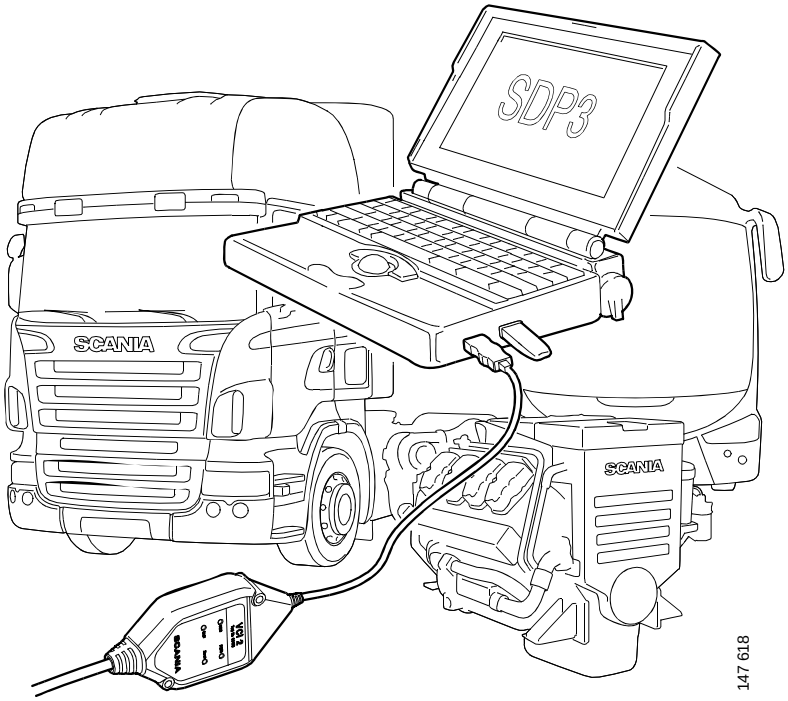
SDP:01

Issue 5 **en**

Scania Diagnos & Programmer 3

User instructions

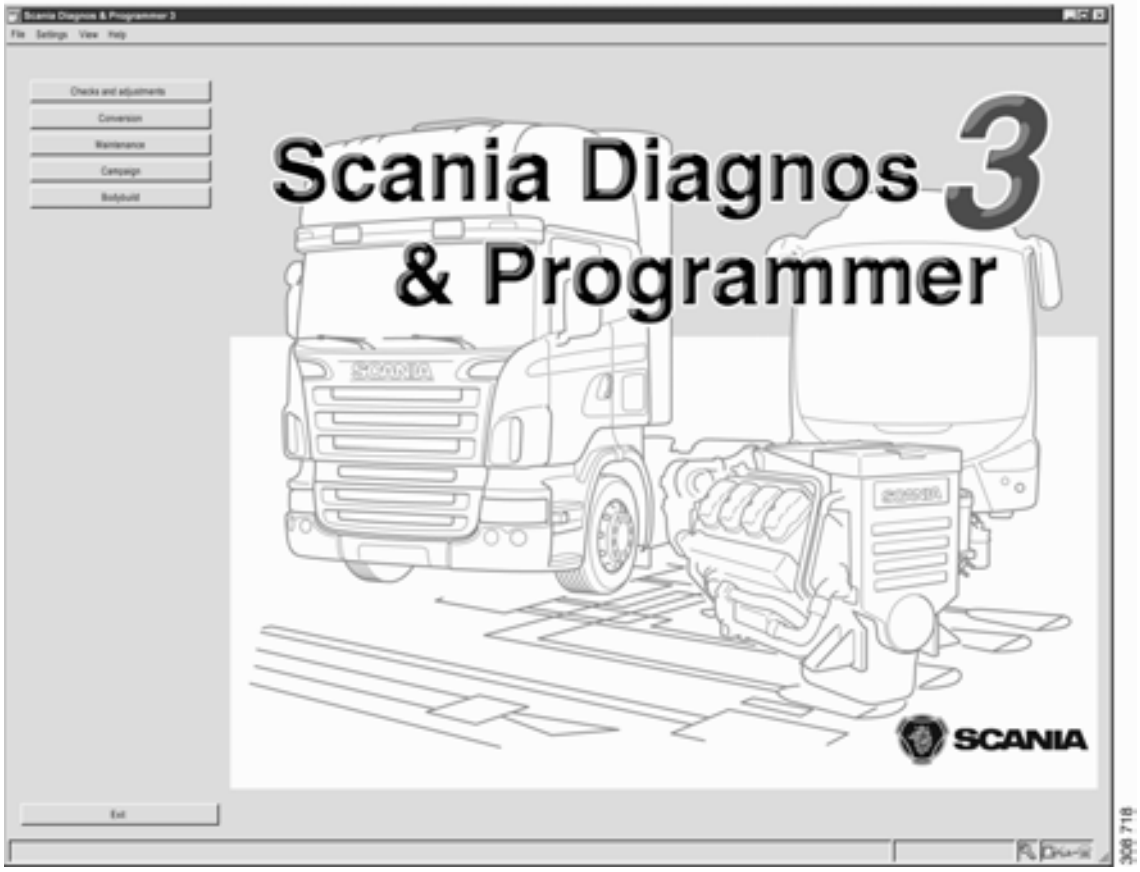


Contents

Introduction

General

Scania Diagnos & Programmer 3 (SDP3) communicates with Scania vehicles and Scania industrial and marine engines. The program has been developed to support the electrical system with CAN communication. The program is used for troubleshooting, adjusting customer parameters, calibrations, conversions affecting the electrical system and campaigns to update the control unit software.



Why SDP3?

Today's vehicles and especially today's electrical systems with their control units and distributed functions place greater demands on tools and technicians. It is both time-consuming and complicated to carry out troubleshooting on vehicles of such complexity. SDP3 has therefore been designed to support the mechanic during troubleshooting and thus reduce downtime.

SDP3 also supports the troubleshooting of industrial and marine engines.

An advantage of SDP3 is that there are more possibilities than before for the individual item, i.e. the vehicle or industrial and marine engine to which you are connected, to give a description of itself. SDP3 makes use of this and only displays information relevant to the vehicle/engine to which it is connected.

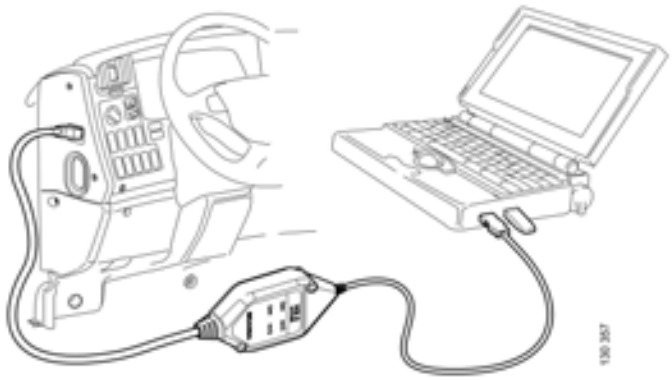
System requirements and ancillary equipment

System requirements

The system requirements applicable to SDP3 can be found on the Scania Technical Information web page which can be accessed via SAIL.

Ancillary equipment

Use of the program requires a PC, a USB key and a VCI2. These components must comply with the applicable system requirements, see System requirements, so that the program will operate correctly.

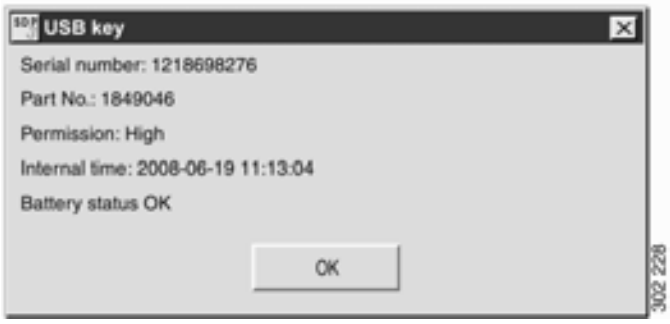


USB key

A USB key supplied by Scania is required. In accordance with the applicable agreements, the USB key is the property of Scania. This means that a stolen or lost USB key should be reported to Scania, where it is entered on a list of blocked IDs. To do this, contact your distributor who will in turn contact Scania.

You can find more information on USB keys in the "Warranty information bulletin" and in the VCI and USB procedures for external administration. These can also be found on the Scania Technical Information website which can be accessed via SAIL.

You will find information about the USB key that is used under Settings in the menu. The permission levels for the different types of USB keys that may be used are also described here.



Information about the USB key that is currently in use can be obtained under Settings in the menu.

The USB key controls permissions, i.e. which parts of the program you can access.

A different type of USB key is required depending on whether you will be working on a vehicle or an industrial and marine engine.

If accessibility is shown as BLOCKED it implies that Scania has entered the USB key in a list of blocked IDs. If permission is shown as UNKNOWN, this indicates that the USB key is of a different type from the one approved by Scania.

The USB key has an internal clock to make sure that the current version of SDP3 is used. The clock time matches the date when this version of SDP3 was installed. SDP3 will notify you in good time before a version ceases to be valid.

The permission level differs depending on the type of USB key used. The applicable permission levels are also described under Settings.

VCI2

The VCI2 used for SDP3 differs from the VCI used for SD2 and SP2. VCI2 is the interface that is used between the vehicle or industrial and marine engine and the computer and can be purchased from Scania as a special tool, part number 99 430.

Function of the lamps

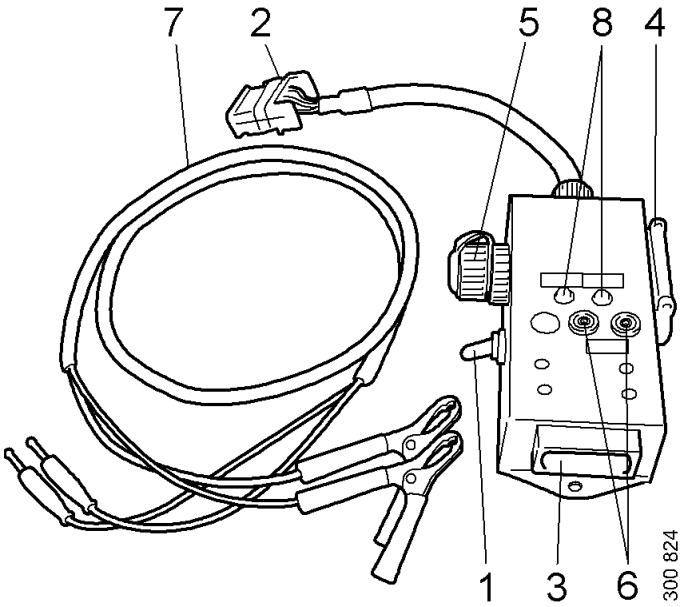
PWR (green)	The lamp lights up continuously when the VCI2 is supplied with voltage both from the vehicle or I/M engine and the computer. The lamp flashes when the VCI2 is connected to the computer.
USB (yellow)	The lamp lights up (flashes rapidly) when data is transmitted between the computer and VCI2 via the USB key.
CAN (yellow)	The light lights up (flashes rapidly) when data is transmitted between the VCI2 and the vehicle or I/M engine via the CAN bus.
Error (red)	The lamp lights up when there is a communication error on the CAN bus.

After connecting your VCI2 to the PC and starting SDP3, you can access information about VCI2 via Settings in the menu.

Information about VCI2 can be obtained under Settings in the menu.

Adapter for connection without diagnostic socket

An adapter must be used when connecting SDP3 to engine control unit S6 on industrial and marine engines without a diagnostic socket. The adapter is used together with the VCI2.



1 Switch

2 Connector to engine control unit connection B1

3 Connection for engine cable harness B1

4 Connection for VCI2

5 Connection for VCI2 with four-pin DIN

6 Connection for external 24 V power source

7 Cables for external power source

8 Lamps for battery voltage U30 (red) and for when the starter key is in drive position 15 (green)

Connection

In order to avoid any risk of a short-circuit: Make sure that the adapter switch is set to Off before the adapter is used.

If the engine is connected to other systems:

- Remove the engine control unit connector B1 and fit the adapter connector 2 instead.
- Connect the engine control unit connector B1 to the adapter connector 3.
- Connect the VCI2 to adapter connection 4 or 5.
- Check that you have battery voltage (red lamp) to the engine and turn the starter key to the drive position 15.

If a diagnosis is to be carried out on the engine without connecting other systems:

- Remove the engine control unit connector B1 and fit the adapter connector 2 instead. Leave the engine control unit connector disconnected.
- Connect the VCI2 to adapter connection 4 or 5.
- Connect an external 24 V power source to the adapter connections 6 via the cables supplied 7.
- Set the adapter switch to On so that the green lamp for starter key in drive position 15 lights up.

Safety

Always ensure that a task is carried out in such a way that there is no risk that you or anyone else will be injured.

Road testing the vehicle

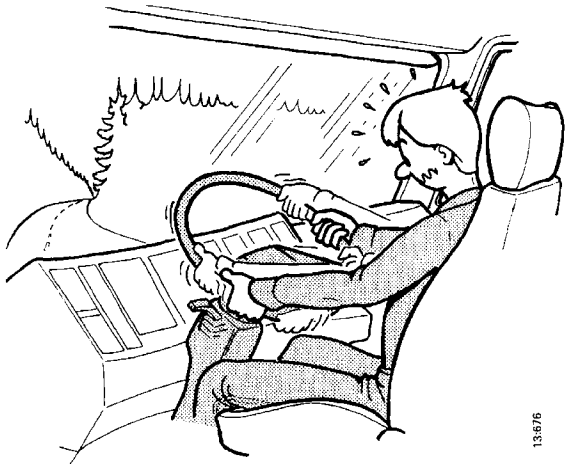
Remember that there are some risks if you carry out a road test when the program is connected. In order to carry out a road test, two persons are required: one to drive the vehicle and one to operate the program. Scania strongly advises against road tests on public highways with the VCI2 and/or computer connected unless otherwise specified.

Vehicle components can be unexpectedly activated or the engine can stop (causing the loss of power steering).

Connection and disconnection

Connecting or disconnecting of the VCI2 and/or PC when the vehicle is moving is forbidden.

The vehicle must be stationary when the VCI2 and/or PC is connected or disconnected. Other instructions for use can be found in the program.



