

VOLKSWAGEN

AKTIENGESELLSCHAFT

Vehicle diagnosis, measuring and information system VAS 505x (5051B, 5052x), VAS 6150x, VAS 6160

Operating manual, software V08.0

02/11

The screenshot displays the VAS5052A software interface. At the top, the 'Administration' tab is active, showing the 'Equipment Number: 80113'. Below this, the 'Select function' menu is open, listing various diagnostic and measurement options. The 'Test Instruments' section is highlighted, showing 'Multimeter' and 'Voltage U/R/D'. The 'Voltage U/R/D' window is active, displaying a reading of '0.000 V'. The main window shows the title 'VAS5052A' and the subtitle 'Vehicle diagnostic-, measuring- and information system Version -GB- V19.00.00 06/04/2011'. A central image of a blue Volkswagen car is displayed. On the right side, a vertical menu lists functions: 'Vehicle Self-Diagnosis', 'OBD', 'Test Instruments', 'Guided Fault Finding', 'Guided Functions', and 'Audi Flashing'. The bottom status bar shows the date '07.04.2011' and time '13:33'.



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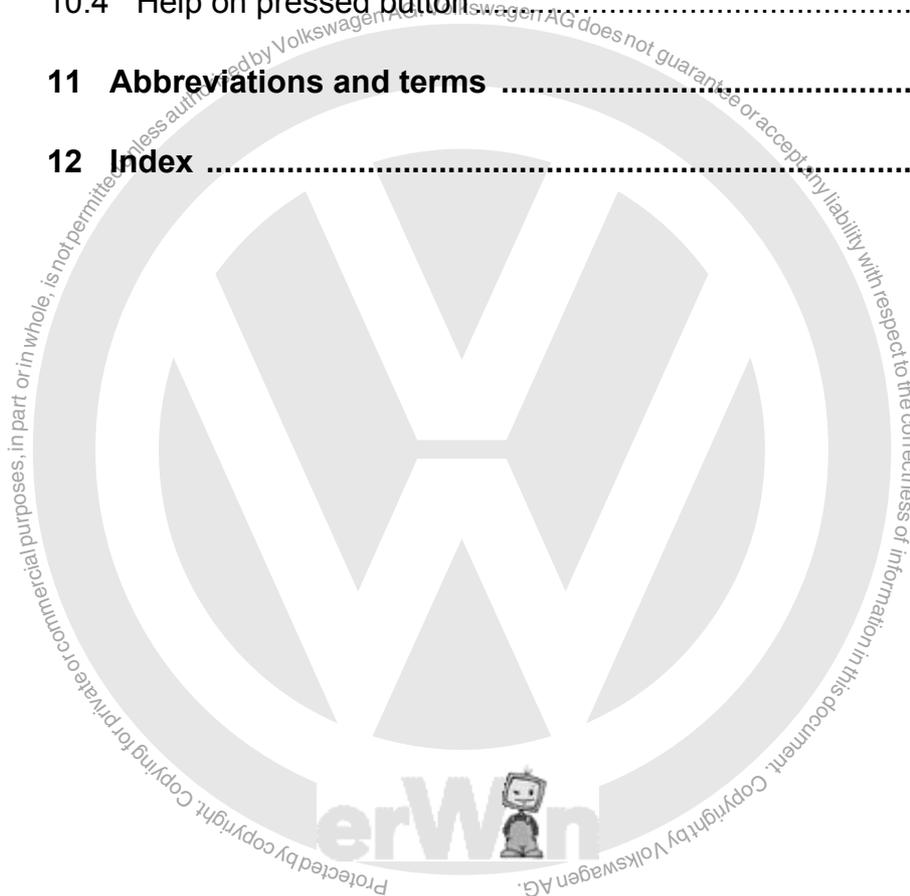
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Software version described

Changes to software version V19.01

This operating manual in the version V08.0 is valid from base CD V19.00 and higher. The diagnostic software is only compatible with brand data of the same version.

The following significant new features have been added for version CD V19.01.

- Starting from the VAS-PC base CD V19.01, firmware versions of the hybrid measuring box from version 3.9 can be used.
- During the function test, the multimeter measured values from VAS 6356 are automatically accepted when using the external measuring box VAS 6356 with VAS 5052A, VAS 6150x, VAS 6160 or notebook.
- The operating system from VAS 5051B is re-equipped on Windows XP with at least 1 GB main memory with the recovery DVD V2.0. When this is done, the "Vehicle identification configuration" menu point in the administration, in which the Bluetooth country selection was also included, in VAS-PC is omitted for the VAS 5051B with Windows XP. The Bluetooth country selection is taken over by an independent application. The configuration of the vehicle identification is done in Windows control panel and in external EDIC applications.

Changes to software version V19.01

This operating manual in the version V08.0 is valid from base CD V19.00 and higher. The diagnostic software is only compatible with brand data of the same version.

The following significant new features have been added for version CD V19.00:

- Up to VAS-PC base CD V19.00, firmware versions of the hybrid measuring box up to version 3.4 can be used.

Changes to software version V18.00

This operating manual in the version V07.0 is valid from base CD V18.00 and higher. The diagnostic software is only compatible with brand data of the same version.

The following significant new features have been added for version CD V18.00:

- For testing of hybrid vehicles, a hybrid measuring box is available for vehicles from V18. The measurements are carried out by the respective function test from the GFS or GFF.
- The representation of the measured values from measured value tables has been supplemented in the user interface and in the protocols with values for TIs (text identifiers).

Changes to software version V17.00

The following changes have been made to version V06.0:

- The equipment numbers, which had five digits up to now, have six digits in the new version.
- The software is also available to independent workshops. The distribution is done entirely by CD.
- The licensing model has been changed due to the addition of independent workshops. If no original testers of the VAS series are used, the identification is done over the erWin portal. Via this portal, a time-limited licence can be obtained after a free registration.

Changes in the previous software versions V16.00 and V14.00

Compared to the previous version, changes have been made in three important areas:

- The communication with the vehicle via an external vehicle communication module has been expanded by a USB wired version (VAS 5054, VAS 5055).
- The battery management via the “Administration” operating mode has been replaced with the independent software package SAM (Siemens Accumulator Maintainer). The battery service on the 5051B tester will continue to be done with “Administration” as long as SAM has not been installed. The installation of SAM completely replaces the battery management used up to now.
- The installation of the diagnostic software has changed starting from the base CD V14. The Windows operating system is installed via a recovery DVD specific to the tester. The base CD no longer includes a Windows operating system and applies for all testers equally (VAS 5051B, VAS 5052, VAS 5052A). The installation instructions for the tester were incorporated in /7/.

Associated Documents

In addition to this operating manual, which describes the use of the individual operating modes, the following relevant technical documents may exist for the individual testers:

- /1/ Start-up/unpacking instructions (tester-specific)
with important information concerning start-up and registration of the device
- /2/ Brief instructions (tester-specific)
Fold-out sheet with information about the tester and also brief information about using it. This printed documentation is a component of a tester package.
- /3/ Operating Manual, VAS 505x Hardware (tester-specific)
Description of tester structure, display and control elements, functions of diagnostic and measurement cables, troubleshooting as well as technical data.
- /4/ Diagnostic radio head VAS 5054A / diagnostic interface VAS 5055 – installation and start-up
Description of the installation and start-up including the installation of the necessary wireless/Bluetooth connection; contains technical data of both diagnostic radio heads.
- /5/ User manual printer
The documentation for the printer is included in the printer package (also see the accompanying data carrier).
- /6/ VAS 505x Service Information
contains important information, addresses and telephone hotlines in case of a fault.
- /7/ Vehicle self-diagnosis operating manual
Describes the use of the “Vehicle self-diagnosis” operating mode.
- /8/ VAS 505x diagnostic software installation manual
Describes the software installation on the tester from the Windows operating system (recovery DVD) up to the diagnostic software (base and brand CD) with allowance for the installation of SAM (Siemens Accumulator Maintainer).
- /9/ VAS 6558 operating manual
- /10/VAS 61xx operating manual

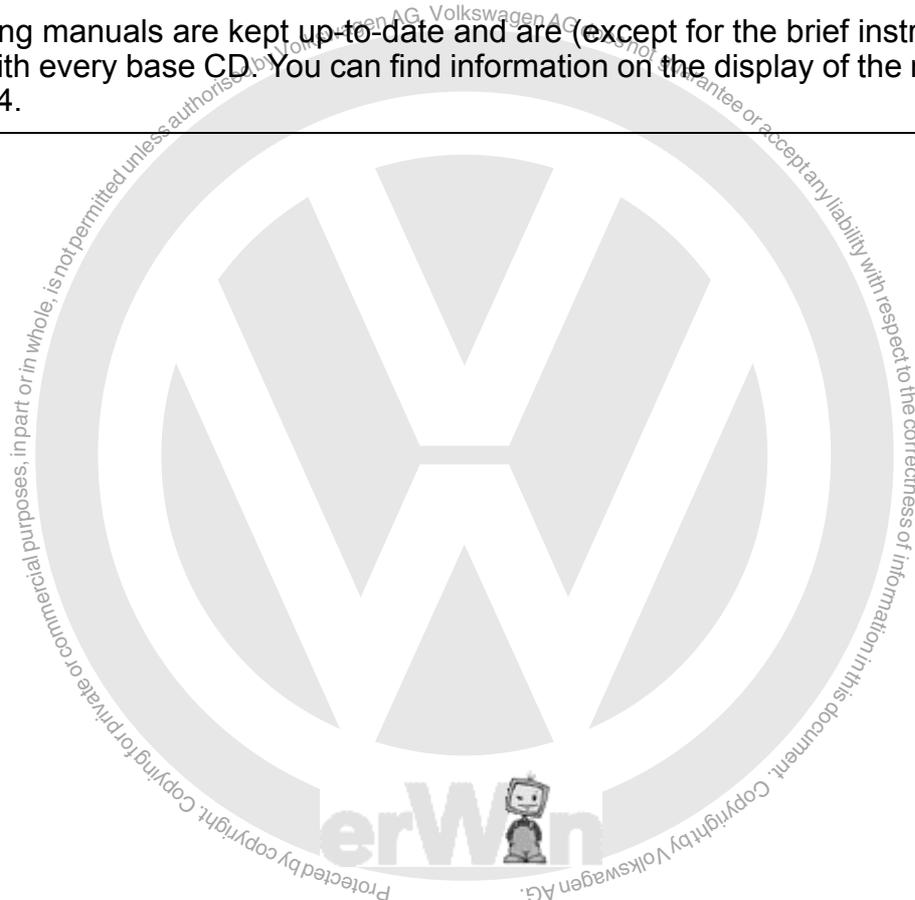
Reference can be made to these documents in the operating manual as follows:

Example: (See /3/, chapter entitled “Troubleshooting”)



Note

The operating manuals are kept up-to-date and are (except for the brief instructions) delivered with every base CD. You can find information on the display of the manuals in Section 9.14.



SAFETY NOTES

Explanation of symbols

The safety instructions in the operating manuals, in the start-up and unpacking instructions or in other documentation provided, in screen displays on the platform during operation and on the products themselves use symbols with the following meaning:



Caution!

Text with this symbol contains information relating to your safety and how you can reduce the risk of serious or fatal injury.

The **CAUTION**  symbol warrants particular attention for your safety.



Caution!

Text with this symbol contains information on how you can avoid damaging the vehicle or device.

The Warning  symbol warns you that if the information is ignored, damage to the vehicle or the tester could result (for example, be sure not to touch the touch screen with sharp objects).



Note

Texts with this symbol contains additional useful information.

A Note **symbol**  indicates important information about the product, how to use it and other information.



Note on other safety instructions

The following section describes general safety instructions which apply to the entire VAS 505x family of testers. Additional safety instructions can be found in the operating manuals. For this reason, always read the operating manuals before using the devices. Safety instructions can also be displayed on the tester screen. Be sure to follow all displayed instructions.

IMPORTANT SAFETY INSTRUCTIONS



Caution!

Read all instructions.



Caution!

If the power cable or the device is damaged, it must not be used until it has been checked by a qualified specialist.



Caution!

Do not allow cables or leads to hang over the edges of tables, desks or consoles. Prevent cables or leads coming into contact with hot components or rotating fan blades.



Caution!

Use of an extension cable is not permitted. Only the specified cables and leads may be used for test purposes.



Caution!

Always disconnect the device from the mains power when it is not in use. Never pull on the cable to disconnect the power cable from the socket. Pull on the plug housing to disconnect the power.



Caution!

The platform must not be operated in the vicinity of open fuel containers, as otherwise there is a risk of explosion or fire.



Caution!

Ensure adequate ventilation when working on combustion machines. Otherwise there is a risk of poisoning.



Caution!

Always use the device in accordance with the description. Use only accessories specified by the manufacturer.



Caution!

Risk of explosions

The devices have parts that generate internal sparks and must therefore not be exposed to inflammable fumes. The device should be operated at least 460 mm (18 inches) above the floor, since petrol and other fumes sink to the floor.



Caution!

All measurement leads may only be used within the measurement ranges stipulated in the technical specifications and the descriptions in the operating manual. All measurement probes may only be used on cables whose sheathing is undamaged. Do not perform measurements on damaged leads.



Caution!

The devices, when connected to an electrical power supply, correspond to protection class 1 and are fitted with a safety-tested power cable. They may only be connected to mains grids with a protective earth conductor (TN network) or mains sockets with a protective earth conductor.



Caution!

Fluctuations and deviations in the power supply beyond the permitted range of tolerance can lead to malfunctions and damage.



Caution!

During test drives, use a strap to secure the tester to the vehicle's back seat and connect it with the diagnostic socket of the vehicle. A second person must operate the tester on the rear seat. Operation from the front seat is too dangerous, e.g. in the event of airbag activation.



Caution!

Electrical ignition systems have voltages up to approx. 30 kV. Always observe the general safety regulations for workshops.



Caution!

Opening the tester or accessories without permission, or making unauthorised modifications, can expose both yourself and the device to significant danger.



Caution!

If a power cable, diagnosis cable, measurement cable of the platform or any other voltage carrying accessory is damaged, it must not be used again until it has been checked and approved by a qualified specialist.



Caution!

If you do not intend to use the device for a significant period of time, please switch it off via the On/Off switch and disconnect it from the mains power when the battery is charged. Simply switching it off is not sufficient to disconnect the power supply to the mains adapter, charging circuit and any connected accessories.



Caution!

Data communication cables must not be connected or removed and the device must not be operated during a thunderstorm.



Caution! VAS 5051B workshop trolley – ventilation

When operating the VAS 5051B workshop trolley, ensure adequate ventilation of the table power adapter for the tester and printer. Remember that even when the tester is switched off, the battery charger remains in operation and the printer is online even if the device enters the energy-saving mode.

- Open the printer flap and/or the roller door (depending on the workshop trolley) fully during operation.
 - The heat dissipation of the table power adapter must not be blocked by articles placed on top (cables, rags, etc.).
 - Disconnect the workshop trolley's power cable to switch off the entire device.
-



Caution! Changing fuses

To prevent the risk of fire and to protect the device, fuses may only be replaced with fuses of the same type and current rating. See also the technical data in the relevant operating manual.



Caution! When connecting vehicles from another source

The VAS 505x diagnostic devices were developed for vehicles made by Volkswagen. Connecting the tester directly to vehicles from other manufacturers can result in damage to the vehicle.

To check vehicles from other sources using the generally applicable OBD self-diagnosis functions, you must therefore connect the VAS 5052/16 OBD adapter cable (with fewer conductors) between the diagnostic cable and the diagnostic socket of the vehicle.



Caution! When handling the battery

- The battery may only be changed by trained personnel.
 - Never short-circuit the battery.
 - Never throw the battery into a fire.
 - Always dispose of/recycle the battery in accordance with the local regulations.
-

Safety instructions for radio-operated devices



Caution!

The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.



Caution!

Do not use portable transmitters (e.g. a WLAN or Bluetooth device) in the vicinity of unshielded detonators or explosive environments, unless the device has been modified and approved as suitable for this type of environment.



Caution!

FCC and FAA regulations prohibit the use of wireless HF devices in the air because their signals can interfere with important aircraft instruments.

The following three notes are valid for the following countries with the required FCC approval:

Bermuda, Canada, USA, Barbados, Cayman Islands (UK), Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Jamaica, Mexico, Dutch Antilles, Nicaragua, Panama, Puerto Rico (US), Trinidad & Tobago, Argentina, Brazil, Bolivia, Chile, Columbia, Ecuador, Paraguay, Peru, Uruguay, Venezuela, Australia, Guam, New Zealand, Lebanon, Qatar, Brunei, Hong Kong, India, Indonesia, Malaysia, Philippines, Singapore, Sri Lanka, Taiwan, Vietnam



Note

FCC 15.19: This device conforms to part 15 of the FCC regulations and the RSS-210 of Industry Canada. The following two conditions must be satisfied for operation:

- The device must not cause any dangerous interference.
- the device must tolerate external interference, including that which may cause undesirable operating states.



Caution!

FCC 15.21: Changes or modifications to the device that are not explicitly approved by the manufacturer can result in FCC approval to operate the device being revoked.



Caution!

FCC 15.105: This device has been tested and conforms to the Class B regulations for digital systems, with regard to part 15 of the FCC regulations. These regulations were developed to avoid undesired interference when the device is operated in a commercial environment. This equipment generates, uses and receives radio signals and can produce harmful radio interference if it is not operated in accordance with the provisions of the device manual. Operating this device in a residential area can trigger influences that are dangerous to health. The user must bear the costs of correcting these influences.

The following information is only valid for Canada:



Caution!

When using an IEEE 802.11a wireless LAN, this product is restricted to use in closed rooms, because it operates in a frequency range between 5.15 and 5.25 GHz. Industry Canada specifies that this product in the frequency range of 5.15 GHz - 5.25 GHz must be operated in closed rooms. This is intended to reduce the potential risk of interference in the same channels as those used by mobile satellite systems. Large radar systems have priority in the frequency bands 5.25 to 5.35 GHz and 5.65 to 5.85 GHz. These radar stations can interfere with or destroy this device.



Note

Dieses digitale Gerät entspricht dem kanadischen Standard ICES-003.
 This Class B digital apparatus complies with Canadian standard ICES-003.
 Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

KEEP THESE INSTRUCTIONS!

Version: 2009-10-30

Copyright Information Volkswagen AG

Starting with V18, the safety instructions also include the following copyright information of the Volkswagen AG:

Any transfer, distribution or duplication as well and any unintended use and/or use which does not serve interoperability is not permitted.

Exception: copies/printouts for company-internal uses and purposes are permitted by Volkswagen AG without written permission. In this case, company-internal use means within a company with the same dealership number.

Exception: printouts of maintenance tables, work times and test records may be transferred to customers.

The transfer of technical knowledge and general technical information to recognised NORA customers (according to the NORA principles of the VW AG) is permitted in the form of extracts.

Expressly not permitted in this context:

1. Information/data from RESERVE concerning repair history
2. Information about product recalls
3. Service Technology manual contents
4. Information/data about repair of electronic components

Warranty work is carried out exclusively with VW original parts. For other repair work, the automatically selected spare parts via AposPro are recommendations. Otherwise, please note the stipulations of articles 5 and 6 of the service contract.

Notes about pyrotechnical components

Starting from V18, the safety instructions have been supplemented as follows with important instructions about pyrotechnical components:

General safety regulations for work on airbag, belt tensioner, and battery separation units (pyrotechnical components)

Pyrotechnical components always contain a fuel which produces gas during combustion. In some versions, pressurised gas is available in addition to the gas production.

This pressurised gas is stored in a pressurised gas container under high pressure.

The ignition of the pyrotechnical components is done by electrical/mechanical igniter.

Testing, installation and repair work may only be carried out by trained personnel.

There are no changing intervals for airbag units.

Never test with test lamps, voltmeters or ohmmeters.

Pyrotechnical components may only be tested in mounted condition by vehicle diagnosis, measuring and information systems which have been approved by the manufacturer.

When working on pyrotechnical components and on the control unit for the Airbag -J234-, the battery's earth strap must be unclamped when the ignition is switched on.

Then cover the negative terminal.

After the battery is unclamped, a waiting period of 10 seconds is required.

The clamping of the battery must be done when the ignition is SWITCHED ON. When this is done, no person may be in the interior of the vehicle.

Exception: vehicles with batteries in the passenger compartment.

When doing this, avoid being within the effective range of the airbags and the seat belts. Wash your hands after touching ignited pyrotechnical components of the restraint system.

Pyrotechnical components may neither be opened nor repaired; always use new parts (danger of injury).

Pyrotechnical components which have fallen on a hard surface or which exhibit signs of damage may no longer be installed.

Before handling the restraint system's pyrotechnical components (for example, disconnecting the electrical plug connector) the mechanic must be electro-statically discharged. The electro-static discharging is achieved by touching earthed metal parts, for example, by briefly touching the door closing wedge.

Pyrotechnical components are to be mounted immediately after their removal from the transport container.

In the event of work interruption, the pyrotechnical component is to be placed in the transport container.

It is not permitted to leave the pyrotechnical component unattended.

Pyrotechnical components may not be treated with grease, cleaning agents or similar materials.

Pyrotechnical components may never be exposed to temperatures over 100°C.

Special notes for driver and passenger airbags

Driver and passenger airbag units are to be stored in dismounted condition so that the padded side faces upwards.

For the following vehicles having an initial registration in the USA, two-staged airbag units might be installed. In these the second stage remains functional after the first stage had been ignited:

“Volkswagen Phaeton:	driver and passenger airbags
“Volkswagen Touareg:	passenger airbag
“Volkswagen New Beetle Limousine:	passenger airbag
“Volkswagen New Beetle Cabriolet:	passenger airbag

For all other vehicles, the second stage is always ignited.

Identifying features of the two-staged airbag units:

1. “PASSENGER AIR BAG OFF” indicator lamp in the foot of the interior mirror
2. Warning sticker on the inside of the sun visor

The following instructions are to be additionally observed for the indicated vehicles with two-stage airbag units.



Caution!

In those airbag units with ignited first stages, it is not certain that the second stage has ignited! Airbag units in which the first stage has ignited can cause serious injuries if the second stage ignites. A possibility to check whether the second stage had ignited is not currently available.

For this reason, the indicated airbag units are to be supplied in the original packaging for proper disposal in accordance with national regulations.

Special notes for head air bag modules

Place dismounted head airbag modules in the transport container or onto a clean, even surface with a cover placed under it.

Folding is possible as long as no damage (in particular to the protective cover) occurs during this.

Head air bag modules are to be treated with the greatest care during mounting and dismounting to prevent possible damage.

Hold on firmly to the gas generator during the whole process (transport, dismounting, mounting etc.) as long as it is NOT screwed in.

Special notes for belt tensioners

The open end of a belt tensioner may never be pointed at anyone.

Belt tensioner units are to be treated with the greatest care during dismounting and mounting. There is an increased potential of injuries if belt tensioner units are handled incorrectly.

When connecting the belt tensioner unit, all mechanical parts, including the three-point seat belt, have to be correctly secured. Should it not be possible to connect the belt tensioner unit due to a lack of space, the seat belt strap has to be completely rolled up before the connection. In this case, there is no increased safety risk if the other safety instructions are noted and observed. Here the greatest attention is to be paid to the unclamping of the battery and the electro-static discharging of the mechanic before connecting the belt tensioner unit.

Depending on the crash, it can be that the belt tensioner has been ignited but NOT the belt-load limiter. These components are to be handled as non-ignited components!

Special notes for battery separation units

Volkswagen Phaeton with two-battery concept:

Sequence for unclamping the batteries.



Caution!

If the sequence is not observed, the pyrotechnical battery separation can be triggered and the electrical vehicle equipment can be damaged.

1. First unclamp the battery in the boot on the right.
2. Then unclamp the battery in the boot on the left.

Storage, transport and disposal of airbag, belt tensioner, and battery separation units (pyrotechnical components)

The respective national regulations are to be observed for storage.

Transport is subject to national and international legal provisions in which packaging, designation, labelling and accompanying documents are regulated in detail.

Non-ignited pyrotechnical parts are to be supplied in the original packaging for proper disposal in accordance with national regulations. If you have any questions, please consult your importer.

Only completely ignited pyrotechnical parts may be disposed of in industrial waste.

1 General Information

1.1 Target group

This documentation is intended to be used by technically qualified personnel and requires relevant knowledge in the field of vehicle diagnosis and instrumentation.

1.2 Contents and structure

The software operating manual contains the information needed for the proper use of the VAS-PC diagnostic software. Depending on which device the software is installed, there are differences in the structure of the masks and in the availability of different operating modes or functions.

For reasons of clarity, not all details of all versions of the operating modes dealt with here are described.

Since the VAS-PC software runs on different testers and with different user rights, test-specific differences will be marked in the text. For this, the individual designations mean:

- “Platform” is the general name for computer or tester. If no platform is mentioned in the text, then the information generally applies to computers and testers.

Type names that apply to more than one tester are designated as follows:

- “VAS 505x” stands for VAS 5051B, VAS 5052, VAS 5052A.
- “VAS 5052x” stands for VAS 5052 and VAS 5052A.
- “VAS 61xx” stands for VAS 6150, VAS 6150A and VAS 6160.

If the diagnostic software is installed on a commercially available PC or laptop, deviations can occur due to the limitations of the PC or different installation. The manufacturer of the software can not assume any liability for this.

Information about the tester design and hardware can be found in the *VAS 505x hardware operating manual/3/*.

1.3 Safety instructions

You should comply with all safety instructions. These will be found after the table of contents and at the various relevant places in the operating manual.

1.4 Difference between “normal” and “EU5” operating modes

The “normal” operating mode of the VAS-PC software is started then when the VAS-PC-SW is installed on a tester or on a VAS61xx diagnostic laptop. In these cases all operating modes are available and the tester can be operated in off-line mode (without existing Internet connection).

The “EU5” operating mode of the VAS-PC software is started in cases when the VAS-PC-SW is installed on a commercially available computer. In this case, the operating modes are available which are needed for the repair and maintenance of the VW Konzern's EU5 vehicles. When the software is started, the computer must have an online connection to the licence server of the VW Konzern. After the user has been identified as valid and authorised, the VAS-PC software can be operated off-line.

1.5 Differences between the devices in use

1.5.1 Operating modes

The following table provides an overview of the operating modes available in the platforms.

Table 1-1 Operating modes of the VAS-PC platforms

Mode	VAS 5051B	VAS 5052x	VAS 61xx	EU5 licence
Administration	+	+	+	+
Vehicle Self-Diagnosis	+	+	+	-
OBD	+	+	+	-
test instruments	+	-	-	-
Guided Fault Finding	+	+	+	+
Guided Functions	+	+	+	+
Audi Flashing	+	+	+	+

- + available
- not available

Communication of control units with LT3 commercial vehicles and UDS control units

Communication with LT3 vehicles is available since the base CD V10.00 and with UDS control units from base CD V11.00.

1.5.2 Testers with and without test instruments

Within the VAS device series there are testers with and without test instruments. For the correct use of the function tests with test instruments available in the Guided Fault Finding, so-called “replacement values” (see Section 6.11) must be input via a virtual keyboard in the case of testers without test instruments. Carry out the measurements using an external test instrument and enter the measured values.

Table 1-2

Devices with test instruments	VAS 5051B
Devices without test instruments	VAS 5052, VAS 5052A, VAS 6150, VAS 6160, PC/laptop

1.6 Associated Documents

Associated documents are listed after the table of contents. Please note that each tester has its own hardware description. The software description is valid for the different platforms and is contained in a shared operating manual.

Using the operating manuals

The operating manuals are on the VAS-PC base CD. They can be called up using the diagnostic software or via the CD/DVD drive at the file path `C:\SIDIS\home\lng.ger\MANUALS\...` For more detailed information, see Section 9.14.

1.7 Open Windows Operating System

The installation of the diagnostics software was separated from an installation of the Windows operating system. This makes it possible to install the VAS-PC on a notebook, provided it corresponds with the general requirements for the hardware.

If you use a tester of the VAS family of devices, then the Windows operating system is installed via a recovery DVD specific to the tester. Then the base CD containing the diagnostics software and support data is installed.

A utility CD is used for providing and installing supplementary software.

One or more brand CDs provide vehicle-specific data. Several brands can be installed in parallel.

The installation instructions for the software and tester were incorporated in /7/.

2 Initial start-up of the VAS-PC software

2.1 Start-up and starting the VAS-PC software

Generally, the following applies for the start-up of the VAS-PC software:

- After the VAS-PC is started, the operating mode (“normal” or “EU5”) is determined and then a check is made whether a valid licence is present.
- The software is to be configured when the initial start-up is done: enter workshop code (based on the importer number and the dealership number), correction of date and time.
- At least one brand CD must be installed to use the “Guided Fault Finding” and the “Guided Functions”.

The following sections show how the VAS-PC software is put into operation:

- Section 2.2 for testers with “normal” operating mode
- Section 2.3 for computers with “EU5” operating mode.
- The conclusion of the start-up applies to both operating modes and is shown in Section 2.5.

2.2 Start-up of the VAS tester



Note

In this chapter, the start-up of a tester in the VAS device series (VAS 5051B, VAS 5052/52A and VAS 6150/A and VAS 6160) is described.
The start-up of a free computer via a EU5 licence is described in the next chapter.

Once the tester has completed the initial start-up, a warning is displayed that no communication link exists to the vehicle. The messages vary with the tester.

Tester type	Warning message
VAS 5051B VAS 5052 VAS 5052A	<i>No network communication is possible with the current station name. Use the menu item Administration/Network settings to change the station name.</i>

After an update of the base CD or when the a new installation is done, the warning message appears:

VAS 5052A VAS 6150 VAS 6150A VAS 6160	<i>The diagnostic head being used is not installed correctly.</i>
------------------------------------------------	-------------------------------------------------------------------

This message will appear at every start-up until the error sources are remedied. More information may be found in *VAS 505x Diagnostic software installation instructions I8/*.

Click on OK to close the warning message.

Another dialog box “Warnings / Notes” appears. It appears each time the tester is started. It explains the meaning of the symbols used for warnings and notes. Pay attention to the note and close the dialog box with OK. You can call up the global warnings and notes at any time by using the operating button “Safety instructions”.

A prompt to initiate a battery service cycle can appear on the VAS 5051B. This depends on the tester's battery condition and whether the Siemens Accumulator Maintainer (SAM) is installed. For more information, see Section 9.20.

Closing the dialog boxes enables the start mask. It contains the initial graphic, the display of the current software version of the base CD and the operating buttons “Administration”, “Warnings and notes”, “Help” and “Print”.

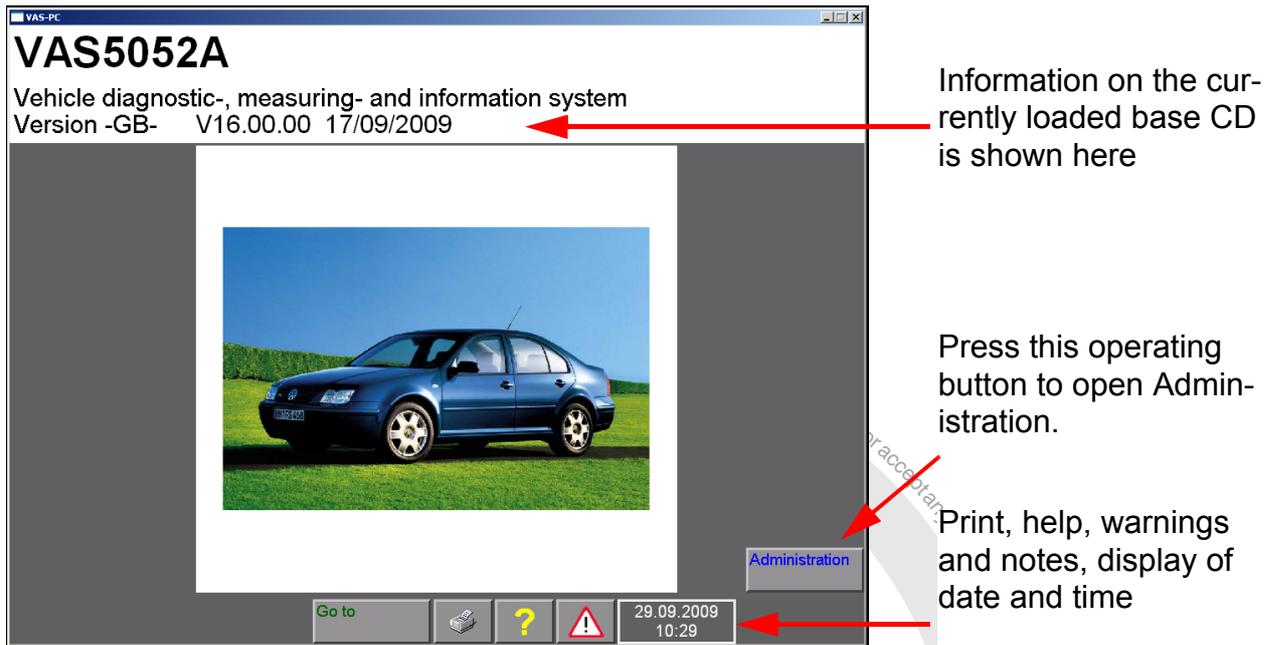


image 2-1 Start mask as it appears during initial start-up

2.2.1 Enter workshop code

Before you can use the tester in your workshop, the tester requires your workshop code. To do this, the “Enter workshop code” function is used which only appears at the initial start-up.



Note

After it is saved, the workshop code cannot be changed.

To enable worldwide equipment identification and a unique user assignment, three elements are used:

- equipment number
- VZ / importer number
- Dealership number

The equipment number is determined automatically at start-up and can not be changed by the user.

The VZ importer number and the dealership number must be entered prior to the initial start-up. Both numbers are provided by the Volkswagen-Konzern. The VZ/importer number here designates the sales centre in Germany or the number of the importer.

This procedure is required again after the base CD has been reinstalled. If the VAS-PC is updated via the base CD and the “Update” selection of the installation menu, the workshop code is kept.

To enter the workshop code, select the “Administration” operating button and then the line “Enter workshop code”.

