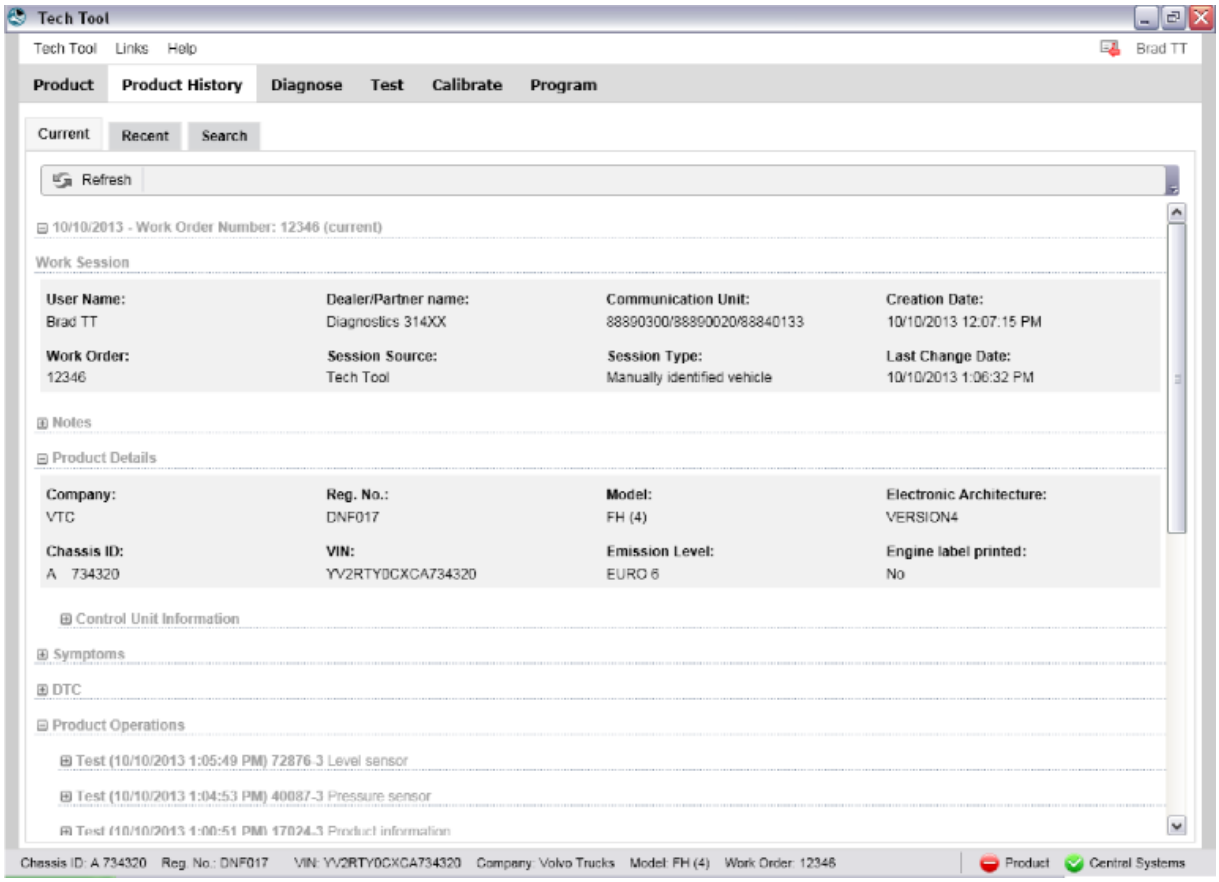
Campaigns

This section displays a list of available campaigns sorted by campaign ID in descending order. To run a campaign, go to **Program** and select the campaign operation.

View product history

In **Product History** you will find the session logs. You can view the current session log or recent session logs for identified products. You can also search for session logs by date.

In the logs you will find work that previously has been done on the selected product. It could be previously detected DTCs, product information and operations that have been performed.



Current session

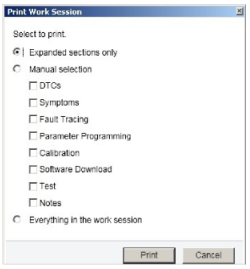
In **Current** you can find information about the currently selected product.

- **Work Session** — This section displays detailed information about the user and the current session.
- **Notes** — This section displays notes from the work order or other systems connected to Tech Tool, e.g. Driver Interview. You can also find the **Logged Product Data (LPD)** here.
- **Product Details** — In this section you can read about the product specifications and control unit information.
- **Symptoms** — This section shows date, time and name of all found symptoms.
- **DTC** — This section displays details of the cleanup time, readout time, freeze frame information and OBD information.
- **LPD Readouts** — This section displays the date and type of the LPD readout.
- **Product Operation** — This section displays information about status and start and end time of performed software downloads, test-, calibrate- and program operations, fault tracing and parameter programming. For software downloads more detailed information regarding control units and part numbers will be displayed.

Print current session log

When you are in the current session log you can make a print of the log. You can also choose to only print parts of it.

To print the current session log open the **Tech Tool** menu and select **Print...**.



- **Expanded sections only** — This selection will only print the expanded sections in the session log.
- **Manual selection** — Select which sections to print by checking the box in front of the section.
- **Everything** — This selection will print everything in the session log.

Recent session

Under the tab **Recent** a list of up to the 10 latest sessions are displayed for the selected product. To view earlier sessions, go to the tab **Search**.

- **Open** — Select a session in the list and click Open to view the session details.
- **Import** — If you have run a test operation, e.g. Sensor and Parameter Monitoring, on a Tech Tool computer it is possible to import the **Operation Replay Files**. You can also import **Work Sessions** from another Tech Tool computer.
  1. Click on **Import**.
  2. Select **Work Sessions** or **Operation Replay Files**.
  3. In the window that opens, search and select the saved file and click **Open**.
  4. **Work Session** — Opens in a new tab.
     Operation Replay Files — go to the tab **Test** and open the operation. Check the box **Run as Replay** and start the replay of the operation.

- **Export** — If you have run a test on for example Sensor and Parameter Monitoring on a Tech Tool computer it is possible to export **Selected Work Sessions** or **Operation Replay files**, and later import them on another Tech Tool computer. To be able to export you have to finish the current work session.

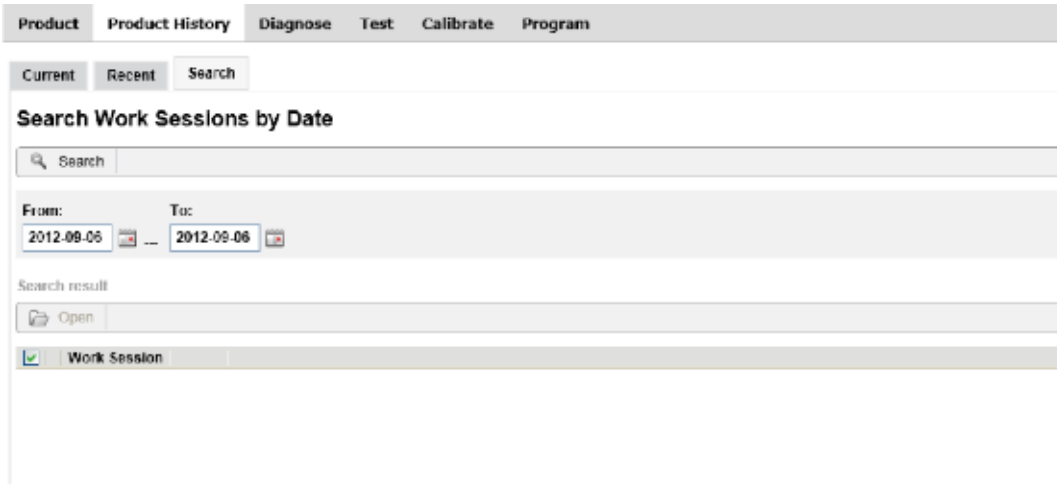
  Operation Replay Files:
  1. After running the test operation, click **Finish Work** to end the current work session.
  2. Connect to the product, or search for the product in **Latest Selection** or **Manual Selection**.
  3. In **Product History**, go to the tab **Recent**.
  4. Select the work session.
  5. Click on **Export** and **Operation Replay Files**.
  6. In the windows that opens, select where to save your replay files and click **Save**. All replay operations for this product will be saved.

  Selected Work Session:
  1. Click **Finish Work** to end the current work session.
  2. Connect to the product, or search for the product in **Latest Selection** or **Manual Selection**.
  3. In **Product History**, go to the tab **Recent**.
  4. Select the work session and click **Open**.
  5. Click on **Export** and **Selected Work Session**.
  6. In the window that opens, select where to save your work session and click **Save**.

     Note: There is also a possibility to export a work session by searching for a time interval. Select a work session and click **Open**. Then do step 5 and 6 above.

Search

Under the tab **Search** you can search for old session logs by date.



1. Select the preferred time interval.
2. Click **Search**.

If there are session logs within this time interval, they will be displayed in a list. You can perform the same actions with the session logs as in Recent session.

If you open an item in the search result, the item is opened as a closable tab (with date as the heading) to the right of the **Search** tab. It is possible to have a limited number of tabs opened at the same time.

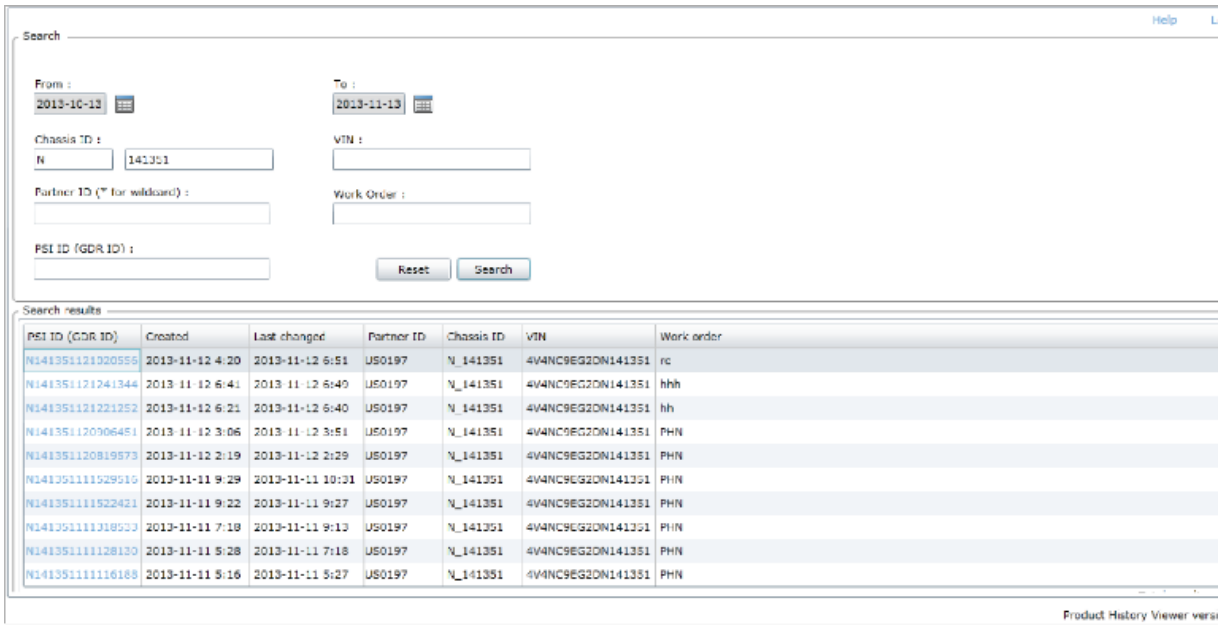
Product History Viewer

In **Product History Viewer** you can search and view all finished session logs for a selected product that have been uploaded to central systems.

A session is finished when you click **Finish Work**, disconnect the product from Tech Tool or exit the Tech Tool application.

All finished sessions will automatically be uploaded to central systems when you start working online again.

Link to the Product History Viewer: http://segotn10632.got.volvo.net/ProductHistoryViewer/#/main



Diagnose

This chapter describes how to diagnose and repair a fault in a product. Select **Diagnose** and start your fault tracing.

Note: Depending on the connected product you might not be able to use the ordinary diagnose flow. When you select **Diagnose** you will only see the **DTC Viewer**. For more information about the DTC viewer, see DTC list. and DTC details

Select symptoms (Step 1 of 3)

The symptoms are presented in several levels in order to make it possible to select the most accurate symptom. By clicking on and expanding a symptom area (for example, Engine Start), specific symptoms will be presented (for example, Engine cranks but does not start).

Symptoms can be displayed with or without details. The symptom description is opened when a symptom that has an Edit icon is selected.

Select symptoms without details

1. Select a component area.
2. Select a symptom area.
3. Select the symptom that best describes the fault. If you are uncertain of the fault, select more than one symptom. You can deselect symptoms by clicking them again.
4. Click **Continue >** .

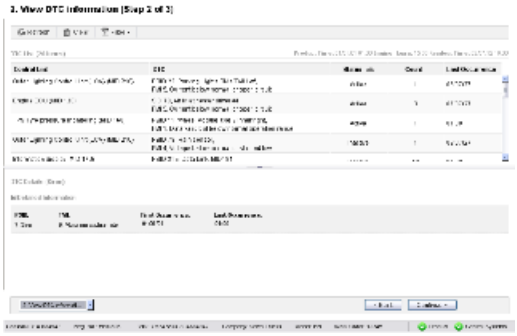
Select symptoms with details

1. Select a component area.
2. Select a symptom area.
3. Select the symptom that best describes the fault. If you are uncertain of the fault, select more than one symptom. You can deselect symptoms by clicking them again.
4. In the detailed panel, displayed on the right hand side, you will find a short description of the symptom and you are able to specify details.
5. Click **Continue >** .

Icon	Description
	Symptom with details that needs to be specified..
	When details have been specified, this icon will be displayed next to the symptom

View DTC information (Step 2 of 3)

With connection to product

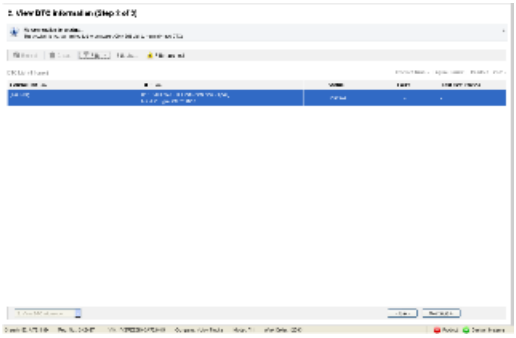


The **DTC List** displays the detected DTCs in the product. See DTC list for detailed information.

1. Click **Continue >** .

Information about the currently selected DTC are shown under DTC details.

Without connection to product



When there is no connection to a product, DTCs must be handled manually.

1. Click **Edit List...**.
2. Select DTCs by setting the status to **Active** or **Inactive** for the DTCs you want to add to the DTC list.
   See DTC list for detailed information,
3. Click **OK**.
4. Click **Continue >** .

Information about the currently selected DTC are shown under DTC details.

DTC information toolbar

Name	Description
Refresh	Rereads the DTCs. If there is no connection to the product they must be selected manually.
Clear	Opens a separate window containing all connected DTCs. Select the control units you want to clear DTCs from.
Filter	Select which DTCs that shall be displayed in the list.
Edit List...	Set a status manually for a DTC and add it to the DTC list.
Filter applied	Displayed if there is an active filtration of the DTCs.

DTC list

Product Time — The date and time of the product.

Engine Hours — Total hours the engine had been running.

Readout Time — The date and time from the local computer.

Table Heading	Description
Control Unit	The name of the control unit.
DTC	The DTC identifier and error type.
Status	The DTC can be active or inactive.
Last Occurrence	The date and time of the last occurrence of the DTC.
Count	Number of times the DTC has been detected.

DTC details

Details about the selected DTCs are shown in **DTC Details**. The information are divided into different areas — **Detailed Information**, **Detailed Status Information**, **Service Information** and **Freeze Frame Information**. Displayed information depends on the electrical system of the product.

Click the title row to expand the information.

Detailed Information

Table Heading	Description
Failure Type	The name of the DTC.
DTC Display Value	The code that is displayed in the product's information display.
First Occurrence	The date and time of the first occurrence of the DTC.
Last Occurrence	The date and time of the last occurrence of the DTC.
OBD Remaining Days	The remaining number of days.

Detailed Status Information

This section contains more detailed information about the DTC. Applies only to products with VERSION 3 and 4 electrical system.

Service Information

Information from control unit.

Note: Applies only to Renault.

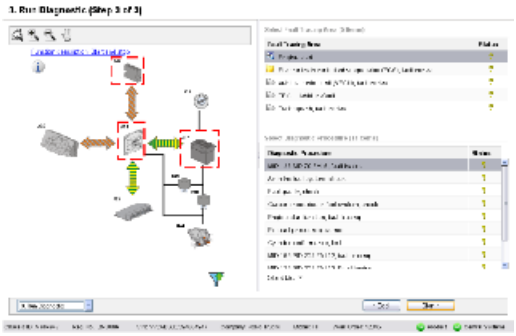
Freeze Frame Information

A freeze frame is a collection of values from a number of sensors and components, saved around the time when the error code was set.

This information is important since it can contain clues as to how the vehicle was being driven when the error occurred. It is also possible to read any abnormal sensor values or see if the vehicle was being driven under abnormal conditions when the error occurred.

Table Heading	Description
Parameter	Contains static information from readout of **Vehicle Mode**, **Outdoor Temperature**, **Odometer Value**, **Fan Speed**, **Vehicle Speed** etc.
ID	The ID number of the parameter.
Unit	Parameter units. Percent, speed, pressure etc.
Value	The unit value for the parameter.

Run diagnostics (Step 3 of 3)



1. Select a DTC area in **Select Fault Tracing Area**.
2. Select one of the recommended procedures in **Select Diagnostic Procedure**.
   In some cases, you will be able to extend the list, see Extend list/Reduce list.
3. Click **Start >** .
4. Follow the displayed step by step instructions.

Icon	Description
	Reset the picture.
	Zoom in the picture.
	Zoom out the picture.
	Move around the picture.

Different icons can be displayed in the **Select Fault Tracing Area** list.

Icon	Description
	The functional area or component area that can be fault traced.
	This fault indication is not covered in the diagnostics steps in Tech Tool. Instead there is a reference to the service information.
	No information is available in Tech Tool. There is a reference to external information that can be helpful.

These icons symbolize different properties that are associated with the fault tracing.

Icon	Description
	Remove gearbox.
	Requires a test drive.

These icons show the status of the procedure.

Icon	Description
	Fault tracing has not been done/was aborted or the result was unknown.
	Fault tracing was completed and no fault was found.
	Fault tracing was completed and a fault was found.
	Fault tracing could not be completed.
	Fault tracing was completed and a fault was found. The fault was repaired and the verification was successful.
	Fault tracing was completed and a fault was found. The fault was repaired but the verification failed.

Icon	Description
	Fault tracing was completed and a fault was found. The verification was not completed.
	Fault tracing was completed but the cause of failure is unknown.

Extend list/Reduce list

1. Proceed as follows:
   - Click **Extend List** to view more procedures
   - Click **Reduce List** to view fewer procedures.

Follow step by step instructions

The following information provides dynamic step-by-step instructions for the user on how to fault trace a specific problem after starting the diagnostic procedure.