Adjustment

During adjustment, settings in the control units are changed. Some of these changes, or combinations of settings, may have an adverse effect on the characteristics of the vehicle/ engine without prior warning. Incorrect use of the software therefore entails a risk of personal injury, damage to property and a breach of the relevant legislation.

Adjustments should therefore only be carried out by personnel who are receiving ongoing training by the Scania organisation on SDP3 and the vehicles and industrial and marine engines concerned, and who are studying the SDP3 user instructions and other service instructions on an ongoing basis.

WARNING!

Adjustment of parameters should only be carried out on stationary vehicles.

Installation

Note: Before the program is distributed, it has been virus-checked as comprehensively as possible. Make sure that the computer on which the program is installed is virus-free!

In order to install the SDP3 program, Administrator authority is required.

Installing programs

1 Close all active programs except Windows.

2 Regardless of whether the file was downloaded from the Internet or comes from a CD, proceed as follows:

3 Double-click the program file.

4 Installation starts and a number of dialogue boxes will be displayed. Follow the instructions in these dialogue boxes.

In order to ensure that the computer has the correct drivers and software for the USB key and VCI2, you must insert them in the computer during installation.

When installation is carried out for the first time, the Windows hardware wizard starts. Work through the hardware wizard and then continue with the installation.

Installing SDP3 may involve several installations and it is only when all these have been carried out that you can use the program correctly.

Clickable shortcuts

Clickable shortcuts placed on the computer desktop after installation:

Start SDP3.

Open SDP3 Configurator to change the language or the logging level.

At installation time, two directories are created which you can also access via shortcuts on the desktop.

- **Reports**: Saved documents are stored here, e.g. printouts from work in SDP3.
- **Log files**: Information recorded while working in SDP3 is logged here. This information may be useful for troubleshooting, for example. The logging level can be set in SDP3 Configurator.

Working with SDP3

The following pages contain a description of how SDP3 works. Some parts are only suitable for working with a vehicle and a USB key with the highest permission levels. This means that if you are working on an industrial and marine engine or have a USB key with limited permission levels, not all the sections described are available.

The user instructions take their examples from vehicles. For those sections that are accessible to industrial and marine engines, the texts and illustrations in the instructions still refer to vehicles.

Starting a task

When you have started the program, the start window will be displayed. Select here the type of task you wish to carry out: Checks and adjustments, Conversion, Maintenance, Campaign or Bodywork. More information about the relevant work option can be found on the following pages.

Selecting the work option: Checks and adjustments, Conversion, Maintenance or Campaign.

After the descriptions of the different work options, information is provided about:

- Connection
- Spare parts programming
- Communication
- Graphic symbols in the program

Checks and adjustments

In the Checks and adjustments work option, you can carry out troubleshooting and change adjustable values.

Here you can access information in order to troubleshoot the different control systems and their related systems and circuits. There is also an option to troubleshoot via user functions.

You can also reset parameters in the vehicle control units and carry out calibrations and resetting.

Procedure when checking

A suitable procedure for troubleshooting is described here.

Start by finding out what problems the customer has experienced.

1 Start SDP3.

2 Start the Checks and adjustments work option.

3 Go to Electrical system and read the registered fault codes.

All registered fault codes will be displayed under Electrical system.

If there are fault codes connected with the problems which the customer has experienced, continue troubleshooting via Electrical system by checking the circuits concerned and rectify the fault.

Otherwise, you should carry out troubleshooting via User functions. Start by checking that the vehicle has a user function which could be connected with the problem experienced by the customer. Then continue troubleshooting using the information provided under User functions.

Troubleshooting via Electrical system

Under Electrical system, you can troubleshoot in relation to the electrical system. The approach is in principle the same as the one used in SD2 for troubleshooting. The main difference is that SDP3 communicates with all the vehicle control units at the same time.

You can obtain a description of the electrical system with its related circuits and components. You can read fault codes, read signals, activate components and carry out tests, adjustments and calibrations.

Navigation under Electrical system has the same structure as the vehicle's electrical system.

1 Vehicle

2 System

The vehicle has a number of electronic control systems. The system is the control unit with its components and circuits.

3 Control unit

Information about the control unit's hardware is presented here.

4 Server

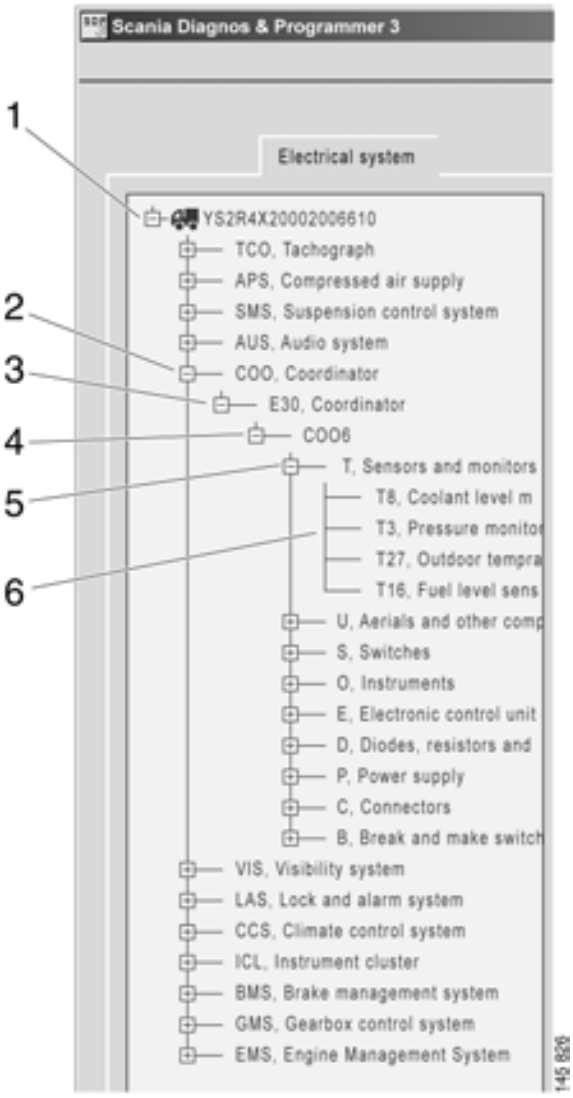
Information about the control unit's software is presented here, i.e. the functions which are available in the control unit. Here you can carry out checks related to the control unit, carry out adjustments and calibrations.

5 Component group

The circuits are grouped under each component group according to the main component in the circuit.

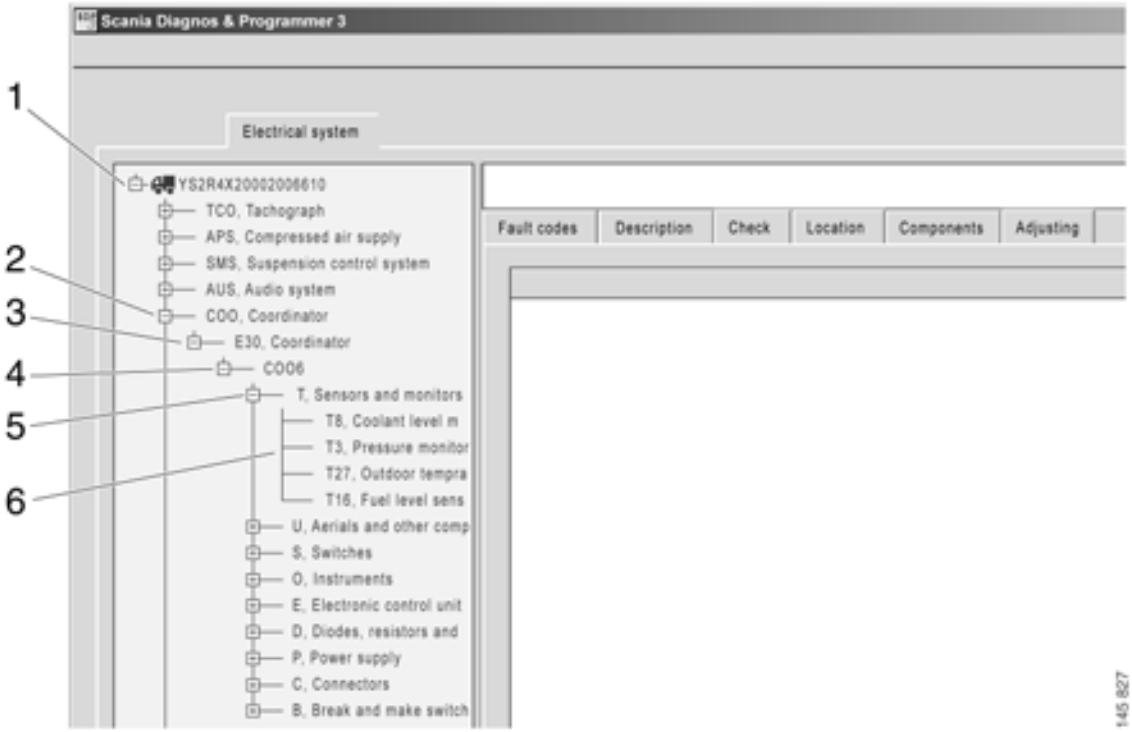
6 Circuit

Here you can obtain information to help you troubleshoot the vehicle's electrical circuits.



Levels when navigating under Electrical system.

The content under the different tabs varies, depending on where you are in the navigation tree.



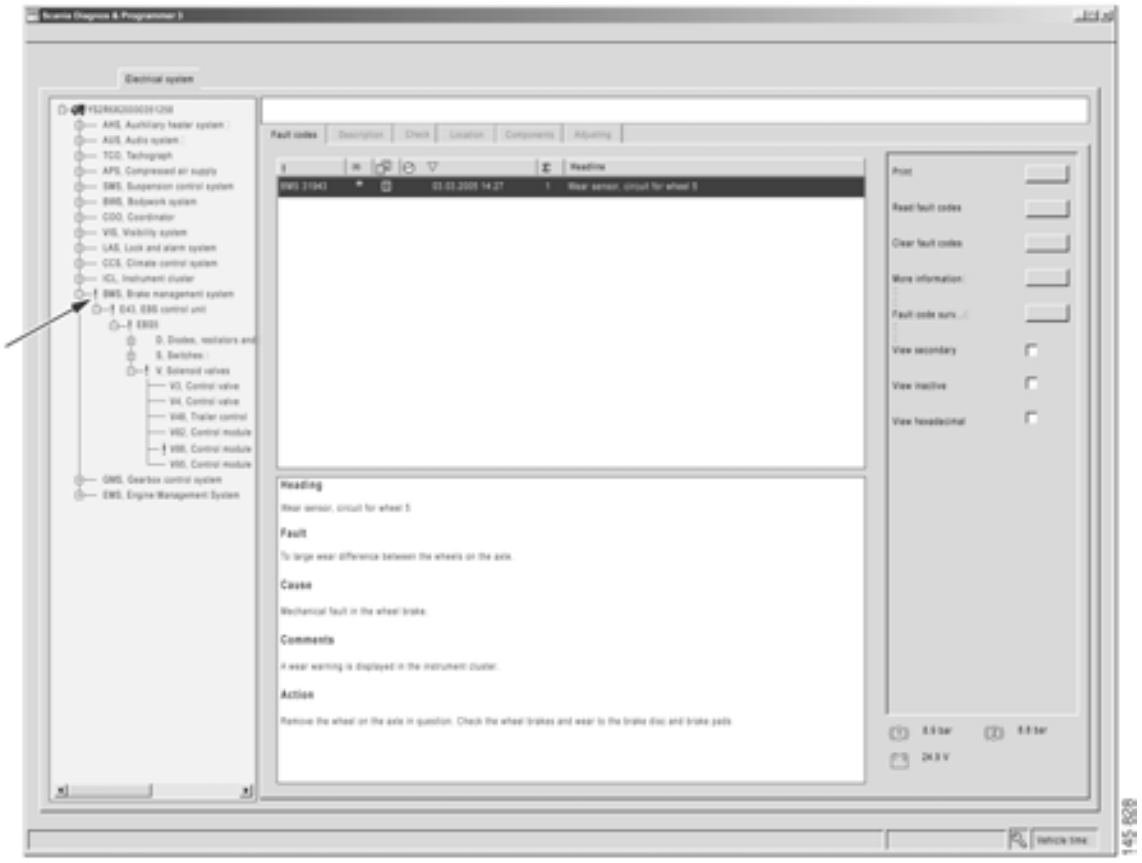
The table on the following page gives an indication of what sort of information the tabs contain on the different levels. The numbers in the illustration refer to the numbers in the table.

	Fault codes	Description	Checks to be made	Location	Components	Adjustment
1 Vehicle	Fault codes for all systems in the vehicle.					
2 System	Fault codes for one system.	Description of the system.				
3 Control unit	Fault codes for the control unit.	Description of the control unit.		Location diagram for control unit.	Overview of the control unit and its circuits.	
4 Server	Fault codes for a server in the control unit.	Description of the server.	Troubleshooting the vehicle using tests linked to a control unit.			Adjusting and calibrating the control unit.
5 Component group	Fault codes for circuits in the component group.					
6 Circuit	Fault codes for the circuit.	Description of the circuit.	Troubleshooting a circuit. Shows circuit diagram, and option to read and activate signals.	Location diagram for circuit components.	Description of circuit components.	

Fault codes

You can read and clear fault codes here. You can see which fault codes are registered. You can choose to view fault codes for the entire vehicle or for each control unit.

The exclamation mark indicates that there are fault codes. The exclamation mark is displayed all the way from the vehicle level down to the circuit where the fault is located.



Fault codes: fault code information for the vehicle is displayed here.

The fault codes are divided into active and inactive ones. Active fault codes are fault codes which have been registered and where the fault persists. Inactive fault codes are fault codes which have been registered but where the fault has then disappeared.

The fault codes are also divided into primary and secondary fault codes. A primary fault code is an original fault code. A secondary fault code means a fault code which has been registered in a control unit because a primary fault code has occurred in another control unit.

Active and primary fault codes are always displayed, and you can then choose whether you also wish to view inactive and secondary fault codes.

Background information from the vehicle is saved in the control unit for some fault codes. The information is from the latest registration. Information which may be useful when troubleshooting is provided under the More information button.