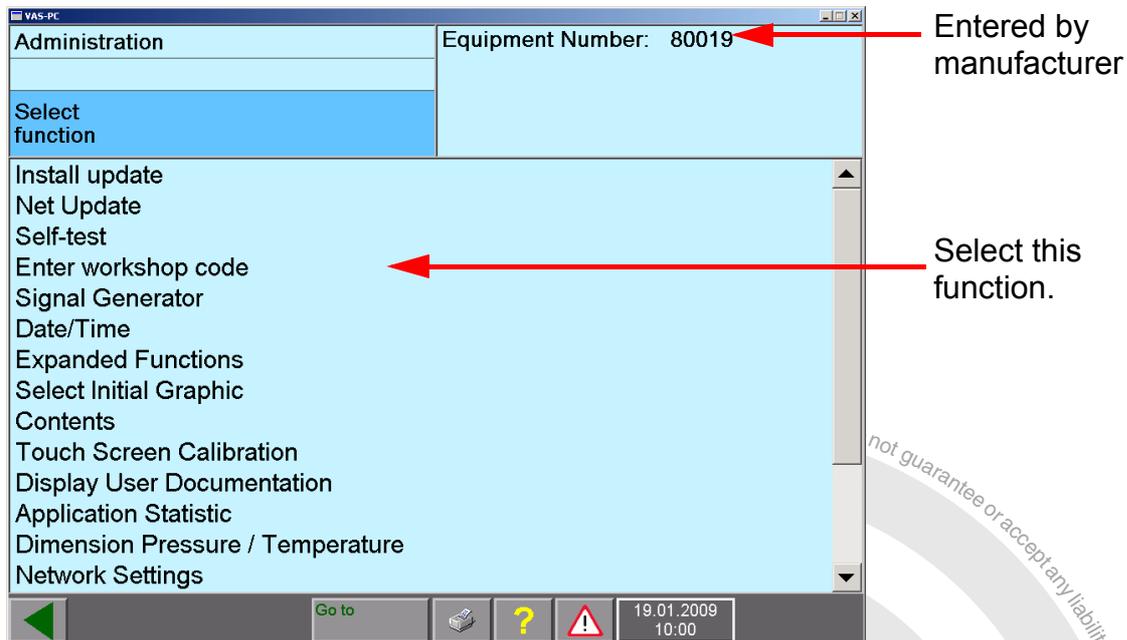


image 2-2 “Administration” mask, “Select function”

2.2.1.1 Equipment number

The equipment number is determined using various algorithms and can not be changed by the user. It has six digits starting from base CD 17.00. For those platforms with five-digit equipment numbers, a zero is added at the beginning.

Table 2-1 Equipment numbers

Range of numbers	Model
050000 - 073200	VAS 5052
080000 - 099998	VAS 5051B
173201 - 189999	VAS 5052A
190000 - 199999	VAS 6150
100000 - 119999	VAS 6150A
120000 - 139999	VAS 6160

2.2.1.2 Importer number and dealership number

Two entry masks now appear **once** for entry of the workshop code (importer and dealership number) and then another mask appears for the entry of the dealership identifier. This can be changed at any time.

Table 2-2 Workshop code

Parameter	Type of input
importer number	Three digits between 0 and 9 (number is provided by VW)
Dealership number	Five digits between 0 and 9 (number is provided by VW)
Dealership identifier	Up to two lines, each containing a maximum of 60 numbers and letters for the input of the name and address of your workshop; no special characters allowed

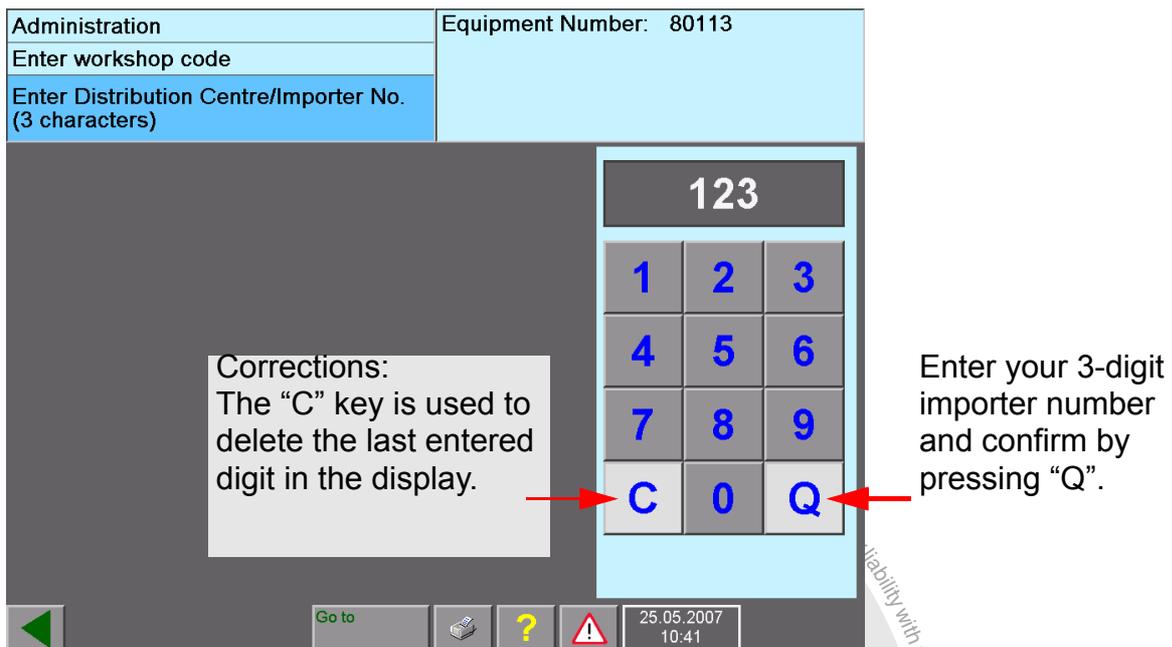
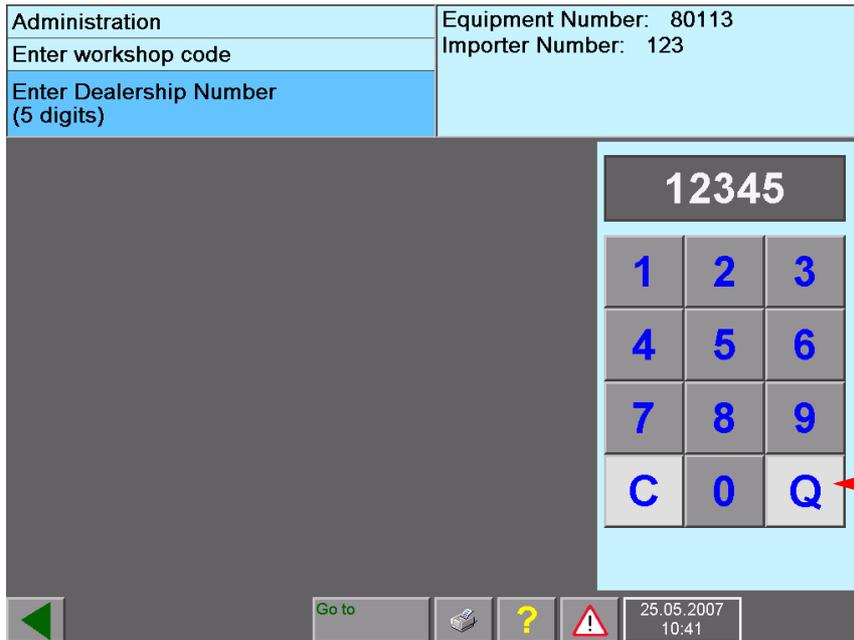


image 2-3 “Enter importer number” mask

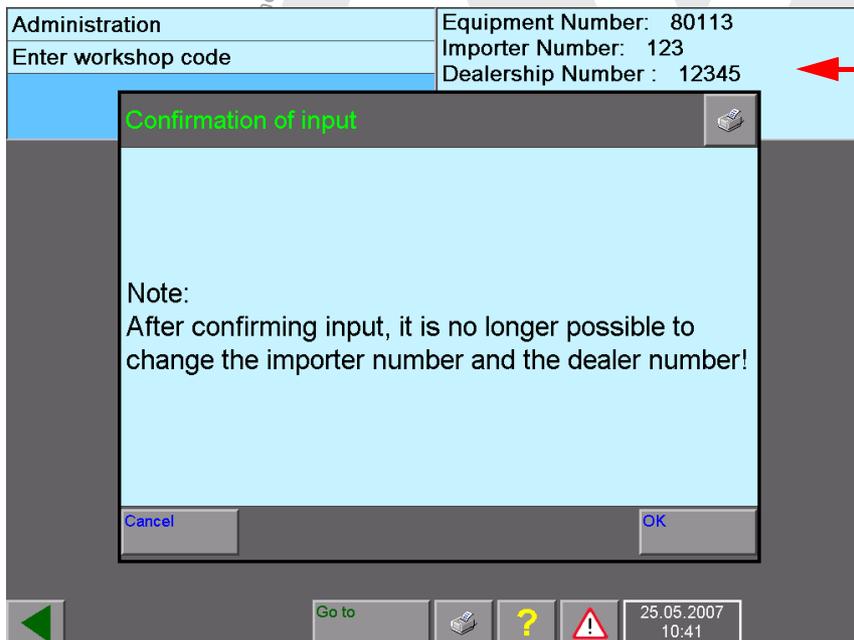
For information on using the virtual keyboards, also see section Section 3.3.8.



Enter your 5-digit dealership number and confirm by pressing "Q".

image 2-4 "Enter dealership number" mask

The workshop number that has been entered can not be changed after it has been saved.



Make sure that the entries you have made are correct. Select "Cancel" to enter the information again.

image 2-5 "Confirmation of input for importer number and dealership number" mask

2.2.1.3 Dealership identifier

After you have confirmed the entries for the importer number and dealership number, a mask appears for the entry of the dealership identifier. The dealership identifier is freely selectable to describe your company; it can, therefore, be the name and address of the company.

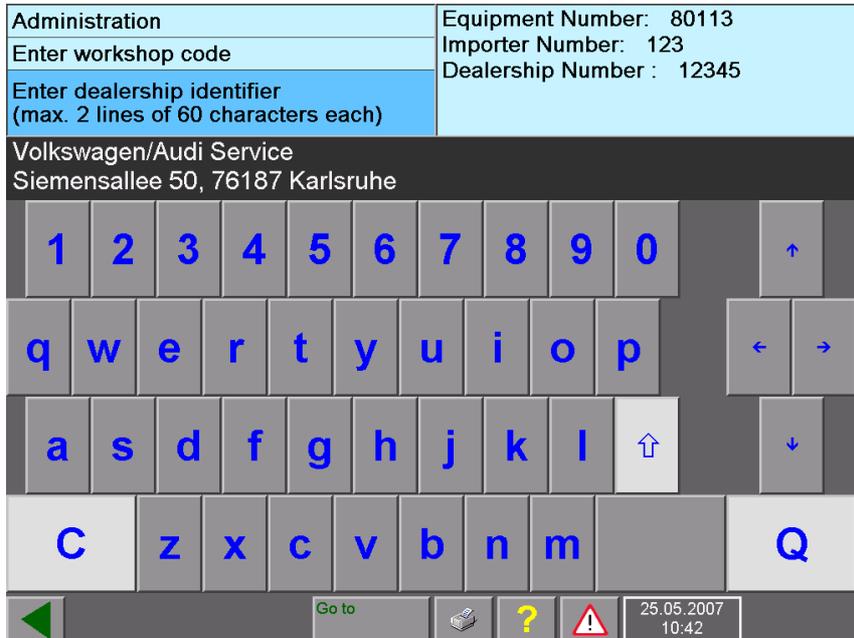


image 2-6 Keyboard for entering the dealership identifier

Enter your dealership identifier here line by line.

Conclude the input of each line using the white “Q” function key.

Use the white arrow key to switch between lower and upper case letters. The other arrow keys change the input position.

For more information on using the virtual keyboard, see Section 3.3.8.

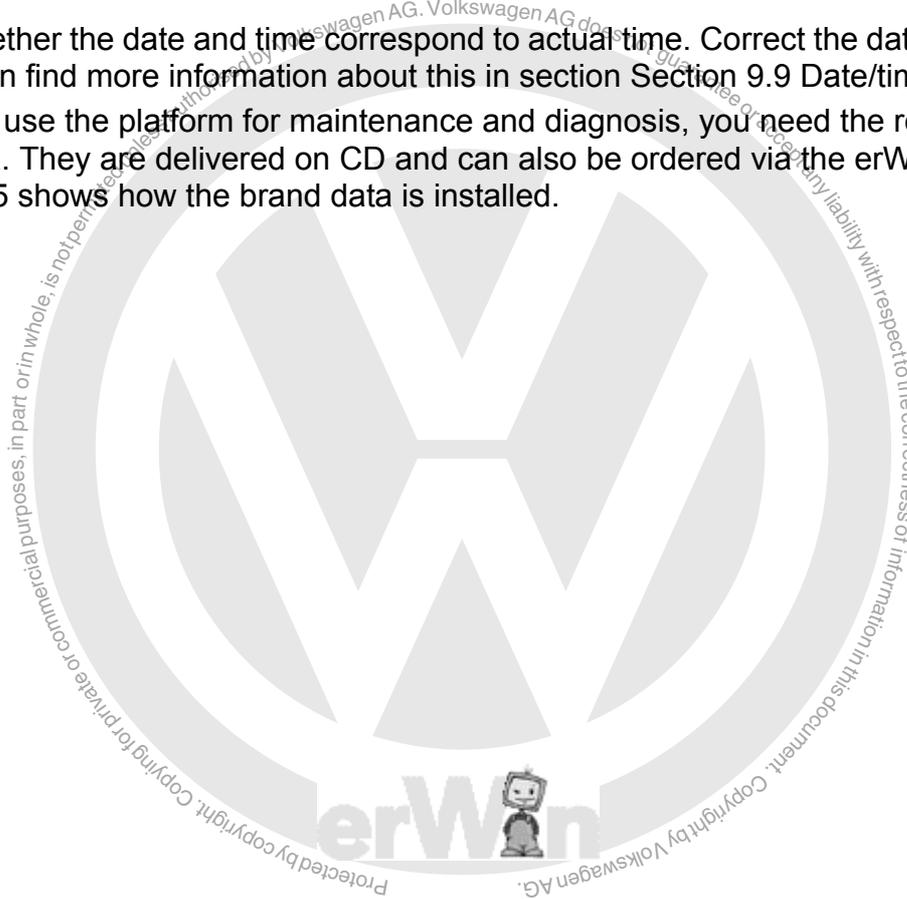
Changing the dealership identifier

After you have entered the workshop code, the function “Enter workshop code” is replaced by “Change dealership identifier”. With this function, you can change your dealership identifier at any time.

2.2.2 Completion of the start-up

After the tester has been initialised with the necessary basic data, two steps are still needed:

- Check whether the date and time correspond to actual time. Correct the data, if need be. You can find more information about this in section Section 9.9 Date/time.
- In order to use the platform for maintenance and diagnosis, you need the respective brand data. They are delivered on CD and can also be ordered via the erWin portal. Section 2.5 shows how the brand data is installed.



2.3 Start-up of a computer with EU5 licence

2.3.1 Basic information about “EU5” operating mode



Note

This chapter will show how a free computer is put into operation using the EU5 licence. The start-up of a tester in the VAS device series (VAS 5051B, VAS 5052/52A, VAS 6150, VAS 6150A and VAS6160) is described in the previous chapter.

When VAS-PC software is started on a free computer, it enters the “EU5” operating mode. Then a check is made via a secure Internet link whether the user is registered and authorised to use VAS-PC.

As soon as a registered user selects an (installed) brand in the “Guided Fault Finding” or “Guided Functions” operating modes, another check is made via a secure Internet link whether a licence for the selected brand is present and still valid. If the authorizations are present, the user is granted access to the desired operating mode.

2.3.2 Initial start on the VAS-PC

2.3.2.1 Prerequisites



Note: Required characteristics

Before you start VAS-PC for the first time, be sure that you have a user name and password which are registered at the VW's erWin server.

Be sure that when you register that you do not use any special characters such as umlauts or diacritical characters. Limit yourself when selecting a user name and password to the 26 letters of the international alphabet as well as the Arabic digits 0 to 9.

Also be sure that you already have an importer number and a dealership number. VW will provide you with these.

Additional information may be found in the installation instructions for the diagnostics software /8/.

2.3.2.2 Logging onto the erWin server

After successful installation, click on the “VAS-PC” icon which is put on the desktop by the installation routine. After a short delay, VAS-PC starts up and starts the consistency test. If the data structure is consistent, you will be prompted to enter the user name and password which you defined during the free registration at the erWin server.



image 2-7 Logging onto the erWin server with the user name registered there

After the test is successfully completed, the start screen and a dialog box opens with general warnings about operation of the platform and VAS-PC software appears. Pay attention to the note and close the dialog box with OK.

The start screen opens and only displays the “Administration” operating mode. Before you can work with VAS-PC-SW, the importer number and dealership number have to be entered.

To do this, open the Administration by clicking on the “Administration” operating button.

2.3.2.3 Input importer number and dealership number

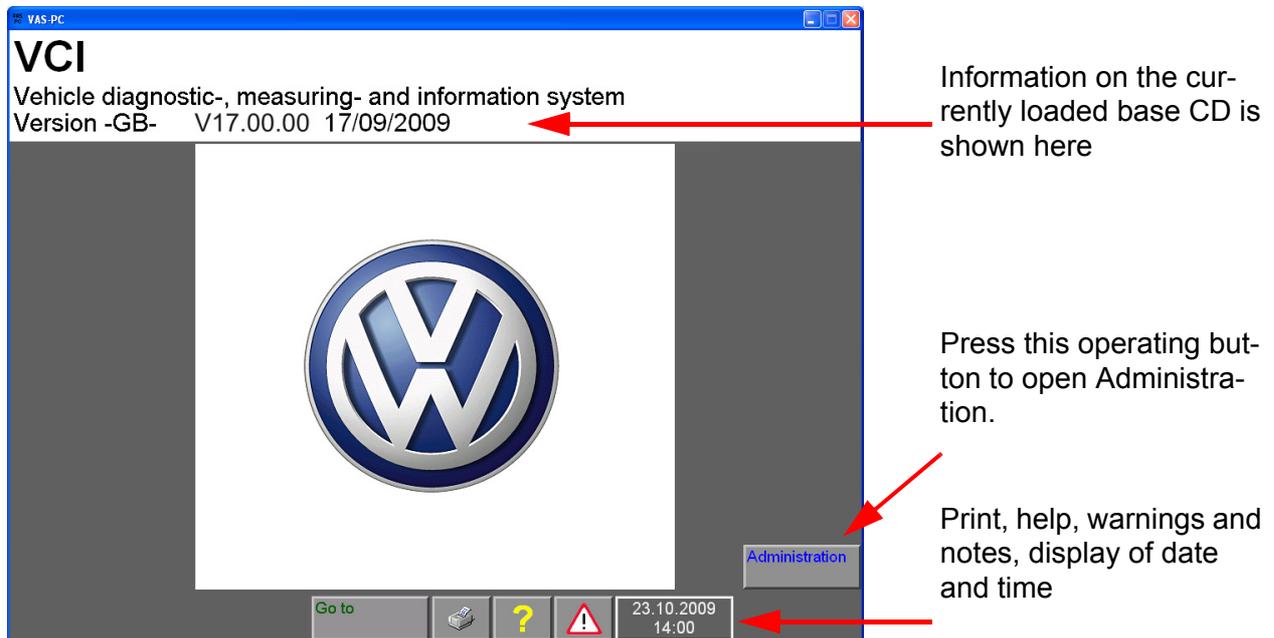


image 2-8 Start mask as it appears during initial start-up

In order to be able to use VAS-PC, the platform requires the importer number and dealership number. VW will provide you with these beforehand.

The “Enter workshop code” function is used for the input and only appears at the initial start-up.

To enable worldwide equipment identification and a unique user assignment, three elements are used:

- equipment number
- importer number
- Dealership number

The equipment number is determined automatically at start-up and does not need to be entered by the user.

This procedure is required again after the base CD has been reinstalled. If the VAS-PC is updated via the base CD and the “Update” selection of the installation menu, the workshop code is kept.

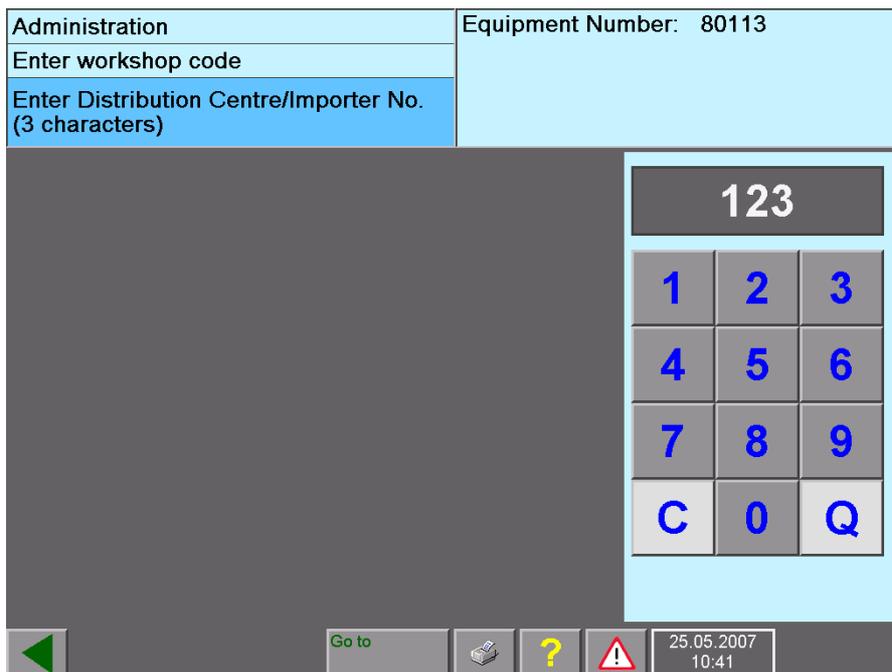


image 2-9 “Enter importer number” mask

Select the “Administration” operating mode and the “Enter workshop code” function.

First use the virtual keyboard to enter the three-digit importer number and confirm with the special key “Q”. Then enter the five-digit dealership number. If you want to delete the last digit entered, actuate the special key “C”. Confirm you inputs.

For information on using the virtual keyboards, also see section Section 3.3.8.

2.3.3 Dealership identifier

After you have entered the importer number and dealership number, a mask appears for the entry of the dealer identification. The dealership identifier is freely selectable to describe your company; it can, therefore, be the name and address of the company.

Administration	Equipment Number: 80113																																													
Enter workshop code	Importer Number: 123																																													
Enter dealership identifier (max. 2 lines of 60 characters each)	Dealership Number : 12345																																													
Volkswagen/Audi Service Siemensallee 50, 76187 Karlsruhe																																														
<table border="1"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>0</td> <td>↑</td> </tr> <tr> <td>q</td><td>w</td><td>e</td><td>r</td><td>t</td><td>y</td><td>u</td><td>i</td><td>o</td><td>p</td> <td>←</td><td>→</td> </tr> <tr> <td>a</td><td>s</td><td>d</td><td>f</td><td>g</td><td>h</td><td>j</td><td>k</td><td>l</td><td>↑</td> <td>↓</td> </tr> <tr> <td>C</td><td>z</td><td>x</td><td>c</td><td>v</td><td>b</td><td>n</td><td>m</td><td></td><td></td> <td>Q</td> </tr> </table>		1	2	3	4	5	6	7	8	9	0	↑	q	w	e	r	t	y	u	i	o	p	←	→	a	s	d	f	g	h	j	k	l	↑	↓	C	z	x	c	v	b	n	m			Q
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<table border="1"> <tr> <td>←</td> <td>Go to</td> <td>📄</td> <td>?</td> <td>⚠️</td> <td>25.05.2007 10:42</td> </tr> </table>		←	Go to	📄	?	⚠️	25.05.2007 10:42																																							
←	Go to	📄	?	⚠️	25.05.2007 10:42																																									

image 2-10 Keyboard for entering the dealership identifier

Enter your dealership identifier here line by line.

Conclude the input of each line using the white “Q” function key.

Use the white arrow key to switch between lower and upper case letters. The other arrow keys change the input position.

For more information on using the virtual keyboard, see Section 3.3.8.

Change Dealership Identifier

After you have entered the importer number, the “Enter Importer number” function is replaced by “Change Dealership Identifier” function. With this function, you can change your dealership identifier at any time.

2.3.4 Notes for start-up with EU5 licence

You can obtain the licence and the brand CD via Volkswagen's erWin portal. For this you have to registered as a user.

The user authorization refers to the licensed period of time and begins from the moment you first call up “Guided Fault Finding” or “Guided Functions”. The validity period is displayed in a dialog box after the licence check.

Note about this: the time point of the first dial up is decisive for the duration of validity and not the number of hours used. You will be automatically logged off by the erWin server after the expiration of the utilisation period. Under certain circumstances, this can lead to an already started fault finding not being completed.

2.3.5 Completion of the start-up

After the platform has been initialised with the necessary basic data, two steps are still needed:

- Check whether the date and time correspond to actual time. Correct the data, if need be. You can find more information about this in section Section 9.9 Date/time.
- In order to use the platform for maintenance and diagnosis, you need the respective brand data. They are delivered on CD and can also be ordered via the erWin portal. Section 2.5 shows how the brand data is installed.



2.4 After the start-up

With the “Go to” operating button and subsequent selection of the “Exit” line, you can return to the start screen from the “Administration” operating mode.

Depending on the operating mode, the platform displays a start mask which reflects the valid user rights. For a tester with the “normal” operating mode, this is the following mask:



image 2-11 Start mask in normal operating mode after entering the dealer data

The current version of the base CD is shown in the start mask. Included in this information are the language designation, version number and version date.

The start mask offers the following selection:

- Vehicle Self- Diagnosis, see /7/ (only for testers with “normal” operating mode)
- OBD, see /7/ (only for testers with “normal” operating mode)
- Test Instruments, see Chapter 5 (only VAS 5051B)
- Guided Fault Finding, see Chapter 6
- Guided Functions, see Chapter 7
- Audi Flashing, see Chapter 8, is only displayed, if an Audi brand CD is installed
- Administration, see Chapter 9

In the navigation toolbar you will find the following functions:

- Operating button “Go to” to change to another operating mode or end the VAS-PC
-  Print, see Section 3.5 and the corresponding sections of the respective operating modes
- ? (Help), see Chapter 10
-  (safety information), see Section 3.3.6
- Set correct date and time

2.5 Installing brand data from CD



Note

VAS-PC diagnostic software is only compatible with brand data of the same version. Installing brand CDs with other compatibility numbers leads to cancelling of the installation procedure.

For Guided Fault Finding and Guided Functions to work, you must install one or more brand CDs. Within this context, the compatibility numbers from the base CD and the brand CD must correspond. The installation attempt will otherwise be aborted with an error message.

The brand CD is installed as follows:

1. Open the CD/DVD drive and insert the desired brand CD. Be sure to read the information about inserting CDs (see *Operating Manual VAS 505x Hardware I/3I*).
2. Close the CD/DVD drive.
3. Actuate “Administration” operating button.
The “Administration, CD Update/Installation” mask appears.
4. Select the “Install update” menu item. Confirm the subsequent security query.

5. The contents of the brand CD are now installed on the platform. It can take up to an hour to carry out a full installation. As soon as installation is complete, the platform switches from “Administration” operating mode back to the start mask. A brand symbol in the upper right of the screen shows you which brand CDs are installed on the platform.

VAS 5051B

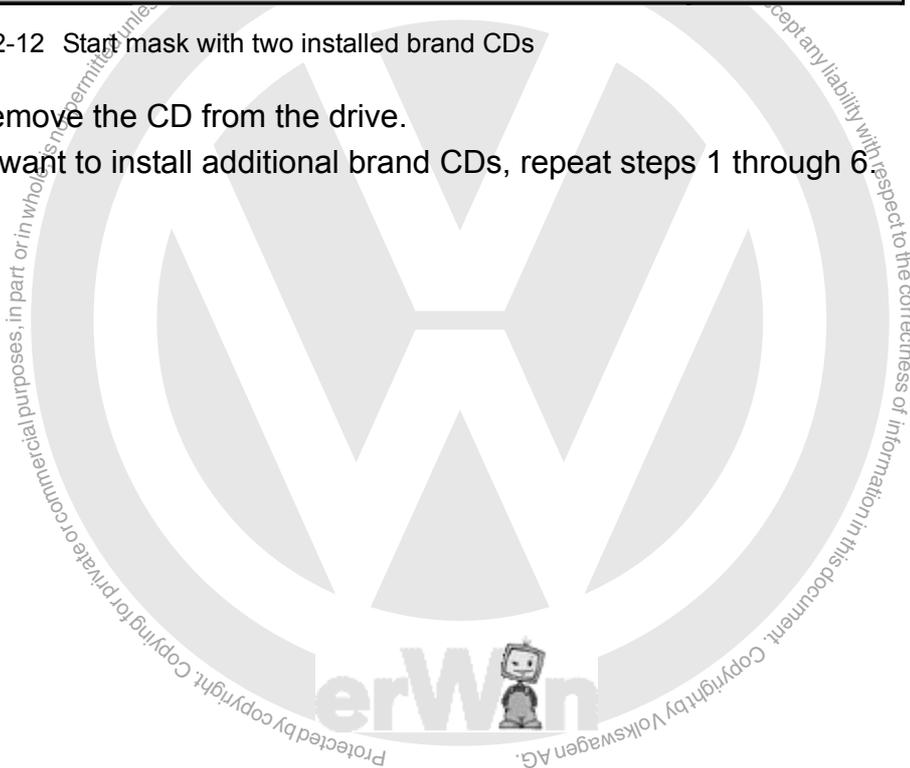


Vehicle diagnostic-, measuring- and information system
Version -GB- V17.00.00 23/09/2009

image 2-12 Start mask with two installed brand CDs

6. Remove the CD from the drive.

If you want to install additional brand CDs, repeat steps 1 through 6



3 Operation of the masks

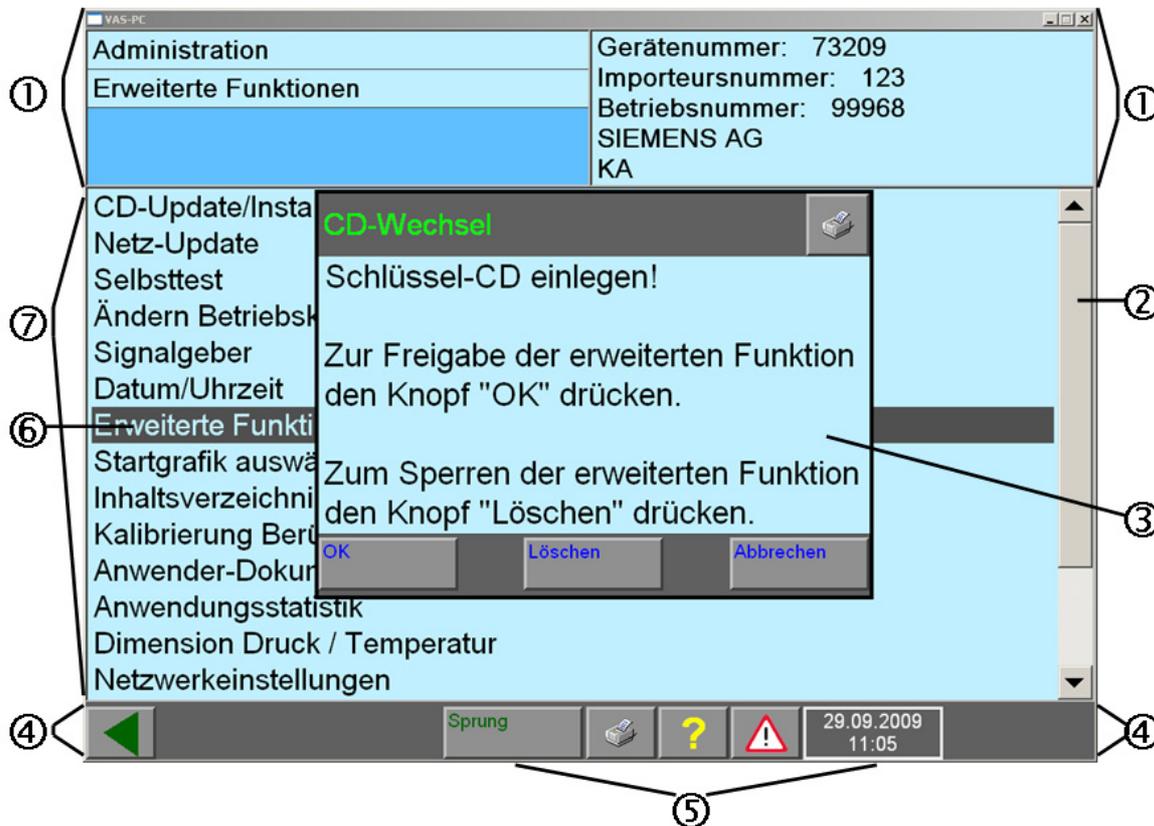


image 3-1 Overview – masks

More information for the individual elements of the mask may be found in the following sections. The relevant number in the figure must thereby be referenced:

1. Left and right information window
2. Scroll bar
3. Dialog box
4. Navigation bar with control buttons “Back”, “Go to”, “Print”, “Help”, “Warning” and clock.
5. Operating buttons of the navigation toolbar
6. Selection bar
7. Work window (behind the activated dialog box)



Note

In “Vehicle self-diagnosis” operating mode, the use of the masks may differ from this description. For more information about the operation of the vehicle self-diagnosis, see the *Operating Manual for Vehicle self-diagnosis I71*.

3.1 Masks

The graphic displays on the screen are known as “masks” (Fig. 3-1). They display all the information and control functions.

The VAS-PC software masks are usually structured in the same way: in the bottom section there is a bar with control elements (the navigation bar); the middle and largest section is taken up by the work window in which you make your selection or can enter values. The two information windows are above the work window.