1. As each step is executed:
   - Click **Continue >** to approve a step result or to continue to the next step.
   - Click **Yes** to approve a step result or to continue to the next step.
   - Click **No** to reject the step result.
   - Click **< Back** to return to the previous step.
   - Click **Cancel** to end the procedure.
2. Once the fault is found, a link to service information is displayed. Click the link to open the service information application and display the relevant information.
3. Repair the fault and then verify that the problem is solved.

View different images

The table contains information about the available options for the images shown in the fault tracing steps. Depending on the fault tracing, the available buttons may vary.

Button	Description
	View an explanatory picture that is connected to the text displayed on the right hand side. This is the default picture.
	View picture that shows the component location.
	View picture that shows schematic for the circuit.
	View block diagram.
	View picture that shows measuring points.
	View protocol.
	View component specifications.
	Go back.
	View information.

The **Step Navigation** is found in the bottom left corner. It is a drop-down list with links to the different steps in the Diagnose flow.

You can always use the links to go back and view the inputted information regarding the product symptoms or view the listed DTCs.

Note: If a diagnostic procedure is running, the **Select Symptom** step and **View DTC Information** step will be locked in the **Step Navigation** list.

Step	Description
1. Select Symptoms	View, change or add symptoms. If symptoms are changed or added, the navigation button **Continue >** must be used to go to the next step.
2. View DTC Information	View DTC details or select a different DTC. If a new DTC fault tracing is selected, the navigation button **Continue >** must be used to go to the next step.
3. Run Diagnostic	Navigates back to run the fault tracing if nothing has been changed in the previous steps.

Test and calibrate

The operations that can be carried out depend on the product connected to Tech Tool and the level of authorisation of the user. Note that the screen images shown in the help text may differ from those in Tech Tool depending on the product that is being tested and the level of authorisation of the user.

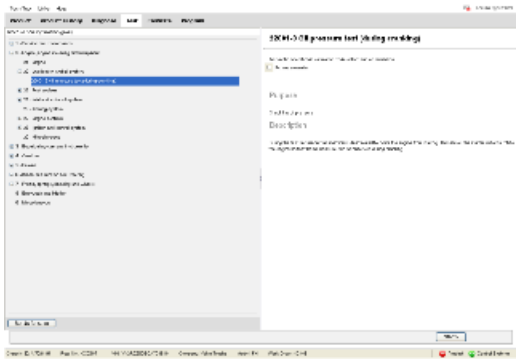
The first time you select an operation which requires communication with control units after manual matching, the program reads information from the control units. This may take a minute or two. The program checks that the control units that store the chassis identity and serial number all contain the same chassis identity and serial number.

If the control units which store the chassis ID/Serial no. contain **different** chassis IDs/Serial numbers, no programming operations except MID XXX Control unit, programming can be carried out (XXX=MID-number).

Note: Test and calibration operations should not be performed on control units that have **different** chassis-ID/manufacturing.no, since there is a risk that the result of the operation could be incorrect or that the function is negatively affected.

Run a test or calibration

In **Test** and **Calibrate** you can select operations to test or calibrate a product.



1. Select an operation by clicking on it.

   Note: The functions can be sorted either as functions or function groups.
2. To run the operation in simulation mode, select **Run as simulation**.
3. Click **Start** to start the operation.
4. Follow the displayed step by step instructions.

Test and calibrate, VERSION 3 and 4

This section describes the functions available when an operation has been opened.

Operation steps

These steps follows the normal workflow when running a test or calibration operation.

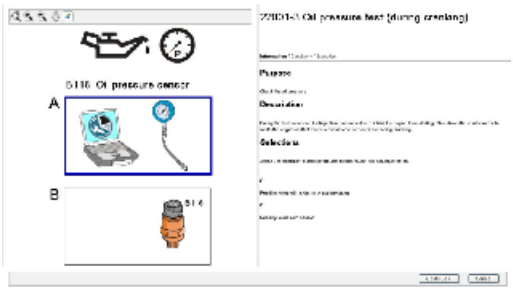
Navigate through the steps in the operation by clicking **Continue >**. If you want to return to the previous step click **< Back** The description of icons that is shown during the steps can be found in the section Run diagnostics (Step 3 of 3).

Note: Since all operations are different, the steps may vary between the operations.

Information

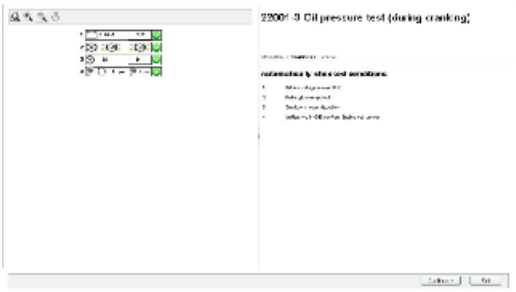
This step contains the purpose and description of the operation.

In some operations you must select a specific component, for example a control unit or the right or left axle, or a variant of the operation.



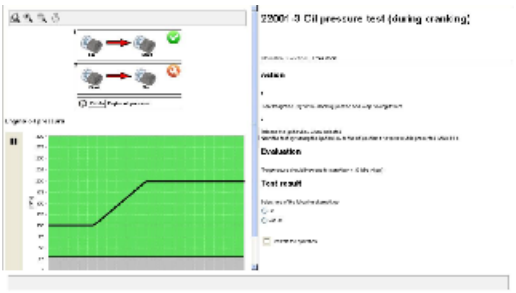
Conditions

This step describes the conditions that needs to be fulfilled before you can run the operation. The conditions could be automatically read from the product, otherwise you must manually fulfil and confirm the conditions.



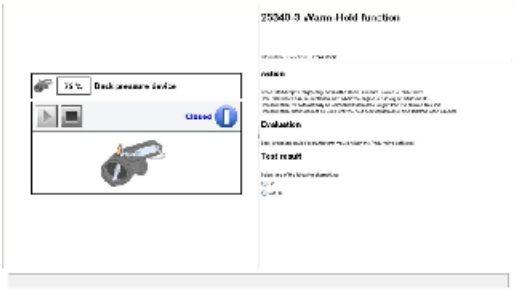
Execution

This step executes the operation. Some operations starts automatically. Other operations you must run and control manually.



Result

This step presents the result of the operation when it is done. After the presentation you must select if the operations was successfully done or not.

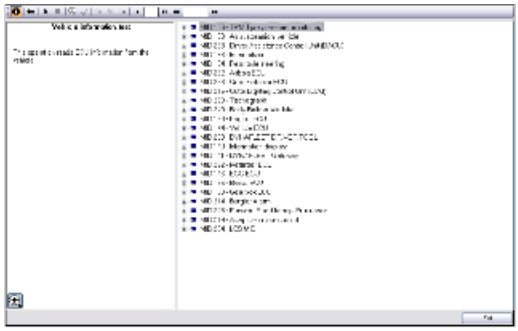


Button	Description
	Start — click on the button to start the operation.
	Stop — click on the button to stop the operation.
	Pause — click on the button to pause the operation.

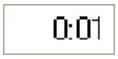
Icon	Description
	Component not activated.
	Component activated.
	Operation timed out.
	Requires a manual action..

Test and calibrate, VERSION 2 and older

This section describes the functions available in the window when an operation has been opened. The illustration shows a typical test/calibration operation. When programming a programming list or parameter presentation are shown in field 5.



Toolbar	The following function buttons are available in the toolbar.
	**Information text -** click the button to display/hide the text and image field.
	**Close -** click the button to stop an operation and return to the previous view. Alternatively use the Esc key.
	**Open -** click the button to open an operation.
	**Start -** click on the button to start the current operation, or use Ctrl+Space Bar.
	**Stop -** click on the button to stop the current operation, or use Ctrl+Space Bar or Esc.
	**Default information -** click the button to display the same information in the text and image field as when the operation was started.
	**Prerequisites -** click the button to display the conditions for the implementation of the operation and the status of conditions.
	**Start replay -** click the button to start playing back the selected operation.
	**Pause replay -** click the button to pause the playback of the operation. Restart the playback by clicking **Start replay**.
	**Stop replay -** click the button to stop playing back the operation.

Toolbar	The following function buttons are available in the toolbar.
	**Rewind –** click on the button to quick rewind an operation backwards manually.
	**Previous session –** click on the button to jump to the previous session manually.
	**Next session –** click on the button to jump to the next session manually.
	**Forward –** click on the button to quick wind an operation forwards manually.
	**Session number –** states which session is being played.
	**Session time –** states how far into a session one is.

Wiring schematics

The wiring schematics shown by clicking on a link in the text field are to be used as a functional description. The schematic shows the conditions that apply when the function is active.

Note: The wiring schematics are not to be used as a basis for circuit measurements.

Cable colours

There are four colours - red, blue, green and black used on the wiring schematics

- Red is only used for power supply, irrespective of whether it is battery voltage or a supply from a control unit, for example 5 V.
- Blue, used for wires connected to a grounding point even if they are indirectly connected, i.e. via a control unit.
- Green is used for signal cables, primarily to indicate the signal cable from a sensor.
- Black is used where the function of the cable is not relevant or where the cable cannot be categorized according to the other colours.

Checking conditions

Click this button to check the conditions status. Checking the conditions can be carried out at any time except when the actual operation is being run. If the button is greyed out there are no conditions for the operation.

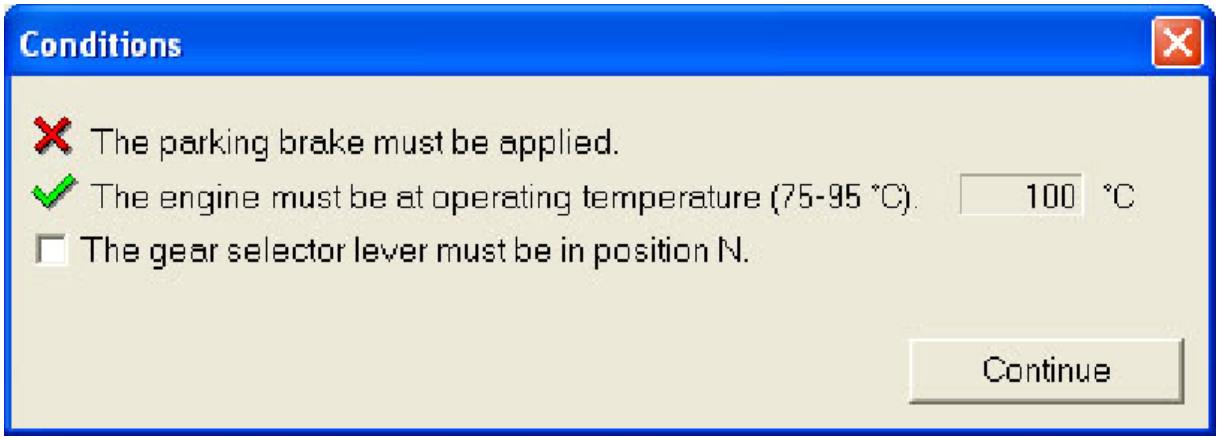
Once an operation has been started, the conditions for implementing the operation are checked. In certain cases conditions are checked even after an operation has been exited.

A window containing conditions and their status is displayed. The following status markings are available.

- Green marking - Condition fulfilled.
- Red marking - Condition not fulfilled.
- Grey marking - Condition not yet checked
- Check box - Condition that must be checked manually, for example blocked wheel. When a manual check has been carried out the check box must be checked.

In certain conditions the sensor value on which the status marking is based is displayed.

Click **Cancel** to cancel the check.



Replaying operations

Replaying operations can take place immediately an operation has been completed or saved to a job card. Programming operations cannot be replayed.

Replaying completed operations

Use the replay buttons illustrated below to replay an operation immediately after it has been completed.

Start replay

Click this button to replay the operation that has just been completed.

Pause replay

Click this button to pause the replay of the operation. Restart the replay by clicking **Start replay**.

Stop replay

Click this button to stop the replay of the operation.

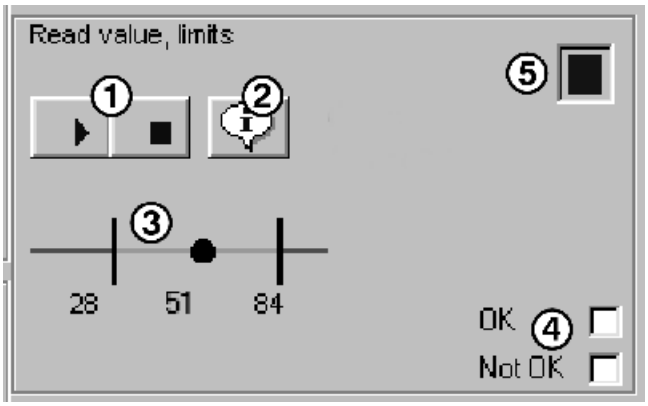
Replay the operation manually

Click on the button in question to quick wind the operation forwards or backwards, or toggle between different sessions manually. The session number and session time are shown in the boxes. This is only possible while replay is stopped.

Presentation element

This section gives a general description of the available presentation elements.

Most presentation elements contain the following components.



- Start/Stop (1): Buttons to start and stop the current operation.
- Information (2): Button to show text and image information related to the current presentation element in the text and image box.
- Graphic element (3): This displays measurements in graphic form.
- Evaluation (4): When the operation is complete an evaluation can be made. In certain cases the evaluation is automatic. In other cases the User must enter whether the result was OK or not. The result is stored on the job card.
- Status box (5):
  - Displayed when a sub-operation is stopped

    
  - Displayed when a sub-operation is running

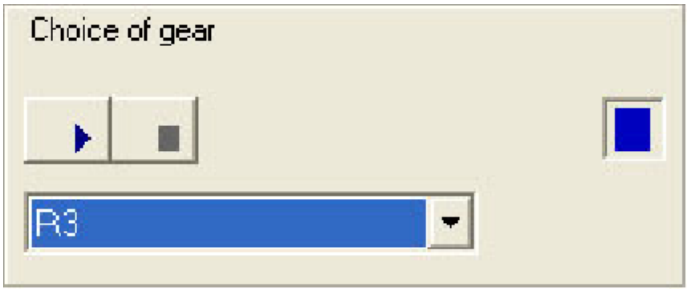
    
  - Displayed when a sub-operation cannot start because the signal cannot be read

    
  - Displayed when a sub-operation has started but cannot function fully because one of the signals cannot be read

Select sub-operation

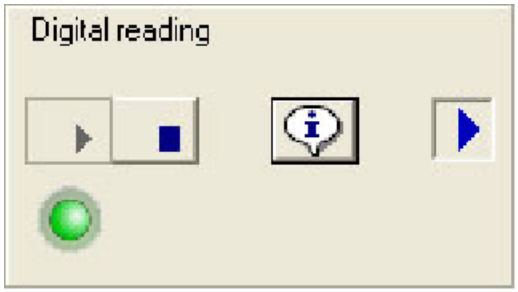
In this presentation object, one selects which sub-operations are to be activated in the pull down menu instead of having all included sub-operations presented in order beside each other.



Status reading

This presentation element is used to read digital signals. The digital signals are linked with various figures. This is for reading status signals in the vehicle control unit for example.

Below is a list of the various status symbols and what they mean. Other symbols are used in certain operations. These symbols are described in the operations.



Active

The colours of the lamps are listed below. The lamps have different colours depending on how they are defined.
Green lamp
Red lamp
Yellow lamp
Orange lamp

Not active

Grey lamp. Signal not active

Read error

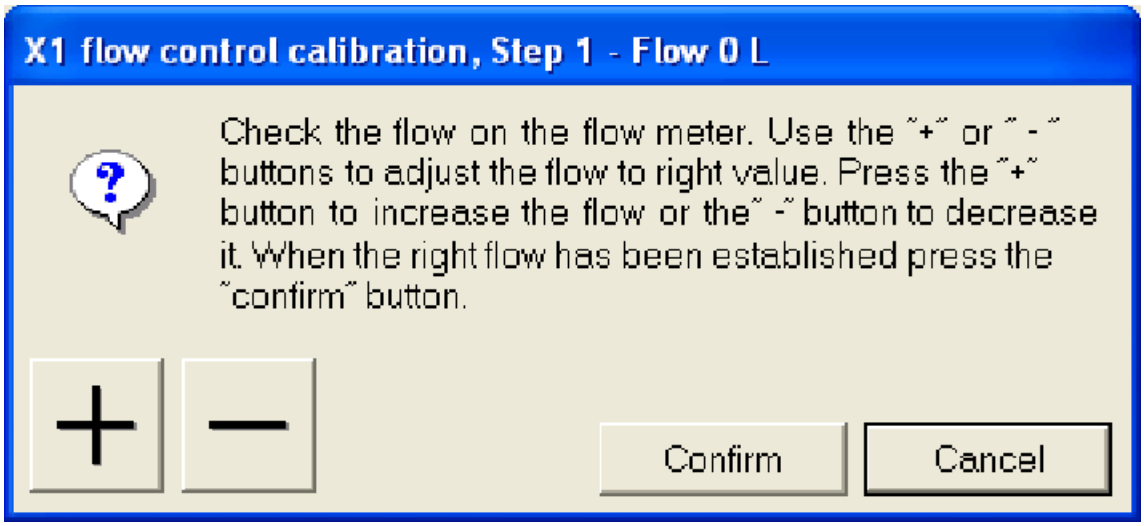
Error message. A fault has occurred.

Not available

Signal not available in this product.

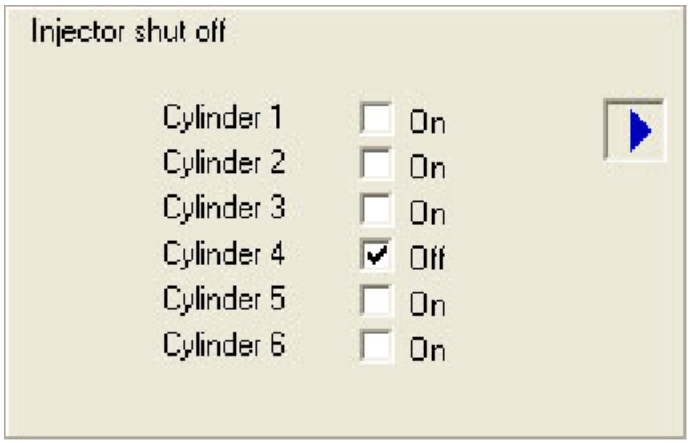
Calibrate the value

This presentation object is used to calibrate values. Press + to increase the value, press - to reduce it. When the calibration is finished, press **Confirm**.



Deactivate/activate injectors

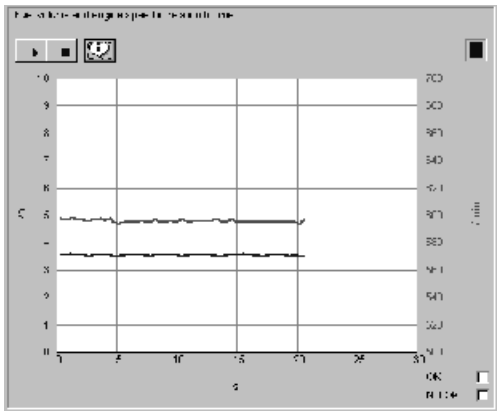
This presentation element is used to deactivate/activate injectors. Click the check box to deactivate or activate injectors. A checked box indicates that the injector is deactivated. Alternatively, keys 1-6 can be used to activate or deactivate the injectors. Key 0 deactivates all injectors.



Graph, parameter/time

This presentation element is used to graphically represent how analogue signals vary with time. The scales for the various parameters are displayed on the left and right vertical axes respectively. Vertical lines indicating the presence of an external change may occur in this presentation element.