Fault code monitoring

Here you can obtain help to check that a fault really has been resolved after you have rectified it, i.e. that the fault code will not recur. Fault code monitoring is used for those fault codes where the fault does not become active immediately, but for which more complicated verification in the control unit is required before the fault code is set.

Here you can obtain a continuous read-out of the fault code status. This can be used when:

- it is necessary for certain conditions to be met in the vehicle so that the control unit can test and verify the fault code.
- the fault code is cycle filtered, which means that the control unit does not set an active fault code until it has tested it four times with a negative result.
- the fault code has a long validation period.

When you have selected a fault code which is monitored, the button is active. You can then access and monitor that particular fault code.

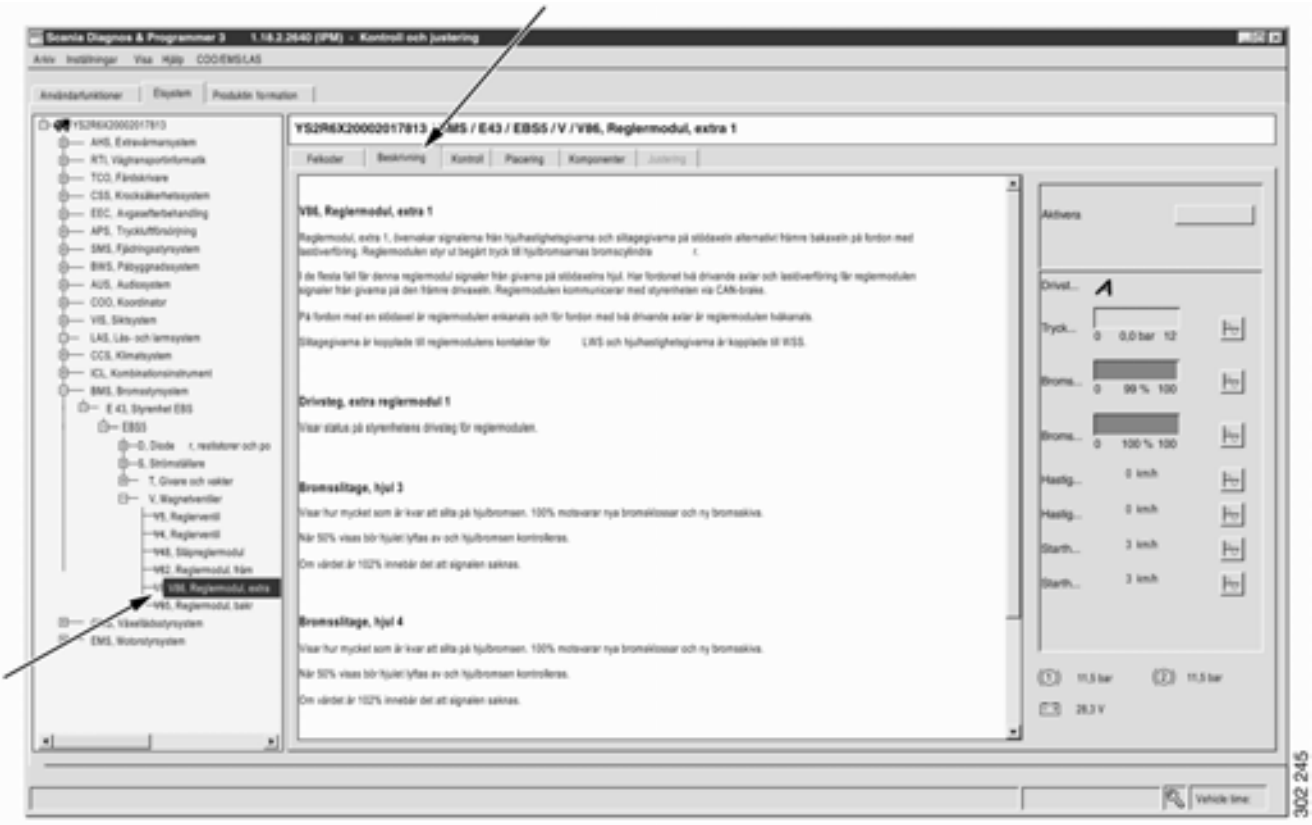
If you have not selected a fault code, you can click on fault code monitoring and select from those fault codes which are monitored. This can be used when fault codes are cleared.

The conditions that apply to the way in which the control unit verifies the fault codes are described in the relevant fault code text.

Description

Here you can obtain a description of the different systems and their circuits. The description applies to what you have selected when navigating.

Information may be available here which can be used when troubleshooting a circuit in the Check tab.



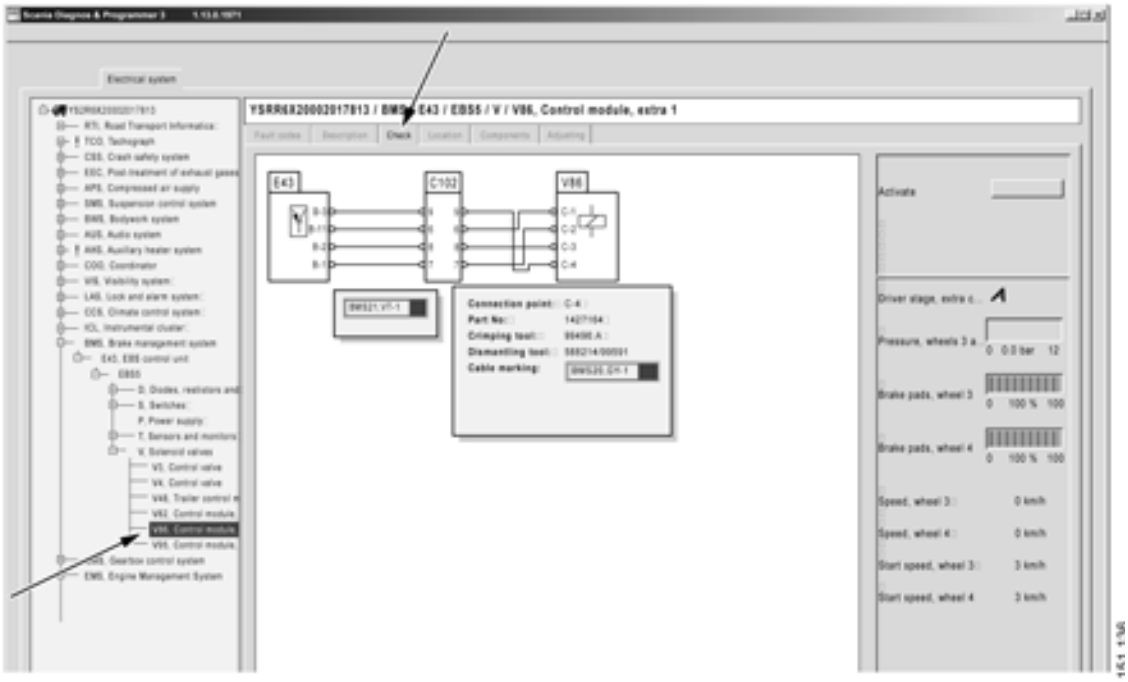
Description: descriptions of the vehicle's electrical system and circuits are displayed here.

Checks to be made

A circuit diagram for the circuit concerned is displayed here. You can read signals from the control unit and activate different functions and components in order to check whether the circuit is working as expected.

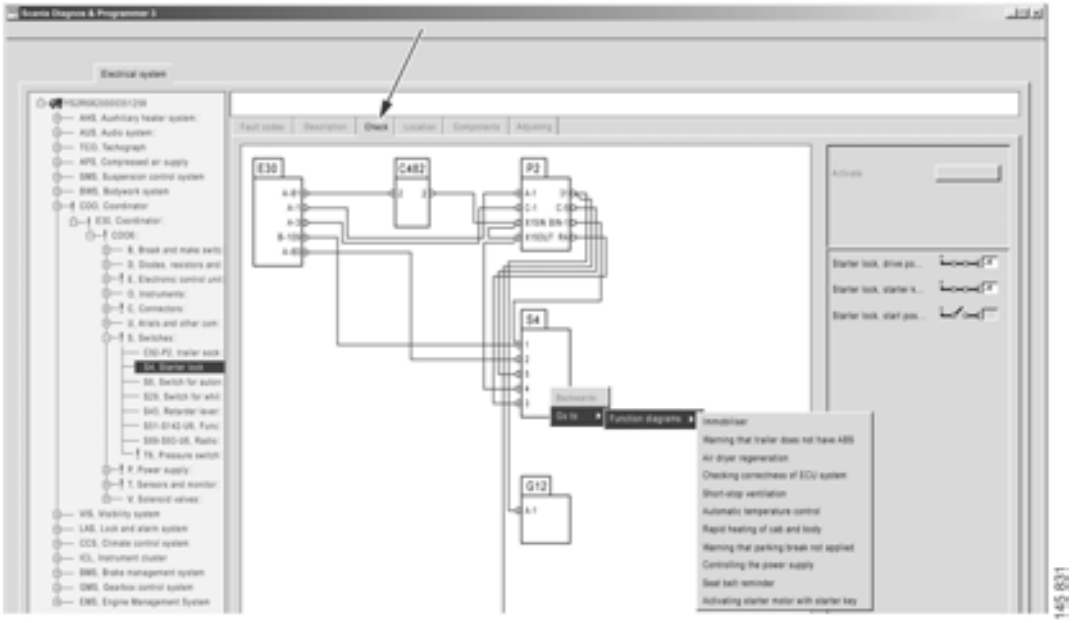
By placing the mouse pointer on a cable harness in the circuit diagram and pressing the left mouse button, the cable is highlighted and the cable marking is displayed.

When you place the mouse pointer on a connection pin and press the left mouse button, the terminal's part number, relevant crimping tool, dismantling tool and cable marking are displayed.



Check: the vehicle circuits can be checked here.

From the circuit diagram you can access a user function directly in the user function view by right-clicking on the mouse button.



Navigation from circuit to user function.

You can also carry out a number of predefined tests related to the specific control unit. Further tests will be added later.

Check: different tests can be carried out here.

Activation

When you start up the activation window **1**, SDP3 takes control over the inputs and outputs of the control units concerned.

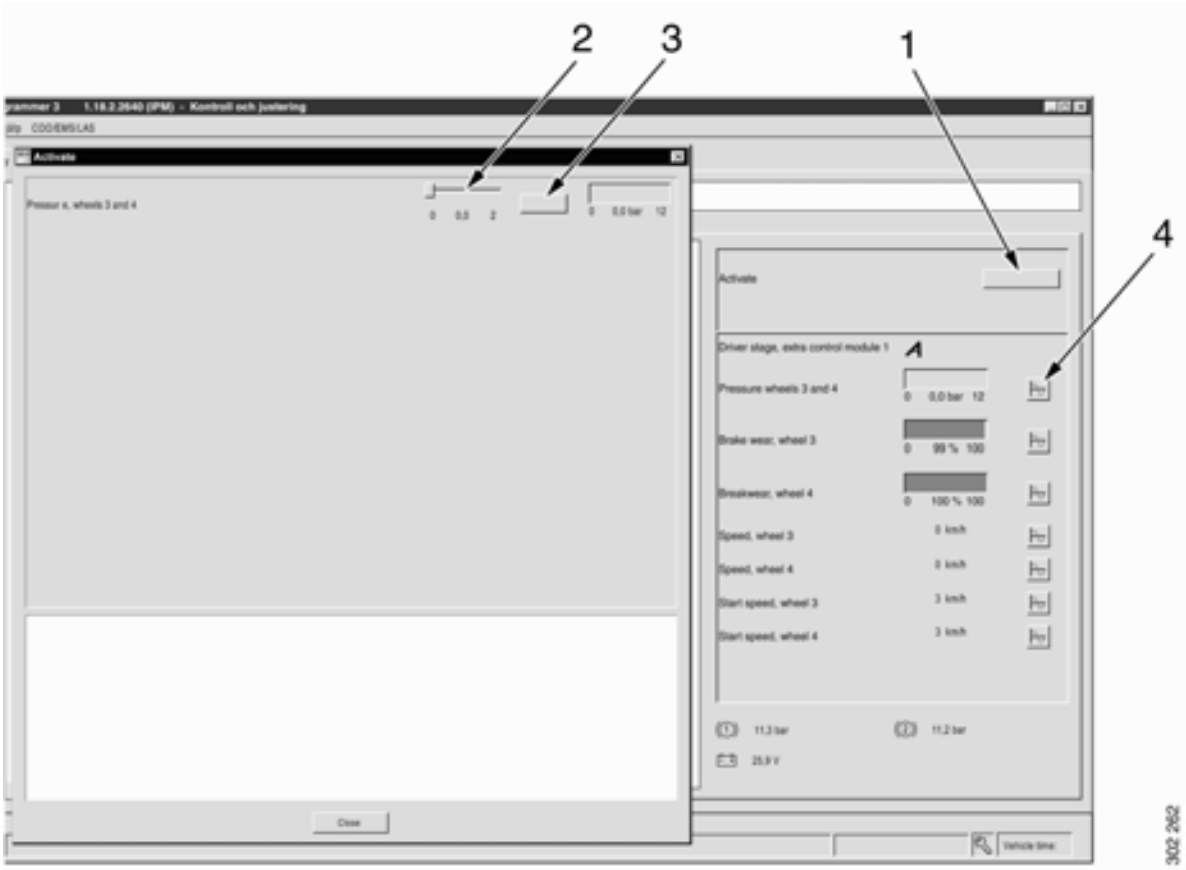
Activation operates by selecting what is to be activated in the activation window, e.g. a value or a status **2**. When you press the button **3**, the value is sent to the control unit. The current status is displayed to the right of the button.

The activation button works differently depending on what is required during the particular activation being carried out. The following options are available:

- Activation takes place when you press the button and to stop activation you have to press the button again.

  Some activations have a time limit which means that the activation ceases automatically after a certain time. Then the button is also reset.

- Spring-loaded button: you have to hold down the button during activation.