3.2 Operating buttons

In each mask, you will only see the operating buttons (Fig. 3-1, No. 5.) that are necessary at the moment. You select the various functions with these operating buttons. The colour of the control operating buttons you whether or not it is activated. If the operating button is dark, it is pressed or switched on.



pressed operating button, function active



operating button not pressed, function can be activated

You have selected and activated this operating button. As soon as you are no longer touching the operating button, the desired command is executed.

The operating button offers a function that can be activated. You have not, however, selected it.

3.3 Work window

The work window (Fig. 3-1, No. 7.) takes up the largest part of the mask. The display changes according to the operating mode and current progress.

The right-hand window shows the results or the previously selected section. In “Test instruments” operating mode, fault reports are also displayed in this window.

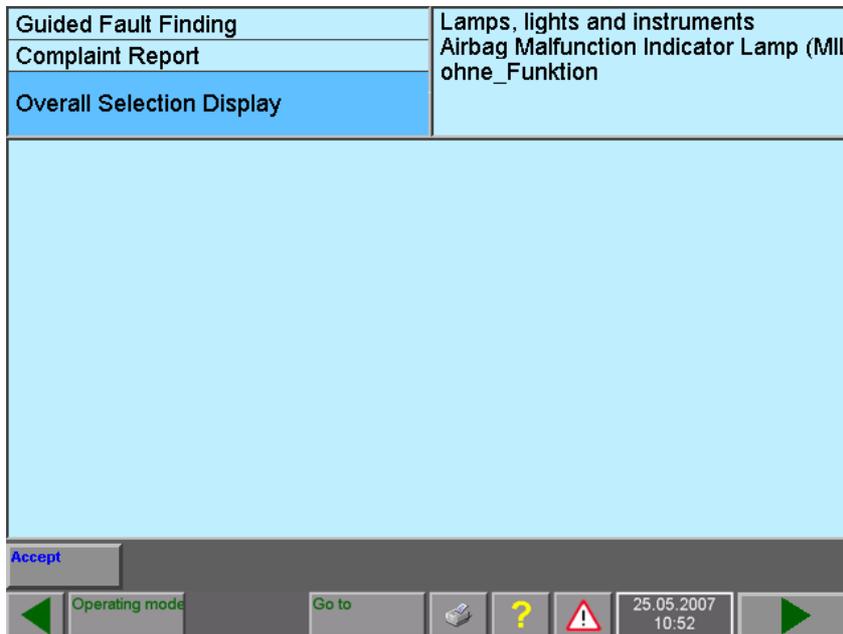


image 3-3 Selection of a complaint report in the right-hand information window



3.3.2 Dialog box

A dialog box (Fig. 3-1, No. 3.) is a small mask which is displayed over the main mask. It shows additional information, operating possibilities and malfunction messages to be able to execute further steps in the selected program.



Note

As long as a dialog box is open, the operating buttons of the main mask cannot be pressed. You have to press an operating button in the dialog box to close it first.

The following operating buttons may appear in the dialog boxes:

Table 3-1 Control buttons of the dialog boxes (selection)

Operating button	Meaning
Cancel	You abort an action and return to the previous mask.
Display	Allows you to display image or text documents.
Exit	You end an operating mode and return to the system start screen.
OK	You confirm the action or a dialog with "OK".
Pause	Work is interrupted briefly and then continued.
Close	The dialog box is closed.
Overview	You are shown a selection list where you can select the desired text or action.
Interrupt	Work is interrupted for an extended period of time, and data is saved.
	Printer symbol: Starts a screen printout which sends what you see on screen to the selected output medium. For more details, see Section 3.5.1

The help also appears in a dialog box. See Chapter 10 for using help.

3.3.3 Selection bar

After selecting a line in the work window or in a dialog box, this line is highlighted by means of a black selection bar (Fig. 3-1, No. 6.). The words in the line you have selected are shown in white.

After you have marked your text, the next mask will usually appear as soon as you stop touching the touch screen.

If this is not the case, the diagnostic software offers you the possibility of selecting several texts. Select all the texts you want to mark. To then go to the next mask, press the "Continue" operating button (see Page 3-8).

3.3.4 Scroll bar

If the complete text cannot be displayed in a dialog box or mask, a scroll bar (Fig. 3-1, No. 2.) appears on the right. It consists of a slide and two arrows. The length of the slide shows you whether it is a large or a small document. The smaller the slide the larger the text which has not yet been displayed. In order to read the text not being shown, move the slide up or down with the left mouse key or with your finger. The desired text becomes visible in this way. You can, however, also move it line by line. If you activate the "Arrow down" (▼) the text moves up one line; with the "Arrow up" (▲) key it moves down one line again.

3.3.5 Cursor

The cursor (Fig. 3-1) of the software takes on various forms depending on its current function.

Table 3-2 Forms of the cursor

Appearance	Function	Note
	The "arrow" is the cursor form with which you select functions or operating buttons.	Depending on the device and the connected hardware, you can activate the functions and operating buttons with the touch screen or with the mouse.
	The "hourglass" appears when the software is processing your inputs.	No further inputs should be made when this display appears. Wait until the cursor changes back to an arrow.
	The "printer" appears when you have sent a print command to a connected printer by pressing the "Print" operating button.	No further inputs should be made when this display appears. Wait until the cursor changes back to an arrow.

3.3.6 Navigation bar

The navigation bar (Fig. 3-1, No. 4.) is at the bottom part of the mask. You can call help and service functions with the operating buttons in this line. The navigation bar contains a maximum of eight different operating buttons as well as the indication of the date and time. The number of operating buttons actually available depends on the type of mask and its current state.



image 3-4 Overview of operating buttons on the navigation bar (example)

After you have pressed the desired operating button, the software will carry out the corresponding action.

If provided, the operating buttons appearing on the navigation bar have the following functions:



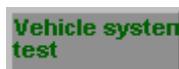
You abort the current function or return to the previous mask.



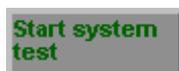
Switch from “Guided Fault Finding” or “Guided Functions” to another operating mode. You can select all possible operating modes in the opening dialog box.



You switch directly to the selected operating mode.



In “Guided Functions”, you switch directly to the mask of the vehicle system test.



In “Guided Functions”, you switch directly to the vehicle system test.



You call the platform help function (see Chapter 10).



By pressing this button, you can view general warnings (“Caution”, “Warning”) and notes.



You switch to the next mask.


 Go to

You open the “Go to destination” menu. In the menu, you will find different items depending on the current operating mode and function of the platform.

- Press “**Cancel**” to go to the first mask of your operating mode.
- Press “**Exit**” to go to the start mask.
- When you select “**Administration**”, you go to a limited number of administration functions. You can also use these functions in other active operating modes, such as “Test Instruments” and “Guided Fault Finding”. Afterwards, press the appropriate operating button on the navigation bar to return to the original operating mode. The following functions are available at present (depending on the device; see Chapter 9 for function descriptions):
 - Change Dealership Identifier
 - Contents
 - Display user documentation
 - Network settings
 - Configuration of vehicle communication (not VAS 5052A)
- If other applications are active in addition to the described operating modes, you can switch to the applications by selecting the corresponding name.
- In “Guided Fault Finding”, the test steps are offered that have already been carried out. This allows you to go back in the function test in order to change entries or selections as needed (see Section 6.3).



Print the screen image or save as image.
For the print options, see Section 3.5.

3.3.7 Slide control

You can change the setting values continuously with the slide control.



image 3-5 Slide control

Touch the lighter coloured slide control and pull it slowly to the right or to the left depending on whether you want to set the value higher or lower.

If you touch the area to the right or left of the slide control bar, the value is incremented or decremented.

3.3.8 Using the virtual keyboards

Not all testers have a traditional keyboard. If it is necessary to input data, a so-called “virtual keyboard” appears on the touch screen, allowing you to enter text by touching the individual keyboard buttons on the screen. The layout of the virtual keyboard changes to suit the application case in question.

A virtual keyboard consists of an input field which provides various keyboard keys and a display field alongside or above it which displays the text you have input.

The tester uses several types of virtual keyboards for special tasks. Examples are shown in the following chapters.



Note

You can also enter characters using a keyboard connected to the tester or use a mouse to actuate the keyboard buttons. See Section 3.4.1.

3.3.8.1 Alphanumeric keyboard

When the alphanumeric keyboard appears on the screen, you can enter letters, numbers and special characters. You can view the input in the field above the keyboard.

To enter a text or string of numbers, touch or click the desired keyboard buttons in the right order.



Note

If the text or the sequence of numbers is too long, an acoustic signal is emitted.

Examples of alphanumeric keyboards are shown in Fig. 3-6 and Fig. 3-7. Depending on the task, different keyboards arrangements are used.

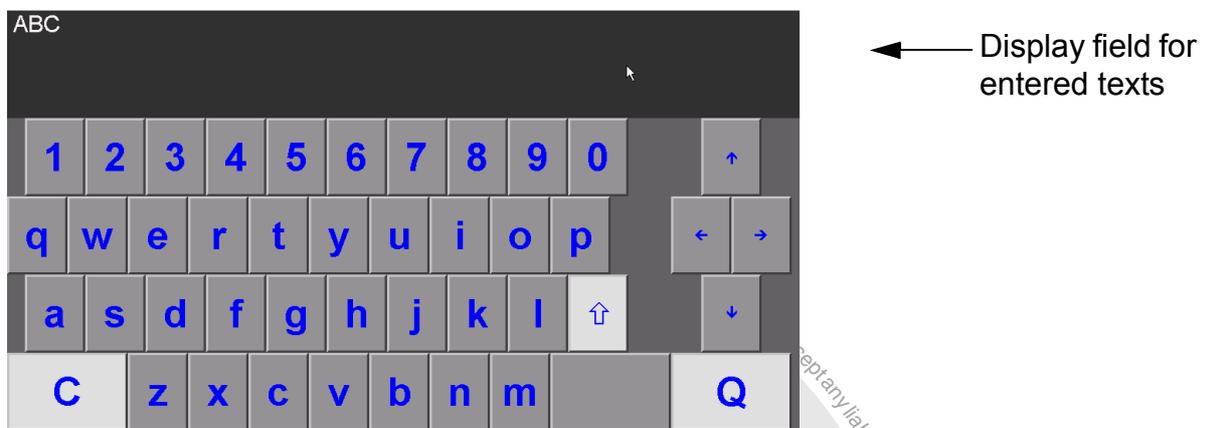


image 3-6 Alphanumeric keyboard (lowercase letters) with display field



image 3-7 Alphanumeric keyboard (uppercase letters) with display field; the "uppercase letters" key is pressed and marked dark grey.

Special keys

The alphanumeric keyboard has special keys. Special keys “C” and “Q” are highlighted in white in order to differentiate these from the grey letter keys “C” and “Q”.

The special buttons have the following special functions:



This special key (C = “Clear”) deletes the last entered character. To delete several characters, activate the “C” key several times in a row.



With “Q” (Q = “Quit”) you confirm and terminate your entry in the active line.

In multi-line input possibilities, you can use “Q” to move to the next line. In the left hand information window you are shown how many characters and lines you can enter.



This key corresponds to a keyboard shift key. When you use it, the display of the keyboard changes from uppercase letters with special characters to lowercase letters with numbers and vice versa (see Fig. 3-6, Fig. 3-7). This key only appears in the alphanumeric keyboard.

Note: Special keys are only available in the “Uppercase” mode and numbers only in the “Lowercase” mode.



This key inserts a space between words or letters.



This key moves the input position up a line.



This key moves the input position back a character.



This key moves the input position forward a character.



This key moves the input position down a line.

3.3.8.2 Numerical keyboard

Enter the desired value by touching the number keys. The numbers you have input will be displayed in the field at the top.



image 3-8 Numerical keyboard with display field

Special keys

The numerical keyboard has the special keys “C” and “Q”, similar to the alphanumeric keyboard. They are highlighted in white. The function of the special keys correspond with those of the alphanumeric keyboard.

3.3.8.3 Decimal keyboard

Enter the desired value by touching the number keys. The numbers you have input will be displayed in the field to the left.

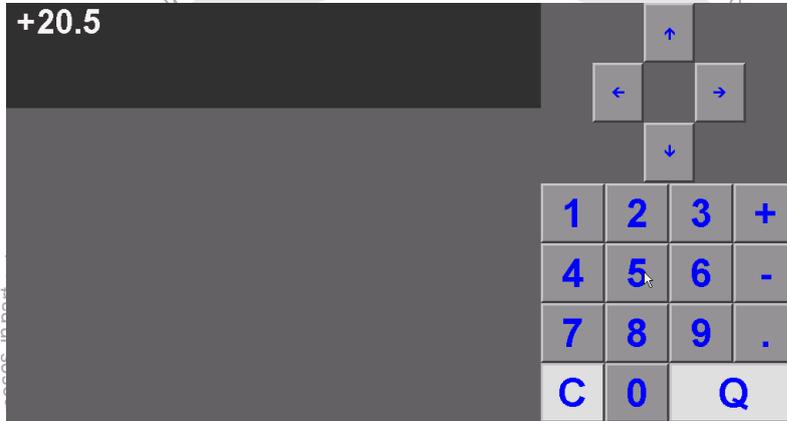


Image 3-9 Decimal keyboard with display field

Special keys

The decimal keyboard includes special keys “C” and “Q” and the arrow keys. The two special buttons “C” and “Q” are highlighted in white, similar to the alphanumeric keyboard and correspond in their function. The keyboard also has the following additional special keys:



This key inserts a positive sign.



This key inserts a negative sign.



This key inserts a decimal point.

3.3.8.4 Hexadecimal keyboard

Enter the desired value by touching the characters. The numbers you have input will be displayed in the field to the left.

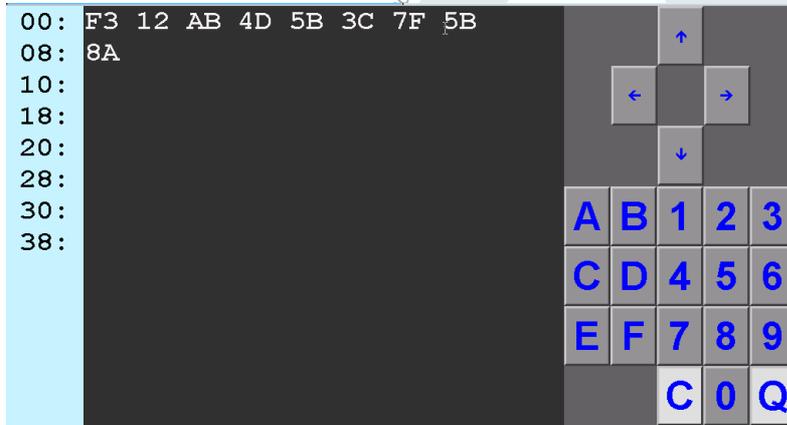


image 3-10 Hexadecimal keyboard with display field

Special keys

The hexadecimal keyboard includes special keys “C” and “Q” and the arrow keys. The two special keys “C” and “Q” are highlighted in white, similar to the alphanumeric keyboard and correspond in their function.

3.4 Keyboard and mouse

3.4.1 Keyboard

You can also make inputs via a connected keyboard. It is an alternative to the virtual keyboard in Section 3.3.8.

The keyboard is supplied for a particular language. Your keyboard assignment can be set using the usual procedures under Windows. Additional information may be found in the *VAS 505x Installation instructions for the diagnostics software I8/*.

3.4.2 USB mouse

As an alternative to operating the touch screen, the diagnostic software can also be operated with a connected USB mouse.



3.5 Print

There are two possibilities to print from the respective program run: either using the “Print” operating button in the navigation toolbar or in the title bar of the active mask. You can cancel the “Print screen” function by clicking on “Continue” without making a selection.



If you select the “Print” operating button in the navigation bar, you can select the output location (printer or external memory drive).

- **Screen**
Prints the contents of the screen that is currently visible (screen shot). This option is always possible.
- **Enter vehicle ID no./licence plate no.**
In operating modes “Vehicle Self-Diagnosis”, “Guided Fault Finding” and “Guided Functions”, you can enter the chassis number and licence plate number of the tested vehicle before issuing the log by using the alphanumeric keyboard that appears. In this way, the vehicle ID number and licence plate number will appear in the log, allowing clear identification later on. When logs are saved to removable storage device, the vehicle ID number also appears in the file name. For this reason, it must be entered before saving. This data is deleted after you quit the operating mode.
- **Safely remove hardware**
This menu item is only available if you have used a USB external memory drive to output data. Make sure to select this option prior to disconnecting the external memory drive from the tester, otherwise the transferred data might be lost. A dialog box informs you when you may disconnect the external memory drive without any loss of data.

You can find further print functions (diagnosis protocol, ...) in the appropriate sections of the corresponding operating modes.

When starting a print job, a dialog box appears for the determination of other options; see Section 3.5.1.



Note about protocols

In the diagnosis software, protocols are output in XML format together with the corresponding format file “report.xml”. If data is on an external memory drive and it is to be displayed on a PC, an appropriate application for reading the data is required, such as Internet Explorer 6.0. The format file is only written to the external memory drive once, even if multiple protocols were output. It specifies the format of the pages displayed.

3.5.1 “Print/Save” dialog box

On assigning a print job, a dialog box appears. Its operating buttons depend on the current situation:

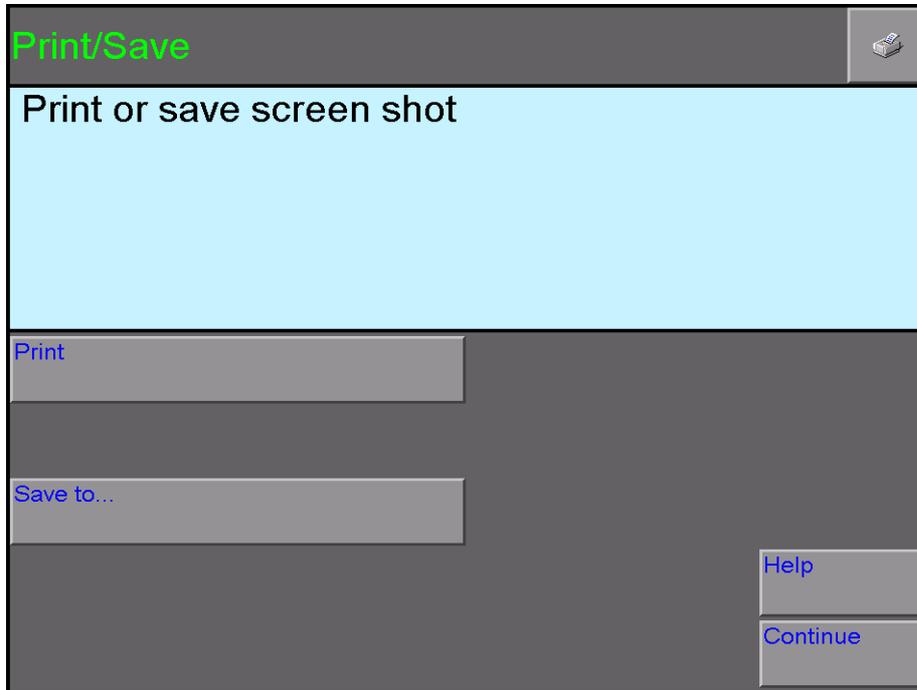


image 3-11 Dialog box for output of a screen printout

Use this dialog box to specify the print job in detail. You may enter multiple outputs in succession, e.g. one for a printer (paper) and one for a USB memory.

Select whether the screen printout is to be sent to an installed printer (“Print” operating button) or be saved as picture file (“Save as” operating button). You can save the picture anywhere you want.

The dialog box remains open until you press the “Continue” button.

If you press the printer symbol on the title bar, another dialog box appears that you can use to specify the output of the desired screen content.

Functions of the possible operating buttons:

- **Print**
Printout to the configured printer.
- **Save as ...**
Output to a storage location which will be specified in the next dialog field, “Select folder”. If you connect a USB memory later on, the corresponding drive will be displayed in the folder selection list.

- **Send for online technical support**
Output to the “ProtoURL” address via LAN connection (display option, see Section 9.17.3). If there is no connection, an appropriate message is displayed and the protocol is stored temporarily on the tester (also see Section 6.16). You can only send the diagnostic protocol of the “Guided Fault Finding/Guided Functions” online.
- **Safely remove hardware**
This operating button appears if a USB memory is connected. Press it before you remove the USB memory (also see Section 3.5).
- **Enter vehicle ID no./licence plate no.**
If the vehicle identification no. and the license plate no. are required to output a protocol (also see Section 3.5), these values are requested here if they have not been entered yet.
If the vehicle identification number has already been entered or found automatically during the vehicle system test, then you only need to enter the vehicle license number. It is not possible to repeat the entry. After such a data request and the corresponding input, you will need to restart the printout.
- **Help**
Help for the dialog.
- **Continue**
Closes the dialog box. If you have selected neither a printer nor a storage location, cancel the dialog box without output.

Printing the diagnosis protocol

If a diagnosis protocol is output, you are asked whether you would like a complete protocol or a short version (see Section 6.13; not for “Send for online technical support”).

Printing user manuals

Printout is only possible using a printer; the “Print/Save” dialog box does not appear. However, the desired page range can be entered prior to printing.

4 Vehicle self-diagnosis/OBD

The vehicle self-diagnosis is only available on testers of the VAS 505x series (VAS 5051B, 5052, 5052A, VAS 61xx diagnosis laptop) and on a PC with ALM licence.



Note

Information on the use of the “Vehicle self-diagnosis” mode can be obtained from the *Operating Manual Vehicle Self-Diagnostics/71*.

5 Test instruments

5.1 Overview

The “Test Instruments” operating mode allows you to set the testing unit with the help of parameter masks and then use the unit to perform tests. Measurement results are displayed numerically or graphically on the screen.



Note

The VAS 5052x and VAS 61xx testers and those for installation on commercially available computers do not have their own test instruments. The measurements required for “Guided Fault Finding” must be obtained using external testing devices. The measurement results are entered as replacement values into the Guided Fault Finding via a virtual keyboard when using commercially available measuring devices. When using the VAS 6356, the measured values are automatically taken over in function tests. The “oscilloscope” function is not available here. A malfunction message appears for the selection.

The following functions are available in “Test Instruments” operating mode:

- Multimeter
- DSO

In addition, you can also use the operating buttons on the navigation bar to switch to the:

- Vehicle Self-Diagnosis,
- Guided Fault Finding and
- Guided Functions

operating modes. You can only do this if you began your diagnostic session in one of these operating modes.



Caution!

Use the test instruments only on vehicles and vehicle components.

In the “Test instruments” operating mode functions you can also have selected measured values from “Vehicle Self-Diagnosis” displayed in parallel.

5.1.1 Printing measured values

Via the “Print” operating button and then selecting “Screen”, you can output a copy of the screen to the output medium specified.

5.2 Starting the Test Instruments

The test instruments are accessed from the start mask by pressing the “Test Instruments” operating button.



image 5-1 Start mask, calling up “Test Instruments”

The “Multimeter” mask always appears after it is started.

Free use

Test instruments can be programmed to carry out a fault search as part of a function test (see Section 6.11) – for example, for checking wiring – or be used as desired. For free use you can select instruments directly from the start mask using the “Test Instruments” operating button or using non-fixed functions on the navigation bar of the other operating modes. If the test instruments are currently in use in a function test, they will not be available for free use.



When “Test Instruments” is started from the start mask, the “Multimeter” mask always opens first but when switched from the operating modes, the mask last used will open first (multimeter or DSO).

You can change between the “Multimeter” and “DSO” masks via the “Go to” menu.

5.3 Multimeter

Setting the multimeter

When accessed from the start mask, the “Multimeter” mask is displayed in its “Voltage U/R/D” basic setting (see Fig. 5-2). When you return to the “Multimeter” mask, the setting shown will be the last one used since the operating mode was started.

Once the mask appears, the current setting is used to perform a calibration.

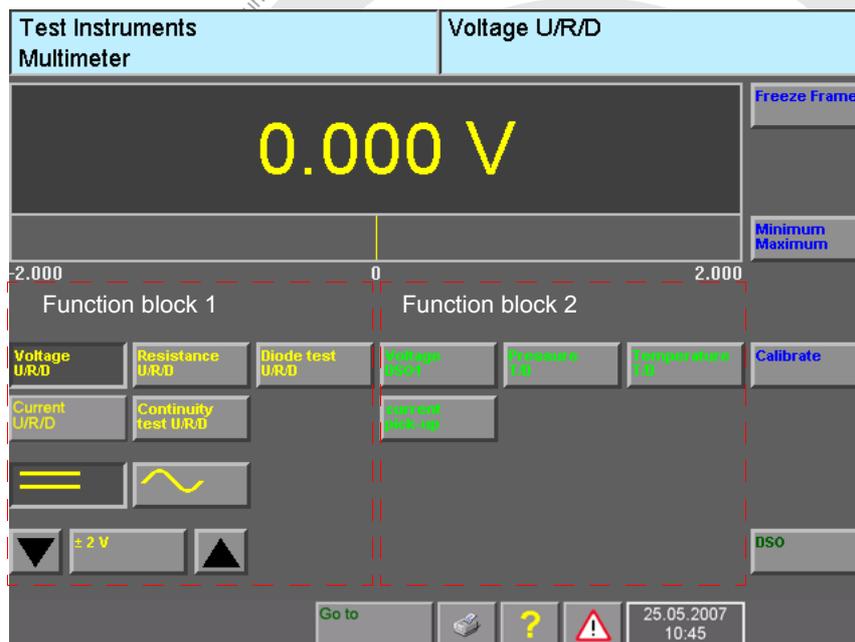


image 5-2 “Multimeter” mask, basic setting

The “Multimeter” mask is used to operate the multimeter as a free measuring device. You can set measurement functions, perform measurements and read the test results in it.

Function blocks

The operating buttons on screen for selecting the measurement functions of the two function blocks have differently coloured inscriptions.

The selectable measurement functions are divided into two function blocks (Fig. 5-2):

- Function block 1 (measurements via U/R/D measuring lead, yellow inscription)
 - Voltage U/R/D
 - Current U/R/D or inline current
 - resistance U/R/D
 - diode test U/R/D
 - continuity test U/R/D
- Function block 2 (measurement via current pick-ups, DSO1 measurement cable, pressure / temperature sensor, green inscription)
 - voltage DSO1
 - pressure T/D
 - temperature T/D
 - Current via current pick-up

Two measurements simultaneously

You can perform one measurement from function block 1 or function block 2 or you can perform one from each of the function blocks simultaneously (for example, see Fig. 5-9).

You can operate both measurement functions the same way as if each of them was the only measurement currently performed.

To display both measured values, the display is divided in the middle and the first measured value is cyclically shown on the left and the second on the right, parallel to the first.

If there is a second measurement function selected in the function block which is not needed, you can switch it off by selecting it again.

The measurement value bar and the Min/Max display under the value display are omitted when two measurements are active at the same time.

Overflow / underflow of measurement values

An overflow or underflow of measurement values for measuring the voltage, current and resistance is indicated by “+++++” or “-----” in the display field and the value display of the Min/Max function.

Calibration

An automatic self-calibration feature is built in to the multimeter functions. It is performed the first time the corresponding operating button is activated. If you switch measurement types, it will also calibrate in the new measurement type.

This calibration will also take place when you return to the “Test Instruments” operating mode if has been more than an hour since the last switch.

You can also perform the calibration manually if necessary (see “Calibration” control button, Section 5.3.10).

5.3.1 Direct and alternating voltage measurement

Measurements can be performed directly with the tester (VAS 5051B) or by entering a replacement value (5052x, VAS 6150). You will receive a replacement value by taking the values with an external measuring device and make these manually available to the tester.



Press “Voltage U/R/D” to select the “Voltage measurement” measurement function.



You select the “Direct voltage” measurement type. (max. 50 V).



You select the “Alternating voltage” measurement type (max. 40 V).



Use the display box for the measurement range to switch from automatic to manual measurement range selection. You can reactivate automatic measurement selection by pressing on the display box a second time.



You set the next higher measurement range when selecting measurement ranges manually.



You set the next lower measurement range when selecting measurement ranges manually.

The colours of the triangles on the measurement selection buttons indicate their status:

- Yellow triangle = Measurement range changes possible
- Black triangle = operation blocked

Freeze Frame

With “Freeze Frame”, you “freeze” the measured value display.

This pauses the cyclical repetition of the measurement and the last display remains on screen without changing.

Press the “Freeze Frame” operating button again. Cyclical repetition of the measurement restarts and the display is updated on a continuous basis.

Freeze frame remote control

Press the button on the end of the measurement cable test probe to start the “Freeze Frame” function by remote control when measuring a vehicle.

**Minimum
Maximum****Extreme values**

While a measured value is being displayed, you can press the Minimum Maximum operating button to start the “Extreme values” function.

The “Extreme values” function calculates the current minimum and maximum values from the measured values displayed and shows them both in the measured values bar in the form of two vertical lines. These extreme value lines represent the fluctuation range of the measured values.

The values calculated for the minimum and maximum measured value are displayed below the lines.

Extreme values can only be switched on when one measured value is being displayed (but not for two simultaneous measurements).

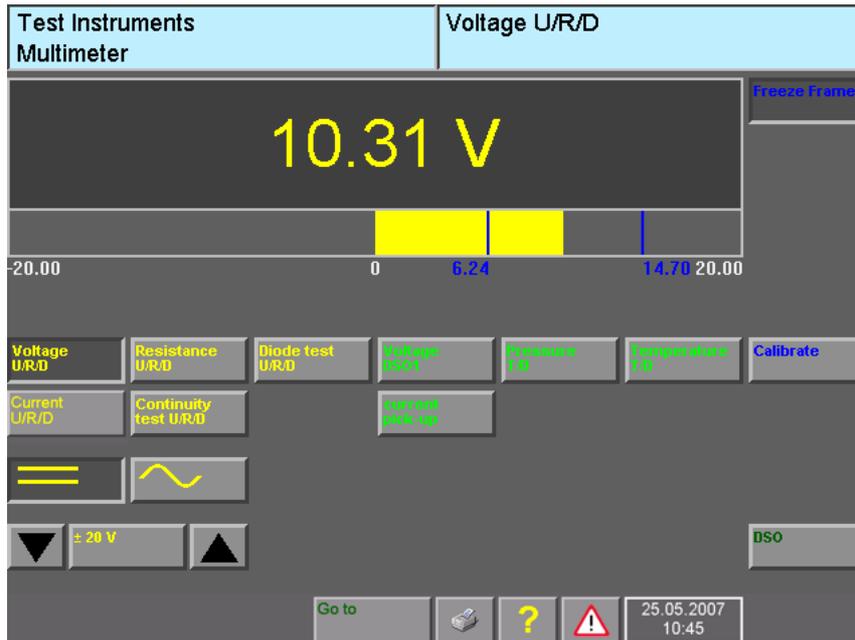


image 5-3 "Multimeter" mask voltage measurement



5.3.2 Direct and alternating current measurement inline

Inline current

To select the “Current measurement” measurement function, actuate the “Current U/R/D” or “Inline current” operating button. You can measure currents up to 2 A (VAS 5051B) or 10 A (VAS 5051) here. The current circuit is opened and the tester is connected into it directly as an ammeter (in-line measurement).

± 1 A

Press the display box for the measurement range to switch from automatic to manual measurement range selection. You can reactivate automatic measurement selection by pressing on the display box a second time.

The other elements of this mask are identical to those of the direct and alternating voltage measurement masks (see Section 5.3.1).



image 5-4 “Multimeter” mask, current measurement

5.3.3 Direct and alternating current measurement using current pick-up

current pick-up

If the operating button is pressed without a current pick-up being plugged in, an error message will appear: "Current pick-up not connected". If, however, one of the four current pick-ups (50 A, 100 A, 500 A or 1800 A) is plugged in, it will be detected automatically and displayed in the right-hand information window. Disconnecting the current pick-up will only be detected during measurement. Plugging the current pick-ups into another socket during a pause will be detected when measurement is restarted and the right-hand information window updated. After a current pick-up is connected or changed, calibration will be carried out before the first measurement is made.

± 5 A

The measurement ranges are adapted automatically to the pick-up type which was detected.

Press the display box for the measurement range to switch from automatic to manual measurement range selection. You can reactivate automatic measurement selection by pressing on the display box a second time.



Note

If carrying out measurements with current pick-ups, remember to recalibrate the pick-up when measuring low currents because of possible magnetisation if you have previously used the pick-up to measure currents in a higher range. For example, this would arise when measuring the quiescent current after switching off the ignition.

The other elements of this mask are identical to those of the direct and alternating voltage measurement masks (see Section 5.3.1).



image 5-5 "Multimeter" mask: current measurement with the 50 A current pick-up

5.3.4 Resistance measurement

Resistance
U/R/D

Press the “Resistance U/R/D” operating button to select the “Resistance measurement” function.

0 .. 10 kOhm

Press the display box for the measurement range to switch from automatic to manual measurement range selection. You can reactivate automatic measurement selection by pressing on the display box a second time.

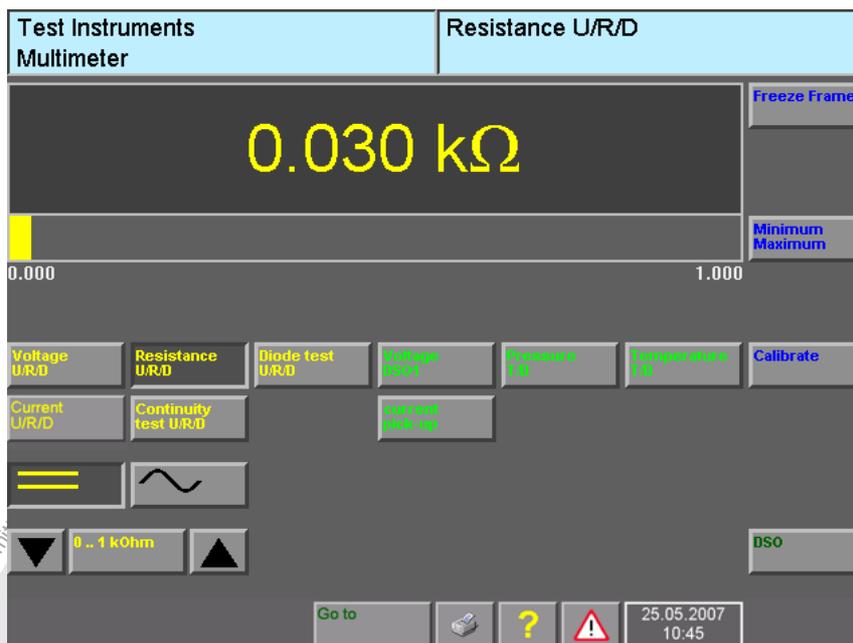


image 5-6 “Multimeter” mask, resistance measurement

When the 0...100 Ohm measurement range is selected, the calibration for this measurement range is started. Dialog boxes prompt you to take the actions necessary for this.