When three or four signals are displayed, the curves can be turned on and off by selecting the checkboxes under the graph.



Sensor value history

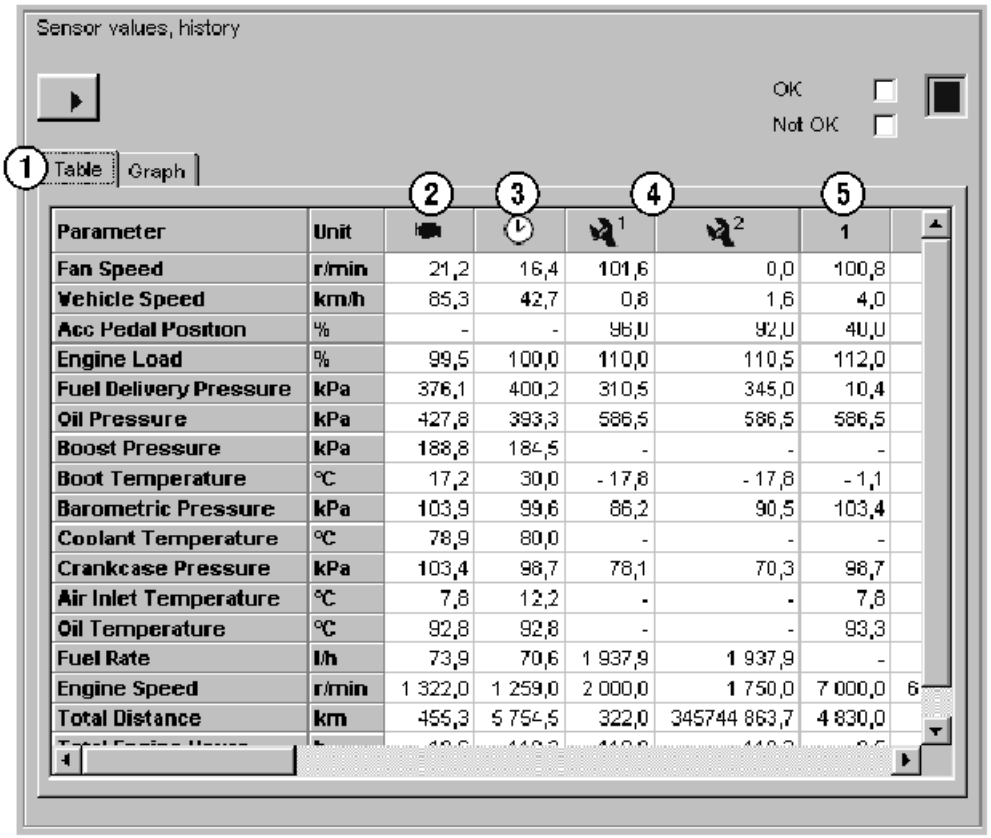
This presentation element is used to read the history of the sensor values. It consists of two tabs. The first tab (1) contains a table with a number of parameter values.

The frozen values which were set when test driven in the factory are given in column (2) .

The frozen values which were set after 100 engine hours are given in column (3) .

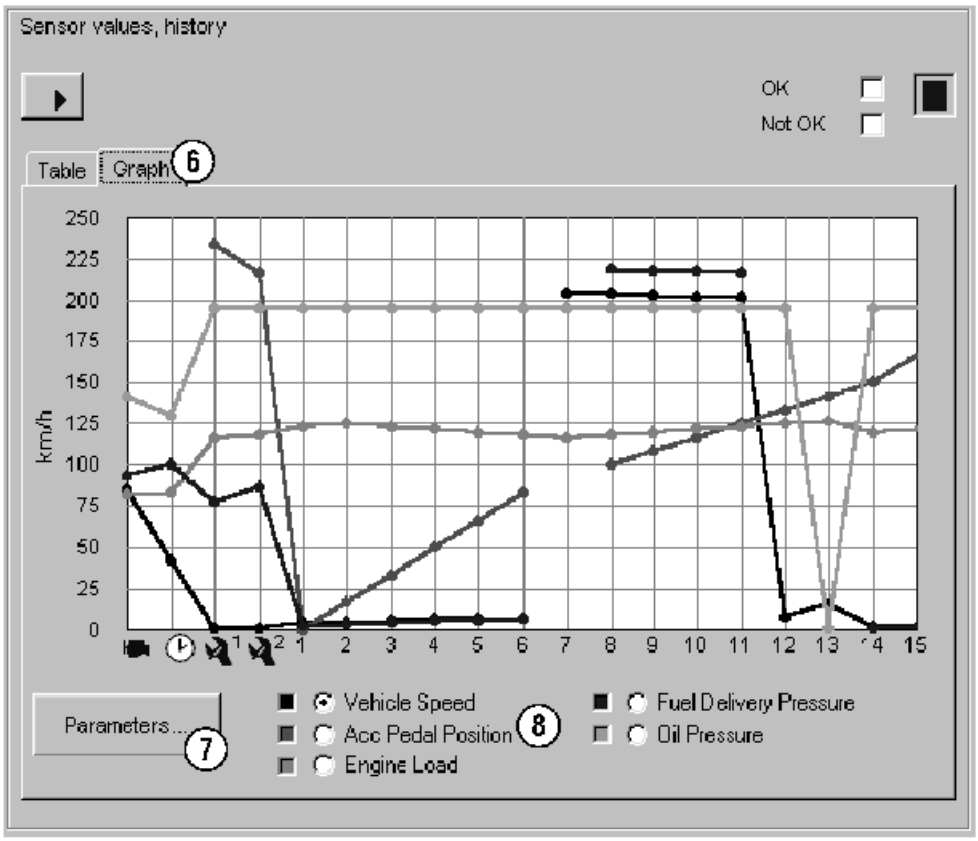
The frozen values which can be set manually are given in the columns (4) .

The first of the 15 parameter values which are continually updated are given in column (5) .



Parameter	Unit	2	3	4		5
				^{1}	^{2}	1
Fan Speed	r/min	21,2	16,4	101,6	0,0	100,8
Vehicle Speed	km/h	85,3	42,7	0,8	1,6	4,0
Acc Pedal Position	%	-	-	96,0	92,0	40,0
Engine Load	%	99,5	100,0	110,0	110,5	112,0
Fuel Delivery Pressure	kPa	376,1	400,2	310,5	345,0	10,4
Oil Pressure	kPa	427,8	393,3	586,5	586,5	586,5
Boost Pressure	kPa	188,8	184,5	-	-	-
Boot Temperature	°C	17,2	30,0	- 17,8	- 17,8	- 1,1
Barometric Pressure	kPa	103,9	99,6	86,2	90,5	103,4
Coolant Temperature	°C	78,9	80,0	-	-	-
Crankcase Pressure	kPa	103,4	98,7	78,1	70,3	98,7
Air Inlet Temperature	°C	7,8	12,2	-	-	7,8
Oil Temperature	°C	92,8	92,8	-	-	93,3
Fuel Rate	l/h	73,9	70,6	1 937,9	1 937,9	-
Engine Speed	r/min	1 322,0	1 259,0	2 000,0	1 750,0	7 000,0
Total Distance	km	455,3	5 754,5	322,0	345744 863,7	4 830,0

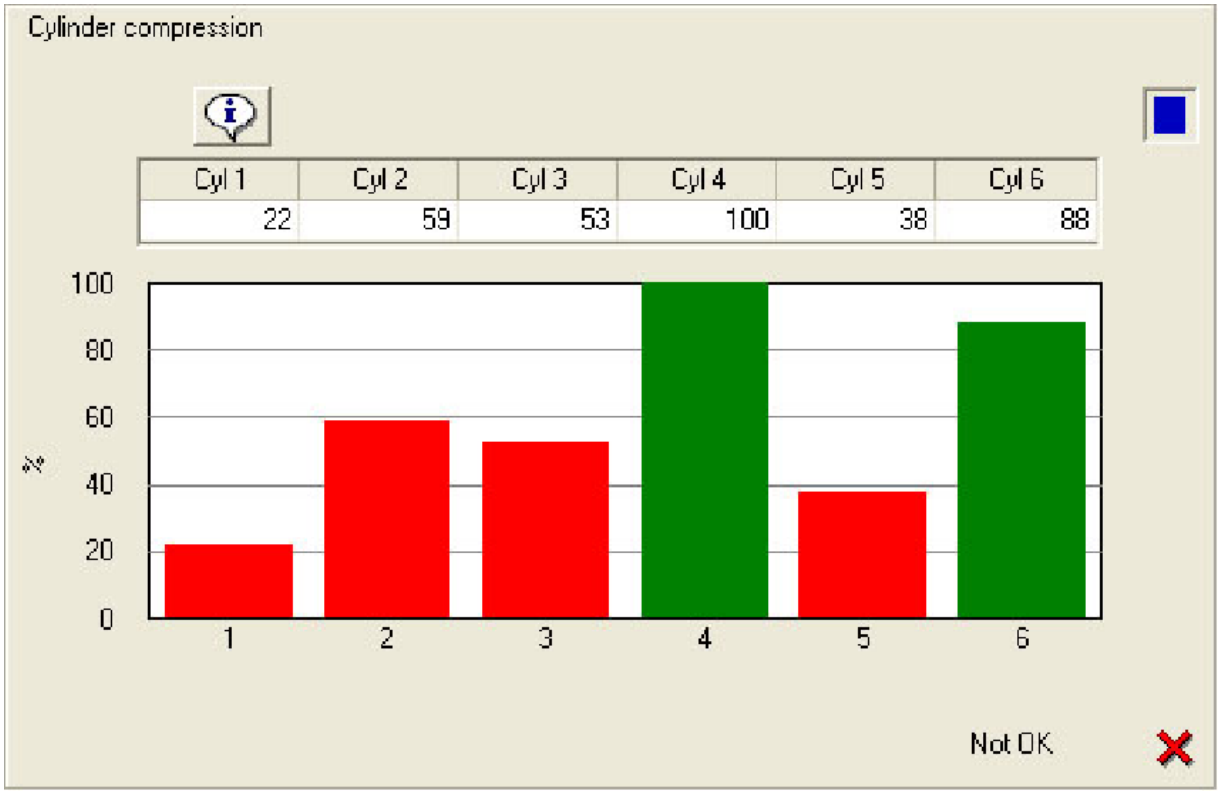
The parameters are displayed in a graph under tab (6). Click the button (7) to select which parameters are to be selected. A maximum of five parameters can be displayed at the same time. The name of the selected parameters is displayed at (8). Different units are shown on the vertical axis of the graph depending on which parameter is marked.



Bar chart

Bar charts exist for various purposes (cylinder compression tests and cylinder balancing tests for example). There may be horizontal lines in the diagram. These indicate the minimum and maximum levels obtained during the tests.

A table is displayed next to the bar graph in which the test values are displayed numerically.

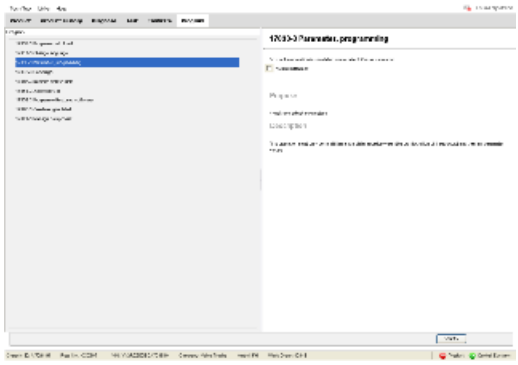


Program

When programming is carried out the workshop ID is stored in the control unit. This makes it possible to check which workshop carried out programming last. The user is responsible for ensuring that programming is carried out correctly according to the requirements of the product owner or other authorized persons. This mechanic is also responsible for ensuring that the correct label is affixed to the engine control unit.

Note: The following applies only in those markets that have statutory speed limiting requirements. The programmer is responsible for ensuring that all programming is carried out correctly and that speed limiting complies with applicable statutory requirements. Certification from the relevant authorities is required to carry out road speed limit (RSL) programming.

Note: Electrical system VERSION2 does not require a direct connection to individual control units. Connection to the communication connector is used for all programming.
In **Program** you can select operations to program a product. The operations are sorted by function group to make them easier to find.



1. Search for an operation by expanding the operation tree.
2. Select an operation by clicking on it.
3. To run the operation in simulation mode, select **Run as simulation**.
4. Click **Start** to start the programming process.
5. Follow the displayed step by step instructions.

Programming

When programming is carried out the workshop ID is stored in the control unit. This makes it possible to check which workshop carried out programming last. The Tech Tool user is responsible for ensuring that programming is carried out correctly according to the requirements of the product owner or other authorized persons. This mechanic is also responsible for ensuring that the correct label is affixed to the engine control unit.

Note: The following applies only in those markets that have statutory speed limiting requirements. The programmer is responsible for ensuring that all programming is carried out correctly and that speed limiting complies with applicable statutory requirements.
Certification from the relevant authorities is required to carry out road speed limit (RSL) programming.

Note: Electrical system VERSION2 does not require a direct connection to individual control units. Connection to the communication connector is used for all programming.

Programming, electronic system VERSION 3 and 4

Parameter programming

Note: If there are chassis ID mismatch, parameter programming will not be possible, you will only be able to read the parameter information.

Note: If a parameter value is out of range after read out from vehicle or after programming, the “Status” column indicates “Invalid” and the value is marked red. These parameter values should be adjusted.

Note: If you are working offline you can only read the parameter information. This means that you are only seeing the information specified for the parameter.

Note: We recommend that you program the parameters when you are connected to central systems to get the latest information. You can program your parameters offline, but then there is not guarantee that the information is accurate.After an offline programming the order will be sent to central systems as soon as you are connected to central systems again.

View available parameters

All the parameters that exist for the product are listed in these views. You can select to view the parameters in **Group View** or **Control Unit View**, depending on what you find suitable.

Heading	Description
ID	The ID of the parameter. The ID is the same, irrespective of language.
Name	A description of the parameter.
Status	The status of the parameter. Could be Valid, Invalid or Inconsistent.
Min	This states the minimum value of the parameter.
Value	The current parameter value. This value can be edited.
Max	This states the maximum value of the parameter.
Unit	The type of unit used for the parameter.
Details	Click the icon to view information about the parameter.

Program parameters

Follow these steps after choosing the operation **Parameter, programming**.

1. Select a parameter and change the value. Repeat for every parameter you would like to program.
2. Click **Continue >** . A list of all parameters to be programmed are displayed.

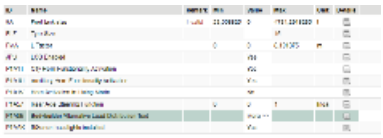
   Note: If there are inconsistent parameters, there will be an extra tab with a list of all inconsistent parameters. Correct the values and click **Continue >** again.

   Note: If you open a complex parameter link in the list of all parameters to be programmed, you will see both the old value and the new value.
3. If you would like to change anything, click **Back**. Otherwise click **Program** to start the programming process.

   Note: If the software is chargeable you must first agree with the terms. Click the **I agree** checkbox, after reading the conditions.

Open a complex parameter

A complex parameter is a parameter that can have several values. To program this parameter, click the link in the **Value** column.



1. In the window that appears, enter the new values and click **OK**.

View parameter details

When clicking the note icon in the details column of the parameter, a new window will open containing information about the parameter. Depending on the type of the parameter different information is displayed.

Program a control unit

Follow these steps after choosing the operation **Program Control Unit**.

1. Select a control unit.
2. Select a software option.
3. Click **Program >**.

If a software is chargeable, read the information and the click in the **I agree** checkbox.

Replace control units

Follow these steps after choosing the operation **Replace Control Unit**.

1. Select which control units you want to replace, by selecting its checkbox.
2. Click **Program >**.
3. Follow the instructions to complete the operation.

Note: You can only replace 3 communication units at the same time.
If you have to change a damaged control unit or want to update to a new control unit, the software for the new control unit are automatically run in the background when you are connected to central systems.

If you are working offline you have to run a conversion kit before the software download.

1. Select the conversion kit operation. See Program for detailed instructions for searching and running an operation.
2. Enter the Chassis ID.
3. Select the correct control unit from the list, and click **OK**.
4. Connect to central systems in the **Tech Tool** menu.
5. Go to **Administrate Software...** and download the current software.

Run a campaign

Follow these steps after choosing the operation **Run Campaign**.

1. Select a campaign in the list.
2. Click **Program**.

Apply an accessory kit

Follow these steps after choosing the operation **Apply Accessory kit** if you already know the number of the software you want to download.

1. Enter a kit number in the field.
2. Click **Program** .

Change language

Follow these steps after choosing the operation **Change Language**.

1. Select one or two languages in the lists.
2. Click **Program** .

Program control units with stored software

Follow these steps after choosing the operation **Program Control Unit with Stored Software**.

1. Select one or more operations in the list.
2. Click **Program** .

Create an engine label

Check that the printer is working. Load the printer with a sheet of labels. After printing the label, cut it out and stick it to the control unit. Then stick the transparent protective film on top to cover the label completely. It is important that the protective film overlaps the label by a few millimetres all the way around.

Follow these steps after choosing the operation **Create Engine Label**.

1. Select the **I confirm** checkbox after reading the conditions.
2. Click **Continue**.

You can also select to print your engine labels from the **Tech Tool** menu. See Tech Tool menu for more details.

Manage a component

The operation **Manage component** is used when replacing a component in the vehicle. The operation reads the information from the vehicle and replaces the component in the central system along with the new components serial number.

Programming, electronic system VERSION 2 and older

Print label (Applicable to Volvo Trucks and Volvo Buses)

When programming the engine control unit a label is created. It can either be printed during the programming, or stored and printed later.

Check that the printer is working. Load the printer with a sheet of labels. After printing the label, cut it out and stick it to the control unit. Then stick the transparent protective film on top to cover the label completely. It is important that the protective film overlaps the label by a few millimetres all the way around.

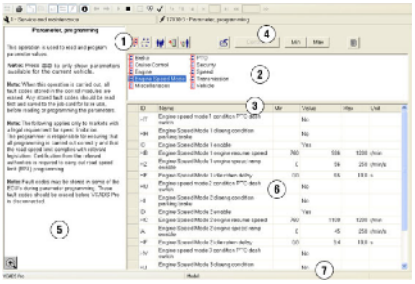
Parameter programming

Note: If the chassis ID does not agree, parameter programming will not be possible, you will only be able to read the parameter information.

Note: If a parameter value is invalid when read out, a message is displayed. Parameters with invalid values are marked in red. These parameter values should be adjusted.

Note: When reading off parameter values the values of parameters in other control units are checked. If there are parameters with differing values these are reported in a dialogue box. This dialogue box displays a list of values which can be adjusted there. The list is active until all differences are remedied. Click the light bulb button to display the list.