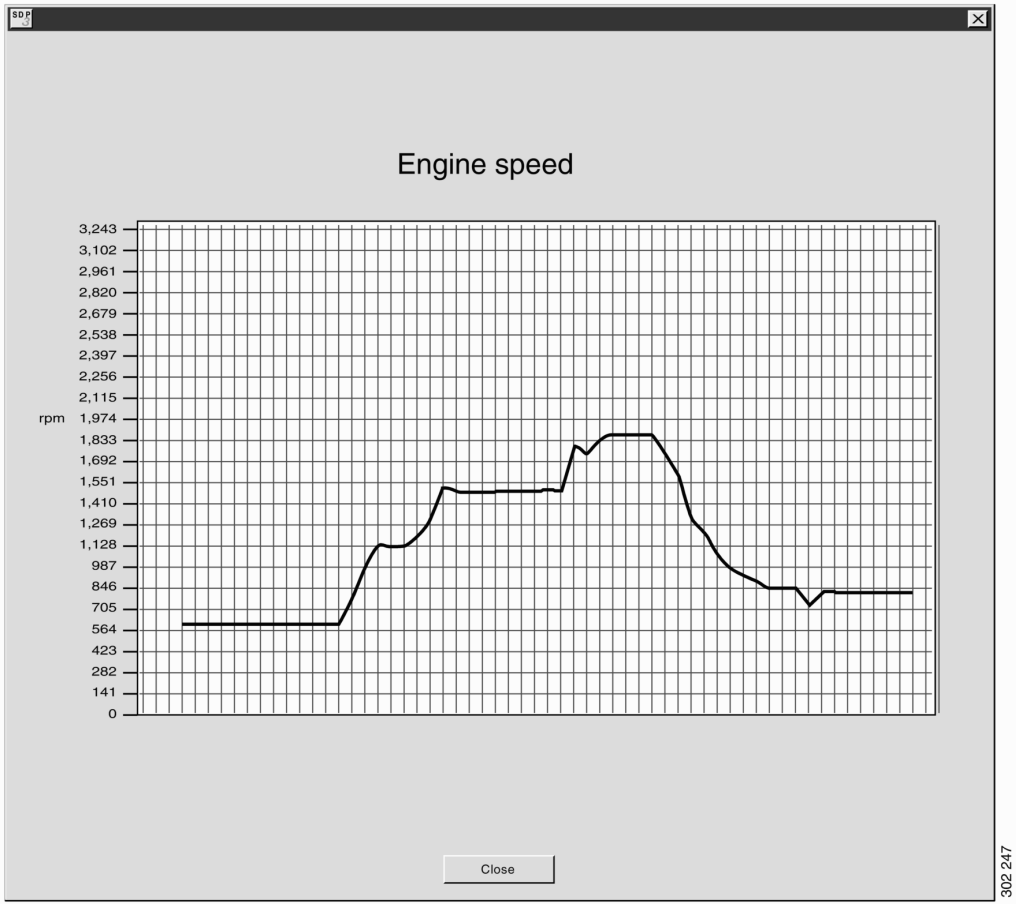
Here it is possible to check the vehicle components by activating them using SDP3.

When activation ceases, the value is reset to its original level.

It is only when you exit and close the activation window that the control unit goes back to checking the components concerned.

As a safety feature, activation can always be interrupted by pressing the space bar.

The readings obtained in the right-hand column, (see illustration on previous page), can be presented in the form of a graph by clicking on the symbol **4**.



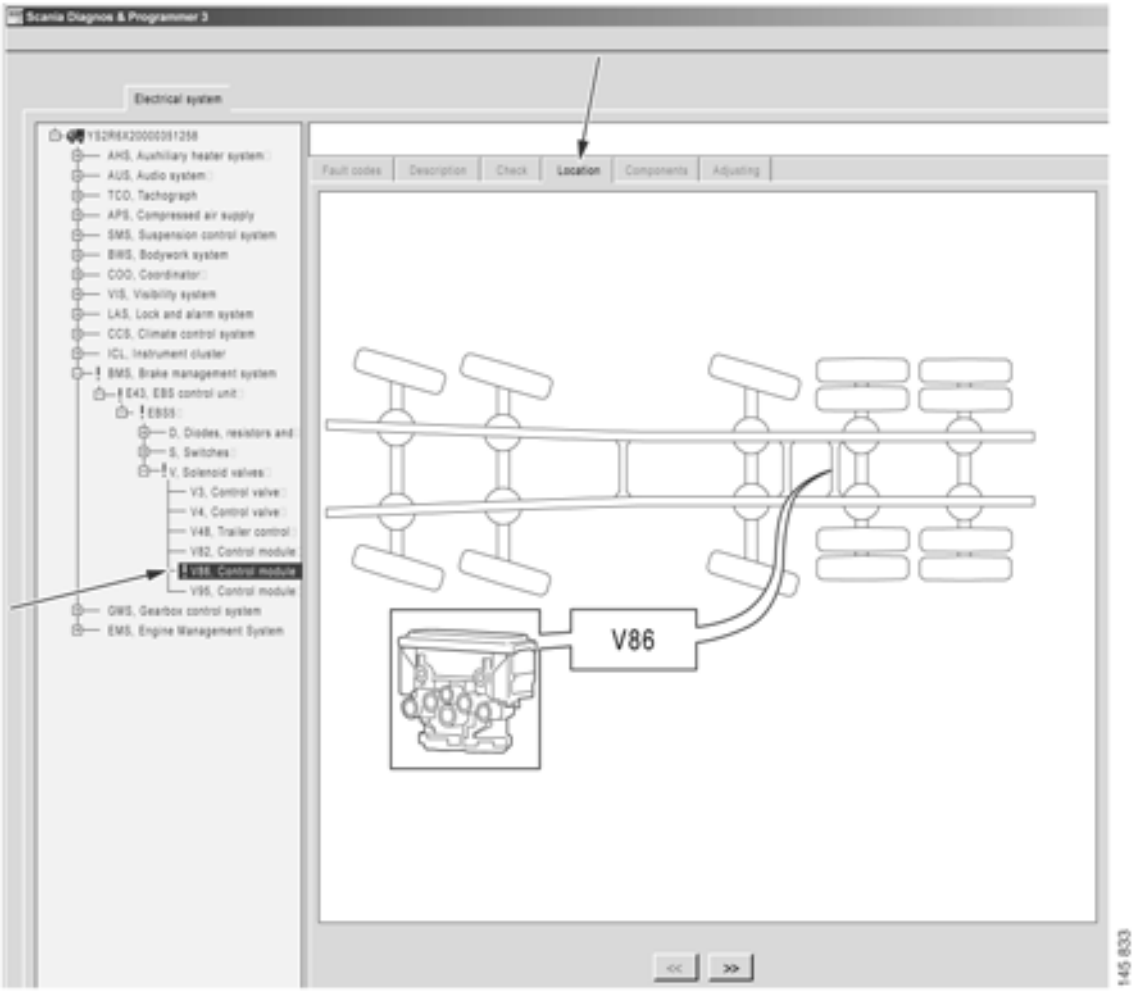
The graph is displayed in real time on the screen. Example for engine speed: the curve is recorded as the engine speed increases/decreases.

Location

Location diagrams are displayed here, which indicate where on the vehicle a particular electric component is located.

In cases where there are several location diagrams, you can move between them using the arrow keys below the diagram.

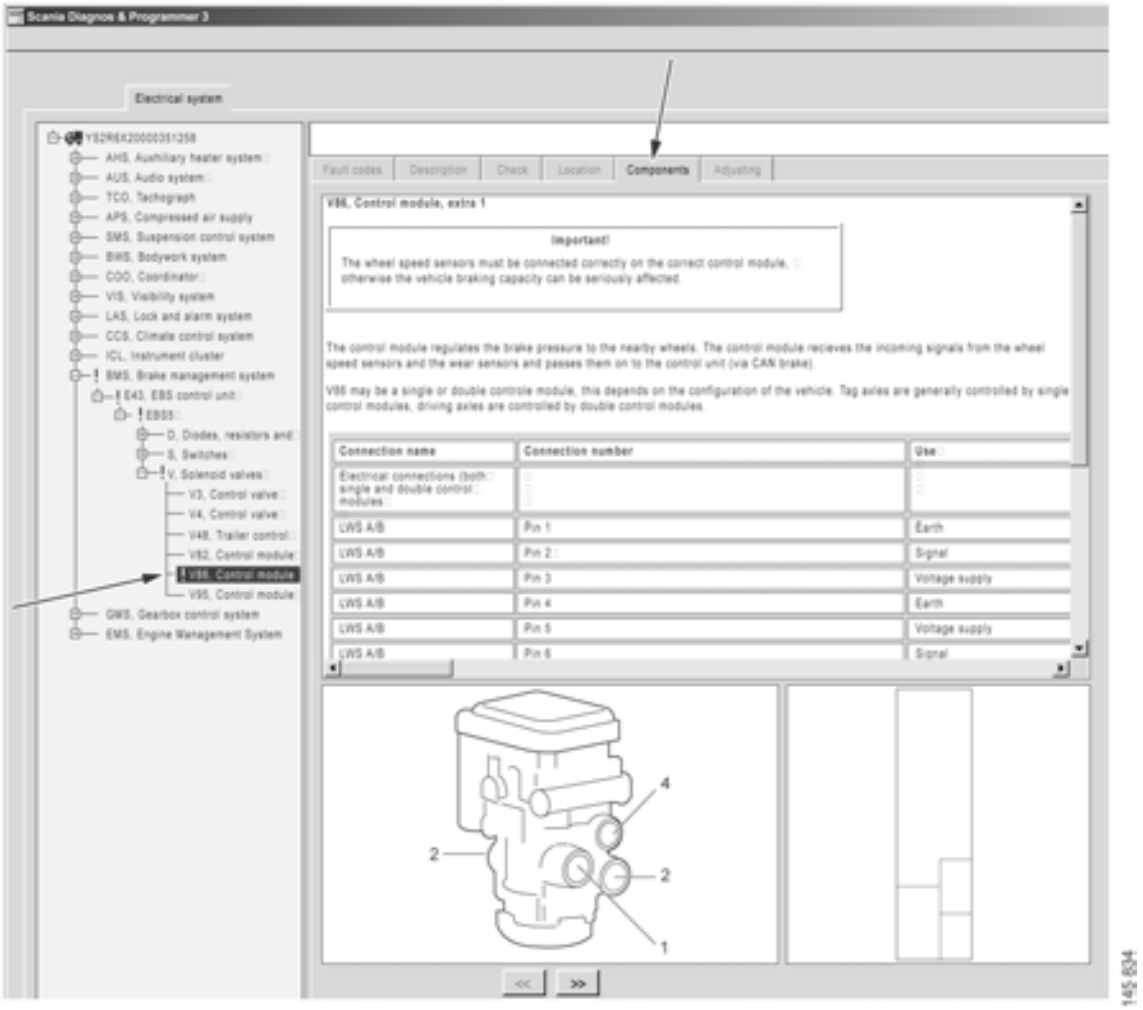
Double-click on a diagram to open a separate window in which the diagram is displayed. This allows you to have the diagram available while you continue working on other activities in SDP3. The same applies to other diagrams in the program.



Location: location diagrams for the components in the circuit are displayed here.

Components

Here you find a description of the components which are included in a circuit.

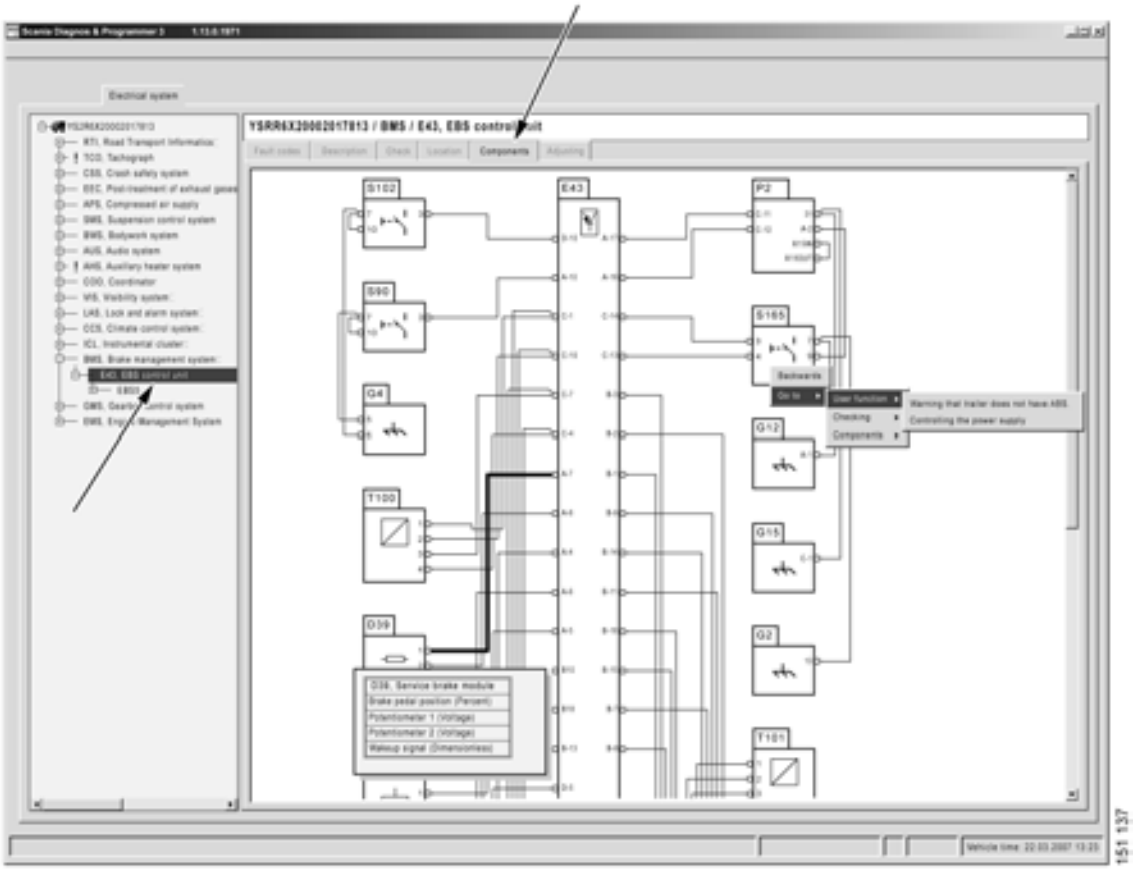


Components: descriptions for the components in the circuit are displayed here.

The connection of controllable components to the control unit is displayed at system level. By placing the mouse pointer on a cable harness and pressing the left mouse button, you can obtain information about the checks that can be carried out on the circuit.