Use of the “=” and “~” keys is blocked.

The other elements of this mask are identical to those of the direct and alternating voltage measurement masks (see Section 5.3.1).

5.3.5 Continuity test

Continuity test U/R/D

Press the “Continuity test U/R/D” operating button to select the “Continuity test” measurement function. It indicates a connection or an open line.

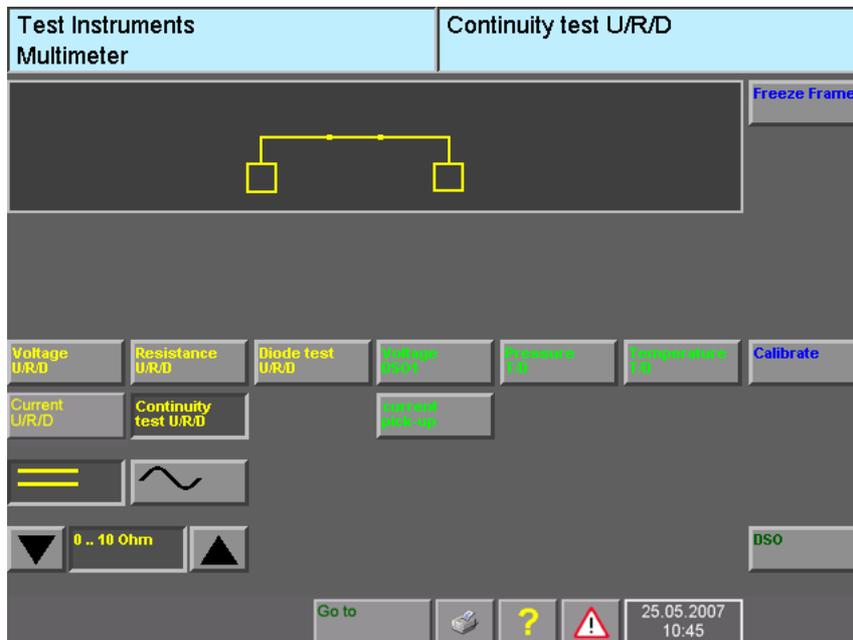


image 5-7 “Multimeter” mask, continuity test, connection

Freeze Frame

Press the “Freeze Frame” operating button.

This pauses the cyclical repetition of the measurement and the last display remains on screen without changing.

Press the “Freeze Frame” operating button again. Cyclical repetition of the measurement restarts and the display is updated on a continuous basis.

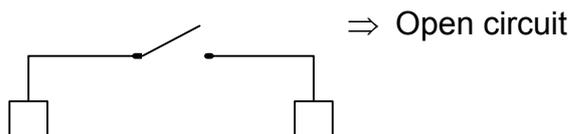
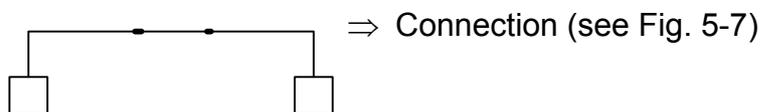
Freeze frame remote control

Press the button on the end of the probe tip of the measurement cable to start the “Freeze Frame” function by remote control.

Use of the “=” and “~” keys is blocked.

Display

The results of the continuity test are shown in graphical form:



When the closed switch symbol is displayed, a signal tone is also heard.

5.3.6 Diode test



Press the “Diode test U/R/D” operating button to select the “Diode Test” measurement function.



Press the “Freeze Frame” operating button.

This pauses the cyclical repetition of the measurement and the last display remains on screen without changing.

Press the “Freeze Frame” operating button again. Cyclical repetition of the measurement restarts and the display is updated on a continuous basis.

Freeze frame remote control

Press the button on the end of the probe tip of the measurement cable to activate the “Freeze Frame” operating button by remote control.

Use of the “=” and “~” keys is blocked.

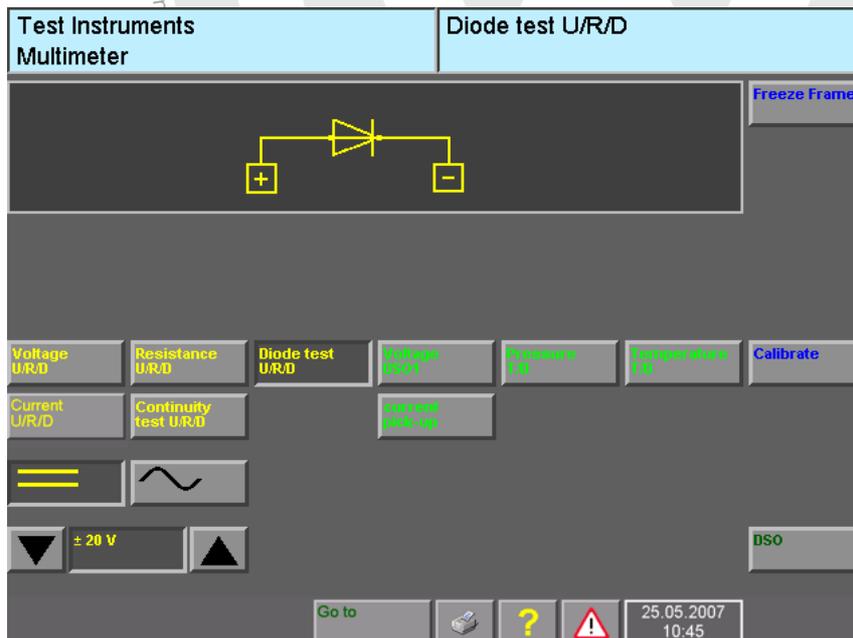
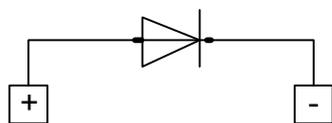


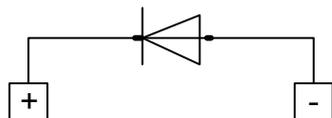
image 5-8 “Multimeter” mask, diode test, diode in conducting direction

Display

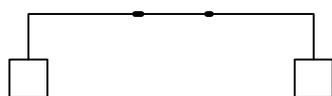
The result of the diode test is displayed as a graphical symbol:



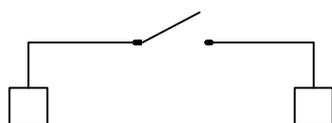
Diode in conducting direction (see Fig. 5-8)



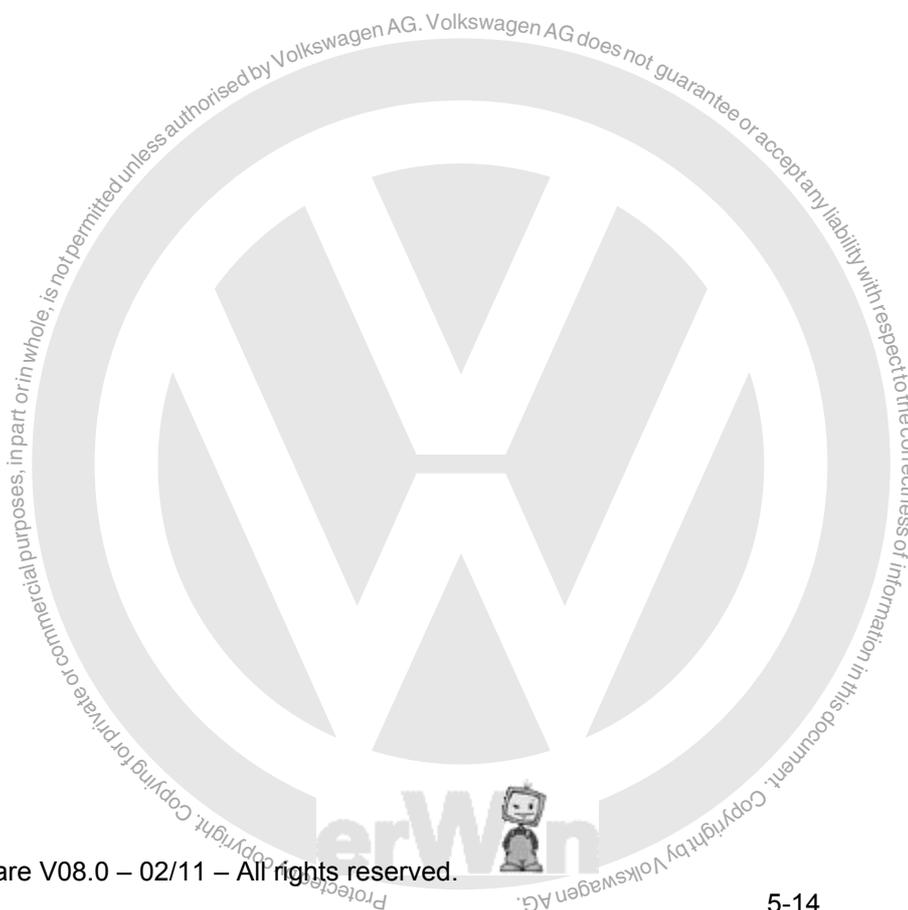
Diode in non-conducting direction



Short circuit



Open circuit



5.3.7 Voltage DSO1

The “Voltage DSO1” function gives you in addition to the U/R/D functions a greater voltage measurement range up to ± 400 V peak voltage (also with AC voltage). You can use this function in combination with the measurement functions of function block 1 (Fig. 5-2) and thus make two measurements in parallel.



image 5-9 “Multimeter” mask: voltage measurement via U/R/D and DSO1



Caution!

Use of the DSO cable

The DSO cables (with blue identification of the pin plug) are approved for voltage peaks up to 400 V and not designed for use in the measurement categories II, III and IV.

For this reason, use the DSO cables only for measurements on the vehicle. Keep possible overvoltages in mind when measuring.

Measurements on the mains voltage are not permitted.

5.3.8 Pressure T/D



Connect the appropriate pressure sensor and press the “Pressure T/D” operating button. The connected pressure sensor will then be detected automatically and calibrated to atmospheric pressure. The corresponding measurement range will then be preset. The measured value display is the relative pressure. In “Administration” operating mode you can specify “bar” or “lb/in²” (see Section 9.16).



Press the “Filter” operating button to filter out higher frequency interference (more strongly damped display):

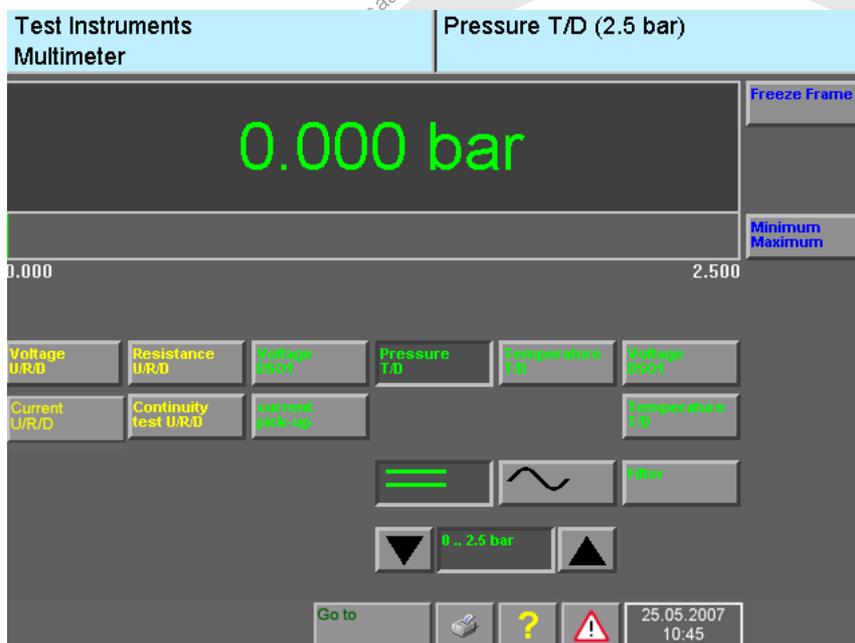


image 5-10 “Pressure T/D” mask

5.3.9 Temperature T/D

Temperature T/D

Connect the temperature sensor for measuring fluids or air and press the button “Temperature T/D”. The connected temperature sensor will then be detected automatically and calibrated. In “Administration” operating mode, you can specify Celsius (°C) or Fahrenheit (°F) (see Section 9.16).

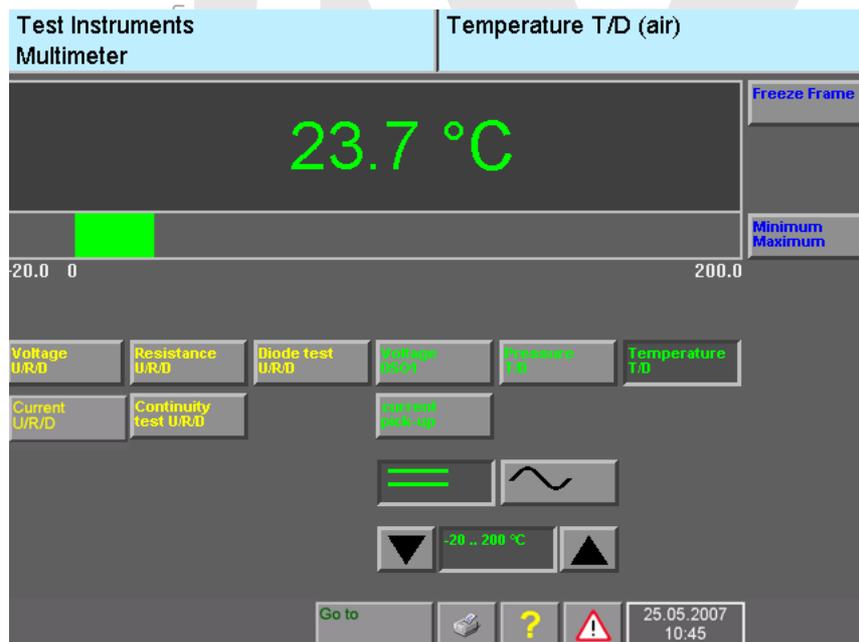


image 5-11 “Temperature T/D” mask

5.3.10 Calibrate

A rectangular button with a dark grey background and the word "Calibrate" written in blue text.

Press the “Calibrate” operating button to perform a manual calibration of the test instruments and the attached measurement cable. Where necessary, dialog boxes guide you through the further actions.

You should always carry out manual calibration any time you change the DSO measuring cable, change or use the current pick-ups at a different location, or use the tester for the first time after a long period, especially if it has been exposed to wide temperature fluctuations.

Calibrate manually in order to compensate additional transition resistance up to the test object when measuring the resistance. Short the connections to the measured object. The calibration will then cover not only the measurement cable but also the connections to the measured object.

5.4 Digital Storage Oscilloscope (DSO)

Starting the DSO

Once you are in the “Multimeter” mask, press the “Go to” operating button and select the “DSO” menu item. If you want to return to the “Multimeter” mask afterwards, select the “Multimeter” menu item in the “Go to” menu.

When changing from application operating modes the mask last used in “Test instruments” operating mode will appear: either the “Multimeter” or the “DSO” mask.

When entering for the first time, the “DSO” mask will be called up in the basic settings (Fig. 5-12).

From then on, each time the “DSO” mask is selected the settings used the last time the mode was started remain in force.

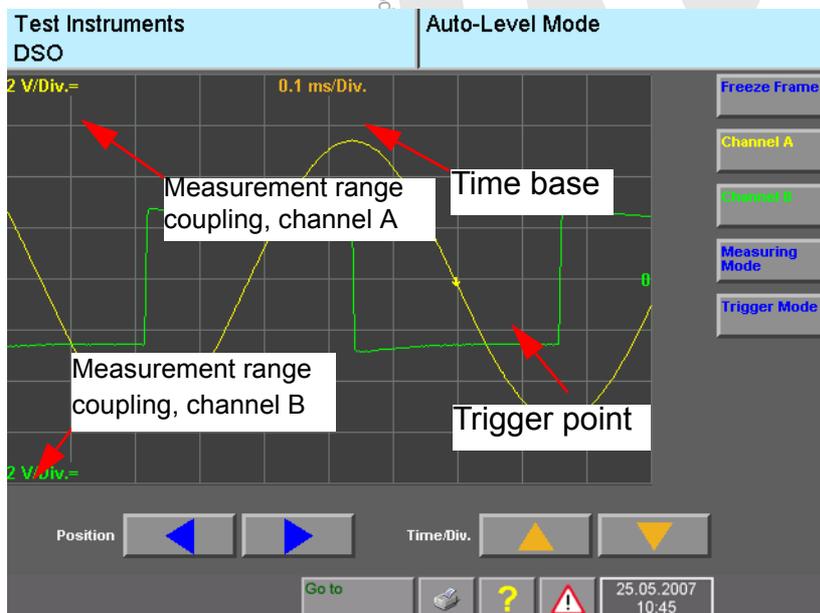


image 5-12 “DSO” mask, basic setting

The “DSO” mask allows you to use the digital storage oscilloscope as a free measurement device. You can set parameters, trigger measurements and read the measurement results.

You can display up to three measurement curves on screen simultaneously. To provide clearer assignment of the functions, the button labels, the parameters and the displayed measurement signals are displayed in different colours:

- Channel A: yellow
- Channel B: green
- Preset measurements: blue

You can make the following settings in the “DSO” mask:

- Select the measurement channels using the “Channel A” and “Channel B” operating buttons.
- Set parameters for the measurement channels (not available in Auto Setup)
- Select and set parameters for the trigger channel using the “Trigger mode” operating button (not visible when you are working in “Draw mode”).
- Select the measuring mode using the “Measuring Mode” operating button.
- Setting the time base via the arrow keys

Image position and time base

If none of the operating buttons “Channel A”, “Channel B”, “Trigger mode” or “Measuring mode” has been pressed, you can select the image position and the time base.



Press this operating button to shift the curve grid-by-grid to the right and so to bring sections that are further left into view.



Press this operating button to shift the curve grid-by-grid to the left and so bring sections that are further right into the display.

If the curve is shifted to the right or left, the trigger point (shown by a coloured arrow) will also be moved.



Press this operating button to set the next higher time base.



Press this operating button to set the next lower time base.



Note

The smallest time base (VAS 5051: 10 μ s/div, VAS 5051B: 1.25 μ s/Div) can only be set with single-channel operation (channel A or B OFF). The operating button of the switched-off channel is hidden.

Time bases 20, 50 and 100 s/Div can only be set in the draw mode.

Div. = division (raster).

5.4.1 Channel A, Channel B



Press the operating button “Channel A” or “Channel B” to display the operating functions for “Channel”, “Measurement range”, “Coupling”, “Min/Max” and “Measurement preset” below the display field and thus be able to access them for this channel.

In addition, a slide control appears at the right-hand margin of the display box which can be used to set the vertical shift of the displayed curve.

Beneath the slide control is the offset voltage displayed (in volts).

In a two-channel display, for example, you can position channel A in the upper portion of the display box and the signal curve of channel B at the bottom. This provides you with a clearer screen view, especially if the signal curves do not intersect.

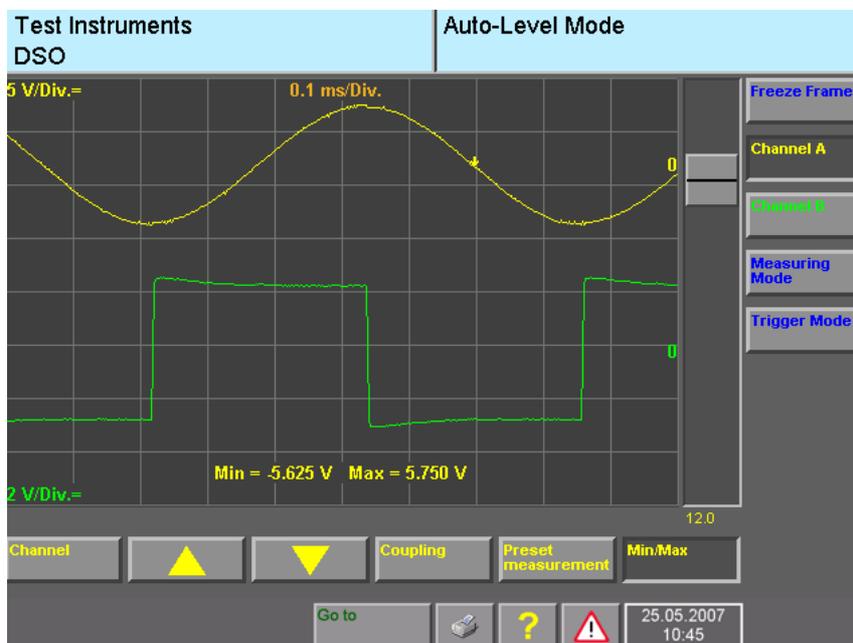


image 5-13 “DSO” mask, two-channel display

Test connection



Press the “Channel” operating button to enter the test connection for the pre-set channel, e.g. “Channel A”.

A submenu appears with the following selection options:

SZ 50A	Pressure	DSO2
SZ 100A	Temp.	DSO1
SZ 500A	KV	OFF
SZ 1800A		

The designations mean:

- SZ: Current pick-up
- KV: kV pick-up

The line you select is shown inverted.

Select the desired test connection (measurement cable) and press the “Channel” operating button again (or any other operating button) to accept the selection and close the menu. If you select OFF, “Channel A” is switched off.



Note

It is not possible to switch off both channel A and B. If “Channel B” is already off, the OFF choice does not appear for “Channel A” and vice-versa.

Measurement range

You can change the measurement range by one step by pressing the “Arrow up” or “Arrow down” operating button. The current measurement range, e.g. “10 V/Div.”, is displayed on the left of the display box (yellow – at the top – to match with channel A and green – at the bottom – to match with channel B).



Press this button to set a larger voltage range.



Press this button to set a smaller voltage range.

Coupling



Press the “Coupling” operating button to select the coupling for “Channel A”.

A submenu appears with the following selection options:

With channel KV and temp.:

GND (earth)
DC

With channel DSO1, DSO2 and current pickups:

GND (earth)
DC
AC

With pressure

GND (earth)
DC
LF

The line you select is shown inverted.

Select the desired coupling and then press the “Coupling” operating button again.

- If “GND” is selected, “Channel A” is set to its reference potential (tester ground) and a flat line is displayed as the signal characteristic. In this function you can set the zero point of the curve display with the slide control.
- If “DC” is selected, the direct and alternating voltage portions of the test signal are represented. The pre-set DC coupling appears as a “=” symbol on the touch screen (e.g. “2 V/Div.=”, see Fig. 5-12).
- If “AC” is selected, only the alternating voltage portion of the test signal is represented. The pre-set AC coupling appears as a “~” symbol on the touch screen.
- When “LF” is selected a low-pass filter is activated which filters out higher-frequency noise.

If “OFF” is selected in the channel menu, the “Coupling” operating button is not visible.

Moving the curve vertically



Press on the slide control and move it up or down the slider track to shift the displayed curve up or down.

If you touch the slide track above the slide control, you can shift the slide control upwards in small steps.

If you touch the slide track below the slide control, you can shift the slide control downwards in small steps.

Preset measurements



After pressing the “Preset measurement” operating button, the “Preset measurements” mask appears displaying a list of available preset measurements.

Preset measurements show sample curves for individual signals compared with the signal to be measured. This presets the DSO and you do not have to make any other settings. If you change some settings, they will no longer match the preset measurement and the sample curve will disappear.

Select a preset measurement from the list. The selected line is shown inverted.



Press the “Display” operating button in the “Preset measurements” mask to display the selected sample curve.

If none of the lines has been selected in the list, a prompt appears:

Select a preset measurement first that must be acknowledged with the “OK” button.

- In the “DSO” mask, you can use the “Document” operating button that appears to display a document relating to the selected sample curve, containing e.g. notes for adaptation, the installation position of the object measured and the operating conditions. Press the “Back” preset measurement to display the sample curve again.
- In the “DSO” mask the saved sample curve is displayed in blue.
- The “Preset measurement” operating button is shown inverted.
- The name of the preset measurement is displayed in the right information window.
- The measurement parameters of the selected channels are set to the values at which the curve path of the preset measurement was saved. While a preset measurement is displayed, only the slide control, the trigger position, the display documents and the freeze frame function can be used.

You can now compare the cyclically measured curve with the fixed sample curve.

Press the “Preset measurement” operating button again to end the “Preset measurement” function. The hidden operating buttons reappear.

If you press the one of the operating buttons “Channel A”, “Channel B”, “Trigger Mode” or “Measuring Mode” during the “Preset measurements” function, the function will be exited automatically and the preset curve will disappear from the screen.

Min/Max values

This function delivers the extreme values (minimum and maximum) of all curve values of the selected channel which occurred since the start of measurement. Display of the values cannot be moved to another position on the screen.

A rectangular button with a grey gradient and a black border. The text "Min/Max" is written in yellow on a black background.

Press the "Min/Max" operating button to display at the lower edge of the oscillogram the extreme values of the current channel in numerical form and in the same colour as the corresponding channel (see Fig. 5-13).

Extreme values are recorded by an overscanning even between the actual scanning times. Due to the alternating display of minimum and maximum values, the curve displayed does not appear as smooth as in the normal plot.

With the two smallest time bases (ms/Div) and in draw mode, extreme values cannot be displayed.

You can switch display of extreme values back off by pressing the Min/Max operating button a second time. Switching the Min/Max function off and on resets to zero the display of the extreme values during scanning.



5.4.2 Measuring mode

Measuring Mode

Measured value acquisition is parametrised with the “Measuring Mode” operating button.

When it is pressed, the operating buttons “Auto setup”, “Auto level”, “Auto”, “Normal”, “Single” and “Draw mode” appear below the display field.

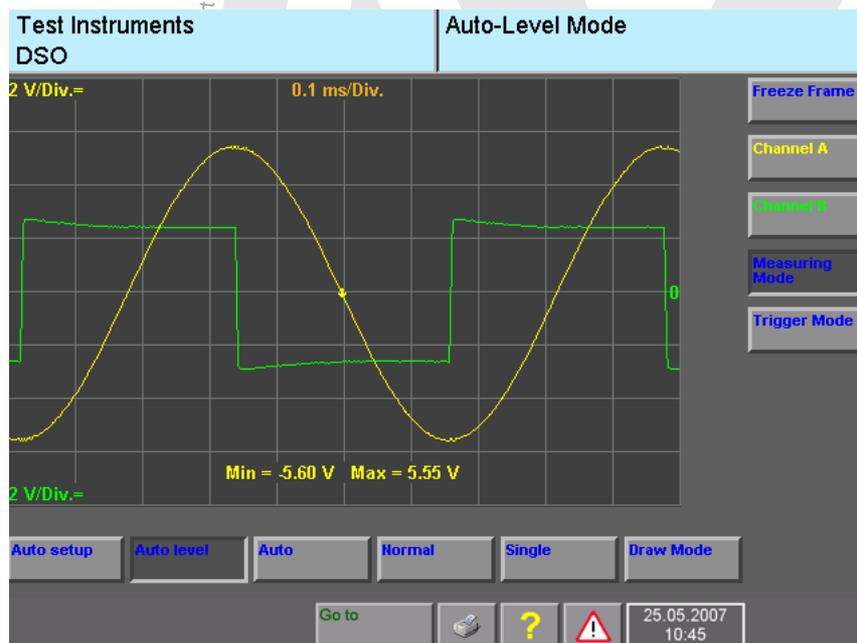


image 5-14 “DSO” mask: auto-level mode, measuring mode

Auto setup

In auto setup mode the amplitudes of channels A and B, the time base and the trigger threshold are set automatically.

Auto setup is performed only once each time it is called up. Measuring mode then switches automatically to auto-level mode.

Auto level

In auto-level mode the set trigger threshold (percentage threshold in the range $\pm 100\%$ of the signal amplitude) is tracked automatically so that a triggered image is always visible independent of the signal amplitude.

Auto

In auto mode measured value recording starts automatically in free-running operation when a valid trigger event occurs (according to the set trigger level) or when a wait time dependent on the selected time base has elapsed (no freeze frame).

Normal

In normal mode, cyclical measured value recording takes place only when a valid trigger event occurs. If the trigger is missing, a prompt appears in the display box at the right.

Single

In single mode, a measurement is taken only once after a valid trigger event.

**Note**

The “Auto Setup” and “Auto-Level” functions can only be used if triggered internally (that is, the trigger signal must be selected as a measure channel) or if the trigger pick-up is used.

Auto level and auto setup can only function smoothly with periodic signals with low interference.

Draw Mode

In draw mode, measured values are recorded without triggering and the curve is plotted continually from left to right. Draw mode is used for displaying low-frequency signals. Long-term measurement is also possible in draw mode. Extreme values cannot be displayed.

**Note**

The time base in draw mode can be set from 0.2 to 100 s/Div.

5.4.3 Trigger mode

Here you can set the trigger time point from which the signal to be measured is to be recorded.

Trigger Mode

Press the “Trigger mode” operating button to display the operating functions for “channel”, “coupling”, “edge” and “horizontal movement” under the display field and thus be able to set it.

A slide control also appears at the right edge of the display box which you can use to set the trigger level.

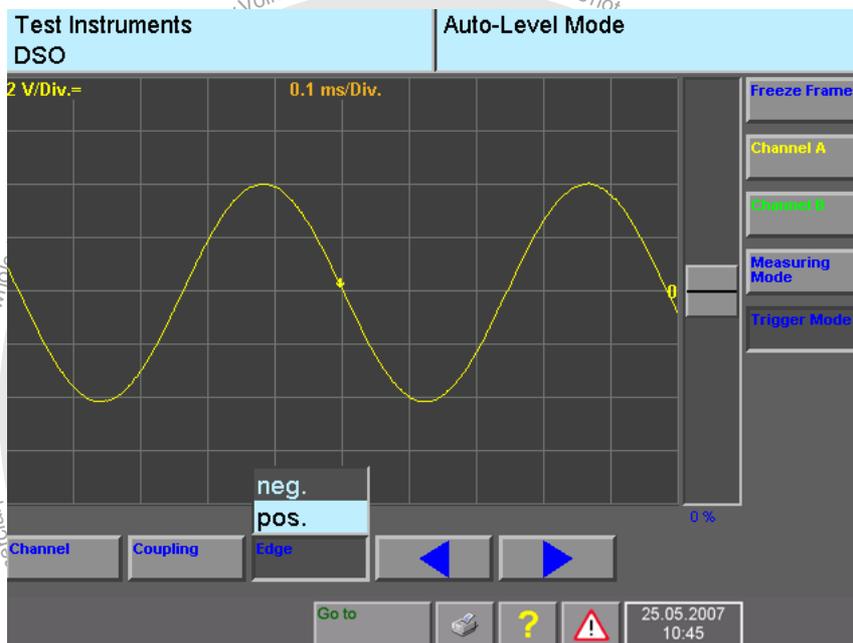


image 5-15 “DSO” mask, trigger mode

The vertical position of the trigger point in the display field (shown by an arrow) indicates the trigger position. Below the slide control you will see the corresponding trigger voltage or (in the case of “Auto level” measuring mode) the trigger value in %.

Provided the trigger position is within the valid measurement range, the trigger point lights up in the colour of the channel selected (blue in the case of external triggering – does not take place via the measurement lines for channel A or channel B). The upward- or downward-pointing direction of the arrow shows whether triggering will happen with a rising (positive) or falling (negative) edge.

Channel

Press the “Channel” operating button to select the test connection for the trigger signal.

A submenu appears with the following selection options:

SZ 50A
SZ 100A
SZ 500A
SZ 1800A

Pressure
Temp.
Pick-up
kV

DSO2
DSO1

The designations mean:

SZ: current clamp
 Pick-up: trigger clamp
 KV: high voltage clamp

The line you select is shown inverted.

Select the desired test connection for the triggering. Then press the “channel” operating button again.

Coupling

Press the “Coupling” operating button to select the “Coupling” for “Trigger mode”.

According to the selection “channel A”, “channel B” and the “coupling” set there, a submenu appears with at least part of the following selection options:

HF
LF
DC
AC

The selected line is shown inverted.

Select the desired “Coupling”. Then press the “Coupling” operating button again.

- Selecting “HF” (high-pass filter) filters out the low-frequency components of the trigger signal.
- Selecting “LF” (low-pass filter) filters out the high-frequency components of the trigger signal.
- If “DC” is selected, the trigger signal will be DC-coupled (standing DC and alternating components included).
- If “AC” is selected, the trigger signal will be AC-coupled (standing DC components filtered out).

Selecting “AC” is not possible in draw mode.

**Note**

If the “Pick-up” trigger signal is selected, the “Coupling” operating button is not visible. Only one AC or DC coupling type can be selected. “AC” coupling is not displayed when there is “DC” coupling shown for the selected measurement channel, and vice versa.

Edge

Press the “Edge” operating button to select the edge of the trigger or test signal for the triggering.

A submenu appears with the following selection options:

neg.

pos.

The selected line is shown inverted.

Select the desired “Edge”. Then press the “Edge” operating button again.

- If “neg.” is selected, the falling edge of the trigger or test signal is used.
- If “pos.” is selected, the rising edge of the trigger or test signal is used.



Note

If the “Pick-up” trigger signal is selected, the “Edge” operating button is not visible.



The “Left” operating button moves the trigger grid by grid to the left, thus bringing sections further to the right into view.



The “Right” operating button moves the trigger grid by grid to the right, thus bringing sections further to the left into view.



Slide control for change of the trigger level:

- up: sets the trigger level to higher voltage values
- down: sets the trigger level to lower voltage values



Note

The slide control is not visible when the “Pick-up” measuring channel is selected.