Detailed description



Position	Designation	Description
1	Toolbar	The following function buttons are available.
		**Group view -** Present parameters in different logical groups. Applicable to Volvo Trucks, Volvo Buses, and UD Trucks.
		**MID view -** Presents the parameters by control unit.
		**Customer parameters -** Only displays customer parameters.
		**Vehicle parameters -** Only displays vehicle parameters.
		**All parameters -** Displays all parameters
		**Coupled parameters -** Only parameters that are coupled to a selected product ID are shown.
		**All parameters to job card -** Saves all parameters to the job card
		**Min -** Shows the parameters minimum value and any limiting parameters
		**Max -** Shows the parameters maximum value and any limiting parameters

Position	Designation	Description
		**Go to template mode -** Click on the button to go to template mode.
2	Logical group/ Control unit window	This field contains a function tree used to select a logical group or control unit depending on the active view.
3	Split line	Drag the line to change the relative sizes of the Logical group/Control unit window and the Parameter list.
4	Button **Continue**	Click this button to continue programming.
5	Parameter description	A more detailed description of a parameter is available in the introduction text field, if the parameter is highlighted in the parameter list. To retrieve the basic information in the introduction text field select **Default information** in menu **Operation**.
6	Parameter list	This lists the parameters available for the logical group or control unit.
7	Status bar	The status of communication between Tech Tool and the vehicle, and between Tech Tool and the central system is displayed. When communication has been established a connection icon is displayed. The text **Simulator** (in a yellow field) is displayed here if the program is in simulator mode.

Group presentation of parameters

Note: Does not apply to VCE.
Click this button to present the parameters by group in logical function groups.

This method of presentation displays a logical group division. Below are examples of groups.

Logical group
Cruise control
Engine
Instrument
Power take-off
Safety
Speed
Transmission
Vehicle

This lists the parameters available for the logical group. A parameter in a logical group can occur in several different control units.

MID presentation of parameters

Click this button to present parameters by control unit.

This method of presentation lists the vehicle/machine control units in the Logical group/Control unit window. Below are examples of control units.

Control unit
Engine control unit
Instrument
Vehicle control unit
Air suspension, vehicle (Does not apply to North American models)

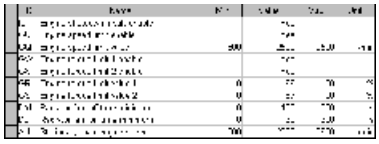
This lists the parameters available for the relevant control unit.

If you wish to show all parameters, select all in the pull-down menu at MID.

Parameter list

The right-hand field displays a parameter list when the Group or control unit presentation of parameters is selected.

The field is divided into a number of columns.



Column heading	Description
ID	The ID of the parameter. The ID is the same, irrespective of language.
Name	A description of the parameter.
Min	This states the minimum value of the parameter.
Value	The current parameter value.
Max	This states the maximum value of the parameter.
Unit	The type of unit used for the parameter.

The parameter list can contain two types of parameters, customer and vehicle parameters. Either one or both types of parameters can be displayed.

To differentiate between customer and vehicle parameters, an icon is displayed to the left of the vehicle parameter IDs. See the illustration. The icon indicates that you must be connected to the central system in order to program that parameter.

Vehicle parameters are displayed only if the user is authorized to modify them.

The parameters in the parameter list are either numerical or multiple choice. The parameters can be sorted by clicking the column headings.

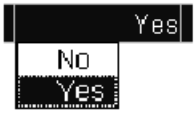
Numerical parameters

Entering a new value overwrites the old one.

Multiple choice parameters

The user can only select one of a number of predefined values (Yes or No for example).

A multiple choice parameter looks like this when selected.



Setting the contents of the parameter list

To make the parameter list easier to read and search, it is possible to display customer and/or vehicle parameters. Both the customer and vehicle parameters can be displayed at the same time.

Selecting the type of parameter for display in the parameter list is described below.

Customer parameters

Click this function button to display only the customer parameters in the parameter list.

Vehicle parameters

Click this function button to display only the vehicle parameters in the parameter list.

All parameters

Click this function button to show both the customer and vehicle parameters in the parameter list.

All parameters to job card

When this button is pressed down all the read parameters are saved to the job card. When the button is up only those parameters which have been modified are saved to the job card.

Coupled parameters

Click on this function button to show only parameters that are coupled to a selected product ID. The Product ID is the combination company-electrical system. This function is applicable to Volvo Trucks, Volvo Buses, and UD Trucks.

Minimum/Maximum limit

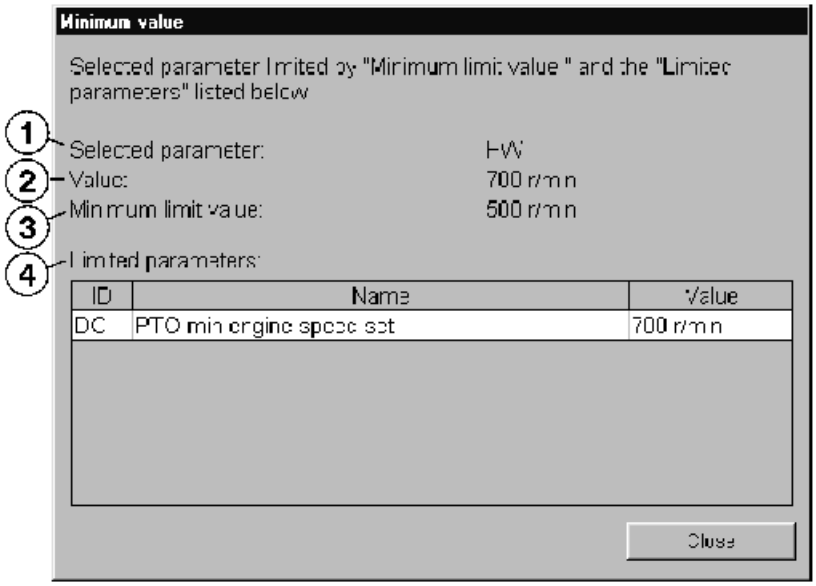
Min/Max-value of a numerical parameter can be dependant on the value of another parameter. The function **Min/Max-limitation** shows the limit values and the values of the dependant parameter. The buttons are located in the tool field.

Display value

To access the dialogue boxes follow the instructions below:

1. Click the parameter in the parameter list.
2. Click on button Min or Max.

Description



Dialogue box for Min value of a selected parameter. The dialogue box for Max value is similar to the dialogue box for Min value.

- **Selected parameter** (1) displays the parameter ID for the selected parameter.
- **Value** (2) displays the current value of the selected parameter in the parameter list.
- **Minimum limit/Maximum limit** (3) displays the lowest or the highest limit value that the selected parameter can have.
- **Limited parameters** (4) displays the parameter(s) that limit the value of the selected parameter.

Example

To explain how the **Min/Max-limitation** function works, this is an example based on the illustration.

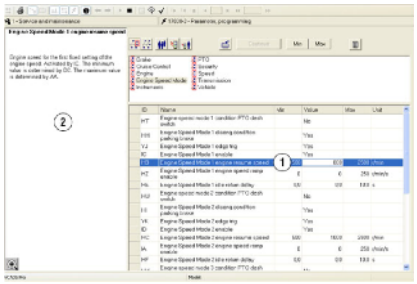
- The minimum value of the HW parameter will be changed from 700 rpm to 500 rpm.
- The following information is displayed:
  1. The selected parameter is HW (1).
  2. The present value is 700 rpm (2).
  3. The lowest value that can be set for parameter HW is 500 rpm (3).
  4. The limiting parameter for HW is the DC parameter, the value of which is 700 rpm (4).

In order to change parameter HW to 500 rpm, the value of parameter DC must first be changed to 500 rpm.

Parameter description

For a more detailed description of the parameter do as follows.

1. The parameter description is displayed by clicking on a parameter (1).
2. The description is displayed in the text field (2).

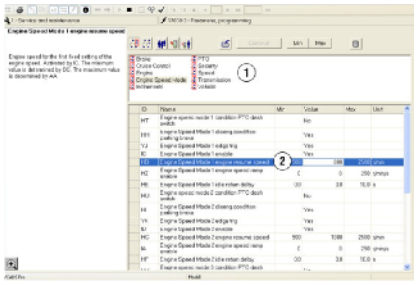


Programming parameters

Programming of parameters is carried out in two stages:

- Assigning new values to parameters.
- Programming dialogue.

Assigning new values to parameters



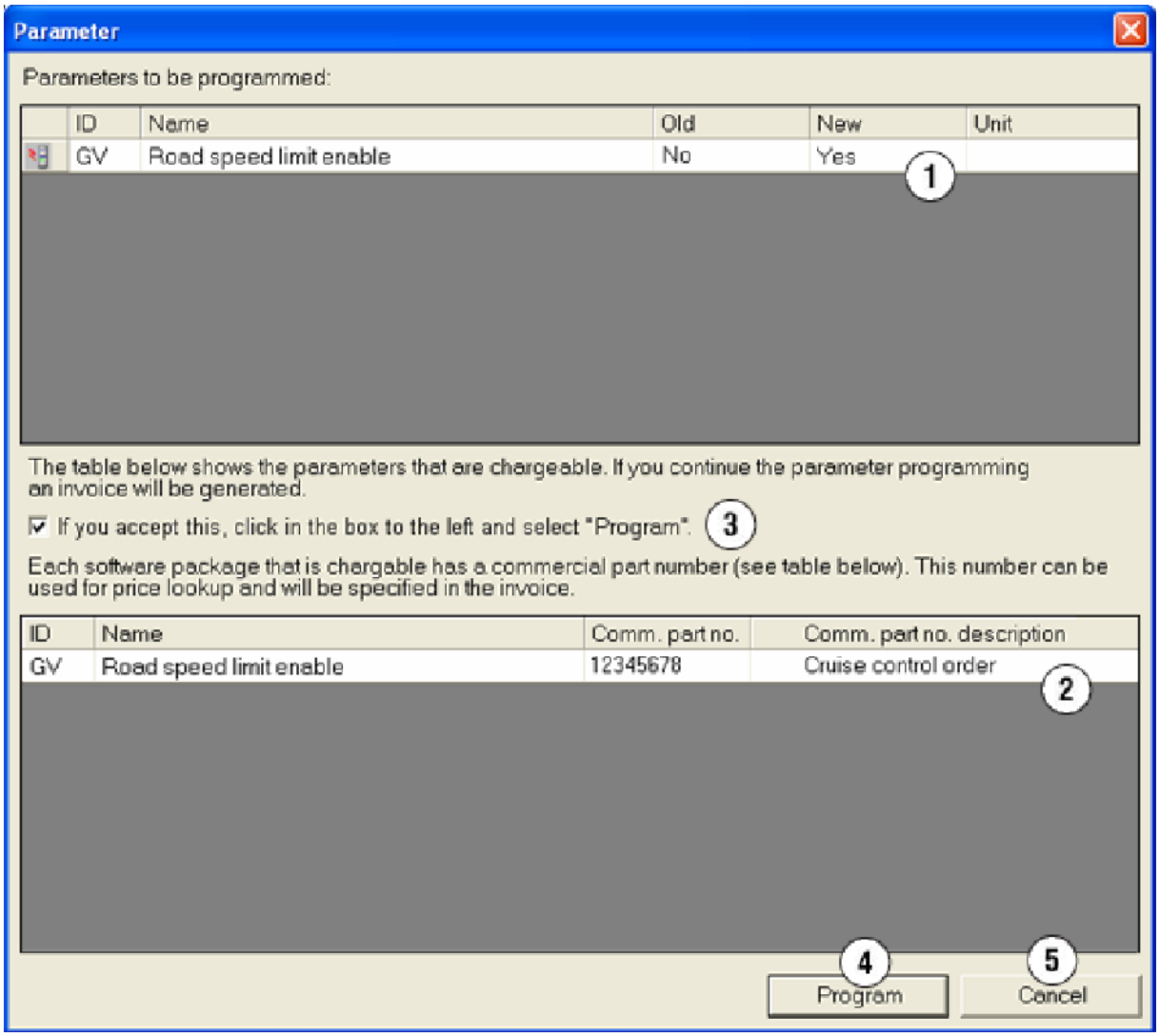
1. Select if the parameters are to be shown in logical groups (Group-view) or per control unit (MID-view). See Group presentation of parameters.
2. Click the desired logical group or control unit (1). The associated parameters are displayed in the parameter list in the function tree (2).
3. Double click the parameter to be reprogrammed.
4. Change the parameter value.
   - **Numerical parameter**: Enter the new value for the parameter.
   - **Multiple choice parameters**: Select the desired alternative from the list.
   - Press Enter.
5. Assign a new value to a new parameter from the group view or MID view. Alternatively click on **Continue** to proceed to the programming dialogue.

Programming dialogue

When a parameter value has been modified, the programming dialogue is started by clicking **Continue**. The following are displayed in the dialogue window.

- Connection symbol, if connection to central system is required
- Parameter ID **(ID)**
- Parameter description **(Name)**
- Old value **(Old)**
- New value **(New)**

- Unit **(Unit)**



The following actions can be carried out in the dialogue box.

- Program the current parameters by checking the box in the middle of the window (3) and click on **Program** (4). Customer parameters are programmed locally without connection to the central system. Vehicle parameters are programmed by connecting to the central system. See Programming vehicle parameters.
- Cancel the dialogue by clicking on **Cancel** (5). It is now possible to give additional parameters new values or change the parameters that are already listed. The parameters that have already been given new values are not erased, they remain the next time the dialogue is opened. Erase a parameter by resetting it to its old value.

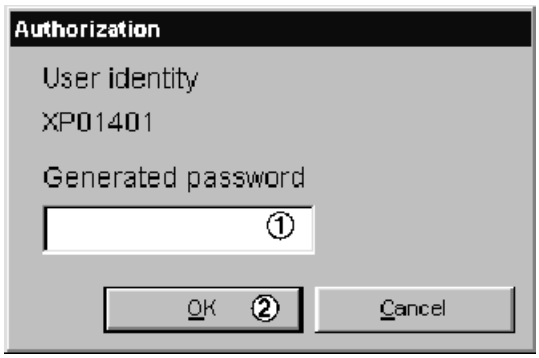
Programming vehicle parameters

The following is carried out when **Program** has been selected from the programming dialogue.

A dialogue box is displayed in which a password must be entered.

1. Generate a password using the DigiPass.
2. Enter the 8-digit password into box (1).
3. Click **OK** (2). Data transfer takes place. Programming is complete.

Note: After parameter programming the parameter may not have exactly the same value, if another unit is selected for display.



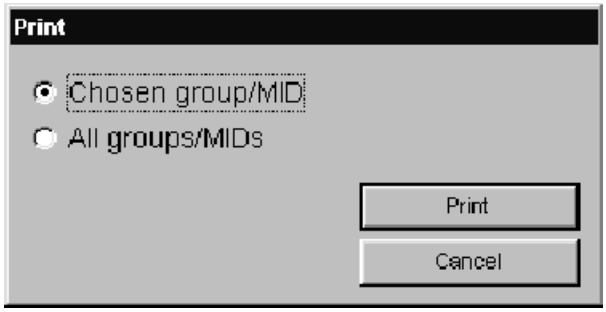
Print parameters

Start printing by clicking on this button. Alternatively select **Print** from the **Tech Tool** menu.

What is printed depends on which program view is active.

- Group view: The parameter list for the relevant logical group will be printed.
- MID view: The parameter list for the relevant control unit will be printed.

When printing parameters, select whether to print the selected group / control unit or all groups / control units.

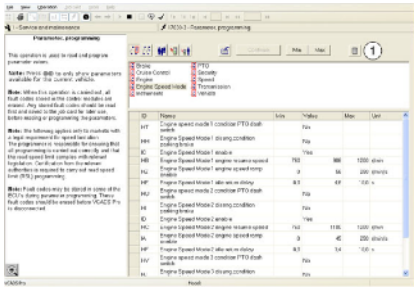


Parameter programming using templates

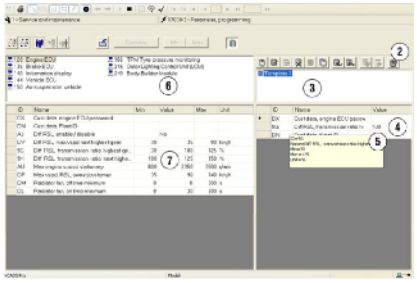
This section describes creation, editing and application of templates for parameter programming. The advantage of using templates is when several vehicles require programming with the same set of parameters and values. It also makes the programming procedure faster.

Access to parameter programming using templates

Go to the operation **17030-3 Parameter, programming** under function group 1 **Service and maintenance**. Start the operation. Template mode can be entered by clicking on the upper right symbol (1).



The main menu for parameter programming with templates is shown.



Description of main menu

The table below describes the main menu as seen in the template mode when programming parameters (see figure for location).

Position	Designation	Description	
2	Toolbar	The following function buttons are available:	
			New template: New templates are created and named.
			Edit template: You must be in editing mode to add/delete parameters to/from templates.
			Close template: Closes open templates.
			Delete template: Deletes the selected template.
			Save template: Saves changes made to the template.
			Copy template: Copies the template.
			Import template: Imports a template.
			Export template: Exports templates.
			Add parameter to template: This button adds parameters from the parameter list to the template.

Position	Designation	Description	
			Delete parameter from template: This button removes parameters from the template and returns them to the parameter list
			Apply template: Click on this button to apply the template on the selected vehicle.
3	Template window	This field contains the various templates that you have created.	
4	The parameters included in the template	When a template is selected in the field (3), the contents of the template are shown in this list.	
5	Tooltip, information about the parameter	If the cursor is moved across a parameter in the list in field (4), information about the parameter is shown.	
6	Control unit window (MID)	Shows the various control units (MID). Select the control unit for which a template is to be created or edited. It is possible to select parameters from all available control units.	
7	Parameter list	This lists the available parameters for the selected control unit in the vehicle.	

Working with parameter programming via templates

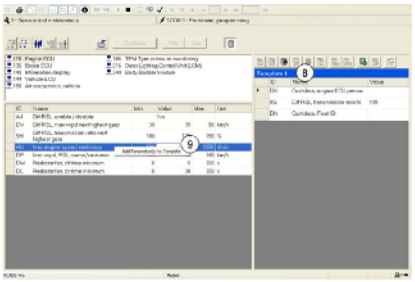
There are two basic modes for parameter programming via templates, they are **Display** and **Editing**. In **Display** one can see existing templates and also import and export templates.

In **Editing** one can create, delete and save templates, add or remove parameters to and from templates and even apply templates to selected products. See the chapter below for additional information.

Display mode

View existing templates

This shows existing templates. In the figure below, the template **Template 1** has been selected from the main menu (8). **Template 1** consists of three parameters, DX, 9G and DN. These parameters have been selected from the parameter list (9) to the left.

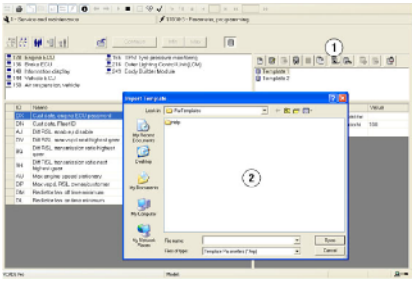


Export or import template

If one wishes to use a template on another Tech Tool computer, this is possible. One just needs to export the desired template from one's own computer and then import the template file into the other computer.

1. Click on button **Export template** (1) on your own computer. Dialogue window (2) appears.
2. Save the template in a location and/or media.
3. On the other computer, click on button **Import template** (1). Browse to the template file and select in the dialogue window (2).

4. The template can now be used on the other computer.



Note: The figure above shows only the “import part” of the export and import procedure.

Editing mode

New template

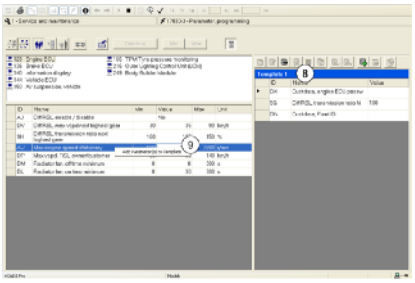
A new template is created if one clicks on the symbol for **New template** in the toolbar. A dialogue window opens where you can name the template.