If you press the right mouse button, the text box disappears but the highlighting remains so that you can see the connection.

Place the mouse pointer on a component and press the right mouse button to navigate directly to the particular user function, circuit check or to information about the component.



Adjustment

The programming which was previously carried out with Scania Programmer 2 can be found under Adjustment.

Here you can view the customer parameters which can be changed and their current values.

There is also an option to calibrate and reset the values.

The program works in different ways depending on whether you wish to change a customer parameter or carry out a calibration or resetting. The following pages contain a description of how to carry out an adjustment or calibration.

Adjustment

You should have checked the vehicle and rectified any fault codes before carrying out an adjustment.

1 To carry out an adjustment, press the Change button.

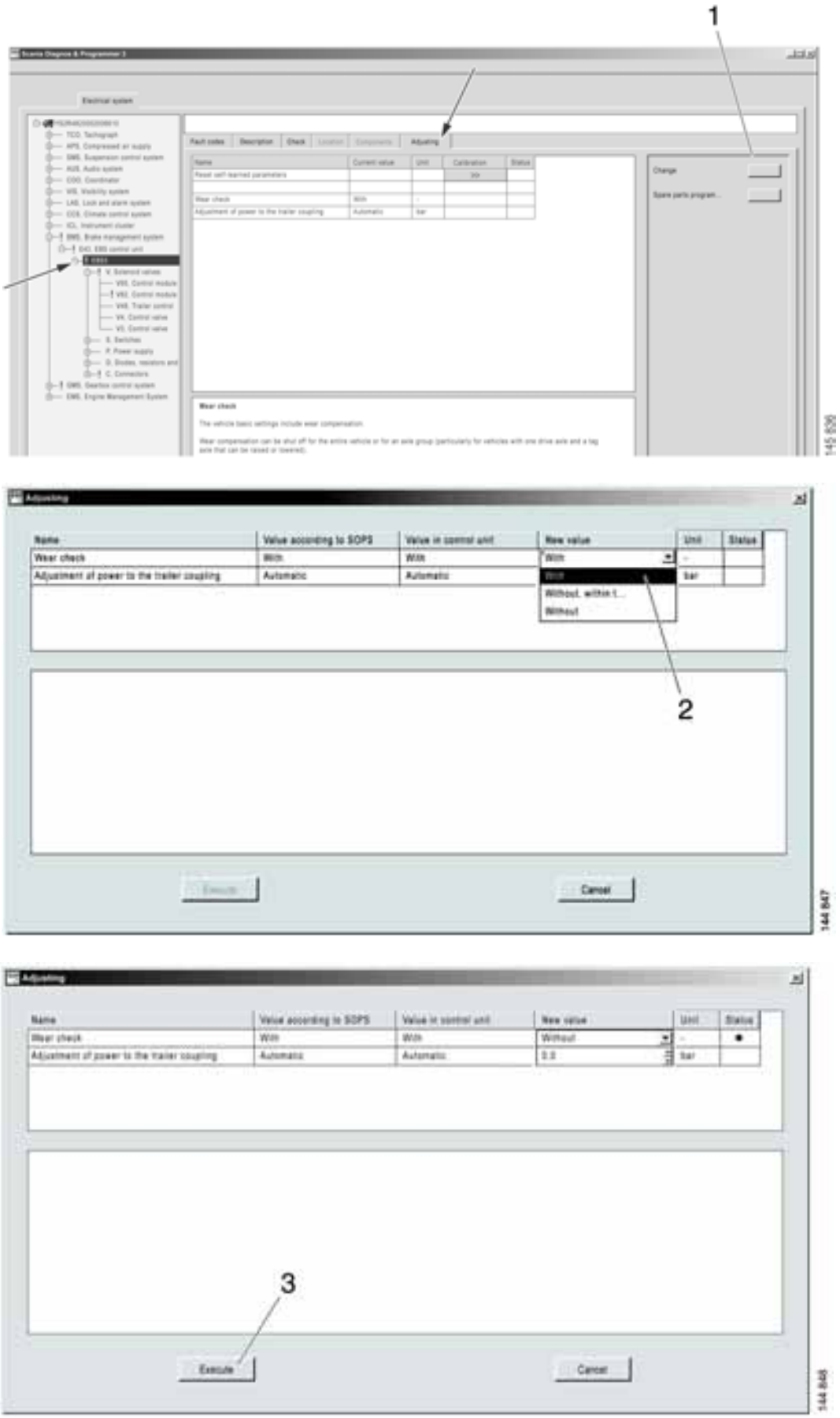
   Here you can see the value that is held in SOPS and that is set in the control unit. If these values differ, a red dot is displayed.

   The star displays the value that was set at the factory.

2 Select a new value.

3 Then press Execute.

   When you start an adjustment, the values which are changed are marked with a red dot. When you carry out the adjustment, the changed customer parameters will be marked with a green tick.

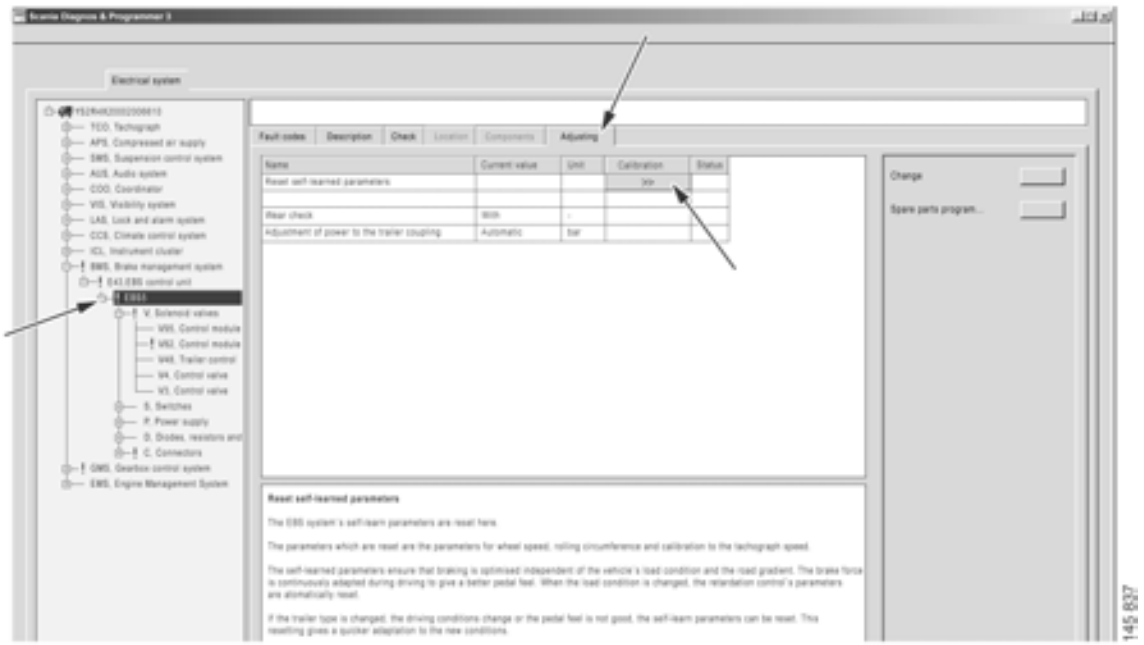


Procedure when adjusting customer parameters on the vehicle.

Calibration

1 Highlight what you wish to calibrate and proceed by pressing the arrow keys.

2 A wizard will now appear which will help you to carry out the calibration.



Calibration and resetting is carried out during adjustment.

Troubleshooting via User function

Here you can troubleshoot by starting from the vehicle's user functions.

Navigation under User functions is divided up as follows:

1 Vehicle

2 Group of user functions

The user functions are grouped into categories.

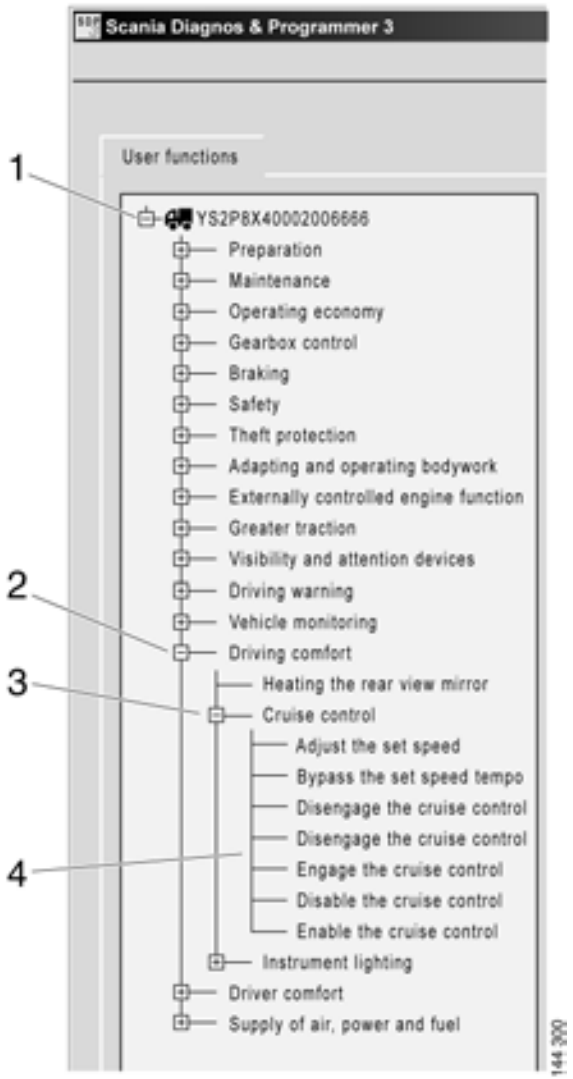
3 User function

An example of a user function is Cruise control.

4 Application

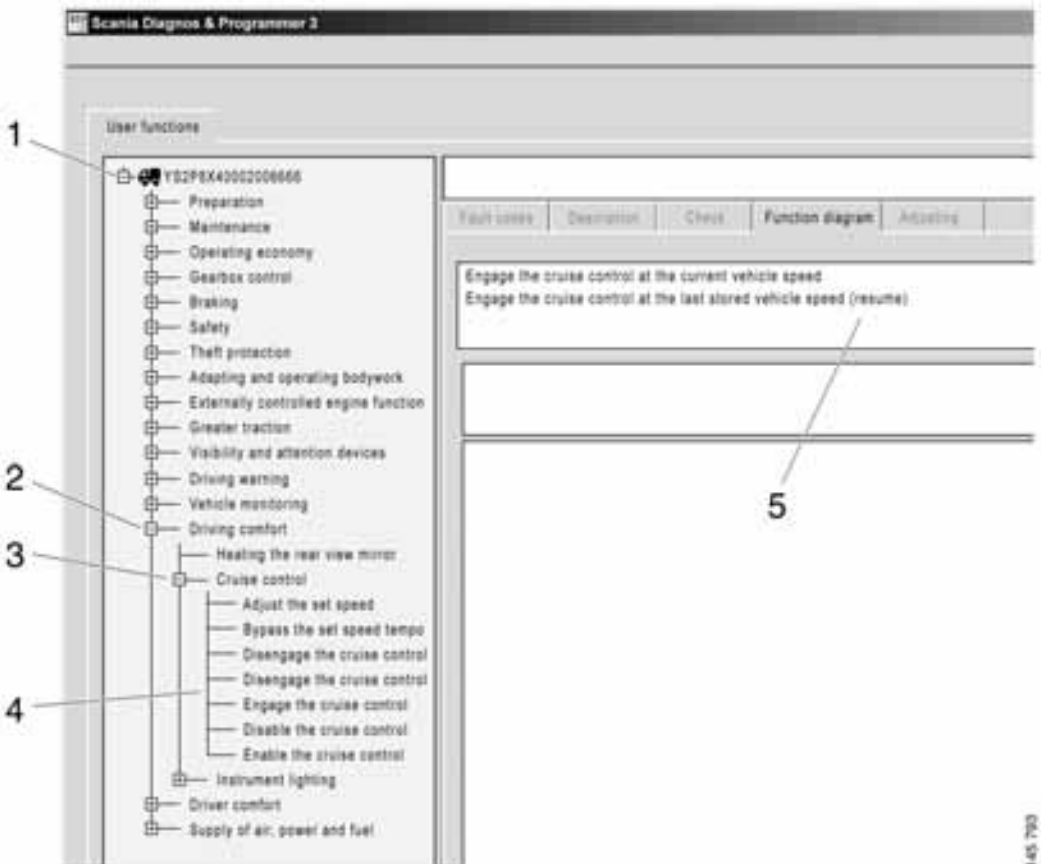
An example of an application for Cruise control is:

- Engage cruise control
- Disengage cruise control



Levels when navigating under the User functions.

The content under the different tabs varies, depending on where you are in the navigation tree.