5.4.4 Bandwidth limitation (only VAS 5051B)



Bandwidth limitation

By default, the “Bandwidth limitation” operating button is enabled automatically up to 0.01 ms/Div. A low-pass filter with a 75-kHz cut-off frequency is activated in all measurement channels. High-frequency components are blocked. For high-frequency signals (such as CAN bus signals), the “Bandwidth limitation” function can be disabled manually if need be.

5.4.5 Freeze frame



Freeze Frame

Press the “Freeze Frame” operating button.

Cyclical repetition of the test is paused and the last curve is frozen.

The “Cursor 1” and “Cursor 2” control buttons also appear (see Section 5.4.5.1).

Press the “Freeze Frame” operating button button again.

The cyclic repetition of the measurement is restarted.

Freeze frame remote control

Press the button on the end of the probe tip of the measurement cable to start the “Freeze Frame” function by remote control.

Parameters changed

If you change parameters while using the “Freeze Frame” function, the curve on display is not affected. The message “Parameter changed” does, however, appear in the information box at the right because the curve and the set parameters no longer match.

5.4.5.1 Freeze frame with one measurement cursor displayed



Press the “Cursor 1” or “Cursor 2” operating button to determine voltage values at specific time points on the curve.

The following mask appears when you press the operating button:

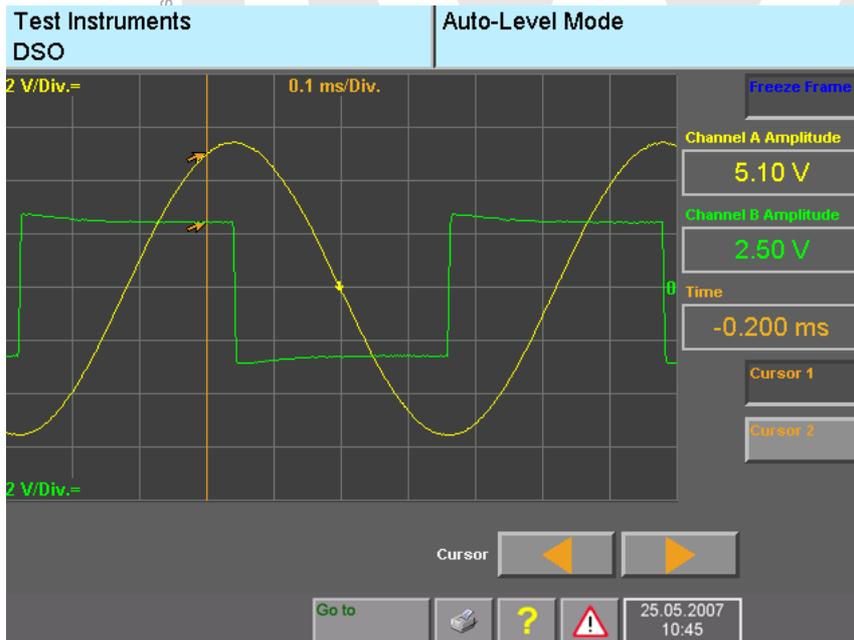


image 5-16 “DSO” mask, freeze frame with a cursor

The “Amplitude Channel A” display box (amplitude) shows the voltage value at the point in the curve for channel A where the cursor is positioned.

The “Amplitude Channel B” display box shows the voltage value at the point in the curve for channel B where the cursor is positioned.

The “Time value” display box shows the time value at the point in the curve where the cursor is positioned, relative to the trigger point.

Touch the curve to move the cursor to this point (rough control).



Press this operating button to move the cursor to the left (fine control).



Press this operating button to move the cursor to the right (fine control).

5.4.5.2 Freeze frame with measurement cursor 1 and measurement cursor 2 displayed

Press the “Cursor 1” and “Cursor 2” operating buttons to determine voltage and time difference values between particular points on the curve.



Press the “Cursor 1” button and place the cursor, as described in Section 5.4.5.1, at the point on the curve for which you want to determine the voltage and/or time differences when compared with the cursor 2 position (reference point).



Press the “Cursor 2” operating button and place the cursor at the point on the curve for which you want to determine the voltage differences to the position of cursor 1.

When the “Cursor 2” operating button is pressed, cursor 1 cannot be moved.

Touch the curve to move the cursor to this point (rough control).



The “Left” operating button moves the cursor to the left (fine control).



The “Right” operating button moves the cursor to the right (fine control).

Once both of the cursors have been activated, the following mask is displayed:

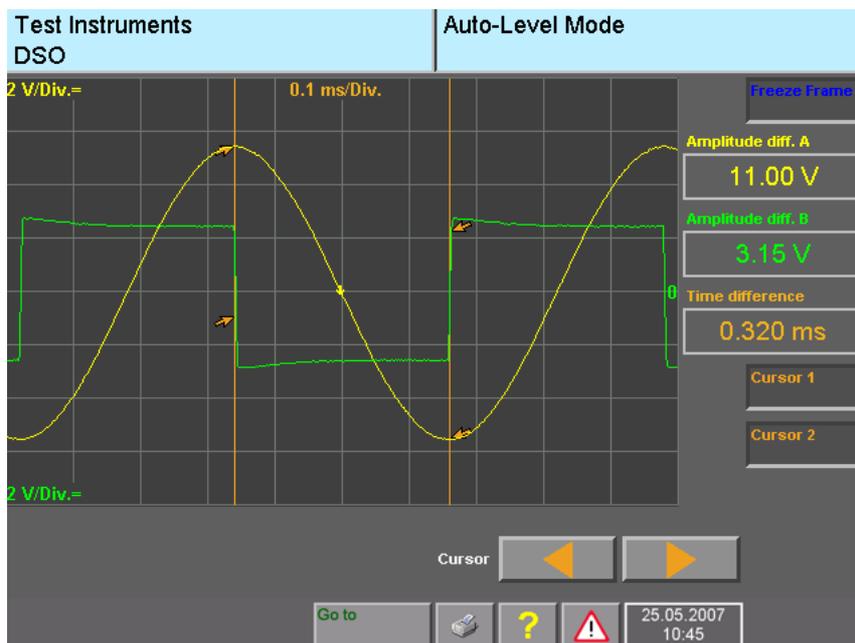


image 5-17 “DSO” mask, freeze frame with Cursor 1 and Cursor 2

The “Amplitude diff. A” display box shows the voltage difference between the two points on the curve for channel A where the cursors are located.

The “Amplitude diff. B” display box shows the voltage difference between the two points on the curve for channel B where the cursors are located.

The “Time difference” field shows the time difference value between the points where the cursors are located.

5.4.6 Long-term measurement in draw mode

Long-term measurement allows a time interval to be set for the measurement process in “Draw” measurement mode. After recording, the signal curves are compressed to the width of the window and output accordingly. A zoom function allows you to look more closely at selectable parts of the curves.

When the “Draw mode” operating button is pressed, the “Long-term measurement” operating button appears (see Fig. 5-18).

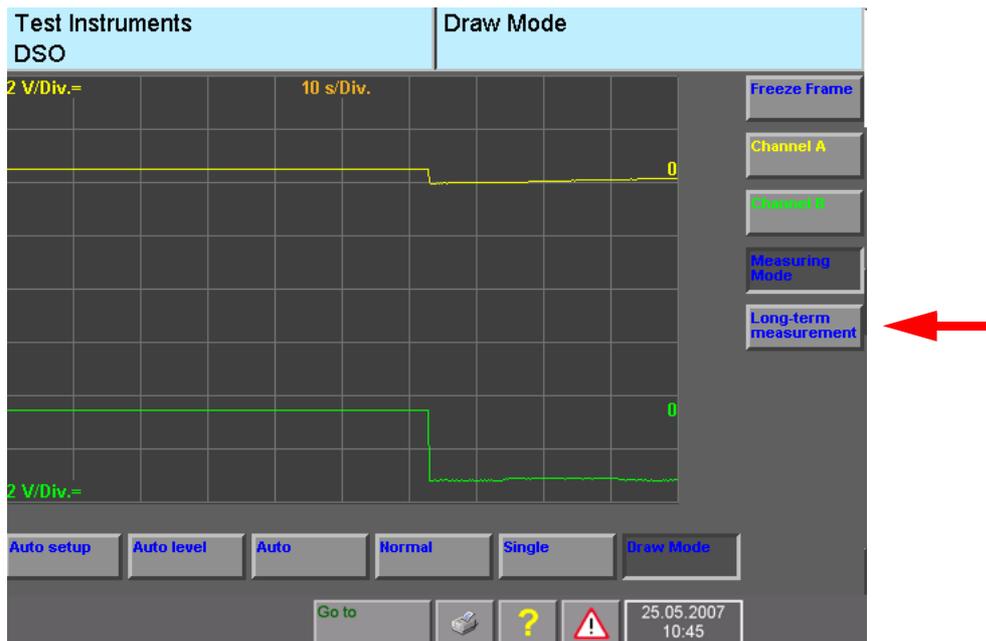


Image 5-18 “DSO” mask with operating button for setting long-term measurement



Note

Since all measured values are compressed to the width of the window, values from self-diagnosis cannot be displayed or recorded during long-term measurement.

Long-term measurement

Pressing the “Long-term measurement” operating button takes you to the mask for setting long-term measurement (see Fig. 5-19). The “Freeze frame” function is switched on for this purpose. The “Long-term measurement” operating button remains hidden during the measurement.

Hours: 00 : Min: 00

Touch one of the buttons for hours and minutes to select them for setting with the arrow keys. The previously set time is kept for a repetition of the long-term measurement.



The right-hand operating button decrements the hour or minute by one unit.



The left-hand operating button increments the hour or minute by one unit.

The maximum duration of a long-term measurement is limited by the sampling rate and the number of channels being recorded, since as the sampling rate increases, the quantity of data also rises. The maximum recording period at a sampling rate of 5 Hz is 48 hours.

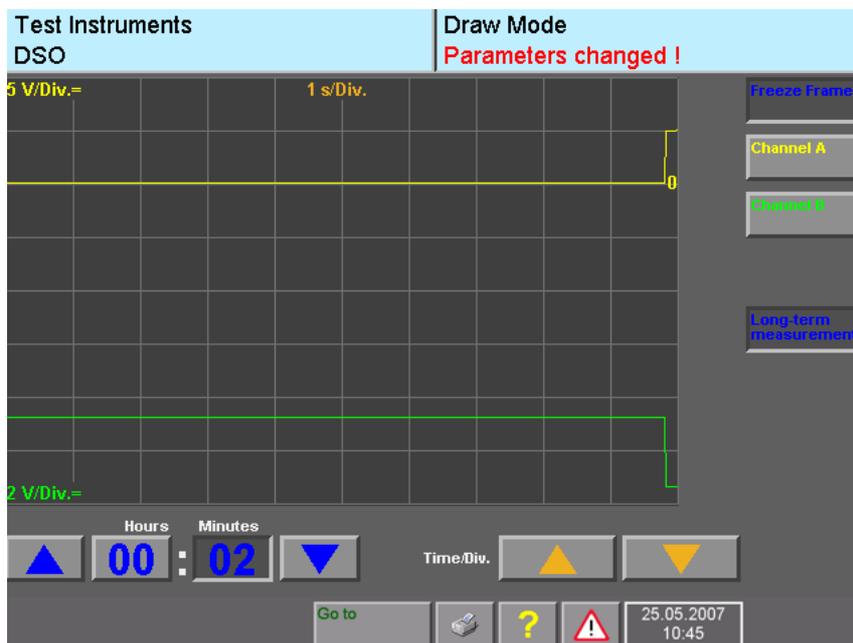


image 5-19 “DSO” mask with elements for setting long-term measurement



After pressing the “Long-term measurement” operating button and setting the time for the measurement interval, start the measuring process by disabling the “Freeze frame” operating button.



Note

During the long-term measurement, no USB cables or USB peripheral devices, such as external memory drives, keyboards etc. may be removed or connected. That could result in the loss of data.

While recording is in progress, the right-hand information window shows the reception time. During this period you cannot change the parameterisation of long-term measurement but you can abort early by pressing the “Freeze Frame” operating button again. The measurement result is then displayed as if the time up to that point were actually the time which had been set.

Once the time period has finished, long-term measurement ends. The “Freeze Frame” function switches itself on automatically and all of the data recorded is compressed to the window width and displayed (see Fig. 5-20). This presentation is formatted in such a way that the extreme values of the compressed data are displayed.

At the end of long-term measurement you can evaluate the signal curve with the aid of cursors 1 and 2 (see Section 5.4.5.2).

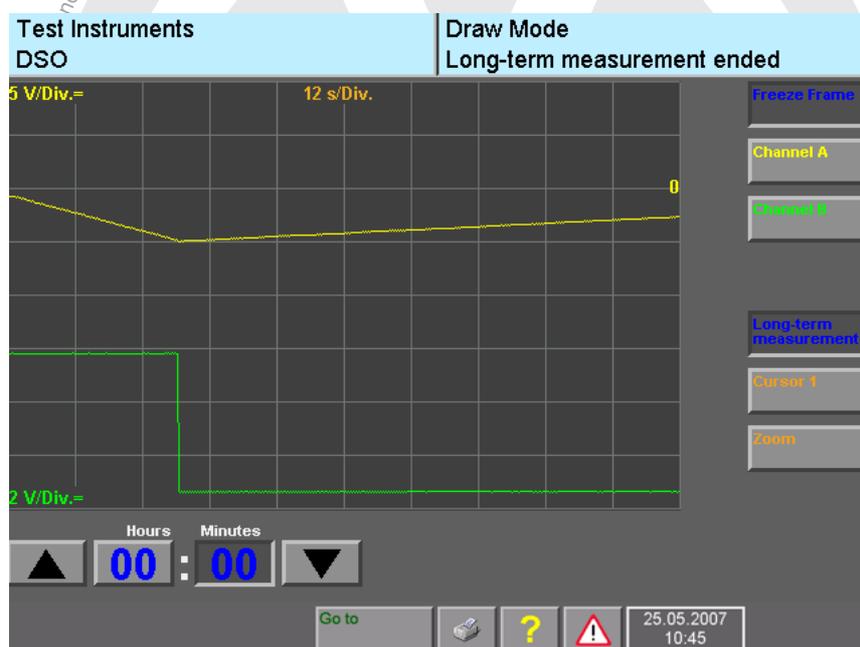


image 5-20 “DSO” mask with normal display

You can however zoom in on any section you wish.



The “Zoom” operating button is only displayed when no cursor function is active.



Press the “Zoom” operating button to zoom in on a section of the recorded data. Pressing the “Zoom” operating button again switches the zoom function off again.

Select the section you want to magnify either by tapping at a point on the measurement curve or by selecting a section, dragging it over the screen and releasing it. In the meantime the start and end of the zoom section are marked by cursor 1 and cursor 2.

The selected range is now expanded to fill the width of the display (see Fig. 5-21). You can keep magnifying a section until the data displayed cannot be expanded any more.

Briefly tapping on a point causes the data in its vicinity to be expanded to the maximum immediately.



Press this operating button to move the displayed area grid by grid to the left until the lower storage limit is reached.



Press this operating button to move the displayed area grid by grid to the right until the upper storage limit is reached.

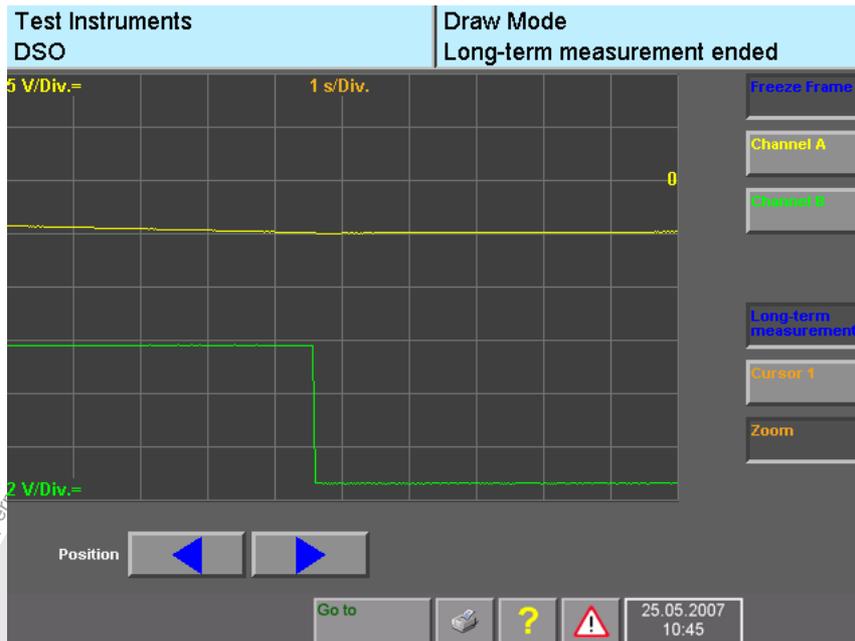


image 5-21 "DSO" mask with zoomed display

Even in the zoom display you can use the cursor functions in the usual way.

5.4.7 Tips and notes

Auto setup – Your most valuable operating button

The DSO is equipped with an auto setup mode which automatically calculates and makes all DSO settings in response to periodic input signals. If channels A and B and the trigger are correctly selected, after a short time you will get an optimally triggered display which continues in “Auto level” mode.

If no curve is displayed, check for the cause in the following order:

1. Are the DSO cables correctly connected to the tester?
For most applications, connect the DSO cables as follows:
DSO1 cable to DSO1 input, DSO2 cable to DSO2 input
2. Is the correct channel input selected?
For most applications, set the DSO for “Channel A” or “Channel B” as follows:
Channel A to DSO1 (default), channel B to DSO2 (default)
3. Is the correct trigger channel selected?
For most applications, set the channel in trigger mode as follows:
Channel to DSO1 (default)
4. Repeat auto setup.

If possible, it is always preferable to have auto setup mode with switch to auto level mode. Auto setup can also be repeated at any time.

No trigger

In normal and single mode: Triggering will work best when you bring the trigger point onto a clear amplitude value. Use the trigger's fine adjuster. If the trigger is outside the amplitude, the “No trigger” message appears. Depending on the preconditions, no signal curve or a frozen signal curve (no measurement) will then be displayed.

Now return the trigger manually to the amplitude range until the message disappears.

Auto level

In auto level mode you can trigger signals independently of their amplitude and zero position, because then the triggering is based on a percentage amplitude value.

After the auto setup is completed the mode changes automatically to auto level and the triggering is set to 0% of the amplitude value. In trigger mode you can use the slide control to set any unambiguous trigger value between $\pm 100\%$; otherwise the DSO triggers in the middle of the measured signal.

Auto mode

If you have no information about the signal, use auto mode. In this case, the curve is also output even if the trigger is outside the amplitude (untriggered display).

Afterwards move the trigger manually to a value within the amplitude range for a freeze image.

Normal

Use normal mode if you are familiar with operation of the DSO. You will only get an triggered image when the trigger is within the amplitude range of the measured signal.

Single

In single mode you can record a one-off event. The signal is measured and displayed immediately as a freeze frame. Make sure there is a valid trigger event.

5.5 Parallel mode with “Test Instruments” and “Vehicle Self-Diagnosis”

5.5.1 Overview

As an option you can run “Vehicle Self-Diagnosis” and “Test Instruments” in parallel. Here, in the “Multimeter” and “DSO” masks, you can also (in addition to the measured values) display the following values which “Vehicle Self-Diagnosis” reads off cyclically in the background (see Fig. 5-22):

- Measurement and status values of the “Final control diagnosis” diagnostic function
- Measurement and status values of the “Read data block” diagnostic function
- Measurement and status values of the “Basic settings” diagnostic function
- Measurement and status values of the OBD functions
- Measurement and status values of the LT2 functions
- Measurement and status values of the LT3 functions

In each case up to four self-diagnosis values can be displayed. If more values are read out, the first four will be displayed.



image 5-22 “Multimeter” mask displaying measured values from the “Vehicle Self-Diagnosis”



Note

Since the two operating modes do not function synchronously, in the display of the measured values phase shifts will occur, these being caused by the time behaviour of the control units and of the tester operating system. With fast dynamic events the values from “Vehicle Self-Diagnosis” serve only as additional information and should not be linked with the measured values from “Test instruments” in a causal temporal relationship.

After you return to a “Vehicle Self-Diagnosis” mask, a triggerable parameterised DSO measurement is retained; for example, a single-shot measurement for a valve control pulse. In the “Vehicle Self-Diagnosis”, you can then perform operations in the usual manner – in other words, you could press the “Continue” button, for example, to continue with a final control diagnosis. When you return to the “DSO” mask afterwards, it will now also show the curve which was measured in the background.

5.5.2 operation

Parallel mode of “Vehicle Self-Diagnosis” and “Test Instruments” is only possible if you switched from “Vehicle self-diagnosis” operating mode to “Test instruments”. If “Test instruments” operating mode is called directly from the start mask, parallel mode will not be available.

**Meas. values
Self-Diagnosis**

In the “Multimeter” or the “DSO” mask press the “Meas. values Self-Diagnosis” operating button. It will only be displayed in the “Test Instruments” masks if you have switched over from “Vehicle Self-Diagnosis”.

With OBD and LT values you can, if applicable, display the corresponding designator by briefly tapping on the value from “Vehicle Self-Diagnosis” (for example, see Fig. 5-23). Tapping once more on the screen outside the measurement value bar causes the designator to disappear again.

While parallel mode is active, you can use the “Test Instruments” and “Vehicle Self-Diagnosis” operating buttons to switch back and forth between the operating modes.

Freeze Frame

Press the “Freeze Frame” operating button to “freeze” the measured value display.

This pauses the cyclical repetition of the measurement and the last display remains on screen without changing.

Press the “Freeze Frame” operating button again. The cyclic repetition of the measurement is restarted.

The cyclic display of the measured values from the “Vehicle Self-Diagnosis” is not affected by the “Freeze frame” function.

**Meas. values
Self-Diagnosis**

In the “Multimeter” or the “DSO” mask, press the “Meas. values Self-Diagnosis” button again to hide display of parallel mode. Self-diagnosis measurements here continue in the background.

You can only end parallel mode and self-diagnosis measurements in “Vehicle self-diagnosis” operating mode.

5.5.3 Values of “Final control diagnosis” function

To display values of the “Final control diagnosis” diagnostic function, proceed as follows:

1. Switch from “Vehicle self-diagnosis” operating mode to “Test instruments” operating mode, “Multimeter” or “DSO” mask.
2. Press the “Meas. values Self-Diagnosis” operating button.
3. Switch over to “Vehicle self-diagnosis” operating mode.
4. Start final control diagnosis.
5. Switch back over to the “Multimeter” or the “DSO” mask. Here the value recorded by final control diagnosis will be displayed (see Fig. 5-23).

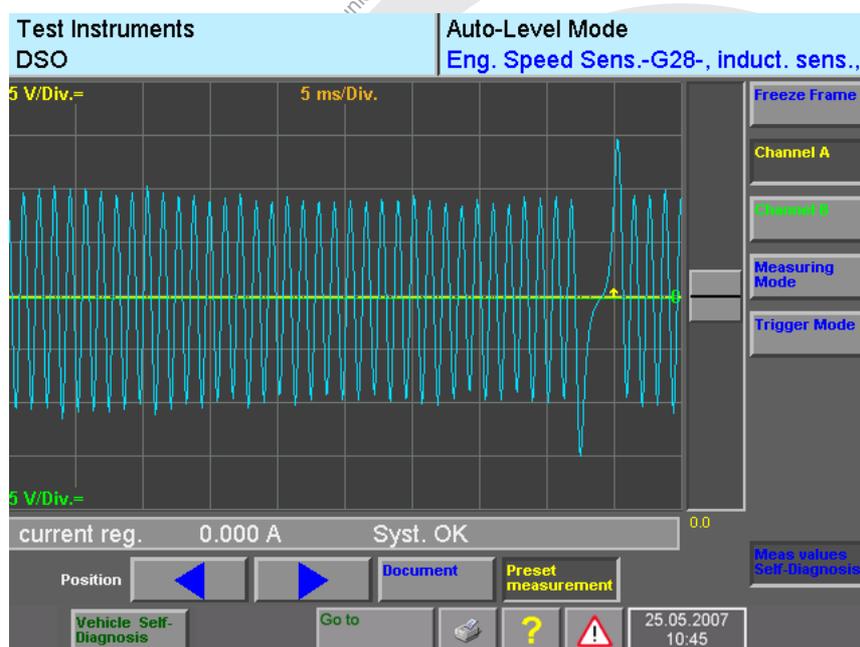


image 5-23 “DSO” mask displaying values from the final control diagnosis (arrow)

While the display is active you can change back to “Vehicle Self-Diagnosis” and press the “Continue” operating button in order to access the next final control diagnosis.

Trigger conditions cannot be set within multimeter mode. Display is solely the values of “Vehicle Self-Diagnosis” in parallel with the measured values of the multimeter.



Note

Designators of values are currently available only for OBD values and LT2 control units.

5.5.4 Values of the “Read data block” and “Basic setting” functions

To display values of the “Read measured values block” and “Basic setting” diagnostic functions, proceed as follows:

1. In “Vehicle Self-Diagnosis”, select a measuring value block (see 17/).
2. Switch to the “Multimeter” or the “DSO” mask.
3. Press the “Meas. values Self-Diagnosis” operating button. Up to four values recorded cyclically in the background will be displayed (Fig. 5-22).

5.5.5 Values of “OBD” operating mode

Basically the same rules apply as with displaying values of the “Read measured values block” and “Basic settings” diagnostic functions: A maximum of four values is displayed. In addition the following restrictions apply:

- When more than four OBD values are measured (for example, six PIDs), only the first four values are displayed.
- Only numerical values are displayed.
- Only actual values without setpoint values are shown (such as Min/Max values).

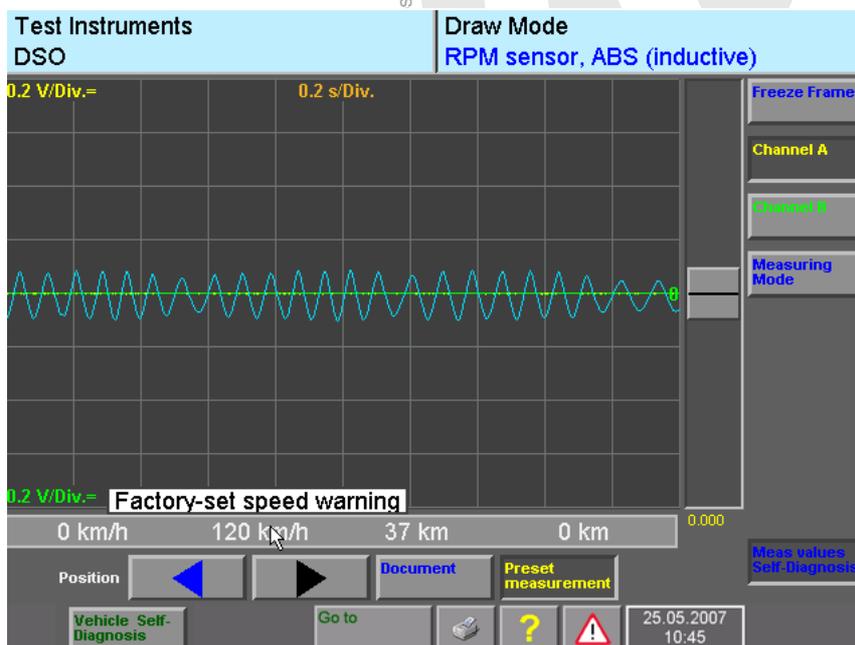


image 5-24 “DSO” mask with examples for the display of OBD values

5.6 VAS 6558 hybrid measuring module

Starting from VAS-PC V18, a hybrid measuring module (VAS 6558) is available for specific measurements on hybrid vehicles.

The hybrid measuring module (also “insulation tester”) is connected via USB to the tester and set up and read out via Guided Fault Finding of the VAS-PC software by new test language instructions.

For more detailed information, please consult the hybrid measuring module manual.

5.7 External measuring technology VAS 6356

The VAS 6356 test instruments box is available for testers without internal test instruments and notebooks.

The VAS 6356 is connected via USB to the tester. The data is read out by a particular application. For test instrument applications in function tests of the VAS-PC software, the measured values of the VAS 6356 are taken over.

For more detailed information, please consult the VAS 6356 manual.

6 Guided Fault Finding

6.1 Overview

The “Guided Fault Finding” operating mode guides you from the vehicle identification and detecting a vehicle malfunction (fault symptoms) to locating the cause of the fault and finally to eliminating that cause. All the vehicle information (equipment, symptoms, functions and components, documents and function tests) is automatically compiled and made available for this purpose.

All functions from the operating modes “Vehicle self-diagnosis” and “Test instruments” (only VAS 5051B) are available in the “Guided Fault Finding” application and are integrated in function tests there.

The fault symptoms are made available to the “Guided Fault Finding” application from three different sources:

- Fault memory contents (from vehicle systems)
- Complaint reports (from user input)
- Experience rules (field findings stored in the system)

In addition, you have the option of selecting functions or components yourself and incorporating them into the test plan or displaying the documents assigned to them.

The sequence of operations for “Guided Fault Finding” can be seen in Fig. 6-1; this diagram will also direct you to the sections in which the individual areas are explained in detail.



Note

You can only use the “Guided Fault Finding” operating mode if at least one brand CD has been installed on the platform. For information on installing brand CDs, see Section 2.5 and Section 9.4.2.



Note

“Guided Fault Finding” provides only limited testing possibilities for old vehicles: the vehicle system test for reading the fault memory and also a few customer service functions via the function/component selection. Special fault-finding programs are not provided here.

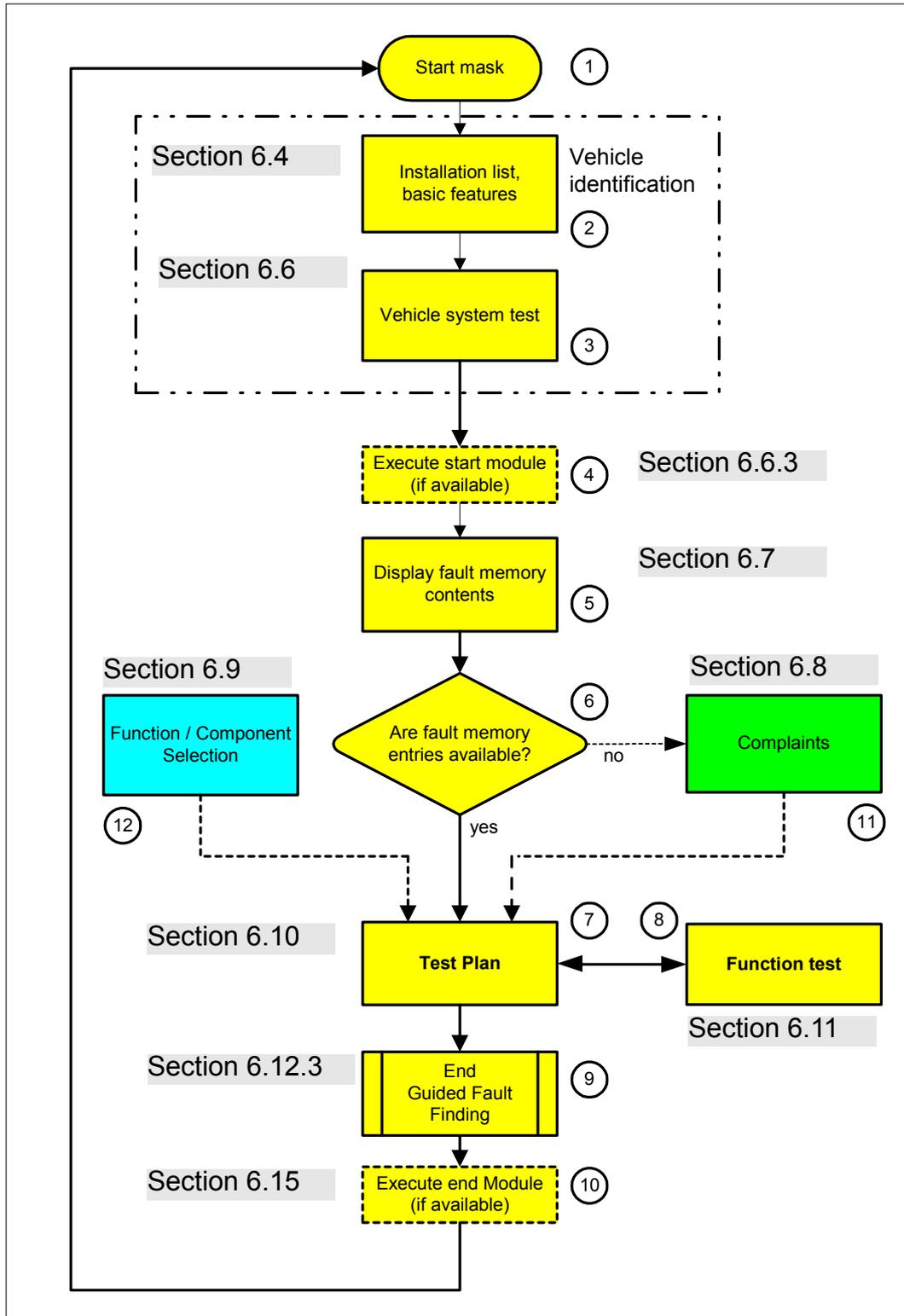


image 6-1 Basic run sequence of Guided Fault Finding; the numbers are explained below.

(1) Start mask

Guided Fault Finding is initiated from the start mask (for further information, see Section 6.2).

(2) Vehicle identification, gateway installation list, basic feature components

“Guided Fault Finding” begins with vehicle identification. This can occur either automatically, by means of a gateway installation list, or manually, via input of the basic feature components or via a mixture of the two (automatic and manual). In some cases, questions can be presented e.g. concerning the national variants. The diagnostic cable must be connected and the ignition must be switched on for automatic and mixed vehicle identification (for further information, see Section 6.4). A connection to the vehicle must exist as well. The following communication possibilities are available:

- for “Normal” mode: diagnosis cable or diagnosis head, which is either connected via USB or Bluetooth.
- for “EU5” mode: PT box.