Edit template

Click on the symbol for **Edit template** in the toolbar to enter the editing mode. One can also reach editing mode by double-clicking on the new template's name in the template window. In editing mode it is possible to make changes to the template, add or remove parameters, deleted templates, etc. See below for more details and illustrations.

Add or delete parameter to/from template

The template Template 1 (8) has just been created in the figure below. One has then gone into editing mode and chosen to add parameters DX, 9G and DN from the parameter list to the template (9).



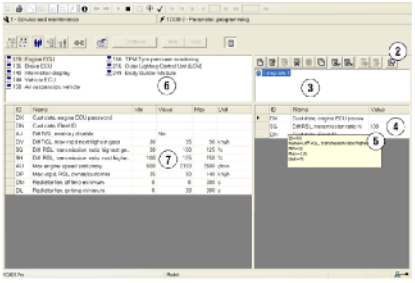
We now wish to add parameter AU to the template. Click on the symbol for **Add parameter to template** in the toolbar. One can also right-click on the parameter in the parameter list. A button with the text **Add parameter to template** appears (9). Click on it to add the parameter to the template. One can select several parameters at the same time by holding down the Shift-key on the keyboard, or the Ctrl-key if the parameters are not sequential. Click on the symbol for **Save template** in the toolbar, once all selections and additions of parameters to the template are done, and the template is saved. If one wishes to delete parameters from a template, click on the symbol for **Delete parameter from template** in the toolbar instead. One can also right-click on the parameter in window **Parameters in the template** (4). To close the template, click on the symbol for **Close template**, and you will return to the main menu.

Delete template

If you wish to delete a template, just click on the symbol for **Delete template** in the toolbar. A dialogue window opens for confirmation of deletion.

Apply template

To apply the template's parameter values in parameter programming, one marks the template and clicks on button **Apply template**.



Example: Parameters DX, 9G and DN (4) from the parameter list (7) have been chosen. One can see extra information (5) about parameter 9G. The template that has been created and used for this is called Template 1 (3). Click on the symbol for **Apply template** in the toolbar (2) to use the template. A dialogue window opens for confirmation of application of the template values.

MID XXX Control unit, programming

Note: Under no circumstances may control units be switched between products for fault tracing or repairs without reprogramming them. Incorrect settings in the control unit can lead to personal injury or damage to the product.

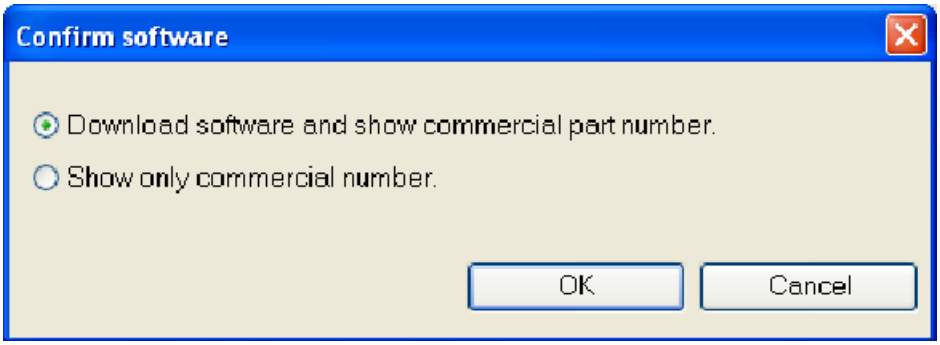
Note: If the control unit's part number and the part number stored in the central system differ, the system automatically checks if a suitable conversion kit is available. In such a case, and if the user has chosen to reprogram the control unit, a dialogue window opens asking the user to restart the operation and select to replace the control unit.

Note: Applies only to vehicle electronics '98. When replacing the engine control unit, vehicle control unit or instrument control unit, the connections to the communication outlet must be made first, so that copying of the current and logged values can be performed. After which direct connection to the control unit can be made. Special wiring must be used when connecting to these three control units.

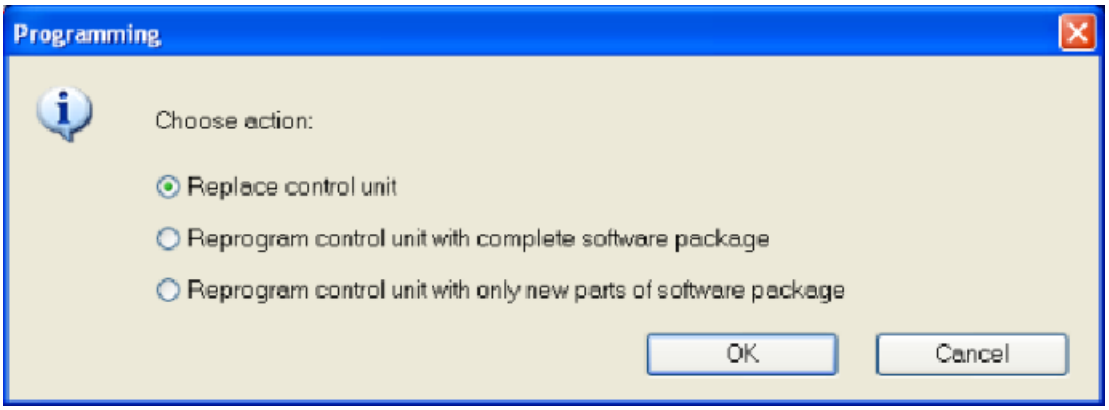
Programming

Note: This operation requires connection to central systems.

1. Select **MID XXX, control unit, programming** in the relevant function group.
2. Start the operation.
3. Select if you want to download the software and see part number or if you only want to see the part number. Click **OK**.



4. Select action:



   – Select **Replace control unit** if you want to change the control unit.
   – Select **Reprogram control unit with complete software package** if you want to repair the software in the control unit.
   – Select **Reprogram control unit with only new parts of software package** when you want to update the software in the control unit. This option is normally fastest. It is not available in Intermediate storage.
5. Click **OK** to continue.
6. Follow the instructions to complete the operation.

MID XXX Control unit, campaign

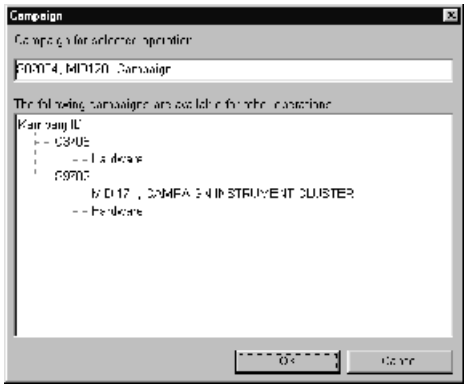
Campaign programming is only possible when the appropriate message has been sent.

Programming

Note: This operation requires connection to central systems.

1. Select **MID XXX control unit, campaign** in the relevant function group and follow the instructions.

   Note: In certain campaigns, when replacing hardware or part numbers, the conversion is carried out automatically without the user noticing anything. In campaigns where the user must carry out the conversion themselves, the user will be notified.
2. The following window is displayed where a campaign for a selected operation is presented. Select **OK** to implement the operation. Otherwise select **Cancel**. Other campaigns for other operations are displayed in the lower field.



MID XXX Programming, change instrument language

Note: Currently the North American market only supports English, French and Spanish.

Programming

Note: This operation requires connection to central systems.

1. Select **MID XXX Programming, change instrument language** in the relevant function group.
2. Start the operation and follow the instructions.
3. Select the three languages that are to be programmed into fields (1), (2) and (3). Language 1 is used automatically as basic setting.

4. Click **OK**.

MID 140 Odometer (Applicable to Volvo Trucks, Volvo Buses, and UD Trucks)

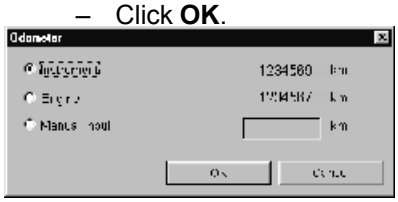
This operation is used to program the correct odometer reading into a replacement control unit for the instrument.

Programming

Note: This operation requires connection to central systems.

Note: The operation does **not** apply to products with **tachographs**.

1. Select **MID 140 Odometer, programming** in the relevant function group. Start the operation and follow the instructions.
2. Select the control unit from which to read odometer setting in the following dialogue box.
   - **Initially** the mileage must be read from the original instrument.
   - If it is not possible to read off the odometer setting from the original instrument, the data can be read off the engine control unit. This does not apply to the VERSION2 electrical system. No information from the engine control unit is shown by this system.
   - As a last resort the data can be input manually.
   - Click **OK**.



Displayed machine hours, correction (Applicable to Volvo CE)

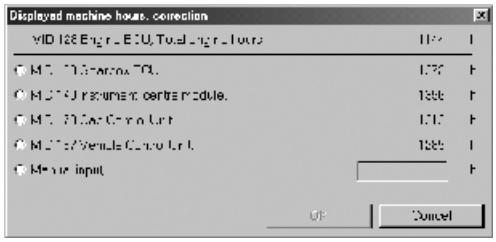
This operation is used to correct the machine hours parameter, when it does not correspond to the actual value. The operation reads the machine hours parameter from those control units where it is stored and the engine hours from the engine control unit The engine hours parameter cannot be corrected and is only used as a reference value.

Correction carried out:

- After replacing the control unit containing the machine hours parameter and where the original value has not been transferred to the new control unit.
- When the machine hours shown do not agree with the actual operating hours.

Programming

1. Select **Displayed machine hours, correction** from function group Electrical system and instruments. Start the operation and follow the instructions.
2. The following dialogue box shows from which control unit the parameter for machine hours can be read. Corrections are made primarily by marking a control unit that shows the correct machine hours, if one exists. Alternatively, a manual value that agrees with the actual machine hours can be set.
3. Click **OK**



Displayed total travelled distance, correction (Applicable to Volvo CE)

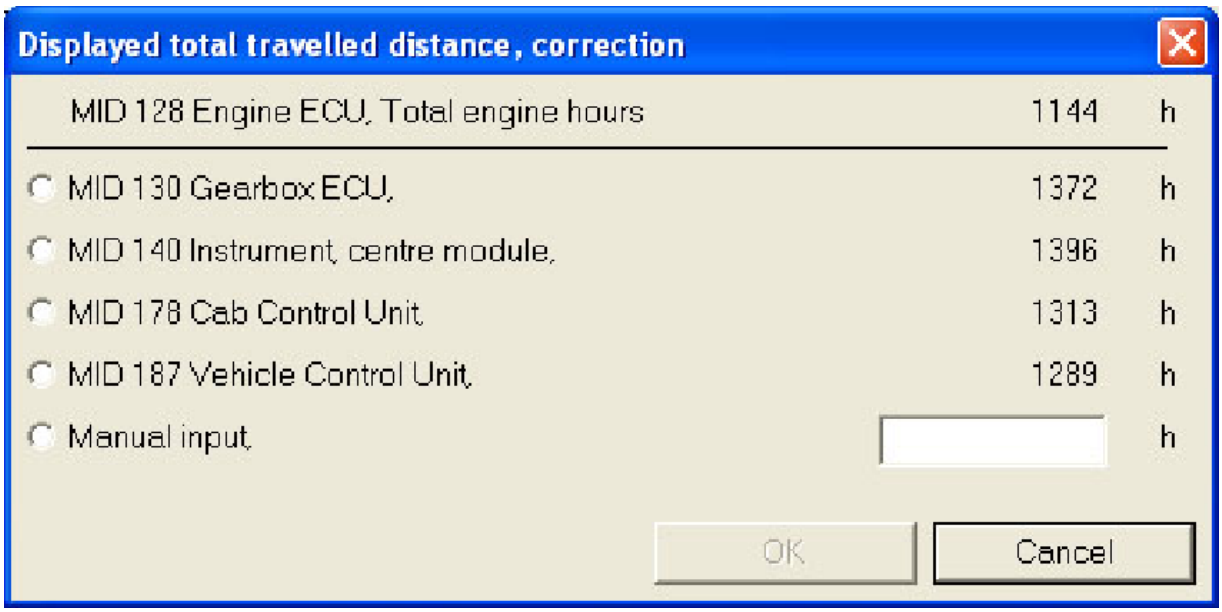
This operation is used to correct the total mileage parameter, when it does not correspond to the actual value. The operation reads the total vehicle distance parameter from those control units where it is stored and the machine distance from the engine control unit The machine mileage cannot be corrected and is only used as a reference value.

Correction carried out:

- After replacing the control unit containing the total mileage parameter and where the original value has not been transferred to the new control unit.
- When displayed total travelled distance does not agree with the actual distance.

Programming

1. Select **Displayed total travelled distance, correction** under functional group Electrical system and instruments. Start the operation and follow the instructions.
2. Select the control unit from which to read the total mileage parameter in the following dialogue box. The correction is carried out by marking a control unit which has the correct total vehicle distance, if there is one. Alternatively a value is set manually which corresponds to actual mileage.
3. Click **OK** .



Accessory kit (Volvo CE: Central systems, updating, replace software)

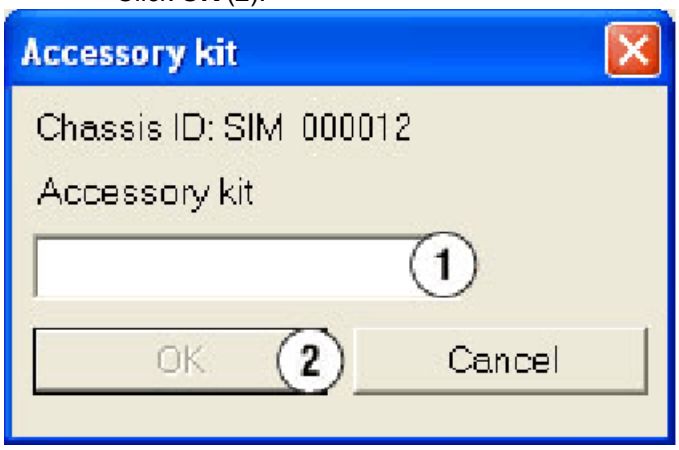
Programming

This operation is to be used if you have bought an accessory that requires software updating.

Note: This operation requires connection to central systems.

1. Select operation **Accessory kit** (Volvo CE: Central systems, updating, replace software) under function group 1. Start the operation and follow the instructions.
2. A dialogue box opens.
   – Enter the number of the accessory kit (1).

– Click **OK** (2).



After the completed operation the new software/hardware is now prepared for the current chassis ID / Serial no. The operations **MID XXX Control unit, programming** or **MID XXX Control unit, campaign** can be used to download software.

Conversion kit (Volvo CE: Central systems, updating, replace control unit)

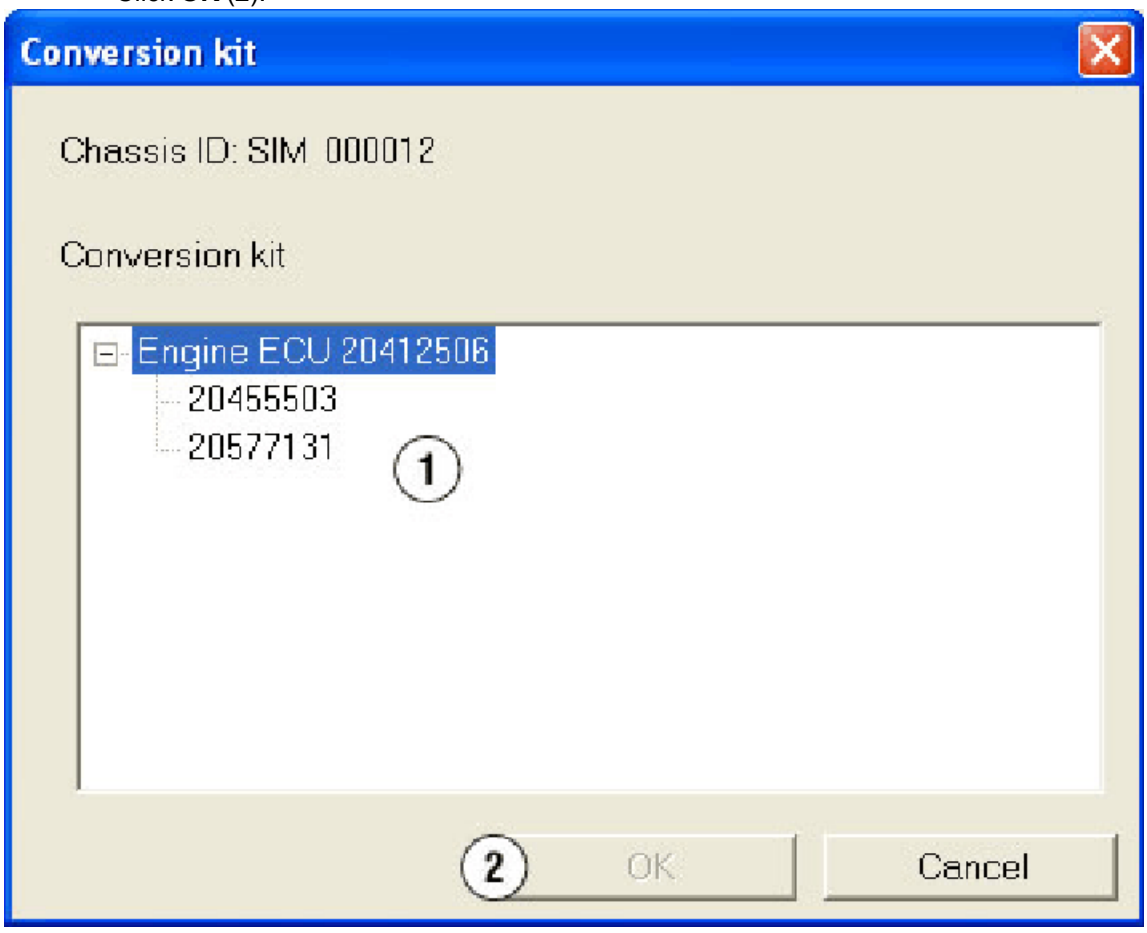
Programming

This operation must be performed when replacing a control unit in Intermediate storage. When replacing a control unit and the new control unit has different part number than the old control unit, the information in central systems has to be updated. In normal mode this is done automatically.

Note: This operation requires connection to central systems.

1. Select operation **Conversion kit** (Volvo CE: Central systems, updating, replace control unit) under function group 1. Start the operation and follow the instructions.
2. A dialogue box opens.
   – Select the hardware to be used from the list (1).

– Click **OK** (2).



After the completed operation the new software/hardware is now prepared for the current chassis ID / Serial no. The operations **MID XXX Control unit, programming** or **MID XXX Control unit, campaign** can be used to download software.

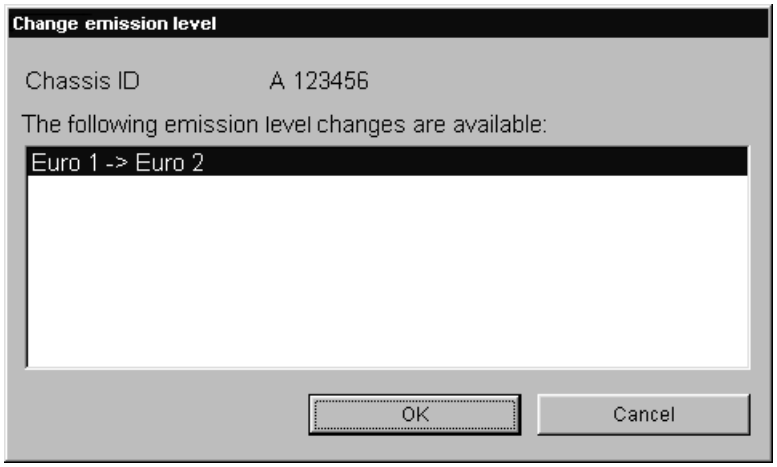
Emission level, replacing D12C

Note: Replacing the emission level does not apply to North American models.