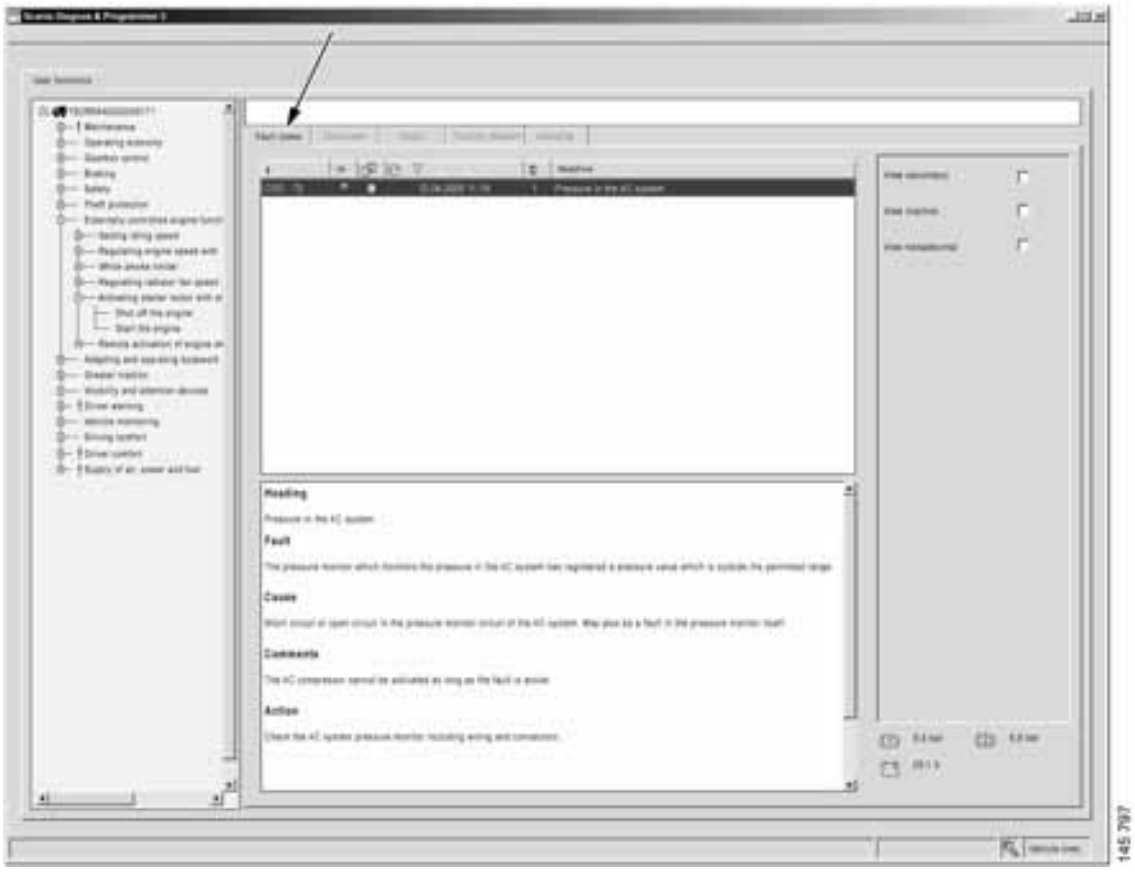
The table below gives an indication of what sort of information the tabs contain on the different levels.

	Fault codes	Description	Checks to be made	Function diagram	Adjustment
1 Vehicle					
2 Group of user functions					
3 User function		Description of the user function.	Troubleshooting the vehicle with tests linked to a control unit.		Calibration of current user function.
4 Application				Function diagram for the different ways in which the application can be carried out, **5**.	

Fault codes

Here you can see which fault codes are registered for a user function.

Other information relating to fault codes is the same as for fault codes under electrical system.



Fault codes: fault code information for the vehicle is displayed here.

Description

Here you can obtain a brief description of the vehicle’s user functions.

Description: descriptions of the vehicle’s user functions are displayed here.

Checks to be made

You can carry out checks on some of the vehicle’s user functions here. Unlike checks under the Electrical system, these checks may work on several interrelated control units. Several checks for user functions are under development and will be added later.

Function diagram

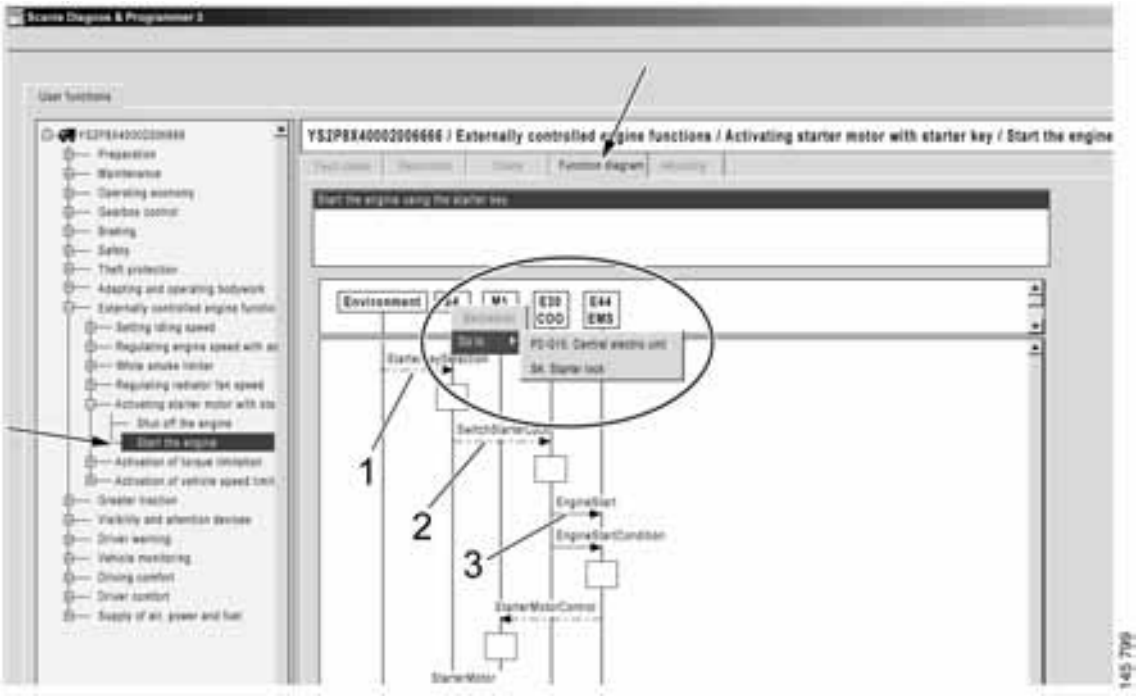
The function diagrams, which are available for a user function, are displayed here. The function diagrams provide a visual representation of the function. They provide an overview of the control units and other components which are involved in a user function in the specific vehicle. They also show the order in which signals travel between the components concerned.

A blue dotted arrow 1 shows the influence from the environment, e.g. the driver turns the key.

A blue solid arrow 2 shows conventional electrics. There must be circuits in the electrical system view to obtain these arrows, e.g. S4 closes + 24 V to E30.

A black arrow 3 displays CAN messages between different control units.

By right clicking on a component, you can go back to checking the circuit in the electrical system view.



Function diagram: a function diagram for the vehicle's user functions is displayed here.

Adjustment

Here you can calibrate a user function that extends over several control units.

Product information

Information about how the vehicle is equipped is available here. For example, the user functions which are available on the vehicle and electrical information from the chassis specification are displayed.

Information about the settings of the different control unit parameters is also available here. You can view when and which USB key was connected when the parameters were last changed.

You can also see any local conversions carried out on the vehicle.

Specification information for the vehicle.

Conversion

Here you can set the correct parameters in the vehicle control units after a conversion.

General

In the Conversion work option you can carry out "major adjustments" of the vehicle, i.e. conversions. You should have checked the vehicle and rectified any fault codes before selecting this type of work option.

The control units affected by a conversion can reset certain control unit settings and calibrations. Make sure that the control units concerned have the correct parameters set and also make sure that after a conversion you calibrate the control units which may have been affected.

Note: Scania cannot accept responsibility for conversions carried out on a vehicle and which contravene the national regulations in a specific country.

Local conversion

You can obtain information about any local conversions here. You can carry these out yourself by setting the parameters covered by the conversion. When you choose to carry out the conversion, the affected control units are reprogrammed.

After conversion, you must report the changes to Scania by sending in the changed SOPS file. The report is a prerequisite for being able to show correct information in Scania Multi.

Procedure

1 Start SDP3 and select the Conversion work option.

2 Read and rectify any fault codes registered in the vehicle.

3 Highlight the vehicle level in the navigation field and select Local conversion **1**.

4 Highlight the conversion you wish to carry out and proceed **2**.

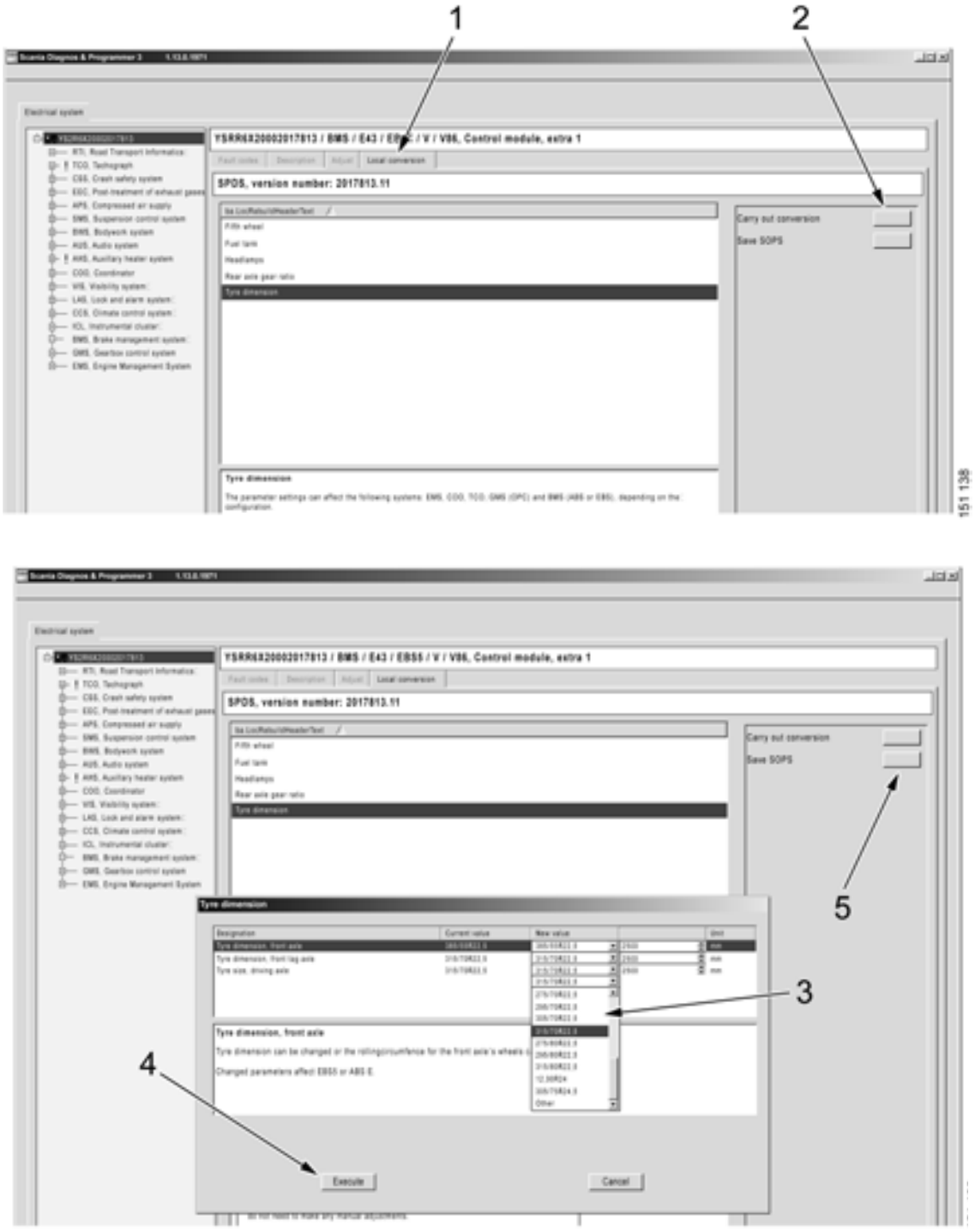
5 Set the new values for the parameters concerned **3**.

6 Execute **4**.

7 Save the SOPS file by selecting Save SOPS **5**.

8 Calibrate and reset any control units which may have been affected. Adjustment can be carried out from the same view in the program.

9 Report by sending in the changed SOPS file to Scania.



Procedure during local conversion. The text on the previous page refers to the numbers in the illustration.

Factory supported conversion

Information is provided here about how to carry out conversions which require you to contact Scania.

Factory supported conversion means briefly that you exchange the vehicle's existing SOPS file for an updated one which is either sent from your local Scania distributor or which you download via the SAIL web portal.

Always start by saving the vehicle's existing SOPS file, basing the update on it. When the file has been saved, no other conversions must be carried out on the vehicle. If a change is made, the contents of the new SOPS file will not correspond to the conditions applicable when the old file was used. It will not then be possible to use the updated SOPS file.

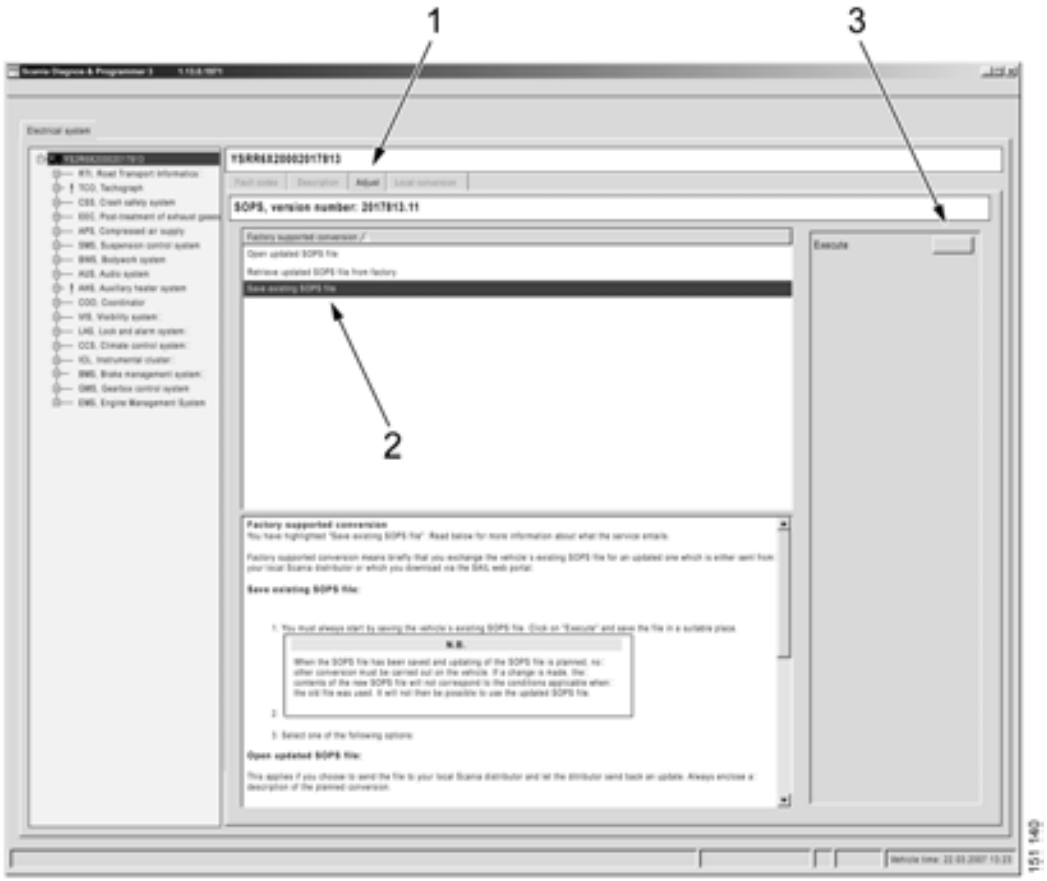
A completed factory-supported conversion must always be reported to Scania.