Please go to Chapter 9.21 for more information on the configuration of the vehicle communication.

(3) Vehicle identification, vehicle system test, read fault memory

The vehicle system test follows once the basic feature components have been determined and/or entered. All the electronic vehicle systems that can be present, given the basic features of the vehicle specified, will be represented in a mask. Vehicle communication will be used to check which vehicle systems and variants are built into the connected vehicle. In addition, their fault memories are read and their contents displayed once the start module has finished (for more information, see Section 6.6).

(4) Execute start module

Depending on the nature of the diagnostic data, a start module may be run after the vehicle system test. One or more function tests can be started in it, for example, to read out the vehicle identification number (VIN) (for more information, see Section 6.6.3).

(5) Fault memory contents

Here the fault memory contents read from the vehicle systems and the associated texts sorted by default by control unit number and fault code are displayed in a mask. If the corresponding ambient conditions are present, they can also be sorted by these (for more information, see Section 6.7).

From this mask on, you can use the “Go to” button to switch to selection of function and component. There you can select a component yourself and either enter it in the test plan or display its associated documents.

(6) Fault memory entries available?

If there are fault memory entries available, the run sequence proceeds to the test plan; if this is not the case, it goes to the “Complaint Report” mask.

(7) Test plan

In the test plan, an automatic test plan is compiled from the fault symptoms that were available and that were entered. The component with the highest degree of suspicion is placed at the very top and is preselected for processing. The results of each function test lead to a re-evaluation of the test plan with a suggestion for the next processing sequence, so the order of function tests suggested can change or others can be added (for further information, see Section 6.10).

(8) Function test

A function test starts a function test (test program) that consists of a sequence of test steps, with which it can localise a fault down to the level of an individual component, lead and plug or control unit. As its end product, the test program supplies a statement on the status of the tested vehicle functions, component groups or components, e. g.: “OK”, “Not OK”, “Unknown” etc. The function test is dialog-controlled and makes use of the “Vehicle Self Diagnosis” functionality e.g. “Read data block”, “Adaptation” etc. With the VAS 5051B, the internal test instruments (multimeter, oscilloscope) are utilised for the function test, e.g. for lead and signal tests.

For platforms without integrated test instruments, these measurements are made using external testing devices. The respective function test dialog boxes allow replacement values to be entered. Please follow these steps: You use an external device to take measurements at the measuring points specified and then enter the measured value via a virtual keyboard (for further information, see Section 6.11).

(9) Leaving the “Guided Fault Finding” application

You leave “Guided Fault Finding” via the “Go to” function. You can “Interrupt” the diagnosis session, “Cancel” it or “Exit” it.

Interrupt

This function permits you to interrupt the diagnosis session briefly (to pause it) or to save the diagnostic session in order to resume it later (for further information, see Section 6.12.1).

Exit

At exit all vehicle systems are checked once again and with faults set the fault memory is cleared and then read again. If there are still faults present, Guided Fault-Finding can be continued or be definitively terminated (for further information, see Section 6.12.3).

When the readiness code is deleted or faulty from OBD vehicles, it can still be generated again via an inquiry.

Cancel

Cancel is like “Exit”, except here the program goes back to the first “Guided Fault Finding” mask instead of the start mask.

(10) Executing end module

Depending on the nature of the diagnostic data, an end module may be started before leaving the “Guided Fault Finding” application. One or more function tests can be started in the stop module, which can be used, for example, for feedback to the vehicle manufacturer (for more information, see Section 6.15).

(11) Complaints

If no fault is recognised in the vehicle system test, the “Guided Fault Finding” application automatically takes you to the “Complaint report” mask. Information about “Technical problem solutions” is available here. In addition, you can enter the complaint lodged by the customer or your own observations. Several symptoms can be registered, in order to establish the fault characteristics as precisely as possible. The tester evaluates the symptoms using the expert knowledge contained on its hard drive (for further information, see Section 6.8).

You can also reach the dialog for entering complaints using the “Go to” button from the “Test plan” mask (see Section 6.10). This enables you to give the tester additional information for its fault memory entries.

(12) Function/Component selection

Here, you can directly enter functions or components that, according to your experience, could possibly be the sources of the fault(s). The functions and/or components selected are entered in the test plan (User Test Plan) (for further information, see Section 6.9). However, you can also select “Display Documents” with the “Go to” button and display the documents belonging to the selected component.

Problem log

If you have problems during a function test, you can use the “Go to” function to save the previous process to an external storage device (for more information, see Section 6.3) and pass the information on.

Online feedback log

An on-line feedback log is available at the end of the diagnosis session for sending feedback to the manufacturer (for further information, see Section 6.16).

“Operating mode” operating button in the navigation bar

In “Guided Fault Finding”, you can use the “Operating mode” operating button to switch over to other operating modes, for example, to perform a measurement or a diagnostics function outside “Guided Fault Finding”:

- “Test Instruments” (VAS 5051B only)
- “Vehicle Self-Diagnosis” (only for platforms with “normal” operating mode)
- “Guided Functions”

Functions from “Test Instruments” or “Vehicle Self-diagnosis” that are presently being used by “Guided Fault Finding” will disappear.

Switching back to the “Guided Fault Finding” operating mode always takes you back to the mask from which the switchover occurred. Processing of the operating mode can continue unrestricted from that point.

“Go to” operating button on the navigation bar

You can use the “Go to” control button to interrupt Guided Fault Finding, cancel it, exit it, read ECU identification data, generate the problem log, resume an interrupted diagnosis order, or switch over to other Guided Fault Finding functions that have already been run (see Section 3.3.6 and Section 6.3).

There is also an option to switch from “Guided Fault Finding” to the “Administration” operating mode, where a reduced selection of functions is offered:

- Change Dealership Identifier
- Contents
- Display user documentation
- Network settings
- System monitor

“Print” operating button in the navigation bar

The following options are also displayed for selection if you have reached the “Test plan” mask:

- **Diagnostic log:** From the test plan, you can print out a log of all previously run function tests or save it to external memory drives.
- **Function test log:** From the test plan, you can print out a log of the last function test run or save it to external memory drives.

See also Section 3.5, Section 6.13 and Section 6.14.

6.2 Start “Guided Fault Finding”

“Guided Fault Finding” is launched from the start mask. It begins with selection of the brand and the subsequent vehicle identification.



image 6-2 Start of “Guided Fault Finding”

6.3 “Go to” menu

In the “Go to” menu (“Go to” operating button), you are given various options for leaving the “Guided Fault Finding” application (see Section 6.12) and some administration functions (see Section 3.3.6).

Using the “Go to” menu, you can however access other functions and masks of the “Guided Fault Finding” application. It contains the titles of the “Guided Fault Finding” masks which have already been run, for example, “Vehicle system test”, “Fault memory contents”, “Test plan,” and the titles of the test steps already processed in the function test. User-guided masks such as “Complaint Report”, “Function/Component Selection”, and “Documents” are also contained in the list (for an example, see Fig. 6-35). You can return to any of these masks via the “Go to” menu, in order to start “Guided Fault Finding” up again at that point.

Under “**ECU identification data**” you can obtain information about all vehicle systems which have been read as part of vehicle identification.

Example:

19 – Databus OBD Interface
 4E0910468B
 Gateway H10
 Long coding
 Dealership number 12345

4E0907468
 0080

01 – Engine electronics
 4F0910560C
 E5F8C60 H10
 Coding 5711
 Dealership number 12345

8E0907560 *
 ---XE09

“**Documents**” displays only the documents of the last component selected in function/ component selection.

If you use a **Go to** (or, where applicable, the “Back” operating button) to return to a previous test step, you can browse through and have another look at the course of the test up to that point e.g. using the “Continue” operating button. Existing results and decisions made in test dialogs will be displayed to you. As you go through, you can also repeat and correct measurements and test dialogs. However, from this point on, you must run through the rest of function test as new, since new results and decisions could produce a different program run sequence.

The “**Export problem log book**” item is another function in the “Go to” menu. If a fault occurs during a function test you can use this function to save to a external memory drive the run sequence up to that point. Before you save the log you will need to enter a job code for the diagnostic session using the virtual keyboard under which the job can later be found and reloaded. The saved run sequence will show all masks run through in the course of the diagnostic session and provides additional feedback for the manufacturer. The program “Guided Fault Finding Light” (not included in current package) can be used by the manufacturer to import and examine the data.

A removable disk can hold several diagnosis sessions and screenshots.

You can switch over to other **operating modes** such as “Vehicle Self-Diagnosis” and “Guided Functions” via the “Operating mode” operating button on the navigation bar.

If you change to **Administration** via the “Go to” menu, you receive a reduced selection of the functions, as can be found in the “Administration” operating mode.

The following is possible from “Guided Fault Finding”:

- Changing the dealer identification
- Calling up the contents with the software changes VAS-PC of the previous versions

- Checking and configuring the network settings: display the destination URL for the VW database server, GeKo test and self-test online connection to check an existing online connection to the VW database server
- Calling up the system monitor with precise details of regarding the PC, installed hardware, installed software and installed modules of diagnostics software VAS-PC

6.4 Vehicle identification

The vehicle identification is for the clear identification of the vehicle by means of basic features (type, model year, variant, engine code) and its control unit equipment as well as other data, such as e.g. the (Vehicle Identification Number; VIN).

The basic feature components can be determined manually via a selection list provided on the platform or automatically. Vehicles with gateway and CAN diagnostics support the identification process, since the gateway provides an installation and status list containing important data for the vehicle identification. In this respect, an identification process for a vehicle with gateway and CAN diagnostics differs from that for a vehicle without gateway and CAN diagnostics.

The following description therefore distinguishes between:

- Vehicle without CAN diagnostics
- Vehicle with CAN diagnostics

6.4.1 Vehicle without CAN diagnostics

After selecting the brand, the basic feature components are selected and entered manually. The sequence is as follows:

1. Type
2. Model year
3. Variant
4. Engine code

A request to confirm the vehicle identification follows. If there is no connection yet between tester and vehicle, the next picture is displayed and the request to establish the connection (Section 6.5). Then, the vehicle system test is performed (Section 6.6).

6.4.2 Vehicle with gateway and CAN diagnostics

Provided that communication with the gateway is possible (also see Section 6.4.2.2), a message appears:

Communication set-up with vehicle systems

The tester reads the installation list and its status information from the gateway control unit and saves it for further evaluation. The installation list indicates e.g. whether a control unit is registered in the gateway (coded) and/or its fault memory is set.

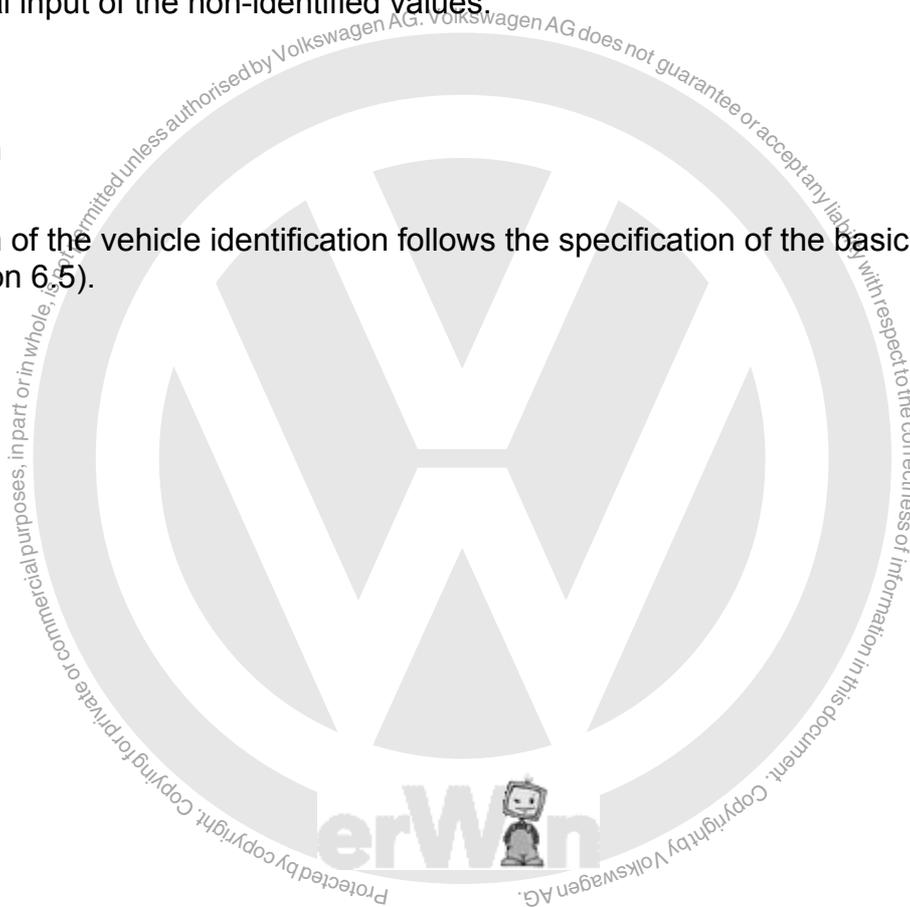
If a non-coded control unit is registered, it can be coded without delay (see Section 6.4.2.1). The fault status is used during the vehicle system test, thus allowing the interrogation of the fault memory to be restricted to the indexed control units.

Depending on the brand and the type, an identification test can already take place before selecting the first basic feature (type) that builds on the gateway data already read and further data can be identified, such as e.g. basic feature components, national variants (about questions) and the vehicle identification number (VIN). In the best case, all basic features can be determined, so that the identification process takes place fully automatically.

If the automatic identification of the basic feature components is not given, the tester offers the manual input of the non-identified values:

- Type
- Model year
- Body version
- Engine code

The confirmation of the vehicle identification follows the specification of the basic features (see Section 6.5).



6.4.2.1 Electronic control unit not registered

If individual control units are detected as being “not coded” (not registered) when the installation list is evaluated, you will have to recode these control units. Guided Fault Finding automatically activates the “Reading/writing long coding” self-diagnosis function for this purpose.

Guided Fault Finding	Audi	V08.64.00.27/04/2005
Vehicle Identification		
Select vehicle systems for coding		
01 - Engine electronics		coded
11 - Engine electronics II		not coded
02 - Transmission electronics		not coded
22 - All-wheel drive electronics		not coded
42 - Driver door electronics		coded
52 - Passenger door electronics		coded
62 - Left rear door electronics		coded
72 - Right rear door electronics		coded
03 - Brake electronics		coded
53 - Parking brake		not coded
63 - Driver's Entry Assistance		not coded
73 - Right Entry Assistance		not coded
04 - Steering angle		coded

image 6-3 “Select vehicle systems for coding” mask

Proceed as follows to code:

1. Select all entries marked as “not coded”. They change to the “coded” status (registered).
2. Press the “Continue” button to start coding. Coding is executed in the gateway. The installation list of the gateway is read again and checked for control units that are not coded.

If the coding is once again incorrect, a fault report to that effect will appear. You can repeat coding or press the “Continue” operating button to begin vehicle identification. In this case, the subsequent vehicle system test generates a malfunction message since the gateway was not coded correctly or could not be read. For this purpose, a special communication test, adapted to the gateway, can be presented.

6.4.2.2 No communication with gateway

If the tester was unable to set up communication with a Gateway-ECU, it will present you with the manual vehicle identification option. Here, select the vehicle's basic feature components one after the other from selection lists that you are shown. The previously selected basic feature components will appear in the right-hand information window of the following masks, for verification of the selection made.

After selecting the fourth basic feature component, the "Check vehicle identification" mask appears. At any time, you can switch back to the previous screen using the "Back" operating button to make a different selection there. The next mask shows the next picture (see Section 6.5). If you now press the "Continue" operating button, the tester attempts to establish communication with the gateway again. If this does not work again, the following note appears:

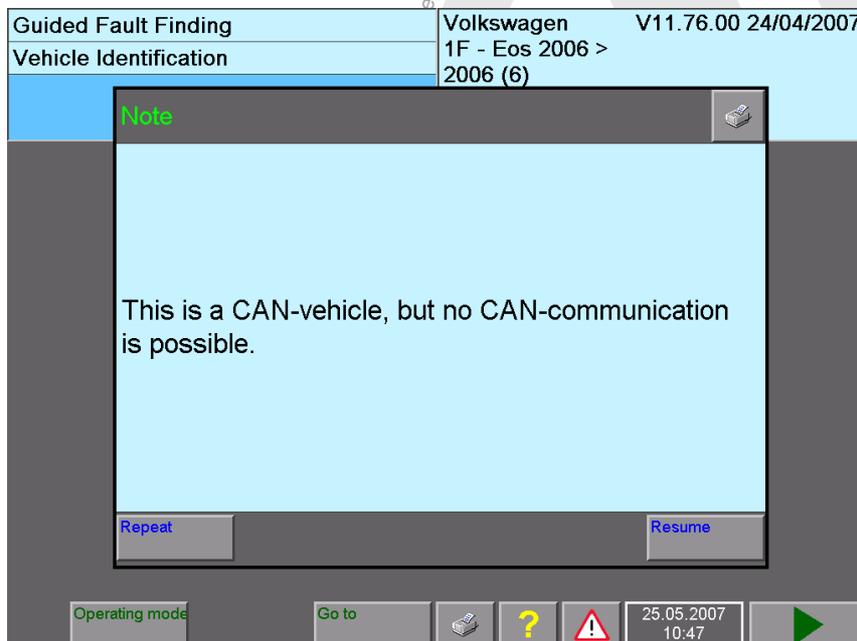


image 6-4 Note: "No CAN communication possible"

6.5 Confirm vehicle identification, diagnostic socket

The following mask concludes vehicle identification. The basic feature components specified are shown in the right-hand information window. Check carefully whether the vehicle to be diagnosed matches the entries exactly. When doing manual vehicle identification, you can press the “Back” operating button to go back to the previous masks to make changes there, if necessary.

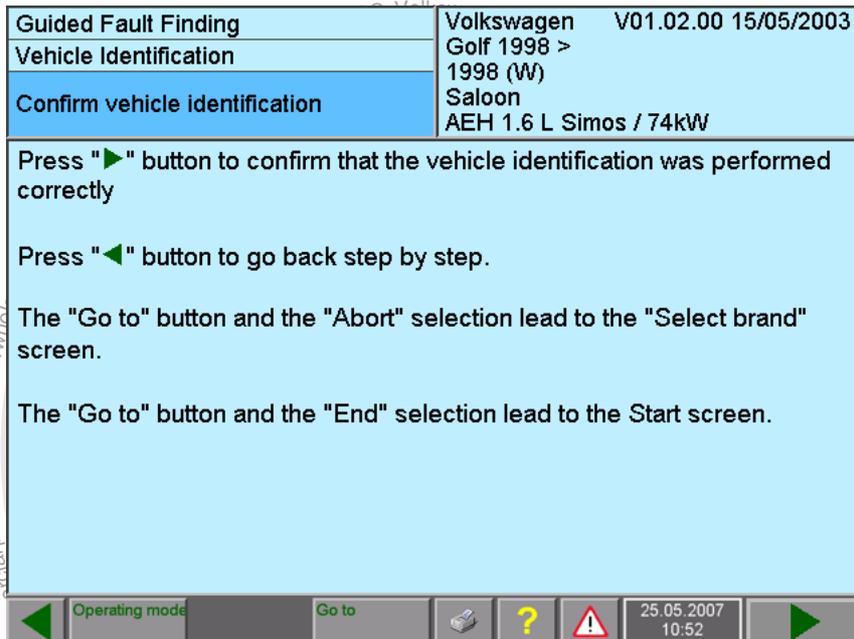


image 6-5 “Confirm vehicle identification” mask

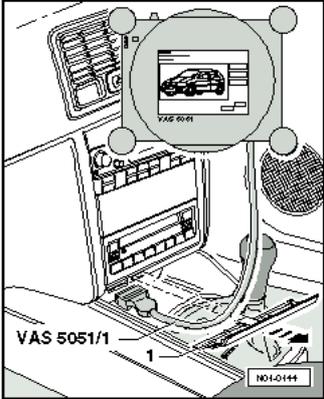
When you press the “Continue” operating button, the diagnostic data for the specified vehicle is loaded from the hard drive into the working memory and communication with the vehicle is established.

If you have not yet connected the diagnostic cable with the vehicle, you will be prompted to connect it after confirmation of the vehicle identification. To do so you will be shown a document displaying the fitting location of the diagnostic socket.

Guided Fault Finding	Volkswagen V01.02.00 15/05/2003
Vehicle Identification	Golf 1998 > 2000 (Y) Saloon AEH 1.6 L Simos / 74kW
connect VAS 5051 to vehicle	

Connect the VAS 5051 tester using diagnostic cable VAS 5051/1 or VAS 5051/3 as follows:

- Remove cover -1- in direction of arrow.
- Plug the diagnostic cable into the diagnostic connection.
- Now switch on the ignition.



Operating mode Go to ? ! 25.05.2007 10:47 ▶

image 6-6 “Connect VAS 505x to vehicle” mask

If you press the “Continue” button, the tester attempts to establish communication with the vehicle again. You can repeat the communication setup any number of times or cancel it if you are unsuccessful continuously. In either case, the tester switches to the vehicle system test.

If communication could not be established during CAN diagnosis, the tester sets a special communication test in the test plan without previous vehicle system test (see Section 6.4.2.2).

6.6 Vehicle system test

The vehicle system test checks whether electronic vehicle systems are present in vehicle and whether they have any saved fault entries. If automatic vehicle identification was possible via a gateway control unit, the list of possibly installed systems is compared with the coding of the Gateway-ECU as follows:

- Systems shown in the gateway control unit as installed and which have no fault status are accepted without further checking.
- The fault memories of systems shown with a fault status are read out and the contents saved in the tester.
- Systems entered in the gateway control unit as not being installed are nonetheless checked to see if they are present and whether they have a fault status.

In vehicles without a gateway, checks will be carried out generally for the presence and fault status of all possible systems and their variants.

In the “Vehicle system test” mask (see Fig. 6-8) the vehicle systems that may be installed in the identified vehicle are classified in the following groups:

- Drive (gateway, engine, gearbox)
- Suspension (brakes, distance regulation, level control system, ...)
- Body (instrument cluster, immobiliser, heating, ventilation, air conditioning, ...)

To make the layout clearer, the systems in the individual groups are set apart from one another in the mask by different background colours and a separating line.

You can observe the progress of the vehicle system test on the screen. The system currently being interrogated is marked with an arrow on the right in the work window. Identified vehicle systems are marked with a black bar and the colour of the lettering is inverted. The status of the vehicle system is entered in the column on the right (see Table 6-1).

The vehicle system test works through the vehicle systems from top to bottom. Vehicle systems are skipped if they are mutually exclusive with one that has already been identified.

If a control unit contained in the selection list was, for example, not identified because it was defective, you should select it manually (see Section 6.6.1.2 and Section 6.6.1.3). Its associated diagnostic data for “Guided Fault Finding” will only be made available if this is done. For vehicle systems definitely installed in the vehicle (standard fittings for the series), a corresponding message appears stating that the system could not be identified.

After the test has been carried out, the following message will appear in the information field on the left of the mask:

Control units have been interrogated

6.6.1 Possible problems

6.6.1.1 Diagnostic bus faulty

This message Fig. 6-7 appears in the following cases:

- The diagnostic cable is not connected either to the tester or to the vehicle, or the connection has come loose at the vehicle end.
- The battery voltage from the vehicle is in a range critical for the tester (see /3/, section “Technical data”). In this case, start the engine or use a battery charger. You can then repeat the communication attempt.
- The diagnostic bus or cable is defective. Perform the self-test as described in Section 9.6.
- The connection to the diagnostic head is interrupted. The Bluetooth connection is not correctly configured or the USB cable is not properly placed.

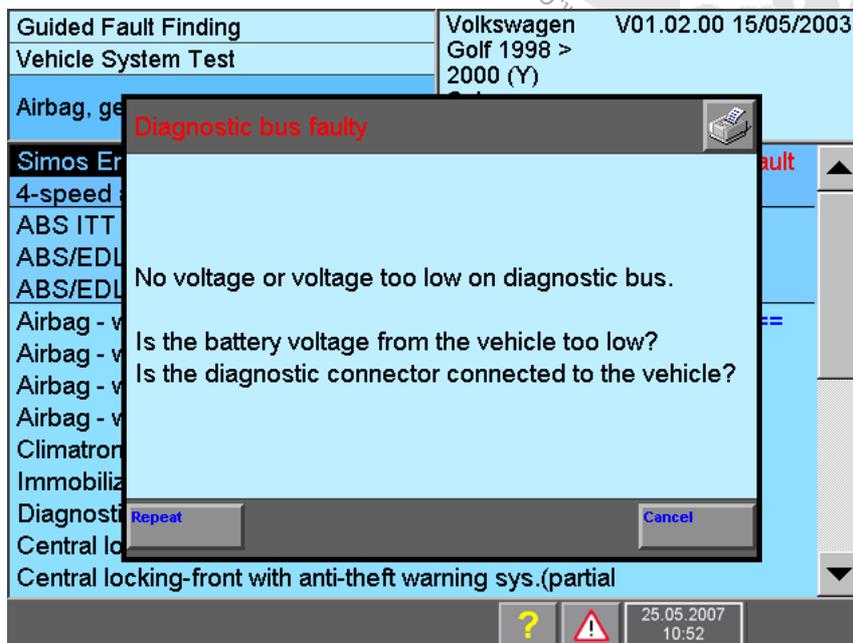


image 6-7 “Diagnostic bus faulty” dialog box

If you press “Cancel”, the vehicle system test will be ended.

6.6.1.2 Definitely installed control unit not recognised

If communication is not possible with a definitely installed control unit, its entry in the list will not be marked and the following message will then appear:

Communication with definitely installed control unit is not possible.

Repeat Cancel

If no communication is possible after “Repeat”, select “Cancel”.

You will be given the following message:

Cannot recognize control unit.

To enter it as installed anyway, press “OK” button.

Select “OK” so that the data applicable to that definitely installed control unit (diagnostic objects) will be available.



Note

If all control units have been interrogated, you must manually select the “Definitely installed control units” afterwards in the “Vehicle system test” mask. Only this ensures that the corresponding diagnostic objects are visible in the functions / components selection.

6.6.1.3 Optionally installed control unit not recognised

If an optionally installed control unit could not be identified, its entry in the list will also not be marked. No message will appear to indicate a non-recognised system.

Check whether optional vehicle systems are installed in the vehicle to be diagnosed and select them as required manually. That is the only way to guarantee that you will be shown the diagnostic data applicable to the vehicle in later masks, in particular in function/component selection.

6.6.2 Observe vehicle system test

While the vehicle system test is running, all operating buttons on the navigation bar will disappear except for “Help” and “Warnings / Notes”.

After the vehicle system test has been carried out, you can navigate using the “Continue” or “Go to” operating buttons.

Pressing the “Continue” operating button will take you into the start module if it is available, or to the “Fault memory contents” mask (see Fig. 6-9).

The “Go to” control button in this mask makes it possible to access the “Function/component selection” mask for the first time (see Section 6.9).

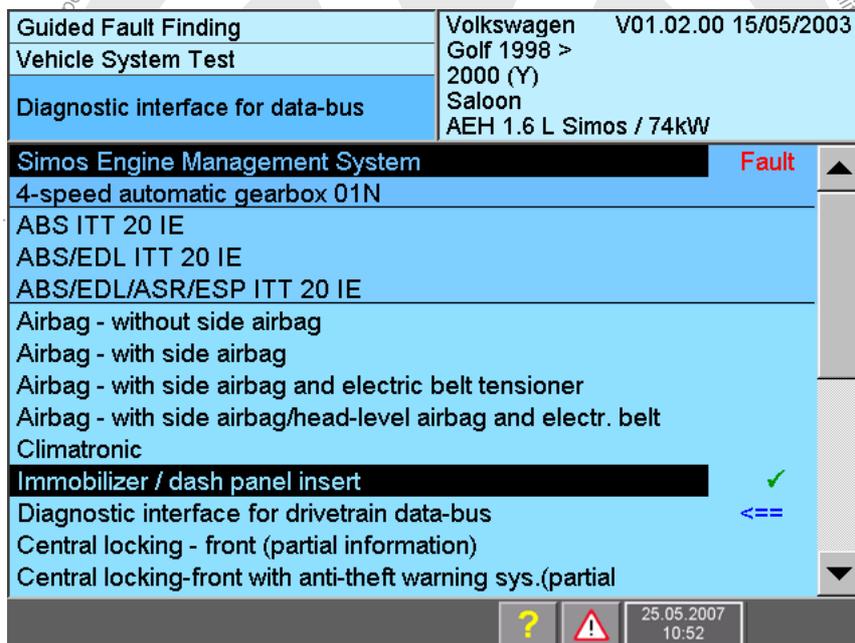


image 6-8 “Vehicle system test” mask with identified systems; test running

Table 6-1 Status symbols in the vehicle system test

Symbol	Meaning
Vehicle system display	
Normal text	Control unit not identified or deselected
Inverted text	Control unit identified (recognised)
Status column	
✓	Fault memory empty – no fault set
?	The vehicle system entered in the gateway as installed could not be recognised.
Malfunction	Malfunction set in fault memory
	Control unit has no communication interface
	Control unit selected manually
	Control unit deselected manually
<==	Control unit is currently being interrogated

6.6.3 Start module

The start module can run automatically in “Guided Fault Finding” after vehicle identification and before the fault memory entries are displayed. It can contain one or more function tests running separately to the test plan and not entered in the test plan. In this way, it reads e.g. the vehicle identification number (VIN) or checks the software status (flash status) of control units. In some cases, the start module can also request this data from you.

After the start module is closed, processing continues with the “Fault memory contents” mask. Function tests in the start module are listed in the diagnosis log.

6.7 Fault memory contents

The “Fault memory contents” mask informs you of faults with possible ambient conditions in the electronic vehicle systems. If no fault was detected, the following text will appear in the information window on the left:

No fault detected

If faults have been detected, they will be sorted by vehicle system and fault code in ascending order (“Standard” sorting).

If a fault (Fig. 6-9 and Fig. 6-10) has been displayed, you are taken to the “Test plan” mask when you press the “Continue” operating button (see Fig. 6-25); otherwise you are taken to the “Complaint report” mask (see Section 6.8).

Fault memory contents and their correlations

Guided Fault Finding	Volkswagen	V01.02.00	15/05/2003
Fault Memory Contents	Golf 1998 > 2000 (Y) Saloon AEH 1.6 L Simos / 74kW		
01 - Engine electronics			4 Fault detected ▲
00522	029		
Sender for coolant temperature -G62 Short to earth			
00282	041		
Throttle valve positioner-V60 locked or has no voltage supply			
17978	P1570	035	
Engine control unit disabled ▼			
Sorting by: Control module			
Operating mode	Go to	?	25.05.2007 10:52

Image 6-9 “Fault memory contents” mask, “Standard” sorting

The scope and structure of the displayed data depend on the build status of the control unit. One by one:

- **Number of faults**
The number of fault memory entries read appears at the top in the right-hand information window.
- **Malfunction code**
Example: 19461 P3005 035 001 Note
Five-digit malfunction code followed by an SAE-standard code number, fault type 1, fault type 2 and the possible indicator “Note”.

Not all blocks are output with every malfunction code.

– **Malfunction code/malfunction location**

The five-digit malfunction code indicates the location of the fault; for example, “Relay for high heating output – J360”.

– **SAE No.**

A code number according to the SAE standard can be assigned to the fault code.

– **Fault type 1**

The three-digit fault type 1 describes the fault symptom more closely – for example, “Short circuit to earth”, “Implausible signal”, “Lower limit fallen short of”, etc.

– **Fault type 2**

Fault type 2 describes how the fault manifested itself – for example, “statically” or “sporadically”. If the mask does not show an entry for fault type 2, this means the fault type is “static”.

– **Note**

This fault memory entry does not indicate a fault but rather a note.

You can change the malfunction code sequence by pressing the corresponding sorting keys. With all types of sorting faults without a sorting criterion will appear at the end of the list, sorted by control unit and marked by a violet background.

There is one special point to note when sorting is on the basis of the time stamp. Faults which follow another fault within a particular prespecified time span (one minute, for example) are grouped together and shown with a dark blue background. This aims at showing faults and their consequent faults in context. Notwithstanding this, all faults will still be sorted in ascending time order.

Guided Fault Finding	volkswagen V07.53.00 28/07/2004	
Fault Memory Contents	7L - Touareg 2003 > 2005 (5) Sedan BMV 3.2 L 177kW	
05 - Access and start permission	00.00.00 00:00:00	▲
00166 010		
Access/Start Authorization Switch -E415- Open/Short circuit to B+		
05 - Access and start permission	00.00.00 00:00:00	
00179 011		
Left Access/Start Authorization Antenna-R134 Open circuit		
05 - Access and start permission	00.00.00 00:00:00	▼

Ambient requirements
Sorting

Standard
Kilometer
Static/
Sporadic
Time

Operating mode
Go to
?
!
25.05.2007
10:52

image 6-10 “Fault memory contents” mask, “Time” sorting

If you press the “Ambient conditions” operating button the fault memory entries will be displayed individually with their corresponding ambient conditions. Depending on the

vehicle system, these could be standard values and expanded ambient conditions in the form of measured values.