Programming

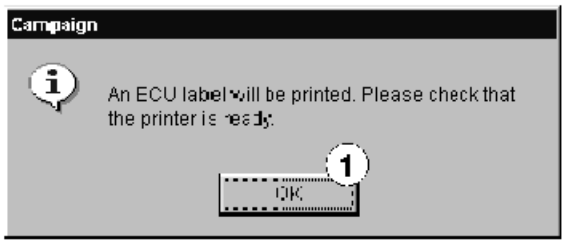
Note: This operation requires connection to central systems.
A list of available emission level replacements is displayed. If no emission level replacements are available, a dialogue box is displayed with information about this.

1. Highlight the emission level replacement required.
2. Click **OK**.



When programming is finished, a label will be printed, see Print label (Applicable to Volvo Trucks and Volvo Buses) .

Click **OK** (1).



Programming, D12A, EDC and DIS (Applicable to Volvo Trucks and Volvo Buses)

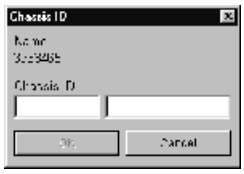
Note: It is important to be extra careful when programming older control units, since the older system is somewhat less stable than the new.

Note: On older control systems (D12A, EDS and DIS) no chassis ID is stored in the control units.

Note: Tech Tool must be restarted when the older EDC control systems have been used.
When the product chassis ID is required, the following dialogue box is displayed.

1. Enter the product chassis ID.
2. Confirm by clicking **OK**.

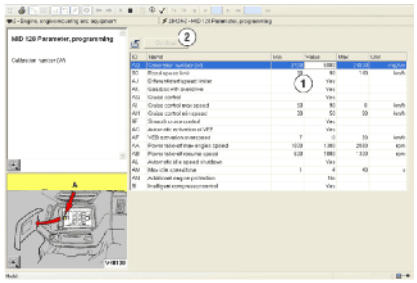
Note: Ensure that the correct product chassis ID is entered.



Programming parameters, D12A, EDC and DIS

Programming

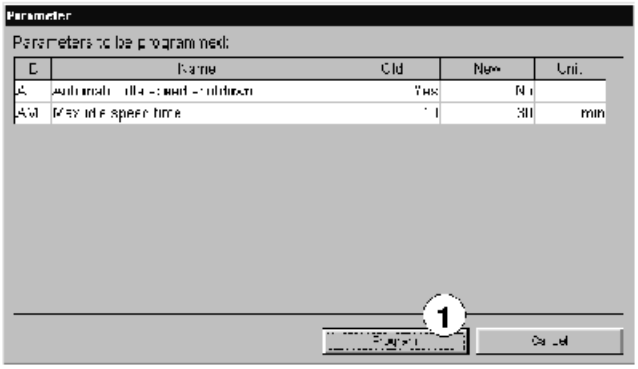
The parameter list with available parameters is displayed. Connection information for the operation is displayed in the image field.



1. Double click in the **value** (1) column on the parameter that is to be changed.
2. Enter a new parameter value or highlight the new value if it is displayed.
3. Confirm by pressing ENTER.
4. If necessary, assign new values to several parameters as above.
5. Press **Continue** (2).

A confirmation of the changed parameter settings is displayed.

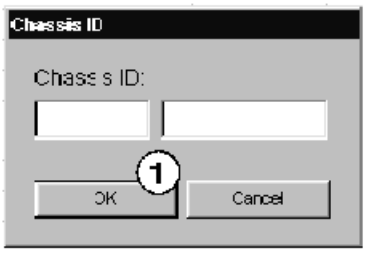
- Click **Program** (1) to program the parameters that have been assigned new values.
- Operation complete.



Print

1. Click the print icon.

2. Enter the product chassis ID.
3. Confirm by clicking **OK**.

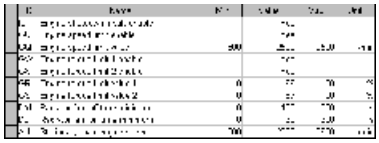


Note: It is important to enter the correct chassis ID to obtain the correct chassis ID on the printout.

Parameter list

A parameter list is displayed in the right-hand field when the operation is started.

The field is divided into a number of columns.



Column heading	Description
ID	The ID of the parameter. The ID is the same, irrespective of language.
Name	A description of the parameter.
Min	This states the minimum value of the parameter.
Value	The current parameter value.
Max	This states the maximum value of the parameter.
Unit	The type of unit used for the parameter.

The parameters in the parameter list are either numerical or multiple choice.

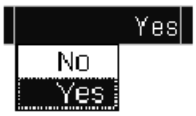
Numerical parameters

Entering a new value overwrites the old one.

Multiple choice parameters

The user can only select one of a number of predefined values (Yes or No for example).

A multiple choice parameter looks like this when selected.

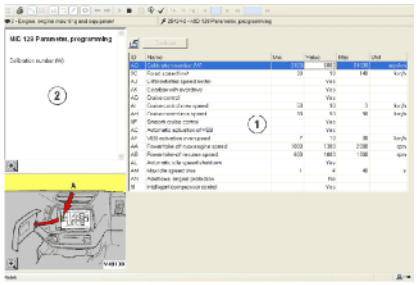


Note: Parameters can be sorted by clicking the column headings.

Parameter description

For a more detailed description of the parameter do as follows.

1. The parameter description is displayed by clicking on a parameter (1).
2. The description is displayed in the text field (2).

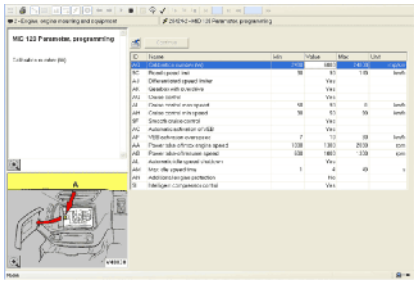


Programming parameters

Programming of parameters is carried out in two stages:

1. Assigning new values to parameters.
2. Programming dialogue.

Assigning new values to parameters



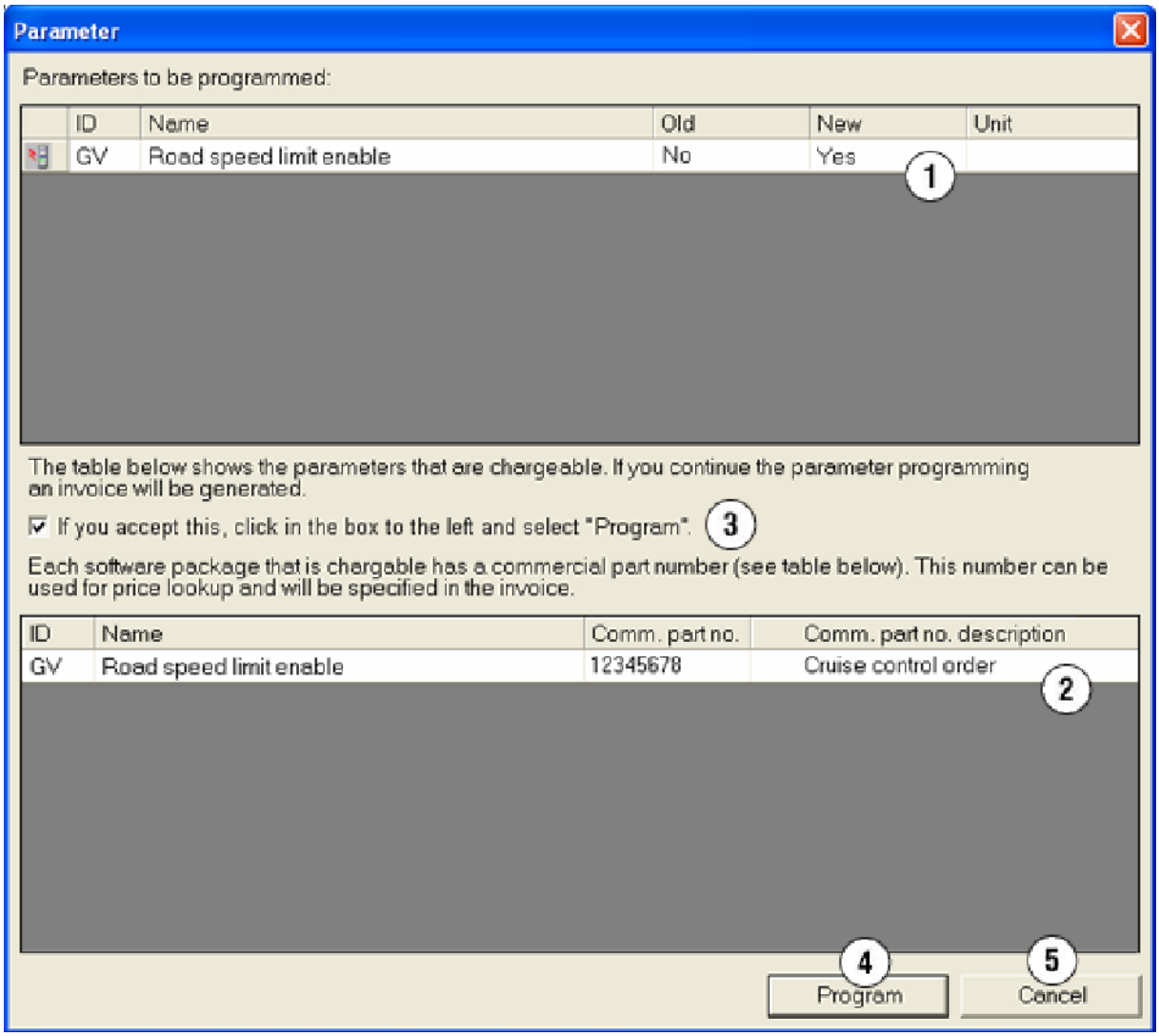
1. Double click the parameter to be reprogrammed.
2. Change the parameter value.
   - **Numerical parameter**: Enter the new value for the parameter.
   - **Multiple choice parameters**: Select the desired alternative from the list.
   - Click Enter.
3. Assign a new value to a new parameter. Alternatively click **Continue** to proceed to the programming dialogue.

Programming dialogue

When a parameter value has been modified, the programming dialogue is started by clicking **Continue**. The Parameter dialogue box opens. The following are displayed in the dialogue window.

- Parameter ID **(ID)**
- Parameter description **(Name)**
- Old value **(Old)**
- New value **(New)**

- Unit **(Unit)**



The following actions can be carried out in the dialogue box.

- Program the current parameters by clicking **Program** (4).
- Click **Cancel** (5) to cancel the dialogue. It is now possible to assign new values to additional parameters or modify the existing parameters in the list. Those parameters that have already been assigned new values are not deleted, they remain when the dialogue is opened again. Delete a parameter by resetting it to its old value.

MID 171 Control unit, programming DIS

Note: Under no circumstances may control units be switched between products for fault tracing or repairs without reprogramming them. Incorrect settings in the control unit can lead to personal injury or damage to the vehicle.

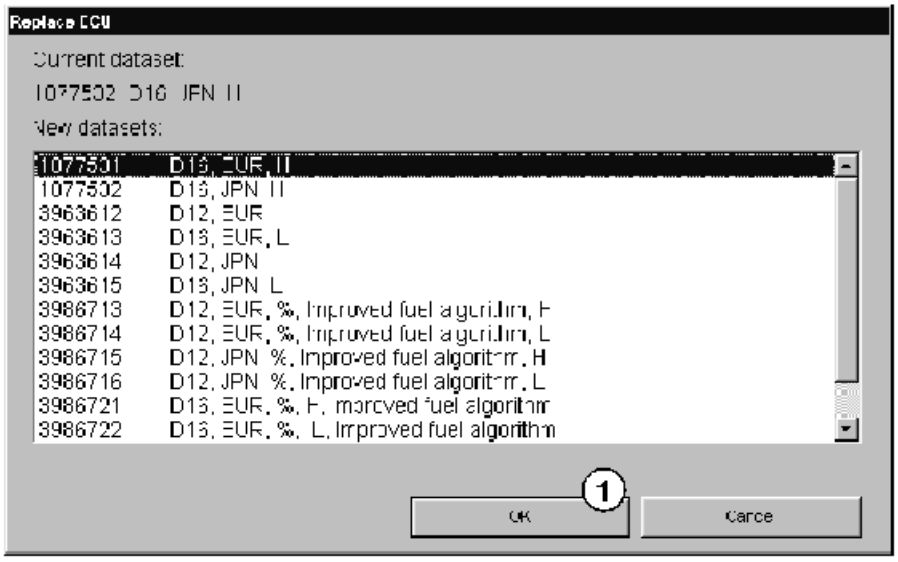
1. Select MID 171, control unit, programming in the relevant function group.
2. Start the operation and follow the instructions.

Programming

The window displays the available data sets.

1. Highlight the desired data set.

2. Click **OK** (1) to confirm the selection.



MID 128 Control unit, campaign D12A, EDC and DIS

Campaign programming is only possible when the appropriate message has been sent.

Note: This operation requires connection to central systems.

1. Select **MID 128 control unit, campaign** in the relevant function group and follow the instructions.

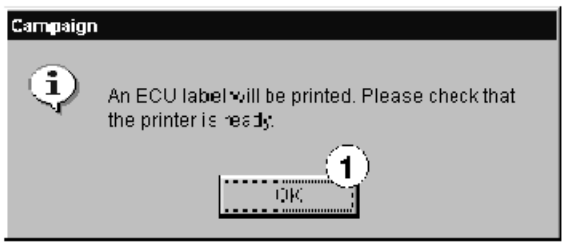
Note: In certain campaigns, when replacing hardware or part numbers, the conversion is carried out automatically without the user noticing anything. In campaigns where the user must carry out the conversion themselves, the user will be notified.

Programming

A list of available campaigns is displayed. If no campaigns are available, a dialogue box is displayed with information about this.

1. Highlight new software under its campaign ID.
2. Click **OK** (1).

When programming is complete a label is printed. See Print label (Applicable to Volvo Trucks and Volvo Buses).



Click **OK** (1).

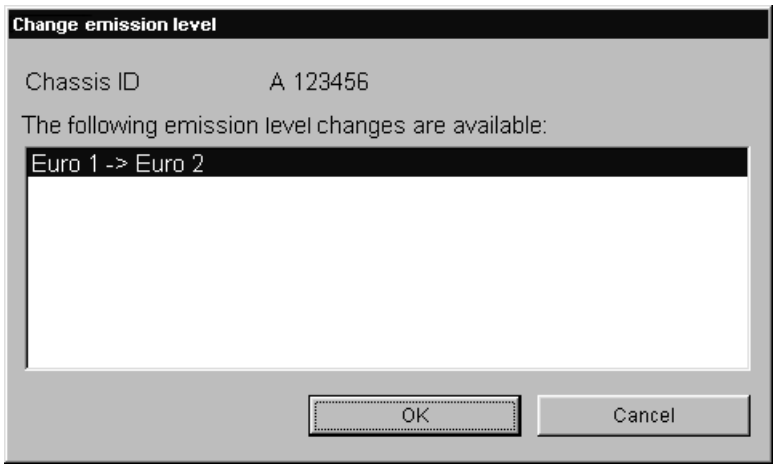
Emission level, replacing D12A

Note: Replacing the emission level does not apply to North American models

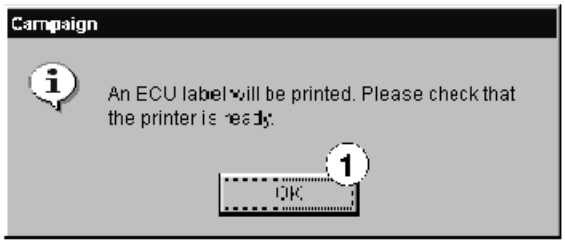
Programming

A list of available emission level replacements is displayed. If no emission level replacements are available, a dialogue box is displayed with information about this.

1. Highlight the emission level replacement required.
2. Click **OK**.



When programming is complete a label is printed. See Print label (Applicable to Volvo Trucks and Volvo Buses).



Click **OK** (1).

Administrate software

In Administrate Software you can order different types of software. If you are working online, Tech Tool will automatically download software from central systems. After a successful order the software is downloaded to local storage and can be used offline. You can also view stored software and report unused software.

Depending on the connected products electrical system, you will have to select between **Administrate Software...** and **Administrate Software New...**.

Administrate Software...

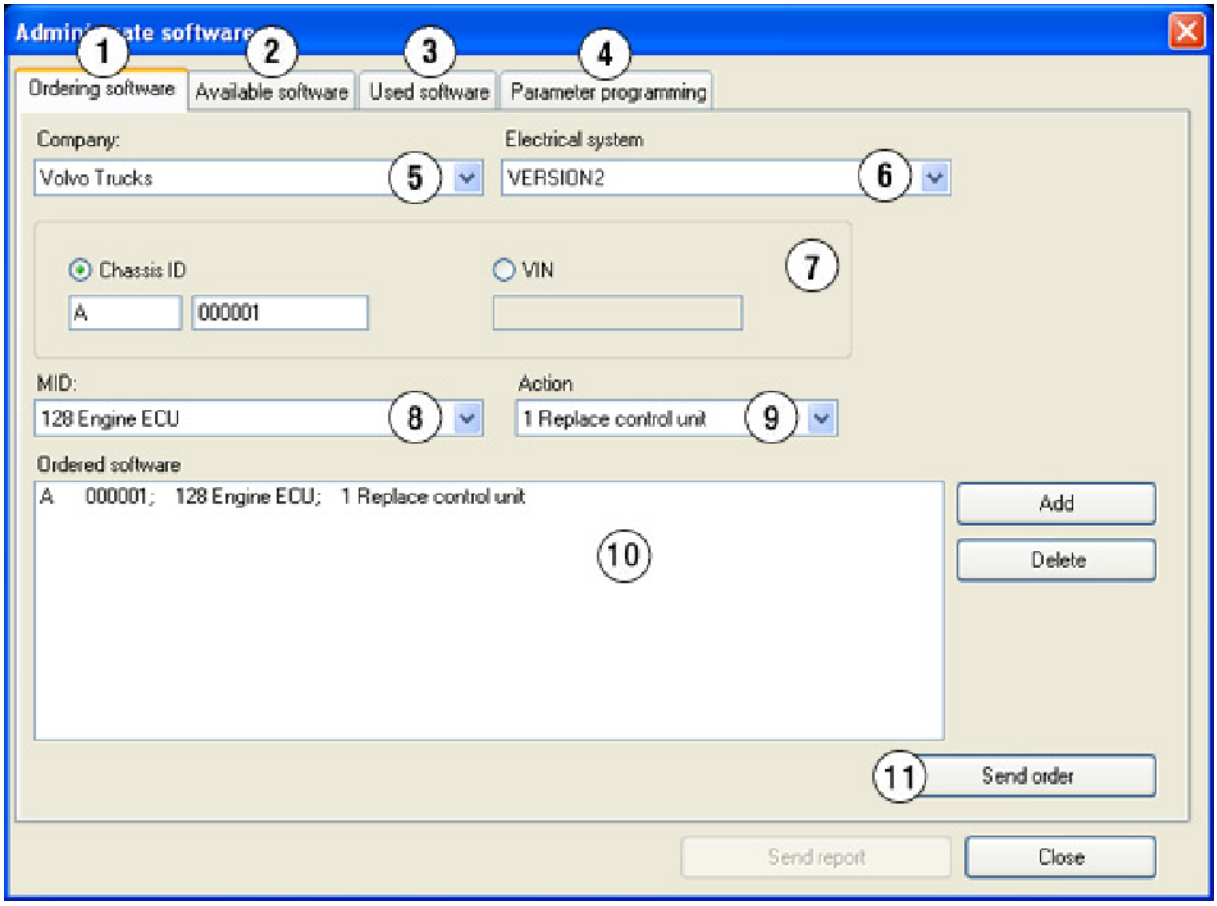
Select **Administrate Software...** in the **Tech Tool** menu. A window opens.