So there are two ways to update the vehicle's SOPS file:

- Upload the existing SOPS file via the SAIL web portal, order an update and then download the updated file from the same website.
- Send the existing SOPS file, including a description of the proposed conversion to Scania. Scania will then send back an updated file once it has been approved

Procedure

Start the conversion and save the SOPS file



1 Start SDP3 and select the Conversion work option.

2 Read and rectify any fault codes registered in the vehicle.

3 Highlight the vehicle level in the navigation field and select Adjust **1**.

4 Highlight Save existing SOPS file **2** and continue **3**.

5 Select a suitable location to save the file.

6 Decide whether to use the SAIL web portal to update the file or whether to send it to Scania together with an order. The options are described on the following pages.

Retrieve updated SOPS file from the SAIL web portal

When the updated file is ready to be loaded into the vehicle: Select Retrieve updated SOPS file from factory.

Use this option if you choose to use the SAIL web portal to update the SOPS file. This option is always preferable provided that the proposed conversion is frequent and available.

1 Log on to the web portal with your SAIL authorisation.

2 Upload your saved SOPS file as described in the instructions on the portal.

3 Enter your proposed changes as described in the instructions on the portal. Agree to order an updated SOPS file.

4 Make sure that the components required for the conversion have been added to the vehicle.

5 When the updated file is ready to be loaded into the vehicle: Return to SDP3, select Retrieve updated SOPS file from factory and press Execute. A procedure starts and is displayed step by step on the screen.

6 You will now be prompted to enter the reference number you received earlier on the portal.

7 Log on to the SAIL portal again via SDP3. Enter your user name and password.

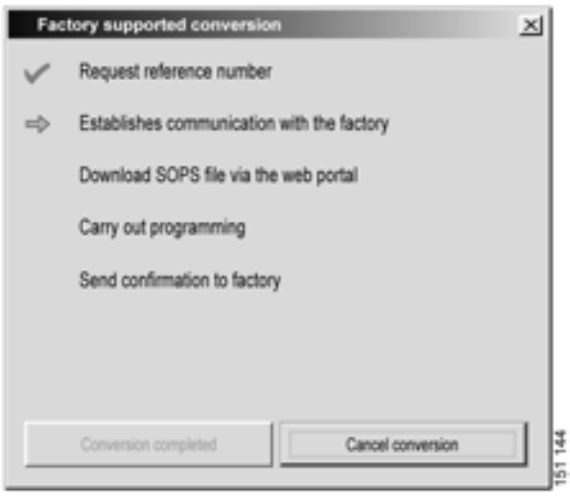
8 Download the updated SOPS file via the web portal.

9 When it is time to load the SOPS file into the vehicle, the program displays a control window containing the version numbers of the SOPS files. Check that the numbers are correct before continuing.

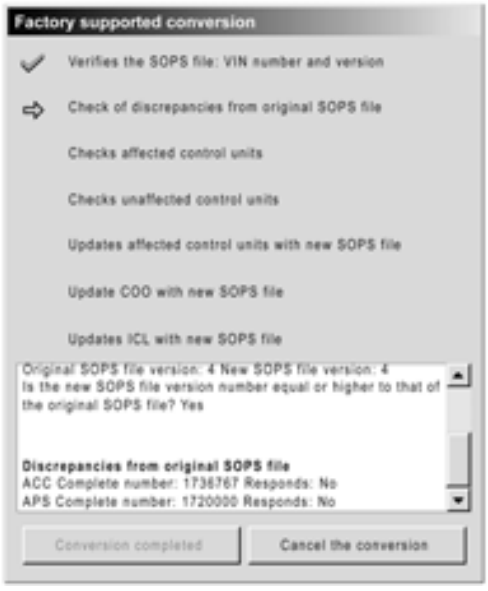
10 When you continue, the actual load procedure starts. This procedure is also displayed step by step on the screen.

11 When the conversion is complete, a confirmation is sent to Scania. Rectify any fault codes generated during conversion.

12 Certain customer settings for function parameters may have reverted to their default values during loading. Calibrate and reset any control units which may have been affected. Adjustment can be carried out from the same view in the program.

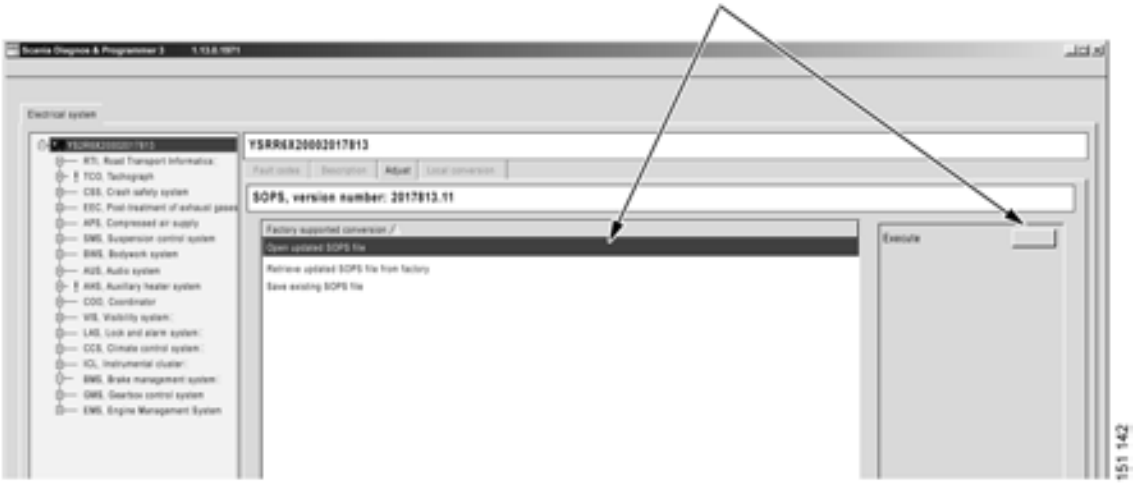


A conversion procedure is displayed step by step on the screen.



A separate procedure is displayed when the SOPS file is loaded. Information is also provided about the results of each stage of the procedure.

Open the updated SOPS file sent from Scania



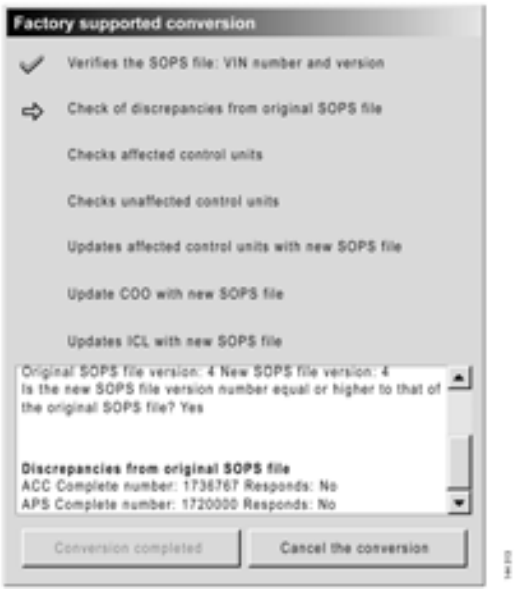
When the updated file has been sent back and is ready to be loaded into the vehicle: Select Open updated SOPS file.

This option applies if you choose to send the SOPS file to Scania and let Scania send back an update.

1 Describe your proposed conversion in detail and enclose the description with the SOPS file when you send it to your distributor/importer. You can use e-mail or a CD.

2 Make sure that the components required for the conversion have been added to the vehicle.

3 When you have received the updated file: Return to SDP3, select Open updated SOPS file and press Execute.



When loading the SOPS file the procedure is shown step by step on the screen. Information is provided about the results of each stage of the procedure.

4 Loading of the SOPS file starts and the procedure is shown step by step on the screen. The SOPS file is verified and the control units concerned are updated. Follow the procedure on the screen.

5 Notify Scania when the conversion is complete and the SOPS file is loaded.

6 Rectify any fault codes generated during conversion.

7 Certain customer settings for function parameters may have reverted to their default values during loading. Calibrate and reset any control units which may have been affected. Adjustment can be carried out from the same view in the program.

Maintenance

In the Maintenance work option you can access limited parts of the program which are required during an inspection.

The parts which are currently accessible are connecting, checking the control unit parameters and support for reading fault codes.

You can also save and analyse the vehicle's stored operational data via the menu option View stored operational data. You can also read more about how this works in the section later on that describes Stored operational data.

Campaign

Support is provided here to update the software of control units using SDP3 during a campaign. Campaigns must only be carried out when prompted by Scania via a campaign letter.

In order to carry out the campaign, you need the campaign number supplied with the campaign letter. In addition, the computer must have a network connection to Scania and you must have SAIL authorisation. You also need to have a certificate for your computer and belong to the VERA_user group. You can find out how to obtain a certificate and how it operates from the Service Development website under Workshop Tools & Equipment. You can access the website via SAIL.

When you enter the Campaign work option, you can access the electrical system view where you can check and clear fault codes before starting the campaign.

When you start the campaign, instructions are given in the program.

Bodywork

The Bodywork work option provides access to the restricted parts of the program required to fit the bodywork to the vehicle.

The control function is fully accessible, while the adjustment function is limited according to the needs of a given bodybuilder.

Connection

General

Note: In order for SDP3 to be able to communicate with certain control units, the systems must be activated. This applies to the auxiliary heater and radio, which must be turned on when connecting.

The response time of individual control units varies after the starter voltage has been switched on. If SDP3 starts the control unit identification too soon after the starter voltage has been switched on, some control units may not respond. In that case, re-establish the connection.

SPD3 carries out a number of checks when connecting to the vehicle or industrial and marine engine. During the connection phase you will be given information about the activities being carried out by SDP3. If a fault occurs during the connection, you will be informed about this and guided through with the help of the program.

SDP3 reads and compares, for example, the information in the SOPS file with the information available in the control units. If there are discrepancies you will be informed about this, and if spare parts programming needs to be carried out on one or more control units, SDP3 will provide this option.

Procedure when connecting

The basic procedure when connecting to a vehicle is displayed here. With some types of work the procedure only includes parts of the steps below.

- SDP3 connects to the vehicle.
- SDP3 retrieves vehicle information from the vehicle.
- SDP3 identifies the vehicle's control units.

  If any control unit fails to respond, this will be indicated at the bottom of the connection window.
- SDP3 reads the SOPS from the coordinator and instrument cluster which are the control units containing SOPS.
- SDP3 verifies SOPS. This means that the program checks both SOPS strings and checks that they are the same.
- SDP3 retrieves system information about the control units from its database.

- SDP3 checks identified control units against SOPS.

  If one of the control units does not correspond to SOPS, you will be informed about this and about how to proceed.

- SDP3 retrieves information about the product type from SOPS. This means that SDP3 checks whether it is connected to a truck, bus or industrial and marine engine.

- SDP3 checks the identity of the control units.

- SDP3 retrieves the vehicle settings from SOPS.

  SDP3 compares the control unit configuration with the contents of SOPS.

  If the configuration differs, you will have the opportunity to carry out spare parts programming on the control units which are not configured correctly.

- SDP3 reads fault codes from the control units.

- SDP3 retrieves other information about the vehicle from its database.

- SDP3 finishes retrieving vehicle information and the OK button becomes available.

Spare parts programming

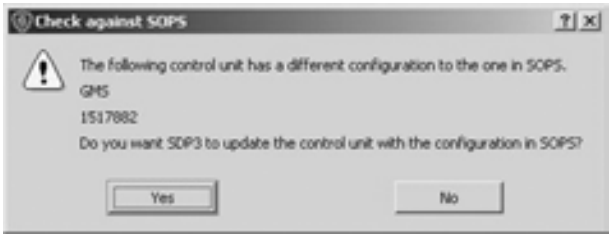
If the control unit configuration does not correspond to the contents of SOPS (which can be due to one of the control units being replaced), SDP3 will propose spare parts programming.

During spare parts programming the parameters in the control unit are changed to correspond to the content in SOPS.

If you are asked whether you wish to carry out spare parts programming on one or more control units, you need to be sure that it is necessary before you answer yes. Otherwise you should refrain from carrying out spare parts programming.

If you choose to carry out spare parts programming on a control unit, SDP3 will guide you through the entire procedure.

After renewing one or more control units, SDP3 should always be connected in order to carry out spare parts programming before the work is finished.



When the control unit configuration differs from SOPS, SDP3 suggests spare parts programming.

Communication

Information is constantly being exchanged between SDP3 and the control units in the vehicle/engine SDP3 is connected to. Signals and messages are sent in both directions. Unexpected interference in communication can occur which affects the ability to, for example, read and display information from the control units.

When interference in communication occurs, you will be informed of this, either in the form of a fault message or via a symbol.

It is worth remembering that disruptions to communication which occur after you have connected the program and started work are usually temporary. Where the fault message indicates a cause, check what is indicated and try again. Where no cause is given, try again several times to see whether the communication problems disappear. If the fault does not seem to affect the work you are doing, you can ignore the fault message and continue.

Fault control in the program is being continuously improved.

The document entitled Communication problems, which can be accessed from the Help menu, provides more detailed information about disruptions to communication.

Graphic symbols in the program

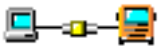
Explanations of the graphic symbols used in the program are provided below.

Some symbols may be combined to display more than one state.

Navigation tree

	The control unit does not respond.
	The control unit responds but the information does not exist in SOPS. Control units may have been fitted and not programmed correctly.
	The configuration in the control unit differs from the configuration in SOPS.
	The VIN or engine number in the control unit differs from the VIN number in SOPS.
	The control unit responds but there is no support for it in SDP3. Either there is no support at all for the supplementary number or there is no support for the supplementary number combined with the vehicle or I/M engine configuration.
	There are fault codes associated with the system or user function.
	The program did not find a SOPS file.