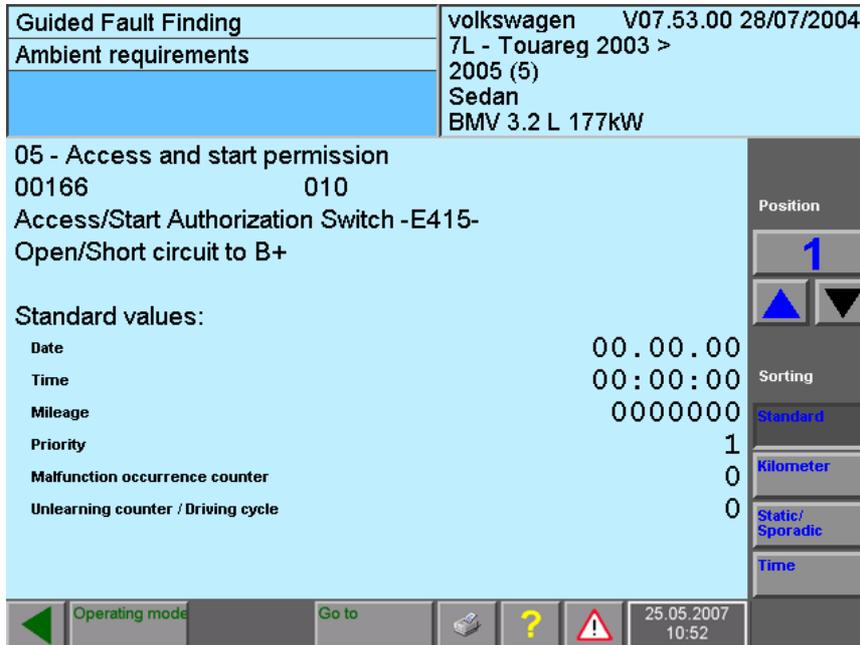


image 6-11 "Fault memory contents" mask, "Standard" sorting (without measured values)

The following environment conditions can be output:

- **Standard values** (when provided)
 - The following ambient requirements are grouped under this:
 - **Date, time:** Time stamp at time when the fault was detected.
 - **Odometer reading:** Shows at what mileage the fault was detected.
 - **Priority:** The priority can have a value between 0 and 15:
0 - 5: fault ID with descending priority; 5 = fault with lowest priority
6 - 8: note, no fault.
 - **Malfunction frequency counter:** The counter can have a value between 0 and 254. Every time the fault occurs (through all driving cycles) the counter is incremented by 1.
 - **Unlearning counter/driving cycle:** Shows the current counter status of the unlearning counter. When a fault occurs, the unlearning counter is set to a control-unit- and fault-code-specific value – for example, 40. If the fault does not occur during the next driving cycle it is marked as "sporadic". Every subsequent fault-free driving cycle decrements the unlearning counter by 1.
- **Measured values** (when provided, additional ambient conditions)

Measured values can also be displayed exclusively or additionally for the individual fault codes. The ambient requirements (which may number up to eight) can in each case consist of a default value and up to seven measured values, or up to eight measured values without a default value.

You can control the display via the operating buttons on the right-hand part of the work window:

- **Position**

The first fault in the list displayed together with its ambient requirements takes the 1st position. You can navigate between the faults by means of the two arrow keys.

- **Sorting**

When the mask opens, the setting is always “Standard”. With the displayed operating buttons you can, however, switch to sorting by other criteria:

Standard

Sorting by standard:

When you press the “Standard” operating button the faults are sorted in ascending order by:

- Malfunction code
- Time
- Odometer reading
- Priority
- Frequency of occurrence

Kilometer

Sorting by odometer reading:

When you press the “Kilometer” operating button the faults are sorted by the registered odometer reading, starting with the lowest. Fault codes without kilometre reading appear at the end of the list in the order in which they were read from the fault memory.

**Static/
Sporadic**

Sorting by Static/Sporadic:

When you press this button, first the static faults are displayed sorted and then the sporadic faults.

In the static faults group, the tester sorts by the change frequency of the malfunction occurrence counter starting with the lowest value (fault hardly changed to sporadic – i.e., behaves almost statically).

Sorting begins with the highest value for sporadic faults.

Faults which appear in the malfunction occurrence counter are followed by faults not in the counter or with a value of “0”.

Time

Sorting by time:

If you press the “Time” operating button, the faults are sorted by the time stamp starting with the oldest. Fault codes without a complete time stamp (date, time) will appear at the end of the list in the order in which they were read from the fault memory.



Note about ASAM-ODX control units

The previous examples apply to control units with KW1281/2000/6000 protocol. Under ASAM-ODX there is only the 2nd fault type. Appropriate contents of fault type 1 are already included in the fault code / fault location.

Usually, only the SAE code is displayed as fault code on the tester.

The ambient requirements displayed may also differ here.

6.8 Complaint report

The “Select complaint” mask is automatically displayed if no faults were recognised from the vehicle systems in the “Fault memory contents” mask (see Fig. 6-9) and you then pressed the “Continue” operating button. Entering complaints is another option for entering fault symptoms.

The “Complaint report” masks contain predefined lists of terms from which you can select the complaints reported by the customer or observed by you yourself. You can input several complaints from each of the two groups, “Technical problem solution” and “Repair group”. The groups differ in the following way:

- **Technical problem solution:** Here the complaints are sorted by solutions to the problem behaviour as currently known (function, fault number, and so on).
- **Repair groups:** Here the complaints are sorted by vehicle structure and the symptoms you have noticed (drive, engine, performance, and so on).

You should enter as many of the known fault symptoms as possible in order to describe the complaints. You can also enter complaints if there are already entries in the fault memory. You can reach the input screen for complaints by selecting the “Complaint report” item in the “Go to” menu.

You can select one element from the lists of terms on each mask. As each term is selected, it is immediately accepted and the screen switches to the next mask. You can use the “Back” operating button to jump back to the previous mask at any time and change the selection on that mask. The steps selected are displayed one after the other in the information window on the right-hand side of the masks.

If the “Overall selection display” mask appears, you can accept the new selection and select the already existing one for deletion. Only complaints appropriate to the vehicle will be presented for selection.

You do not always have to specify something at all levels of a given complaint. As soon as the Continue operating button appears, you can switch over to the “Overall Selection Display” mask (see Fig. 6-14). In this case all of the symptoms coming under the step last reached will be included in the test plan.

Example of the mask sequence for “Complaint related to observation”:

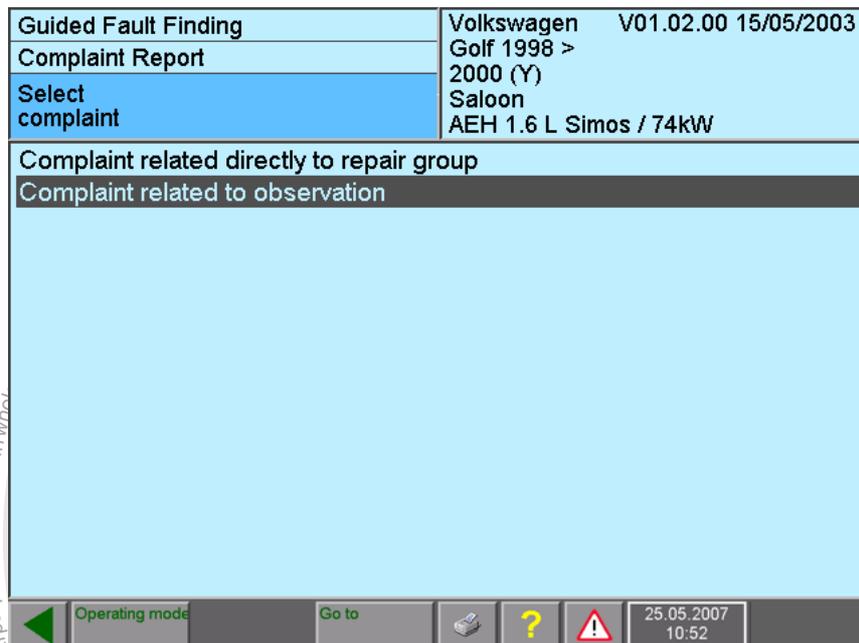


image 6-12 “Select complaint” mask

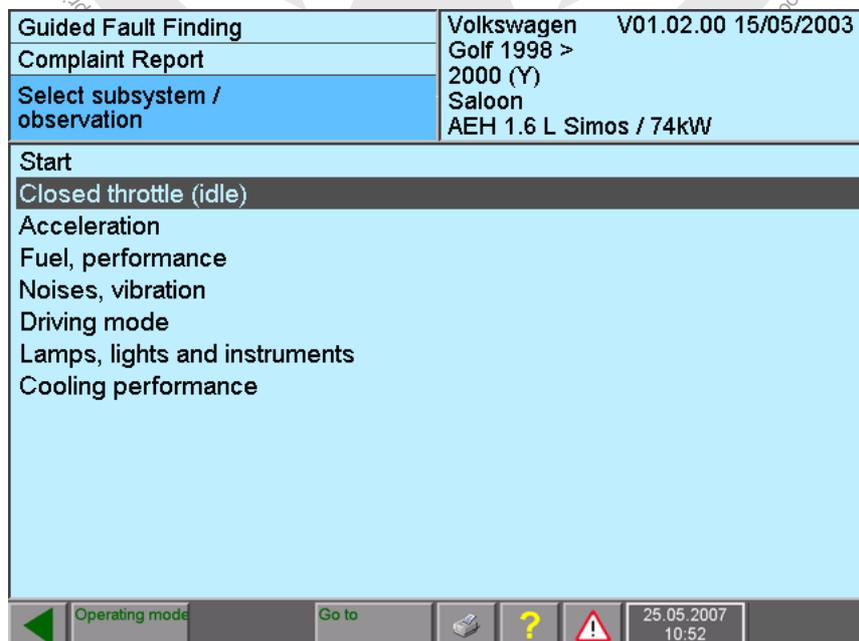


image 6-13 “Select subsystem / observation” mask

Complete the complaint by selecting further phrases.

The “Accept” operating button appears when you have entered the complaint completely. It will be displayed again in the information window on the right. If you press the “Accept” operating button, the complaint will be accepted into the “Overall Selection Display” (see Fig. 6-15).

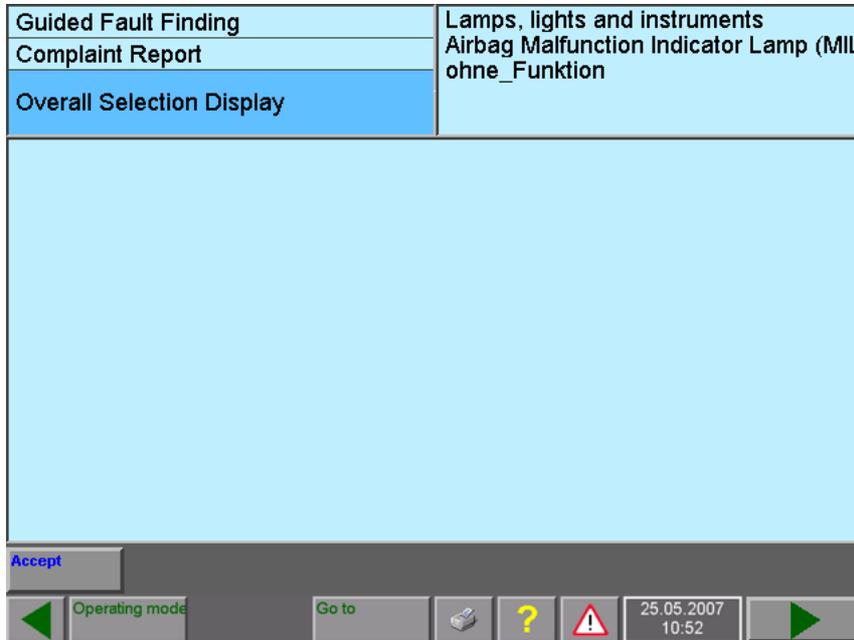


image 6-14 “Overall Selection Display” mask (ready for accepting the complaint)

You can formulate further complaints. Use the “Back” operating button to go to the point in complaint input where you wish to make entries.

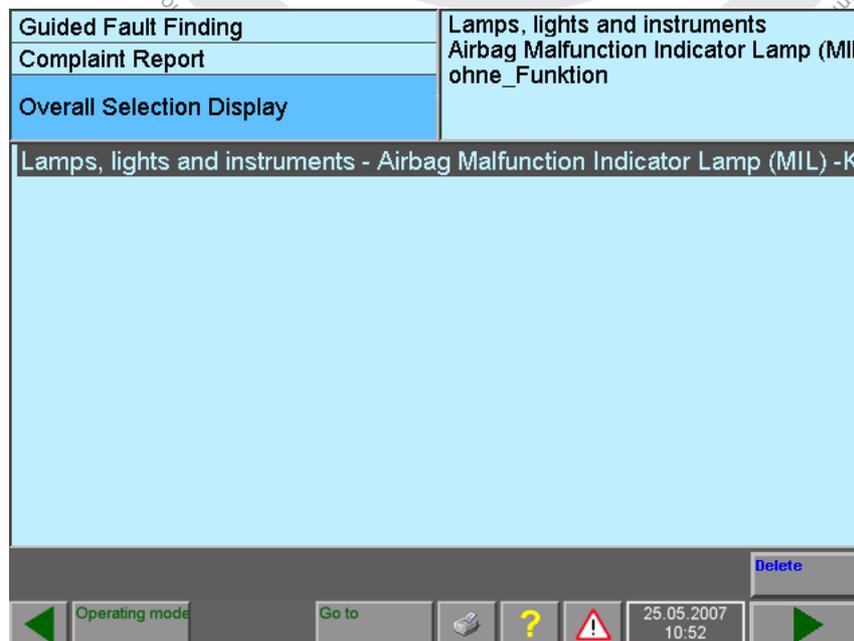


image 6-15 “Overall Selection Display” mask (with “Continue” to test plan)

By pressing the “Continue” operating button, you will leave the “Complaint Report” function and switch over to the “Test Plan” mask. As you switch over, the tester will prepare the test suggestion that matches the symptom and will enter it in the test plan.

If suspect components have already been entered in the test plan, a Yes/No question will appear to ask whether you want to replace the current system test plan with a new one. Select “Yes” to enter the suspect component that matches the complaint into the test plan.

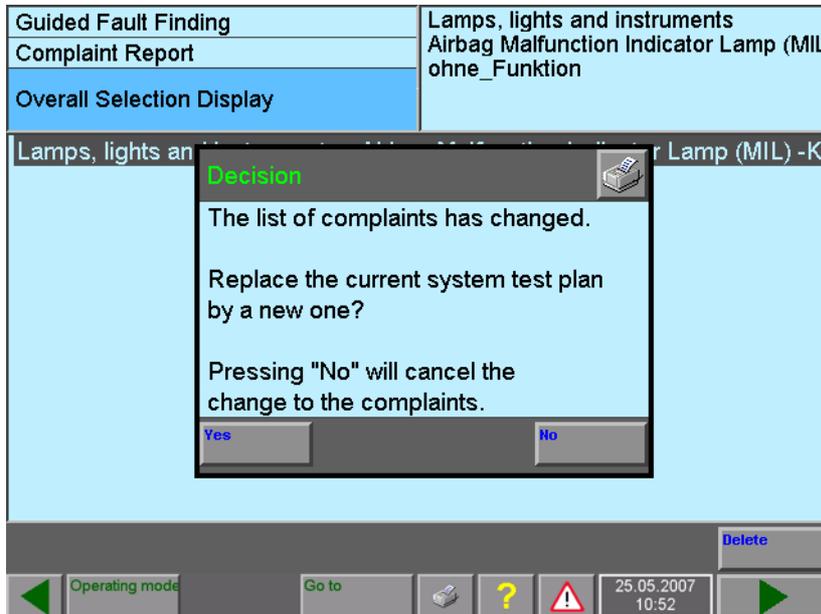


image 6-16 “Overall Selection Display” before accepting the symptom



The system and the matching suspect component appear here

image 6-17 Test plan with test suggestion based on an entered symptom

The rest of the procedure is as described in Section 6.10.

At any time, you can view, delete or add to entered complaints by selecting “Go to”, “Complaint report”, “View/delete complaint report”.

6.9 Function/Component selection

The “Function/component selection” function gives you the option of applying your own personal expert knowledge in the context of “Guided Fault Finding”. Here, in contrast to the evaluation of DTC memories (see Section 6.7) or complaint reports (see Section 6.8), you directly select functions or components that seem suspect for testing.

In addition to function tests, other functions, documents (see Section 6.9.1) and information may also be stored here, which do not belong to the fault finding, such as e.g.:

- Customer service functions (coding, reading measured values, ...)
- Information / documents on testing equipment, tools
- Information on fuse / relay configuration



Note

The only functions and components definitely displayed are those for vehicle systems marked in the “Vehicle System Test” mask (Fig. 6-8), i.e., those that were automatically identified or manually selected.

After the functions and/or components are selected, the tester automatically allocates the relevant function tests to them. In this way, you compile your own “User test plan”. The names of the selected functions or components appear in the “Test plan” mask at “User test plan” (see Section 6.10) if there are already system-guided test suggestions available. This is presumed for the example which follows.

The “Function / Component Selection” mask is accessed from the “Vehicle system test” mask by pressing the “Go to” operating button. Function, repair group, component group and component are selected from lists displayed over several masks, similar to the procedure for the complaint report (see Section 6.8).

When selecting functions and components, the screen layout develops in the form of levels, with each level distinguished by an indent to the right when compared with the previous item selected. If a row is preceded by the “+” symbol, this indicates further options for selection. Example:

- + *Drive*
 - + *ADR engine*
 - + *01 – Systems capable of self-diagnosis*
 - + *Motronic engine management system*
 - + *Electrical components*

etc.

Each indent signifies a selection in a mask. If you want to jump back one level, select a higher level (not the “Back” operating button since this takes you directly back to the test plan!). Example:

- + *Drive*
 - + *ADR engine*
 - + *01 – Systems capable of self-diagnosis*
 - + *Motronic engine management system*

Example of a “Function / Component Selection” mask sequence:

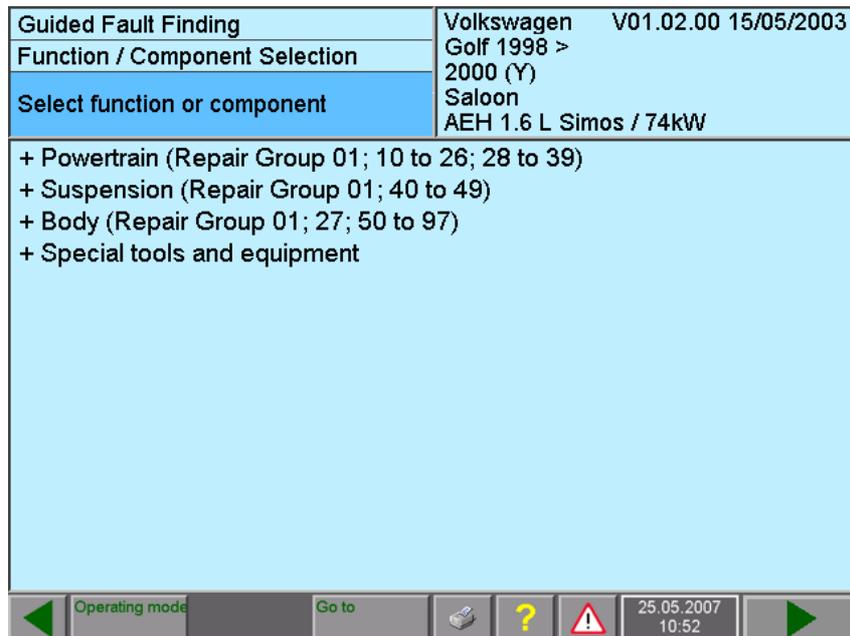


image 6-18 “Select function or component” mask, 1st level

Select “+ Drive”, for example. The next mask will be shown automatically when the selection is made. Specify the function or component in more detail in the masks which follow. If you want to change your selection, touch the preceding selection.

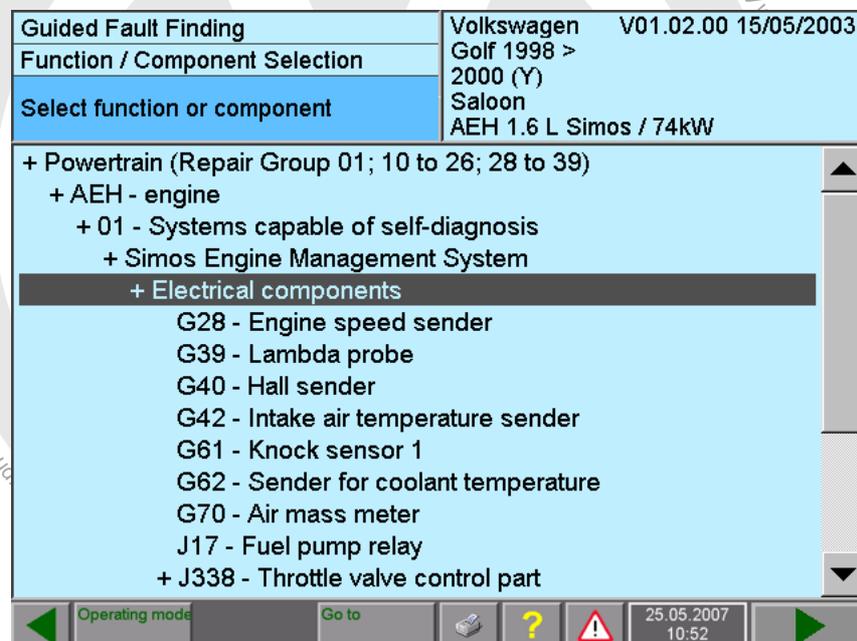


image 6-19 “Select function or component” mask, 4th level



Note

If you do not go through all of the steps – after the confirmation of a message – all of the components and functions coming under the step last reached are included in the test plan.

In this submask, select the desired component or a function. The selection will be displayed until you touch the “Continue” operating button, which will take you to the test plan.

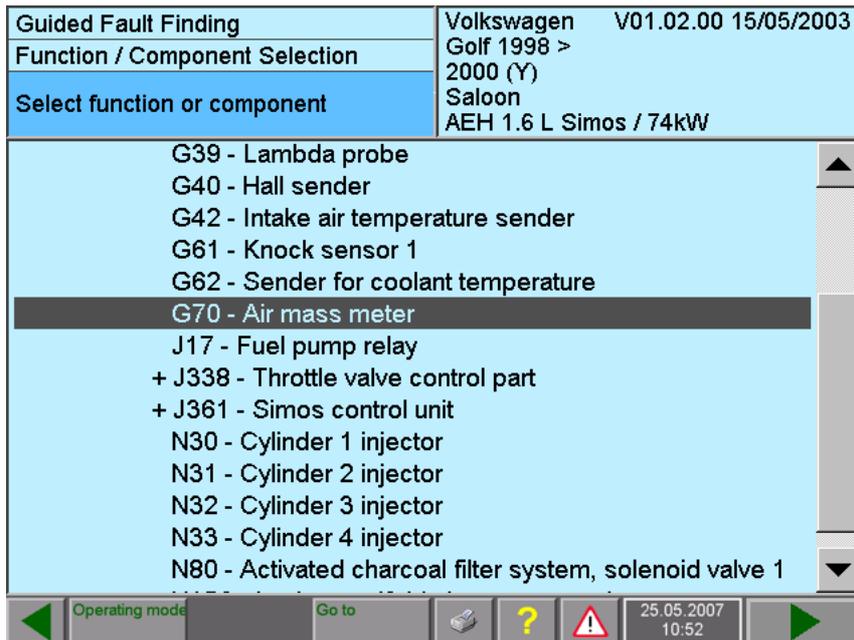


image 6-20 “Select function or component” mask, 5th level

The selected diagnosis object is added to the “User test plan”.



image 6-21 “Test plan” mask with “User Test Plan” section

The rest of the procedure is as described in Section 6.10.

6.9.1 Documents

Available documents, such as installation locations, pin assignments and so on, can be selected and displayed in the “Function/component selection” mask. For this purpose, select the relevant function/component and then the “Go to” destination “Documents”. After the first selection, the “Go to” destination “Documents” is available for selection permanently in the “Go to” destination menu.

Documents (graphics, text) are displayed in the work window. If they are larger than the work window, they will be provided with a vertical scroll bar.

Documents are also found in the function test masks. There they are made available directly via a row of up to six numbered and correspondingly labelled control buttons (see Section 6.11.1).



Note

If you selected a diagnosis object in function/component selection, you can also access its documents directly by selecting “Documents” from the “Go to” menu during the ongoing function test. The documents presented here do not form part of the current function test, but rather the last selected function/component selection.

Example of a mask sequence arising from “Function/Component selection”:

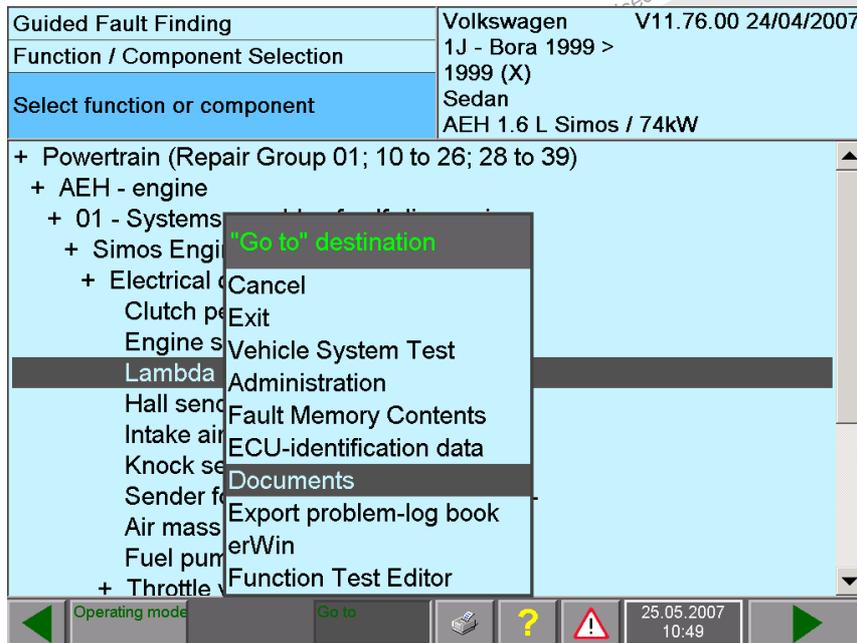


image 6-22 Function/Component selection, “Documents” selected as “Go to” destination

You can activate the “Select Document” dialog box for a selected function or a component via the “Go to” destination menu.

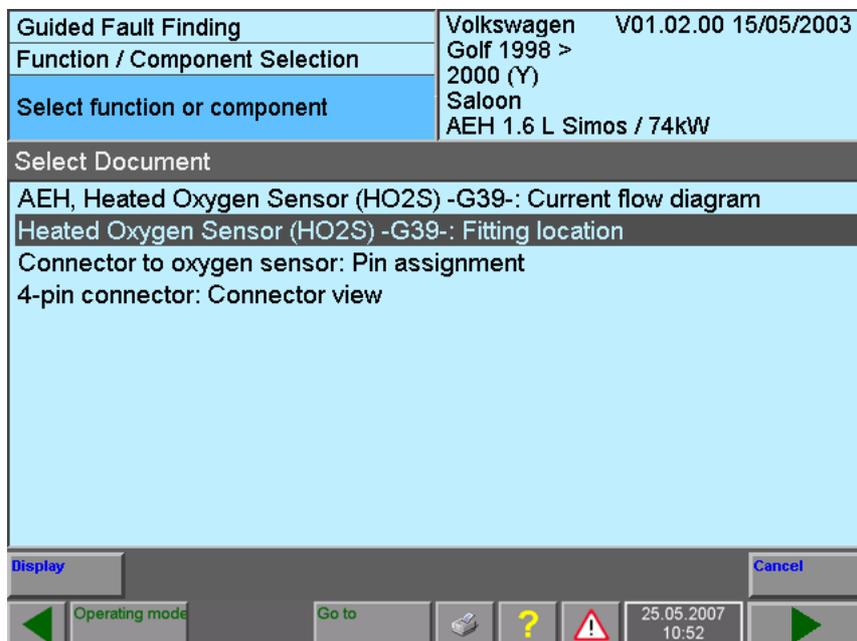


image 6-23 “Select Document” dialog box

The documents that can be displayed are listed in the “Select Document” dialog box. Select the desired document, and press the “Display” operating button. The document will then be displayed.

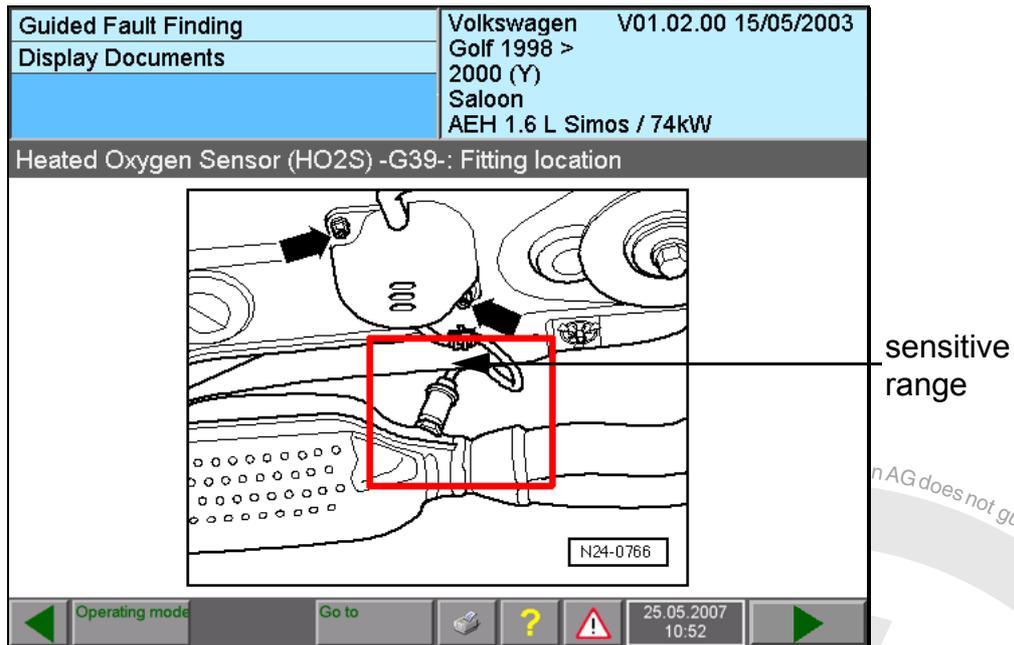


image 6-24 Displayed document with hotspot (red frame)

The displayed document can contain hotspots (sensitive rectangular areas). If you touch a hotspot on the screen, you will be shown the document associated with it.

The “static” or “sporadic” (fault no longer present at the moment) fault type plays a role for the sequence of the diagnostic objects. If only sporadic faults are assigned to a diagnostic object, they are placed at the end of the test plan. When you start the function test of such a diagnostic object, the following message may appear:

*Sporadic faults occurred.
(possibly additional text)*

Would you like to see the details?

If you confirm with “Yes”, the corresponding fault memory entry is displayed along with the ambient requirements (if available).

When all the function tests for the diagnostic objects entered have been performed, the test plan is considered to have been processed. You can also repeat function tests by reselecting the diagnostic object and pressing the “Continue” button.

The status preceding the diagnostic object corresponds to the current status of the function test or the result of the linked function test.

“OK” means, for example: the function test was performed without any faults; the diagnostic object (module or function) is OK.

Table 6-2 Meaning of symbols for the status of the diagnostic objects

Symbol	Meaning: Function test
-	Not yet carried out
OK	OK
OK!	<p>This status is a special case: A function test may end with the status "Diagnosis generated and component repaired". In this case, the tester does not go back to the test plan after completing the function test, but asks the question:</p> <ul style="list-style-type: none"> • <i>Repeat test after repair is completed?</i> <p>If you answer with "No", the status "OK" (already repaired, result not checked) is entered in the test plan in front of the diagnostic object. If you answer "Yes" instead, the function test is repeated in verification mode (examination of the repair). However, this concept requires appropriate program components in the function test, e.g. a short test. If these program components are not available, the entire function test is repeated and the reaction is the same as during the initial activation. You can also start the verification of a function test from the test plan by the repeated selection and start the "Test" selection.</p>
OK?	<p>Probably OK. It is not possible to make a statement with 100% certainty about the result of a particular function test, since e.g. not all the results are testable.</p>
X	Not OK.
?	Result unknown or cancelled
⇒	Currently being carried out

6.11 Function test



Note

Since the platforms (except for VAS 5051B) do not have any internal testing devices (multimeter, oscilloscope), external testing devices must be used and measurement results transferred to the function test via replacement value input.

When using the external VAS 6356 measuring box, the multimeter measured values in the Guided Fault Finding are taken over automatically.

A defined function test has been assigned in the test plan to every vehicle function, every component group and every component (diagnostic object that could indicate a fault). Its task is to test the requirements defined for each. It yields the results “OK”, “Not OK” or “Test result unknown”.

A mask from a function test is shown in Fig. 6-26. Every function test consists of closed test steps that can also be repeated via the “Go to” destination menu after they have been executed. The information window on the left contains the title of the function test, while the name of the test step currently being processed is displayed as a heading in the work window.

A function test can include the tester's communication via the diagnostic bus, as well as measuring instructions. You become actively involved in the process at this point, e.g. to connect measuring leads, to make decisions or to enter values. For this purpose, the tester will provide you with up to two rows of appropriately labelled operating buttons in the work window, for example. The left row contains the control buttons for further processing of the test dialogs (see Section 6.11.1); the right row contains up to six numbered control buttons for displaying documents.

After the function test is finished, the tester will return to the “Test plan” mask. There, you can select the next diagnostic object and start its function test or access alternative diagnostic procedures via the “Go to” Destination menu (such as complaints or function/component selection).