Enter the following information under the tab **Ordering Software** (1):

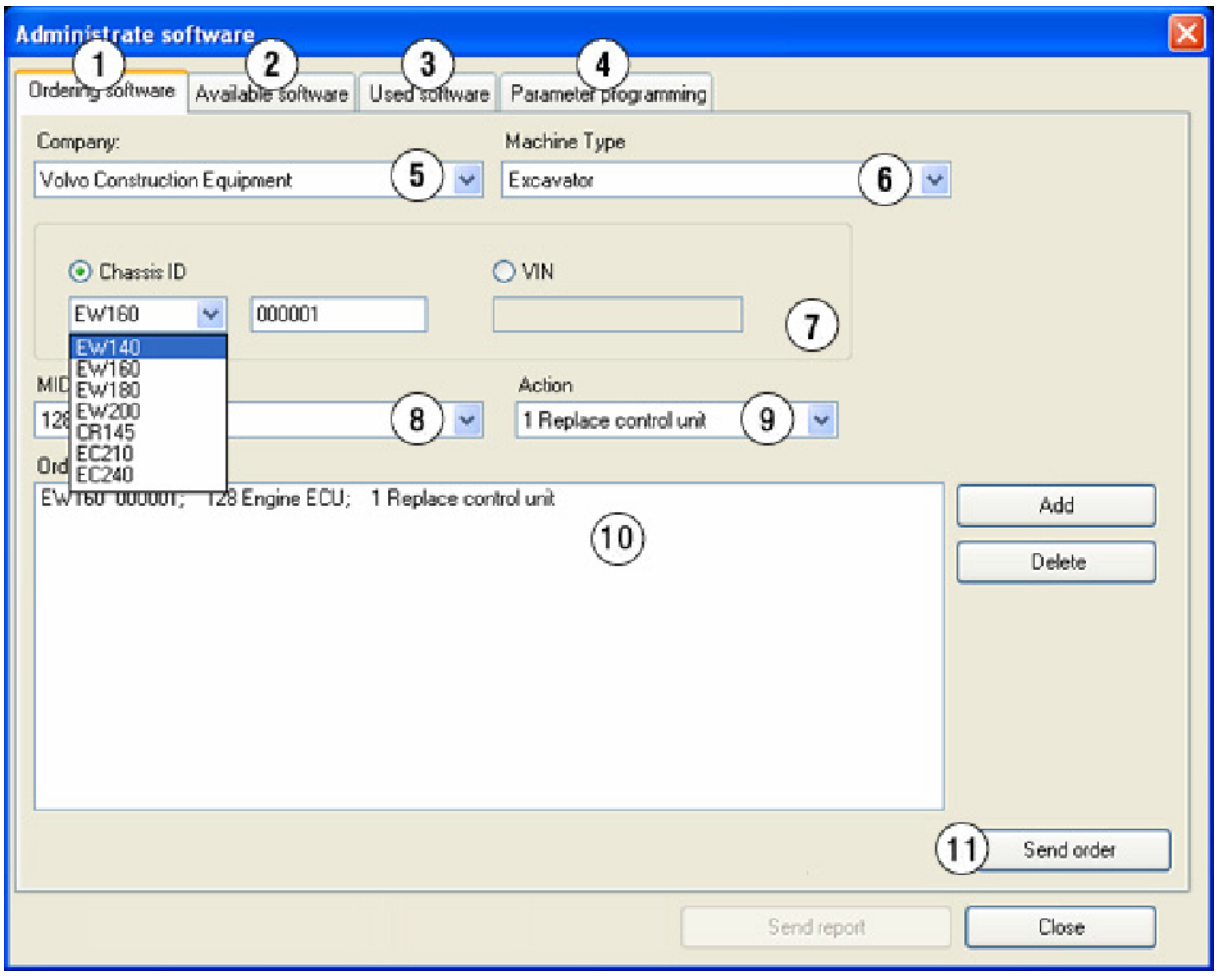
- Company (5)
- Electrical system (6) (Applicable to Volvo Trucks, Volvo Buses, and UD Trucks)
- Machine type (6) (Applicable to Volvo CE)
- Chassis ID (7)
- MID (8)
- Action (9)
- Click on Add.
- The software to be ordered is listed in field (10).
- When the order form is complete, send the order (11).

A connection to the central system is established. Enter the digipass generated password when requested. The software is downloaded.

Note: Feedback is required between downloads in order to download the same software to the same chassis ID more than once.



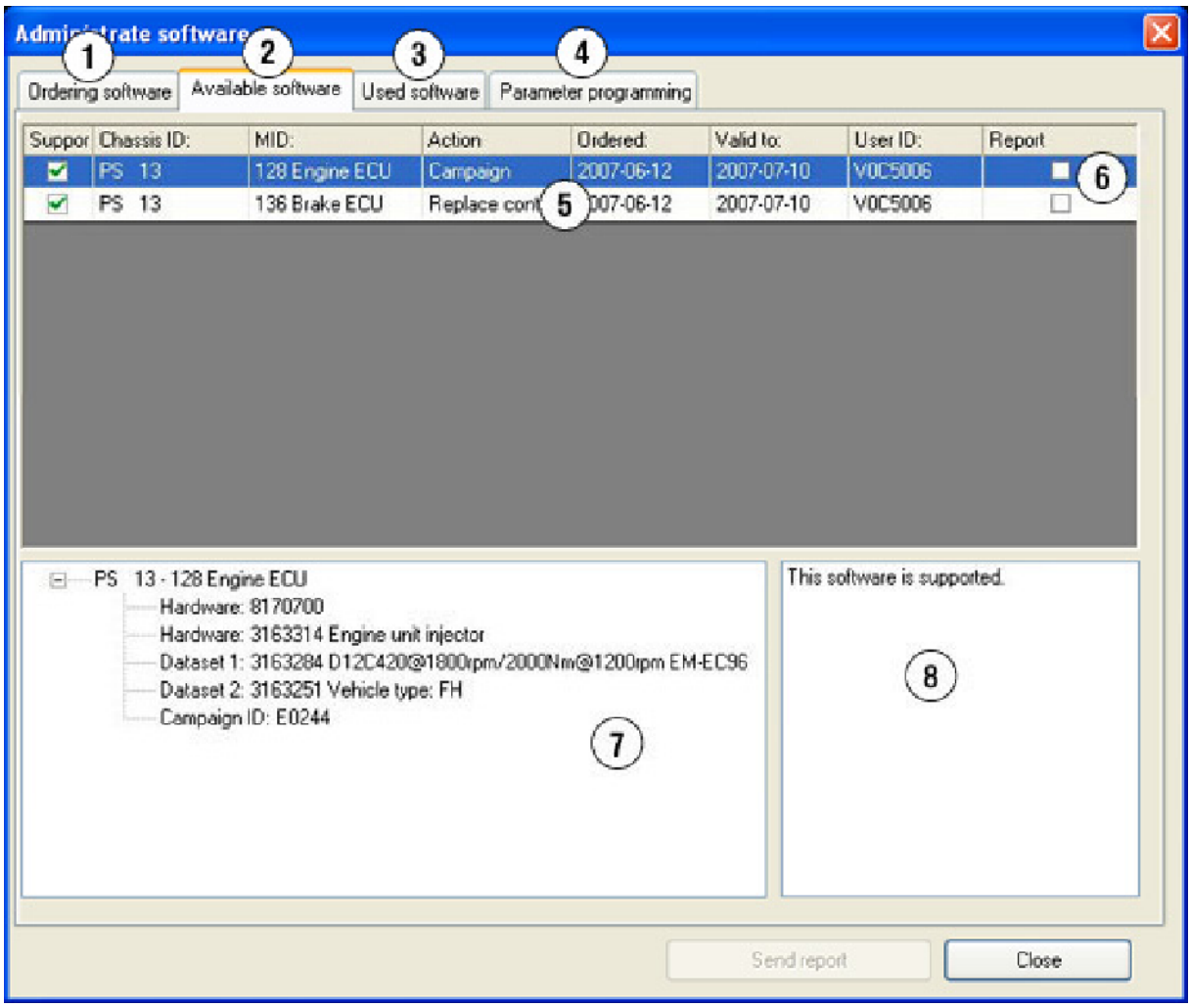
Applicable to Volvo Trucks, Volvo Buses, and UD Trucks



Applicable to Volvo CE

You can check which software is available under tab **Available software** (2), once software downloading is complete.

- The software in field (5) is available for programming the given control units at any time during the following 28 days.
- If you highlight a software in field (5), information about it is shown in field (7).
- Information showing if the software is supported or not is shown in field (8).



Program the control unit

No connection to the central system is established to program the control units. Otherwise operations are carried out as usual.

If an engine control unit is programmed, a label is printed. To see the printed label, go to **Print Label...** in the **Tech Tool** menu.

Send report

A report must be sent as soon as connection to the central system is possible.

If a report is not sent, all downloaded software will be treated as if it has **not** been used. It is therefore very important to send the report.

Twenty one (21) days after downloading, a message is shown explaining that there is software to report

Note: If feedback is not carried out in time the downloaded software becomes unusable. The User will be charged whether the software is used or not. If feedback is not carried out in time it may also lead to faults in VDA.

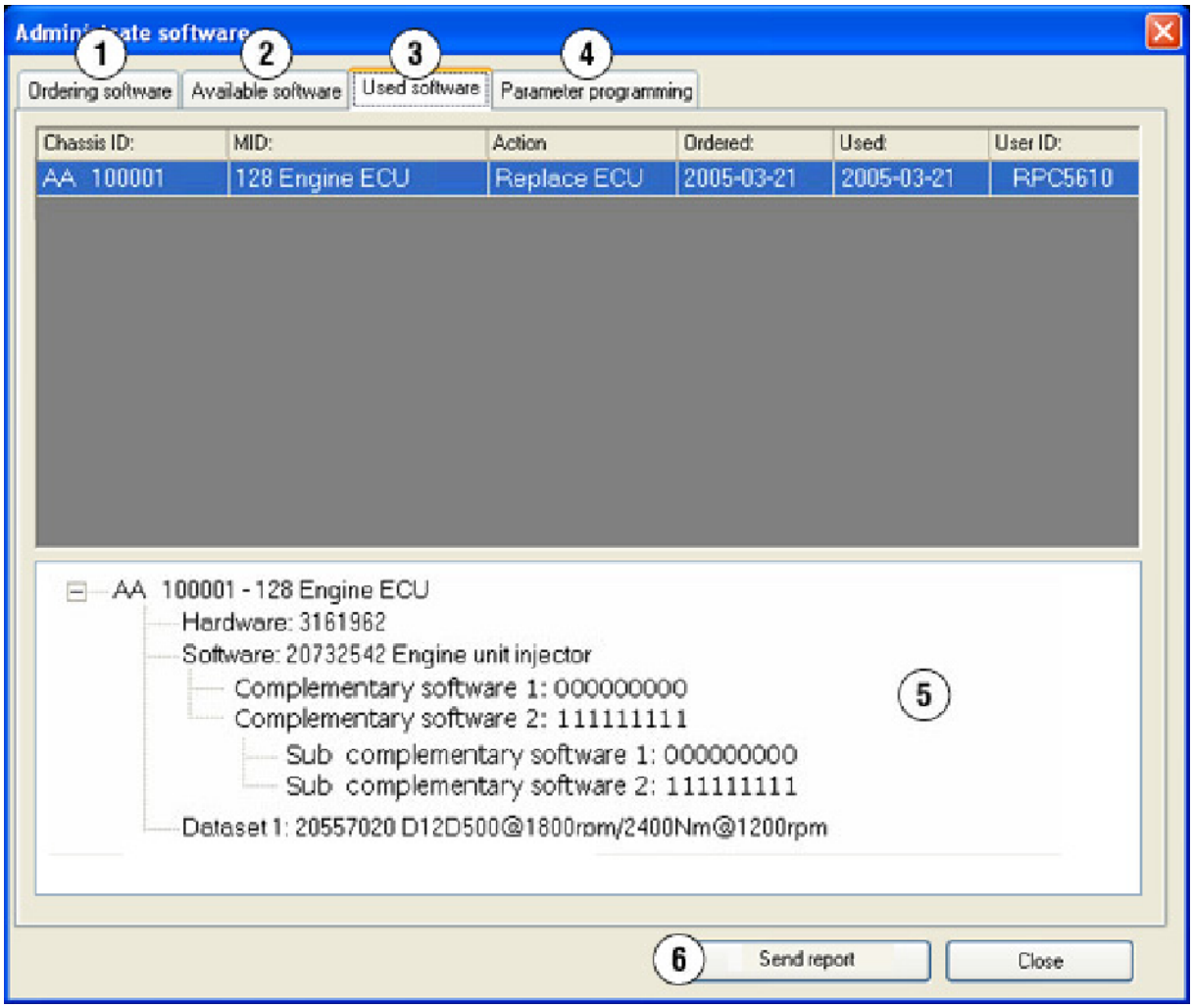
Report unused software

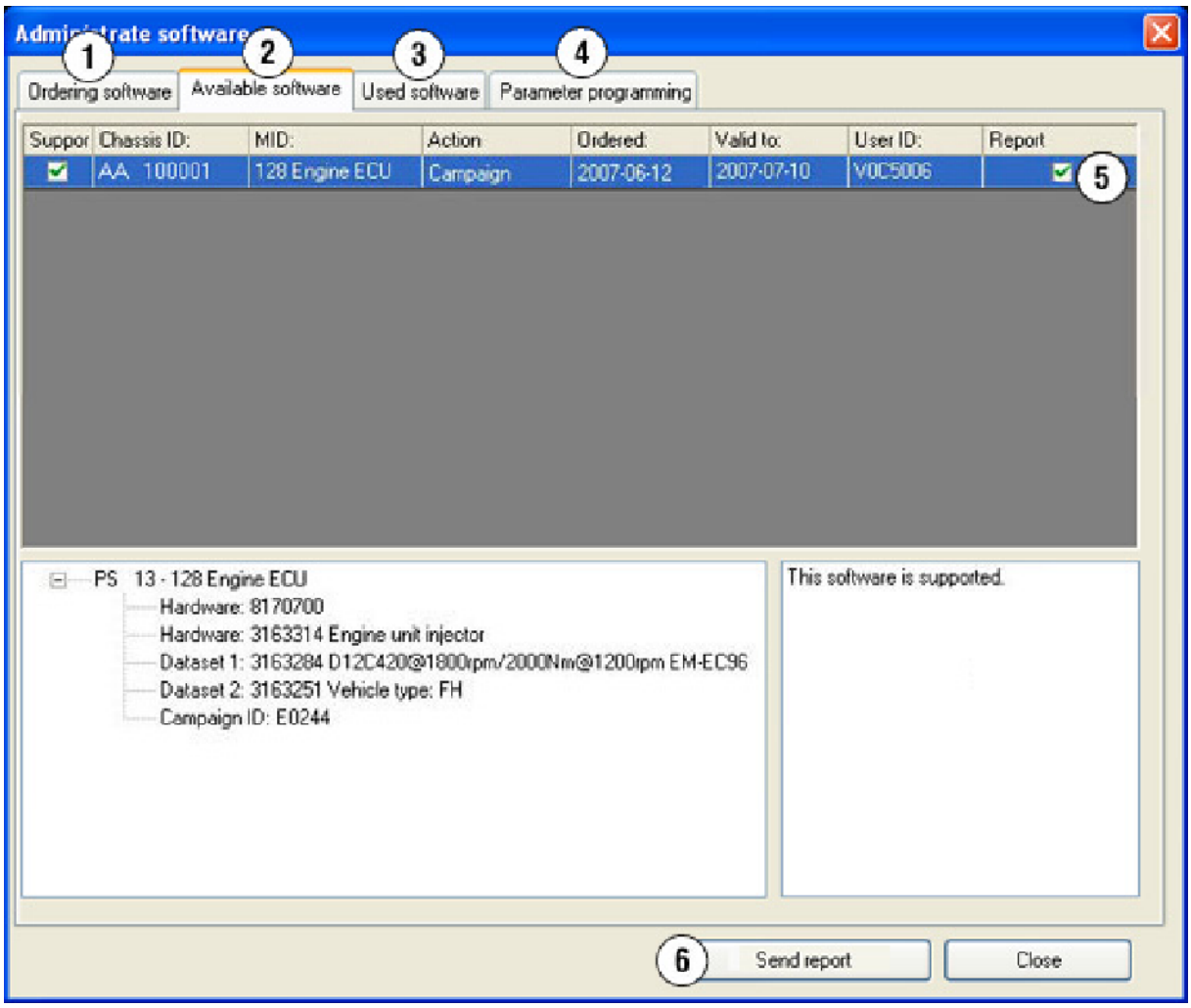
- In the **Tech Tool** menu, select **Administrate software...**.
- All software that has not been used, and is therefore still available, is listed under tab (2) **Available software**.
- Select the checkbox in the **Report** column (5) for the software you wish to report as unused.
- Click on **Send report** (6).

Report used software

- In **Tech Tool** menu, select **Administrate software...**.
- Enter tab (3) **Used software**.
- Select the software you wish to report from the table.
- More information is available in field (5) for each software.
- Click on **Send report** (6).

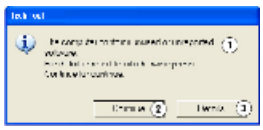
You are connected up to the central system. Enter your password when requested. The report is now sent to the central system.





Message concerning unused or non-reported software

If unused or non-reported software is found in the computer when it is started, the following message is displayed:



The message states that the computer contains unused or unreported software (1).

If you wish to continue logging in, select **Continue** (2).

If you wish to see details of the unused or non-reported software, select **Details** (3). Window **Administrate software** opens. For instructions on how to report used or unused software see Report unused software and Report used software.

Parameter programming

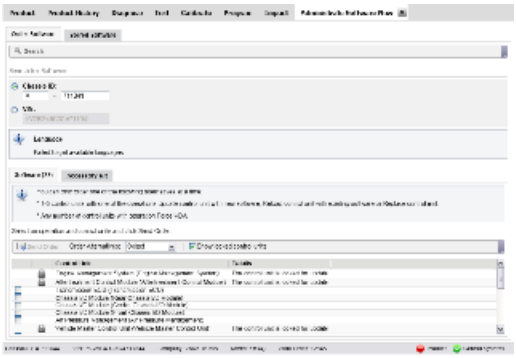
If parameter programming (for parameter level 3) has been performed while not been connected to the central systems, the saved parameter changes are shown under tab Parameter programming (3). You can now select to update the central systems with this information.

- Go to tab (3) **Parameter programming**.
- Table (4) shows which parameters are changed but not reported. If the remaining reporting time is less than one week, the text is marked in red.
- Click on **Send report now** (5).