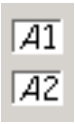
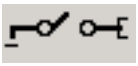
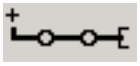
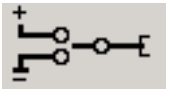
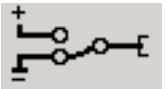
Status bar

	No contact between VCI2 and vehicle or I/M engine.
	No contact between computer and VCI2.
	Contact between computer, VCI2 and vehicle or I/M engine but communication not working.
	Communication between computer and vehicle or I/M engine is OK.
	Normal battery voltage, more than 24.5 V.
	Low battery voltage, between 22.0-24.5 V. The system is working but the battery charger should be connected.
	Incorrect battery voltage, less than 22 V. The system is not working and the battery charger must be connected.

Fault codes

!	Fault code.
	Primary or secondary fault code.
	The fault code was registered as active when fault codes were last read.
Σ	Number of times a fault code has been registered as active.
	Vehicle system time at which the fault code was last registered as active.

Read/activate

	The control unit recognises an activity (input signal, output signal or communication).
	The control unit detects that a received value (of a signal or a message) is outside the expected range.
	Communication works well but the control unit does not recognise the value received. The symbol is also displayed for components which are not valid for the vehicle or if no calibration has been carried out.
	Interference in communication between the control unit and SDP3.
	The control unit recognises an activity (input signal, output signal or communication) for a given function.
	The circuit to the control unit input is open (not closed to ground).
	The circuit to the control unit input is closed (to +24 V).
	The circuit to the control unit input is open (not closed to earth or to +24 V).
	The circuit to the control unit is closed (to earth).

Demo mode

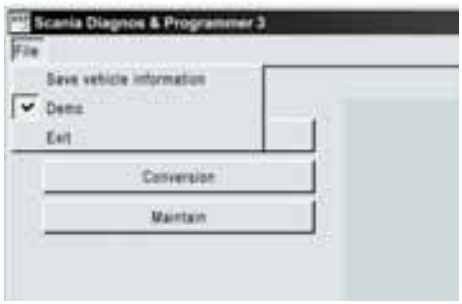
The USB key must be connected in order to run the program in demo mode. VCI2 does not need to be connected.

Starting and exiting demo mode

Demo mode can be found under File in the menu. When you highlight Demo in the menu, the program goes into demo mode. There you have the option of selecting from a number of demo vehicles which have been included.

If you have saved information from your own vehicles, navigate to the folder where the files are saved and select the file you wish to use from there.

To exit demo mode, go to the File menu and deselect Demo.



Demo mode is started and stopped from File.

This is how demo mode works

The information displayed in demo mode has been provided by real vehicles and has been recorded and saved in the program.

The program works in the same way as it would if it were connected to a vehicle. The program "does not know" that it is running in demo mode. The saved information represents the program’s communication with the vehicle control units.

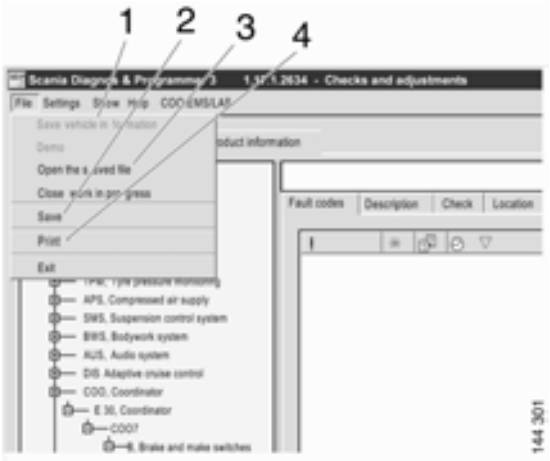
If you choose to do something which means that the program is expecting more information than is available in the saved vehicle information, the program will interpret this as an interruption of communication with a control unit.

An example of this is when the program sends a new value to a control unit and expects to receive a modified value back.

SDP3 will then think that contact has been lost with the control unit and will work as it would during normal fault control.

Saving and printing vehicle information

You can save selected information from the connected vehicle and store it in any folder on the computer. Access the File menu and select from:



You can save and print vehicle information via the File menu.

1 **Saving vehicle information**

When you select this option a large amount of data from the vehicle is automatically saved in a text file, regardless of the task in progress. You can then use the saved file to view the vehicle in demo mode. You can save vehicle information once per connection.

It is also possible to open the file on the SVAP website and look at the vehicle's stored operational data.

2 **Save**

If you place yourself at circuit level in the Navigator tree and select Save, the selected information is saved in a PDF file. A window opens in which you can tick those parts of the work in progress you wish to save. Both illustrations and text are saved in the PDF file.

3 **Open the saved file**

Open the saved files stored in any folder here.

4 **Print**

This option allows you to first open your saved file and then print it out. When you select Print, a PDF file is first created with your selected information which is then printed immediately on the selected printer.

When you choose to save or print, tick the parts of the current information you wish to add to the PDF file which is automatically created.

Viewing stored operational data

Under the Maintenance work option, there is an option to view stored operational data when you are connected to the vehicle.

There is also an option here to save the file with vehicle data. The file that is saved contains the same information as that saved from the Save vehicle information menu option. The file can be used to view the operational data later via the SVAP home page or to view the vehicle in demo mode.

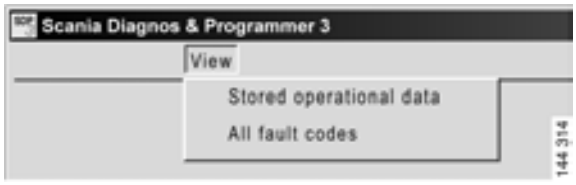
When you access and view stored operational data the file will be sent to Scania. Experience from real operating conditions is an important aid to the development of engines and the diagnostics program.

To view stored operational data, use SDP3 to access the SVAP website. It is therefore necessary for the computer to have a network connection to Scania.

You need to have a certificate for your computer and belong to the VERA_user group in order to access stored operational data. You can find out how to obtain a certificate and how it operates from the Service Development website under Workshop Tools & Equipment. You can access the website via SAIL.

Proceed as follows to analyse and send stored operational data:

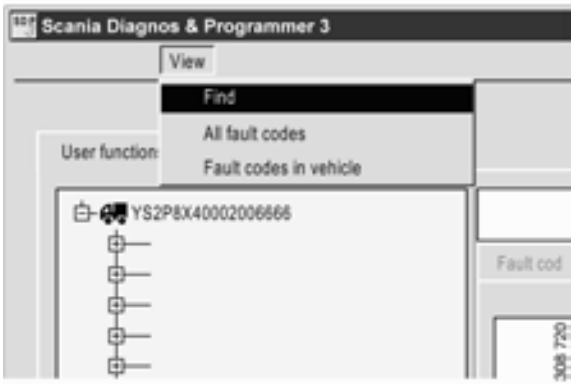
1. Click the Maintenance work option.
2. Select Stored operational data under View in the menu.
3. Log in using your SAIL identity in the login dialogue which is displayed.
4. Then follow the instructions given in the program.



Stored operational data can be accessed under View in the menu in the Maintenance work option.

Search

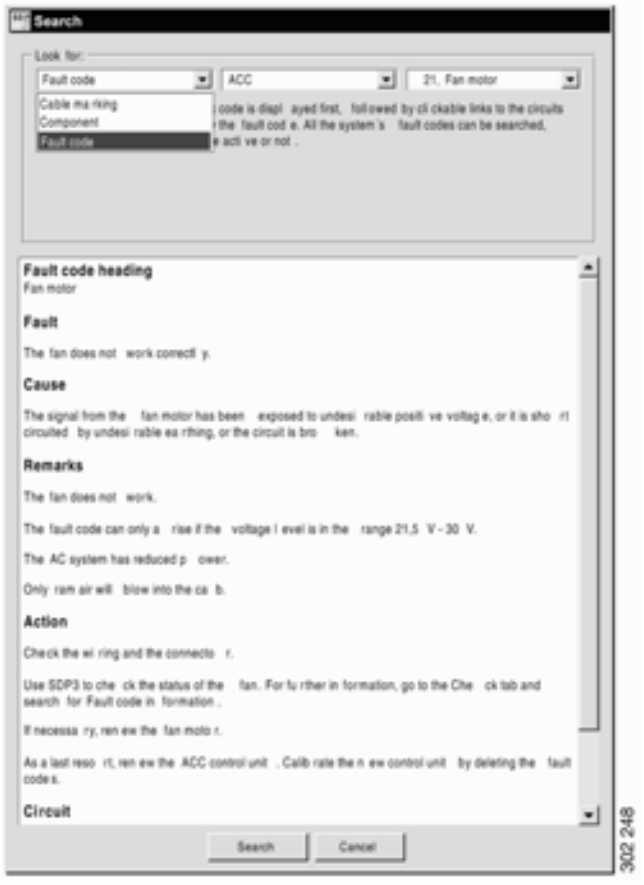
Select Find under View in the menu to access the SDP3 search function.



The search function can be found under View in the menu.

Select the category and search conditions by pressing the arrow on the right of the relevant box in the search window. Then press the Find button. The categories that you can search on are:

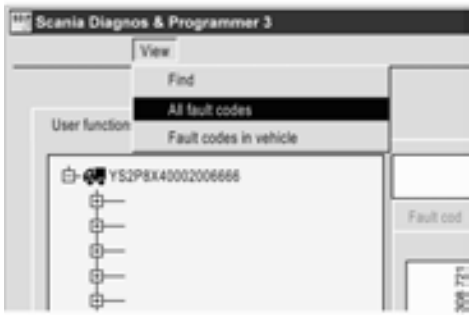
- Fault code: Optional search conditions are system family and fault code heading. The full description of the fault code is displayed first, followed by clickable links to the circuits and user functions affected by the fault code. All fault codes can be searched, regardless of whether they are active or not.
- Component: Optional search conditions are component family and component code. The search has given hits on the circuits and user functions where a selected component is fitted. The hits are displayed as clickable links.
- Cable marking: Optional search conditions are system family and serial number in cable marking. The search has given hits on the circuits and user functions where a selected cable is fitted. The hits are displayed as clickable links.



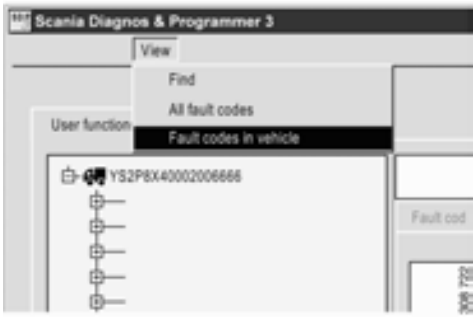
Viewing all fault codes

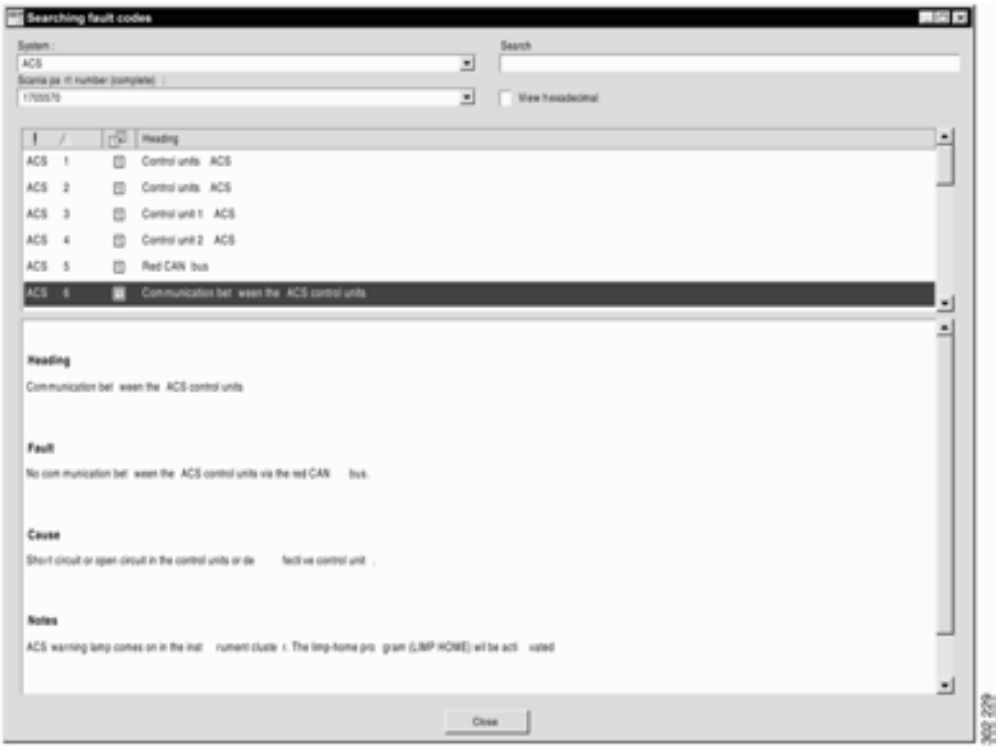
SDP3 can also display fault codes that have not been generated. Go to the View menu:

- Select **All fault codes** if you want to see all the fault codes that can be generated, whatever the vehicle. SDP3 does not need to be connected to the vehicle or VCI2.



- If SDP3 is connected, you can select the option **Fault codes in vehicle**. This displays all the fault codes that can be generated in the vehicle concerned.





You can search for fault codes by system and by control unit supplementary number. You can also search for individual fault codes via the fault code number. A separate window opens which remains available while you work on other activities in SDP3.

Fault control

Electromagnetic fields

Scania VCI2 and most of the computers on the market are protected against the electromagnetic fields which are generated by all electrical equipment.

However, this protection is limited and is not always sufficient to allow trouble-free communication. Take care when using the programs close to the following equipment:

- Mobile phones and transmitters
- Electric welders
- Power supply installations, e.g. thyristor units

Reporting faults and queries

It may be necessary to ask questions and receive help with the programs.

Dealers should refer their questions and suggestions for program development to the importers. Importers should consult the factory in Södertälje, Sweden.

If any faults or "bugs" are detected in Scania software, this should be reported to the factory. Do this by contacting your distributor, who will report this through the normal reporting system. Reports about faults help us make adjustments to future versions and improve the program.