You are connected to central systems. Enter your password when requested. The report is now sent to central systems.

Administrate Software New...

Select **Administrate Software New...** in the Tech Tool menu. A new tab opens. You can close **Administrate Software New...** by clicking the **x** on the tab.



Search for software to order

1. Select the tab **Order Software**.
2. Enter a **chassis ID** or a **VIN** .
   Chassis ID is preselected but if you want to search by VIN select VIN.
3. Click **Search**.

The table in the **Campaign** tab will show a list of available campaigns. If there are no campaigns the **Software** tab will be opened instead with the search result. The number of available campaigns and software will be shown in the tab headings.

Order a campaign

1. Select the **Campaign** tab.
2. Select the campaign you want to order by clicking the row in the table.
3. Click **Send Order**.

Note: You can only order one campaign at a time.

Order software

1. Select the type of software operation you want to order.
2. Select one or more control units by selecting the corresponding checkboxes.
3. Click **Send Order**.

Order software to replace a control unit

1. Select **Replace control unit** as the type of software you want to order.
2. Select one or more control units by selecting the corresponding checkboxes.
3. In the red marked fields, select the hardware you want to replace.
4. Click **Send Order**.

Order accessory kit

If you already know the number of the accessory kit you want to download, you can order it directly.

1. Select the **Accessory Kit** tab.
2. Enter the number of the accessory kit you want to order.
3. Click **Send Order**.

Order languages

1. Select the **Language** tab.
2. Select one or two languages.
3. Click **Send Order**.

View stored software

The tab **Stored Software** shows if there are stored software on the computer. Software that is used is indicated with an icon. Select a row to see details about the software.

Report unused software

1. Select the tab **Stored Software**.
2. Select the software you want to report as unused by selecting the corresponding checkbox. You can select one or more items.
3. Click **Send Report**.

Note: Used software will be reported automatically.

Communication unit 888 series

The communication units are used to enable communication between a computer and a product.

Note: Information about special tools are not listed in this help. Go to Impact or Prosis for more information.

Communication types

There are three different ways of connecting the communication unit; via USB cable, directly to communication unit (wireless) or via an access point (wireless). The communication type for a new communication unit is by default via USB cable.

All settings must be made connected via USB cable. When the settings are completed, the USB cable can be disconnected if a wireless connection type is chosen.

How to select communication type

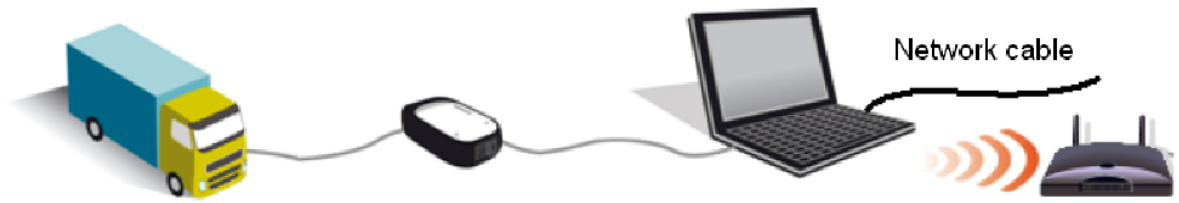
A workshop using wired network (LAN) should select from these two communication types:

- Via USB cable connected between computer and communication unit and a wired network connection.
- Directly to communication unit (so called ad hoc communication) and with wired network.

A workshop using wireless network (WLAN) should select from these two communication types:

- Via access point, this is the recommended connection type. Via access point means wireless communication between communication unit and the computer via an access point (wireless local network). Connection via access point can also be used on stationary computers.
- Via USB cable connected between computer and communication unit and a wireless network connection.

Via USB cable



USB cable connected between computer and communication unit and a network connection via wire or wireless.

The communication type for a new communication unit is by default **via USB cable**. No settings update is necessary for this type of communication.

Note: Do not use a USB hub (to enable connection of more than one USB device) as each cable joint can cause problem in this signal level.

Directly to communication unit

Directly to communication unit means that there is wireless communication between the computer and communication unit and a network cable is connected to the computer.

1. Connect the communication unit to the product.
2. Select communication unit and **USB + Directly to communication unit** in the Configure communication unit 88890020/88840133/88890300 window.

Note: If it is not possible to establish communication after installation, contact the local IT-support or network technician.

Security level Directly to communication unit

Communication is performed using 128-bit WEP, Wired Equivalent Privacy. The WEP key is generated automatically and is not seen during the configuration.

Via access point

Via access point means wireless communication between communication unit and the computer via an Access point (wireless local network). The connection between computer and local network can be wired or wireless. The communication type via Access point can also be used on stationary computers.

This type of communication requires that Tech Tool and the communication unit are correctly configured in relation to the local network. This needs involvement of your local IT-support or network technician.

1. Contact the local IT-support or network technician before installation.
2. Connect the communication unit to the product and connect the communication unit to the computer via the USB cable.
3. Configure the communication unit in **Communication Unit** tab in the **Settings** dialogue. Click the **Configuration...** button and select communication unit and **USB + Access point**.
4. Select the **Access point** tab for further setup, for more information see Configure communication unit 88890020/88840133/88890300.

Security level via access point

There are three security level alternatives for the communication unit. One of these alternatives must be selected.

- WEP 128-bits and MAC address. Communication is performed using 128-bit WEP, Wired Equivalent Privacy. The WEP key is written in during configuration. The MAC address is to be written into the access point for additional security.
- WPA-PSK (TKIP). Communication is performed via WPA, Wi-Fi Protected Access.
- 802.1x RADIUS authentication.

Example how to connect via access point (wireless router)

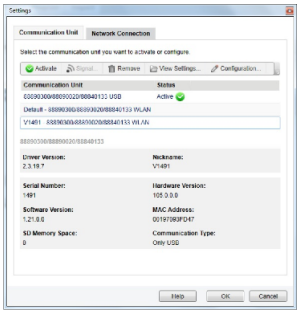
Connection of a communication unit via access point requires that Tech Tool and the communication unit is correctly configured in relation to the local network. This needs involvement of your local IT-support or network technician. Below is an example of how the setup of an access point is connected to the configuration of the communication unit.

1. Configuration of a wireless router at your location. The example used here is:
   – IP Address: (each unit has a unique IP Address)
   – Subnet Mask: 255.255.255.0

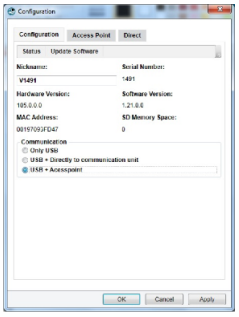
– Default Gateway: 190.0.0.255

2. Connect the computer to your wireless network. You can now setup the communication unit.

   Note: You will be prompted to configure the communication unit the first time you connect it to the computer.
3. In the Tech Tool menu, select **Settings**, **Communication Unit** tab.

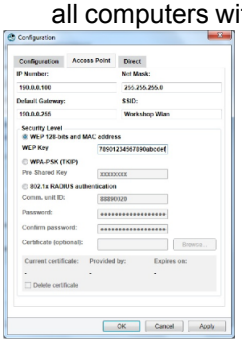


4. Click the **Configuration...** button and then select **USB + Access point**.



5. Select the **Access point** tab and enter the credentials from your wireless router. These are used in the example:
   – IP Address: (each unit has a unique IP Address)
   – Net Mask: 255.255.255.0

– Default Gateway: 190.0.0.255 (from the network configuration on the computer)
– SSID: Workshop WLAN (the SSID of the access point, a unique identification shared among all computers within the wireless network)

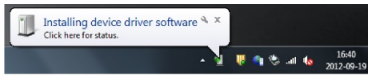


6. Select security level, see Security level via access point. Keys for both types are generated by the wireless router and should be obtained from your local IT-support or network technician.

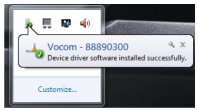
Hardware installation

This is how it should appear the first time you connect the communication unit to a computer. The pictures in the installation instruction serves as illustrations, the actual dialogues and pop-ups may look different depending on which communication unit and Windows you are using.

A small window in the lower right corner will state **Installing device driver software**.



After a while, a small pop-up appears in the lower right corner and states that new hardware has been installed and is ready to use.



LEDs description

The communication unit has a number of different coloured LEDs. These LEDs show the status of the communication unit and indicate warnings, etc. Refer to the table below for an overview.

Colour	Text on label	Description
Green	Power USB / Communication	The communication unit receives power via the USB port. The LED flashes during communication. If this LED and the red **Critical Error** flash, the internal software is faulty or is missing completely. Call your helpdesk for assistance.
Green	Power Product	The communication unit receives power via the product cable.
Blue	WLAN	WLAN active. The LED shows the strength of the radio traffic. The various strengths are indicated by the LEDs illumination ratio between **ON** and **OFF**. The more frequently the LED illuminates, the better the radio traffic.
Yellow	Error Warning	An error has been detected in the communication unit. See View communication unit status on how to read the information. Connect the USB cable between the computer and the communication unit before reading. These errors are not critical.
Yellow	Temperature Warning	The communication unit is outside the approved temperature range, -40°C (-40°F) to +85°C (+185°F). Warm or cool the unit by placing it in a room at normal temperature. **Note:** If the unit is equipped with a WLAN function, the temperature range is 0°C (32°F) to +45°C (113°F). When the USB cable is connected, WLAN is disconnected and -40°C (-40°F) to +85°C (+185°F) applies instead.
Red	Critical Error	A critical error has been detected in the communication unit. Perform the following actions: 1. See View communication unit status on how to read out the information. Connect the USB cable between the computer and the communication unit before reading. 2. Contact your helpdesk for assistance. 3. If the communication unit must be replaced, use the normal accessory warranty if the unit is less than 12 months old. If this LED and the green **Power USB / Communication** flash, the internal software is faulty or is missing completely. Call your helpdesk for assistance.

Note: All LEDs light up during startup of the communication unit. This is to check that all the LEDs function.

Fault tracing

Known problems

The following problems can occasionally occur when using communication unit 88890020:

- **Power surge** — **Power surge on hub port** is shown in the status field, of some computers, when the USB cable is connected to the communication unit 88890020. When this message is shown constantly, in combination with the LED for power USB not being lit, it indicates that the communication is malfunctioning. This could be caused by a broken wire, a defect communication unit or incorrect user handling. Disconnect the USB cable immediately to avoid problems with the computer USB port.
- **Powering up** — Communication unit is not powering up when it is connected only to the computer. Some computers have problem to power supply the communication unit via USB. This problem is related to the 4 m long USB cable which may cause the voltage to drop. To solve this problem please connect product cable to power supply the communication unit. If that does not work, open the Device Manager (Control Panel/Administrative Tools/Computer Management/ Device Manager) to see if there is an exclamation mark in front of the communication unit. Right click the communication unit and select Update Driver.

Fault code description

The fault codes for the communication unit are found in the **Status** dialogue. You find the Status option when you have chosen **Configuration** of a communication unit through the **Settings** dialogue. For more information see Configure Tech Tool. The table below lists the fault codes, their cause and corrective actions to solve them.

Error code	Cause	Action
1	Fault in application flash-memory	Send the communication unit for repair.
2	Fault in boot program flash-memory	Send the communication unit for repair.
3	Fault in parameter flash-memory	Send the communication unit for repair.
4	Parameter flash-memory worn out	Send the communication unit for repair.
5	Internal RAM error	Send the communication unit for repair.
6	External RAM error	Send the communication unit for repair.
7	A fault occurs when accessing to the USB chip.	Send the communication unit for repair.
8	A fault occurs when accessing to the temperature sensor.	Send the communication unit for repair.
9	The serial SDIO bus cannot be accessed.	Send the communication unit for repair.
10	The serial SPI bus cannot be accessed.	Send the communication unit for repair.
11	There is a fault in the CPU.	Send the communication unit for repair.
12–19	There is a hardware fault.	Send the communication unit for repair.
20	A power fault has been detected by the communication unit.	Check the communication unit power supply first. If the power supply is OK, send the communication unit for repair.

Error code	Cause	Action
21	Supply voltage is too low.	Check the voltage to the communication unit.
22	Supply voltage is too high.	Check the voltage to the communication unit.
23	The temperature is too low.	Warm up the communication unit and try again.
24–25	The temperature is too high.	Let the communication unit cool down and try again.
26–29	There is a fault in the environment around the communication unit.	Contact helpdesk for additional information.
30	There is no USB power supply.	Check the USB cable. If it is OK, send the communication unit for repair.
31	Power surge on USB-port #1	The USB unit on port 1 is consuming too much power and has been turned off.
32	Power surge on USB-port #2	The USB unit on port 2 is consuming too much power and has been turned off.
33	An unsupported USB unit on port #1	The USB unit on port 1 is not supported by this software. Change the software or acquire a supported unit.
34	An unsupported USB unit on port #2	The USB unit on port 2 is not supported by this software. Change the software or acquire a supported unit.
35–39	There is a fault with the USB connections.	Contact helpdesk for additional information.
40	SD card not supported	Change SD card.
41	Fault when accessing SD card	A fault occurred when reading or writing to the SD card. Change SD card.
42	SD card FULL	Empty the SD card or replace with another card.
43–49	There is a fault with the SD card.	Contact helpdesk for additional information.
50	There is no WLAN card.	Send the communication unit for repair.
51	The WLAN card is not functioning correctly.	Send the communication unit for repair.
52	No access points accessible	Move the communication unit to position with better reception.
53	WLAN signal strength too low	Move the communication unit to position with better reception.
54	The WLAN manager has detected a fault.	Restart the communication unit.
55	A fault was detected during network verification.	Check the configuration and make sure that the network has the correct parameter settings.
56–59	The WLAN manager has detected a fault	Contact helpdesk for additional information.
60	A fault occurred during the verification process.	Check the verification method and the security keys in question.
61	A fault occurred during the encryption process.	Check the encryption method and the security keys in question.
62–65	A fault occurred in security management.	Contact helpdesk for additional information.
66	A fault occurs when accessing to the TCP/IP port.	The port may already be open for transfer. Restart the communication unit.
67	The is a TCP/IP conflict in the network.	Change TCP/IP number to avoid this problem.

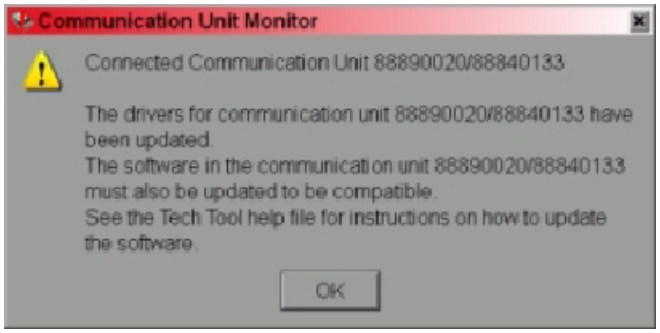
Error code	Cause	Action
68	A time-out occurred while waiting for a TCP/IP packet.	Communication broken. This fault code is only intended for fault tracing. Continue using the communication unit as usual.
69	A fault is reported from the TCP/IP stack.	Restart the communication unit.
70–75	There is a fault related to the TCP/IP stack.	Contact helpdesk for additional information.
76	A fault has occurred in the SAE J1708 communication.	Check the network for short-circuits. If there are none, change the communication unit.
77	A fault has occurred in the ISO 9141 communication.	Check the network for short-circuits. If there are none, change the communication unit.
78	A fault has occurred in the ISO 9141 5 volt communication.	Check the network for short-circuits. If there are none, change the communication unit.
79	A fault has occurred in the CAN communication.	Check the network for short-circuits. If there are none, change the communication unit.
80	Wrong logon ID	Wrong logon ID given at start of communication.
81–89	There is a general fault.	Contact helpdesk for additional information.

Communication unit monitor

Communication Unit Monitor is an application that checks if the software and driver of the communication unit matches.

Icon	Communication unit monitor status in taskbar
	Displayed when Communication Unit Monitor is active.
	Displayed when the software in the communication unit has to be updated.

When connecting a communication unit the **Communication Unit Monitor** checks if the software in the communication unit and the driver are compatible. If they are incompatible a message will be shown informing that the software has to be updated.



See Update communication unit software for information on how to perform the update.

Client update

Client Update is a program handling updates of applications via network. It is designed as a wizard in three steps; search for updates, download, and installation. It has four icons, each describing different status. One of these icons is always visible in the taskbar.

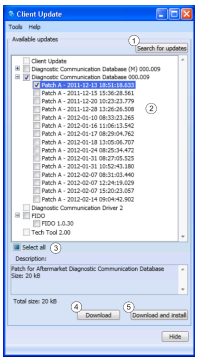
When the **Client Update** tool is started it is possible to select and download available updates. When the updates are downloaded they must be manually installed. It is possible to select automatic installation of the updates. The installation will then start as soon as the updates have been downloaded. Note! Close Tech Tool before starting the installation of updates.

Note: It is important to close **Tech Tool** before starting the installation of updates.

Icon	Client Update status in taskbar
	Displayed when Client Update does not do anything and while it is checking for available updates.
	Displayed when Client Update has found available updates and when updates have been downloaded but not installed.
	Displayed when the download of updates is in progress.
	Displayed when the download or installation of an update failed.

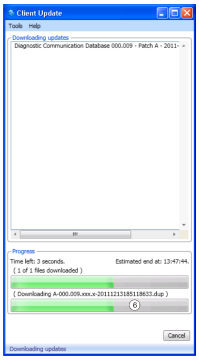
How to update Tech Tool

1. Click the **Client Update** icon in the taskbar. The following window is displayed.

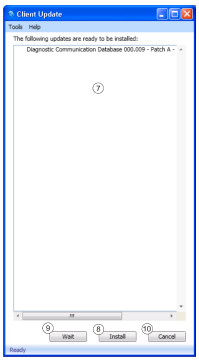


2. Click **Search for updates** (1). Files that can be downloaded are shown here (2).
3. Select which updates you want to download by selecting the checkbox in front of them (2). If you want to download all available updates select the checkbox **Select all** (3).

   Note: When an update is selected previous updates will be downloaded as well, since the updates must be installed in a certain order.
4. Click **Download** (4) to start download the selected files, or click **Download and install** (5) to automatically install updates as the download is finished.



5. The downloading process is shown in the window (6).



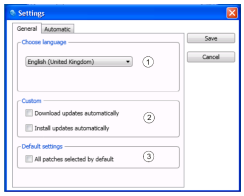
6. When the download is finished updates ready to be installed are shown here (7).
7. Click **Install** (8) to install the downloaded updates.

Note: Instead of installing the updates you can select to either wait with the installation or to cancel it. Clicking the **Wait** (9) button implies that Client Update will remind you to install the downloaded updates in a while. Clicking the **Cancel** (10) button implies that no installation will take place and that the downloaded files are removed.

Settings

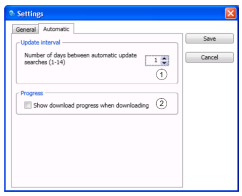
The **Client Update** settings are reached in the **Tools** menu . Changes in settings will not take effect until **Client Update** is checking for new updates.

General



In the **General** tab you can select which language you prefer to have **Client Update** displayed in (1) and decide if you want to download or install updates automatically (2). If you want all available updates to be selected for download by default, select this checkbox (3).

Automatic



In the **Automatic** tab you can set the number of days between automatic update searches (1) and decide if you want to view the download process while downloading (2).