In this example of a function test, a question appears after starting:

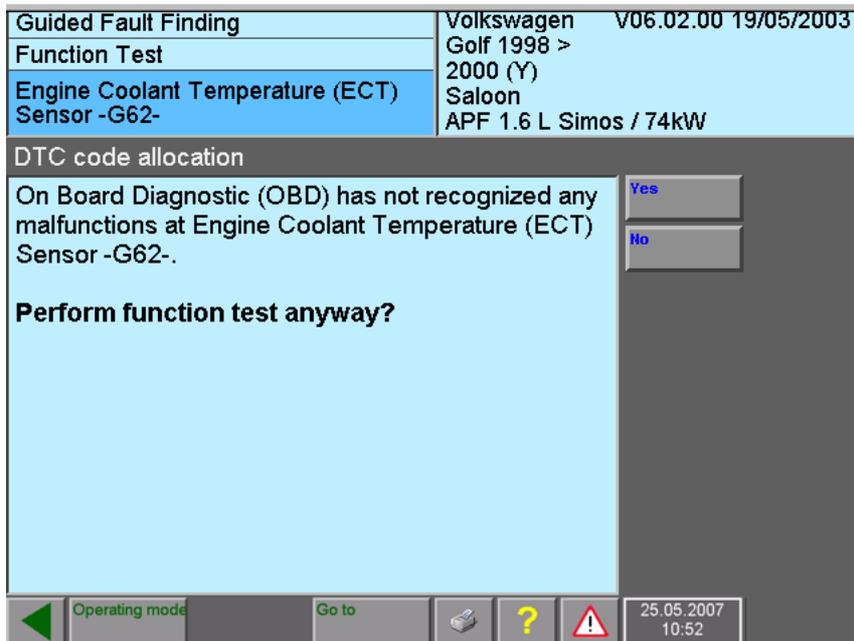


image 6-26 Function test, question to the user

Different masks appear later in the course of the function test depending on the actual tests done, e.g. a message with the “Done” operating button:

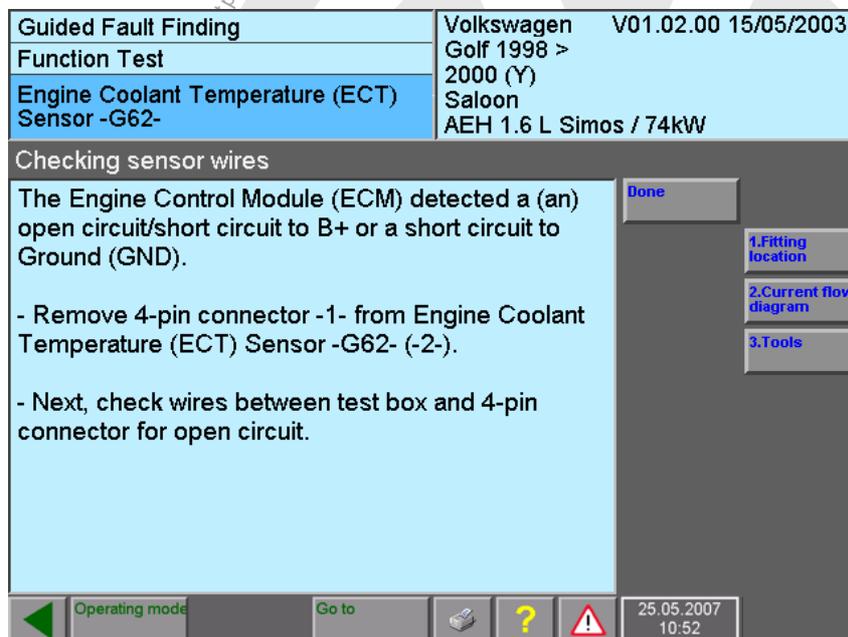


image 6-27 Function test, message for the user

Select the “1st Fitting location” operating button, for example. You are immediately shown the matching image document (see Fig. 6-28).

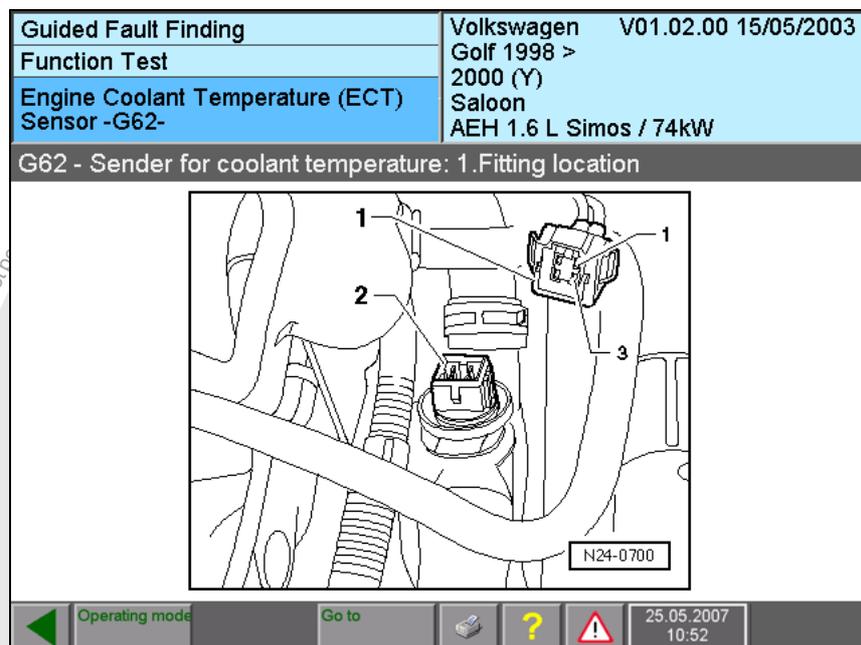


image 6-28 Display Documents, “Fitting location” example

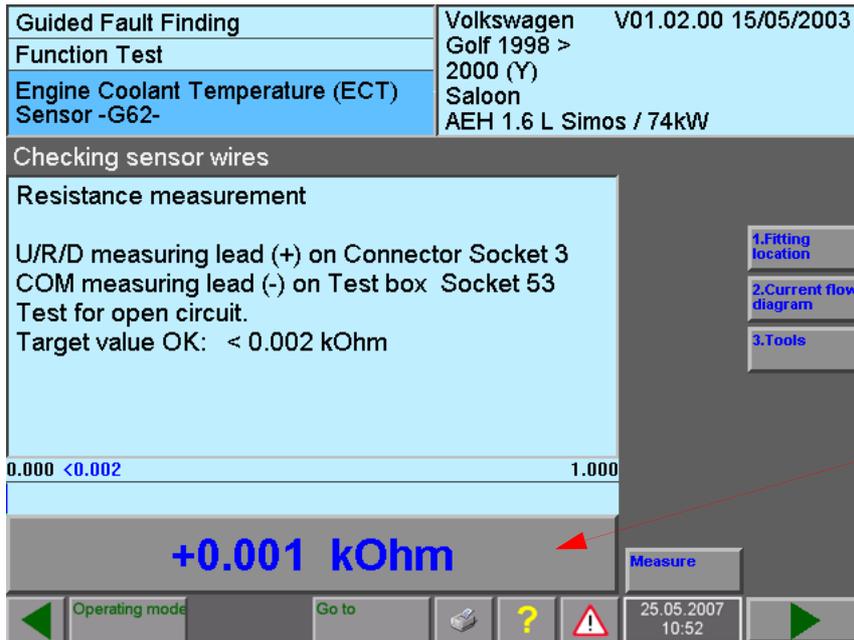
Use the “Back” operating button to switch back to the previous mask and use the “Done” operating button to continue the test there after dealing with the message.

One element of the function test shown in the example is a resistance measurement. The corresponding mask (see Fig. 6-29) contains instructions as to which measuring points the measuring lead should be connected to. Press the “Measure” operating button to start the cyclic measurement on the VAS 5051B. If you press the “Measure” operating button again, the value last measured is retained. Press “Continue” to continue the function test. You can also use this button to cancel an active cyclic measurement directly and continue the function test with the value last measured.



Note

The button on the measurement lead's probe tip triggers the same function as the “Measure” operating button on the screen. It is recommended to use it if the tester screen is not visible or accessible from your working position on the vehicle.



Result field and activation of the replacement value input.

image 6-29 Function test, Resistance measurement

Replacement value input

If no measurement is possible or if an external testing device must be used for the measurement, you can enter the value manually. To do so, touch the results field (Fig. 6-29). A numeric keyboard will appear for entering replacement values. On the VAS 5052x, the virtual keyboard also appears after the “Measure” button is pressed.



image 6-30 Virtual keyboard for entering measured values

Enter the measured value. The “Q” button is for applying the value you entered.

At the end of the function test, the “Guided Fault Finding” application switches back to the “Test Plan” mask (see Fig. 6-25) and presents you with any more suspect diagnostic objects for testing.

6.11.1 Test dialogs

In the function test, you will find the following types of user/test dialogs:

- Messages to the user with the “Done” operating button for continuing with the program.
- Questions to be answered with the “Yes” and “No” operating buttons or the additional “Unknown” operating button.
- Decisions with up to eight operating buttons for branching off on separate program paths.
- Measuring instruction with the “Measure” operating button for starting and/or stopping the cyclical display for the measured value.
- Displays of results from a control unit with the “Read” operating button for starting and/or stopping the cyclical output of those results.
- Displays without a special operating button for cyclical program runs (loops) and for any cyclical output of texts or values. A cyclical loop is interrupted either by the test program or by pressing a operating button.
- Input instructions for entering a numerical value or text via a keyboard that appears on the screen.

All test dialog steps are only concluded when a operating button appropriate to the activity is pressed, e.g. “Done”, “Yes”, “No” etc.

All test dialog steps can include operating buttons for displayable image documents. They are displayed by pressing the corresponding operating button, switching to the document display and then back to the test dialog step.

6.11.2 Measuring instruction (multimeter)

The work area of the “Function test, G62 – Sender for coolant temperature” mask (see Fig. 6-29) contains a display of the type of measurement (“Resistance measurement”), the instruction for connecting the measuring lead, an optional description of the measurement (Example: “Resistance measurement on sender for coolant temperature), and the specification of the target value and the measured value as a bar display and as a numerical output.

The bar display contains a numbered scale. A rectangle indicates the range of tolerance for the measured value. The measured value appears as a coloured horizontal bar in the numbered scale. If the value is OK (green), the bar will jut into the tolerance window. A red bar indicates an incorrect measured value; the display “+++++” indicates an overload.

The numerical display also includes the physical unit of measurement.

Measurements of numerical values are triggered by pressing the “Measure” operating button after the specified connections have been set up.

VAS 5051B:

The measurement is repeated several times in a cycle, as long as the “Measure” operating button is pressed; the last value measured is accepted after the “Continue” operating button is pressed. Pressing the “Measure” operating button again stops the continuous measurement, and the last value displayed will be kept.

The “Measure” operating button can alternatively be activated via the switch in the red probe tip.

If the internal testing device is defective or if you prefer a testing device of your own, you can enter the measured value thus determined via a keyboard on the screen. The keyboard appears automatically when the results field is touched or if the internal test instruments are malfunctioning. It will disappear again after entries have been made when the “Q” or “Continue” operating buttons are pressed, or, if a genuine measurement is carried out, by pressing the “Measure” operating button. The physical unit for the entry (e.g.: V, mV) is preset automatically.

VAS 5052x and VAS 61xx:

Here, a numerical keyboard appears when the “Measure” operating button is pressed, for entering a measured value.

When using the external VAS 6356 measuring box, the multimeter measured values in the Guided Fault Finding are taken over automatically. The DSO function is not available here.

6.11.3 Measuring instruction for vehicle systems

The vehicle systems supply a wide variety of measured values relevant to diagnosis which can be interrogated and evaluated in a function test by so-called “measuring instructions”. Measuring results are displayed in some cases in a message (Fig. 6-31) or directly from the measuring instruction.

Measuring instructions to vehicle systems require functioning communication with the vehicle system in question.

6.11.3.1 Measuring instruction results in a message

As a rule measurement results are displayed in messages. Here the measuring instruction itself runs invisibly in the background.

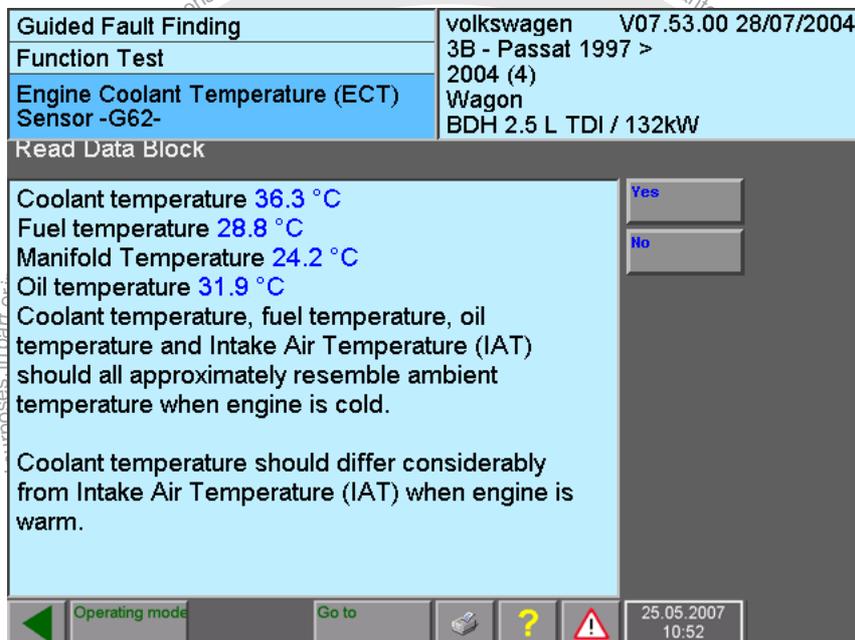


image 6-31. Function test, message with measurement from vehicle system

Fig. 6-31 shows a message which is incorporated in a loop in the function test. Every time the loop runs, the measured value is read from the vehicle system and updated in the mask. It is not possible to input a replacement value here.

6.11.3.2 DSO combination measurement

In addition to measuring an individual parameter, measurements are possible, in which two different sources are called up simultaneously. One of the values (such as voltage) can be directly read from the control unit and the other can be read in via the measuring instrument (such as the pressure).

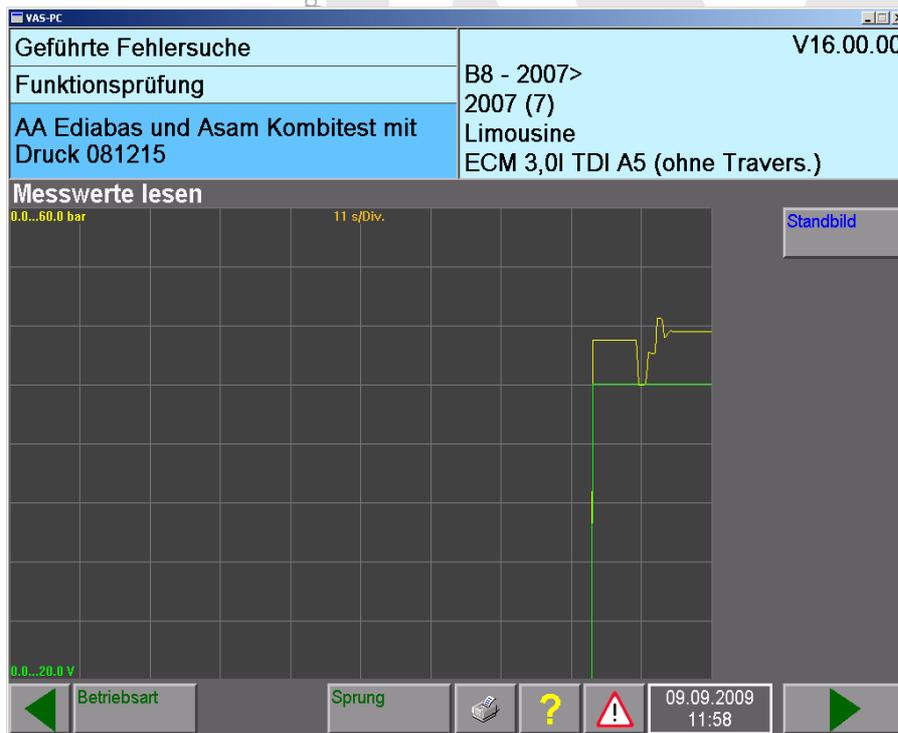


image 6-32 Example of a combination measurement: query of pressure and voltage

6.11.3.3 Measuring instruction with direct output

In some special cases measuring instructions with vehicle systems are also programmed as direct output. The display is similar to the measuring instructions for multimeter applications (see Fig. 6-29), but with the following differences:

- Since it only uses internal measurements of the vehicle systems, it can also be accessed on the VAS 5052x without restrictions.
- Instead of the “Measure” operating button, a “Read” operating button is displayed. If vehicle communication is possible, while it is activated the selected measured value is displayed cyclically in the result field.

If vehicle communication is not working, you can input a replacement value manually. Touch the result field (see Fig. 6-29) to access the virtual numerical keyboard and input the replacement value. Next press the “Continue” operating button. The “Read” operating button is not used in replacement value input.

6.11.3.4 Measured values table

This provides another way of displaying measurements from vehicle systems. The function test can present you with a measured value list for selecting measured values or a preselected selection of measured values for displaying the results.

Selecting measured values from a measured values table

This display allows you to select the desired measured values yourself from a measured values table. An entry consists of the ID (for EDIABAS = group number / number of the display field; for ASAM-ODX = text identifier) and measured value name.

The measured values of different control units are given different colours to make it easier to differentiate them.

After selecting at least one measured value, press the “Done” (starting from V18, upper right above the selection window) operating button which takes you to the next mask where you can perform the measurement.

The selection list of measured values has been expanded by an “ID” column starting from V18, replacing the two columns that had been displayed up till then for the respective number of the measuring value block as well as the measured value. The two columns have been dropped.

In the “ID” column, the so-called TextIdentifiers (TI) are shown as they are included for the respective measured value in the ODX data.

If there is no TI in the ODX data, an empty string will be output.

If a measured value consists of several portions, then the respective TIs as well as the measured value designations are differentiated by the separator “>” for improved clarity.

The “Done” operating button has been shifted above the selection list.

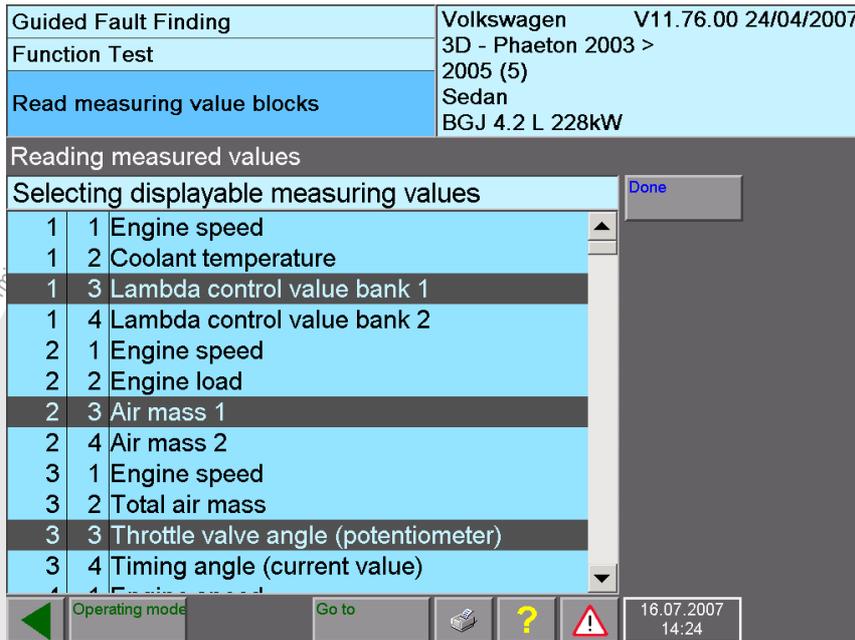


image 6-33 Function test, read measured values

Carrying out measurement

You can go to this mask directly from the function test or via the selection list of the measured values table (Fig. 6-33). There can be any number of measured values. The “Result” column initially is empty. Press the “Read” operating button to read the measured values cyclically from the vehicle system(s) (Fig. 6-34).

Selecting individual measurements

You can select a single line. With this, the name of the measured value and the result are displayed again in the long information bar in the lower part of the work window. At the same time, a “Message text” operating button and/or a “Test program” operating button may appear on the right (not illustrated).

- **Message text:** Information about the measured value is provided here.
- **Test program:** If a result is outside the specified value and you select the relevant measured value, a function test for finding faults may be offered when you press the “Test program” operating button. If you press this operating button, the function test is entered in the test plan; an appropriate message is displayed. You can activate this test after the current test.

Press the “Go to” operating button to jump back to the selection list “Measured values: Read measured values” where you can make another measured-value selection. Press the “Continue” button to continue with the function test. In some cases the measured values table is quit automatically; for example, if all values are OK.

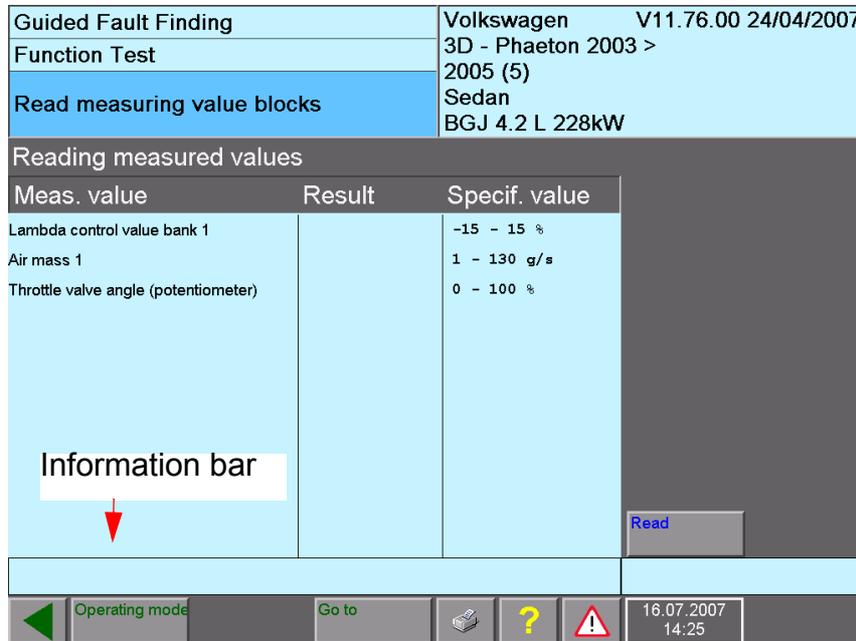
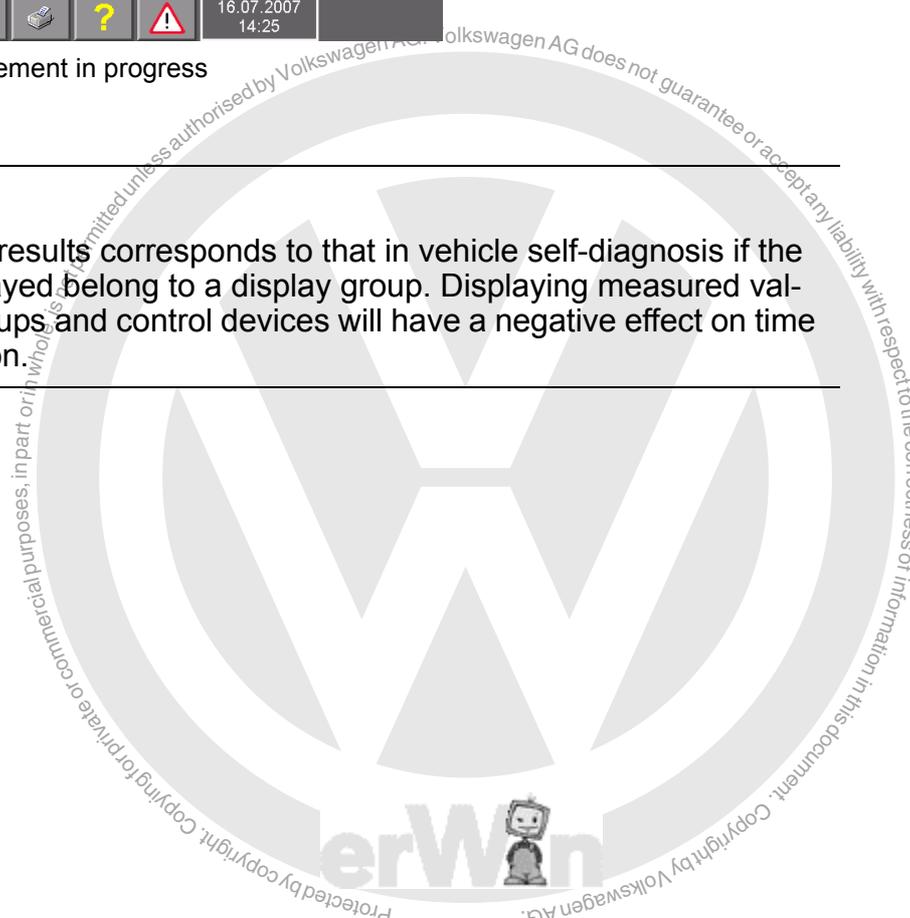


image 6-34 Function test, measurement in progress



Note

The display frequency of the results corresponds to that in vehicle self-diagnosis if the measured values to be displayed belong to a display group. Displaying measured values from different display groups and control devices will have a negative effect on time behaviour and synchronisation.



6.11.4 Digital Storage Oscilloscope (DSO) measuring instruction

VAS 5051B:

The DSO measures graphical curved lines cyclically using parameters preset by the function test and displays them. Press the “Freeze Frame” operating button to pause the cyclical repetition of the measurement. The last display will freeze on the screen. Press the “Freeze Frame” operating button again to start the cyclical repetition of the measurement up again. The “Freeze Frame” operating button can also be operated by activating the switch in the red probe tip of the measurement cable.

With measurements that are triggered by a particular condition (events), the “Measure” operating button is used to enable triggering. The measurement is then automatically initiated when the trigger event occurs.

The measurement instruction is followed by a question regarding the evaluation of the signal curve.

VAS 5052x and VAS 61xx:

A DSO measurement must be carried out using an external device.

6.11.5 Cancel function test

Normally, you can only move from the “Function test” mask to the “Test plan” if all operator entries have been properly concluded and a clear test status has been achieved. Missing information or operator actions that are still outstanding are displayed via messages.

Nonetheless, you can cancel an ongoing function test in the following way:

1. Use the “Go to” destination menu to switch over to the “Test plan” mask.
2. There, select the ongoing function test and press the “Continue” button.
3. In the dialog which appears, press the “Abort function test” operating button. Note that the status “?”, i.e. “unknown”, will now be entered next to the function test.

6.12 Leaving the “Guided Fault Finding” application

You leave the “Guided Fault Finding” application via the functions contained in the “Go to” destination menu. These include:

- Interrupt,
- Cancel and
- Exit.

The “Interrupt” function is only offered if you have accessed the “Test plan” mask at least once. The “Cancel” function is offered from the “Select type” mask onwards.

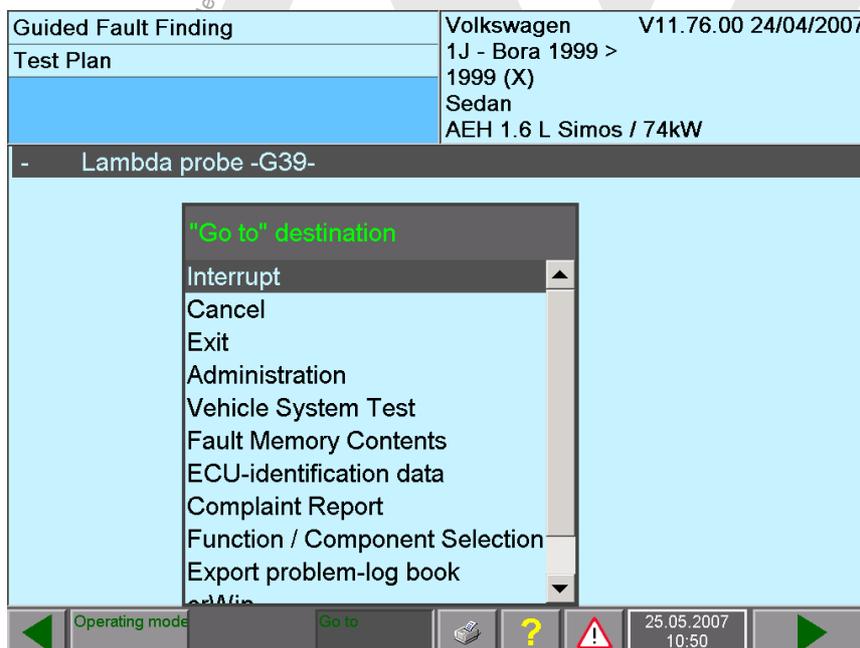


image 6-35 Leaving the “Guided Fault Finding” application via “Go to” destination

Before returning to the start mask (in the case of Exit) or to the basic screen for Guided Fault Finding (in the case of Cancel), you will go through various additional run sequences (“Interrogate fault memory”, “Generate readiness code?”, end module) (see Section 6.12.2, Section 6.12.3 and Section 6.15).

6.12.1 Interrupt

You can interrupt the diagnosis session for a short break (pause) or save your work to continue with it at another time.

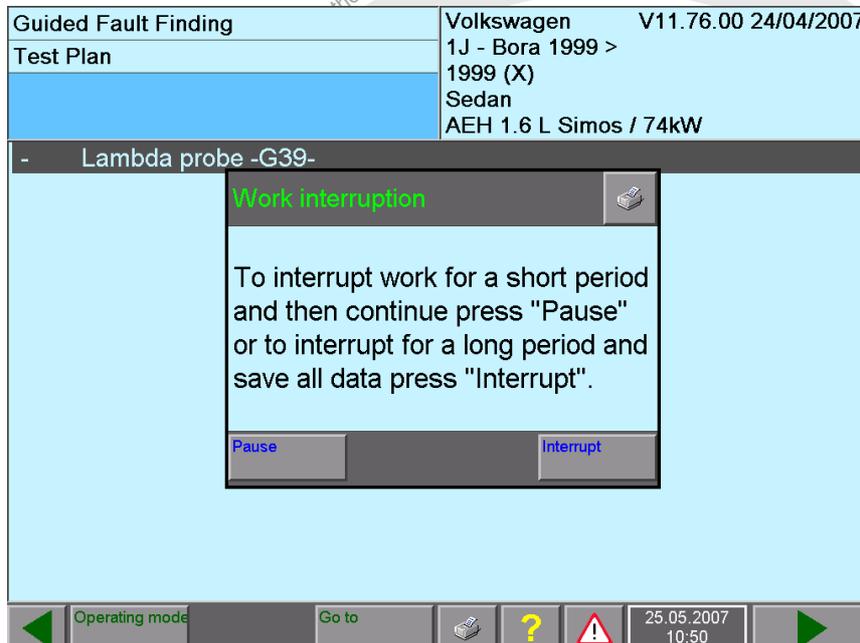


image 6-36 Work interruption dialog box

6.12.1.1 Briefly interrupt work: "Pause"

After the "Interrupt" function is activated within the "Go to" menu, a dialog box appears where you can choose whether you want a short pause or a longer interruption. If you choose the short break, the following text will be displayed:

*Work has been interrupted for a short time ("Pause").
Press "OK" to end pause.
Do not cancel pause without consent or good reason.*

When the "OK" operating button is pressed:

Work can be continued in the current mask.

6.12.1.2 Interrupt work for a extended period: save job

You can interrupt a diagnosis job and save all relevant diagnostic data up to that point in the tester for later retrieval by specifying a job code. After saving, you will automatically switch over to the first mask of “Guided Fault Finding”.

After saving, you can activate any other diagnostic functions.

Enter job code:

image 6-37 “Enter job code” dialog box

You can use the “Enter job code” dialog box to enter a job code via an onscreen keyboard for the diagnosis job that is to be saved, and acknowledge it with the “Q” operating button. The current date and time will also be saved, alongside the job code.

6.12.1.3 Load diagnosis job

You can reload saved diagnosis jobs after the selection of brands in the masks of the basic feature components (type, model year, body version, motor). To do so, select the "Diagnosis job" function in the "Go to" destination menu. Choose the desired job and select "Edit". An instruction follows with the job name and the corresponding vehicle that must be connected. When you acknowledge the instruction with "OK", the "Test plan" mask will follow. It shows the status achieved for the interrupted diagnosis job when it was saved.

After the saved diagnosis job is loaded, the saved item will be deleted. Therefore, you should save the diagnosis job again if you need to, in which case it will be stored again under the same name.



Note

The top right-hand information window shows the name of the loaded job instead of the loaded brand data.

Example for a "Load diagnosis job" mask sequence:

Select "Diagnosis job" as "Go to" destination:



image 6-38 "Select type" submask, "Diagnosis job" selected as "Go to" destination

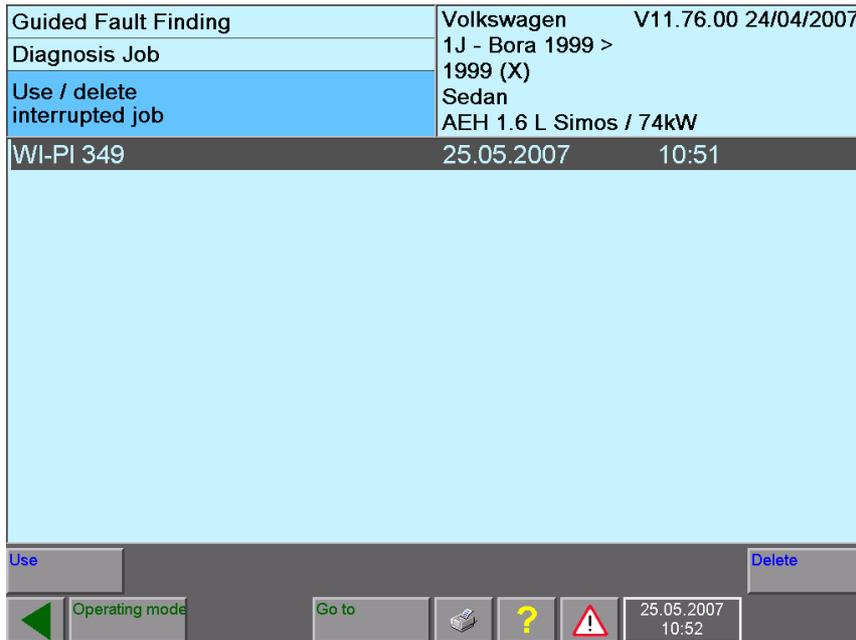


image 6-39 Diagnosis job, “Use/delete interrupted job” submask

Select the interrupted diagnosis job and press the “Edit” operating button.

Fulfil prerequisites and press the “OK” operating button:

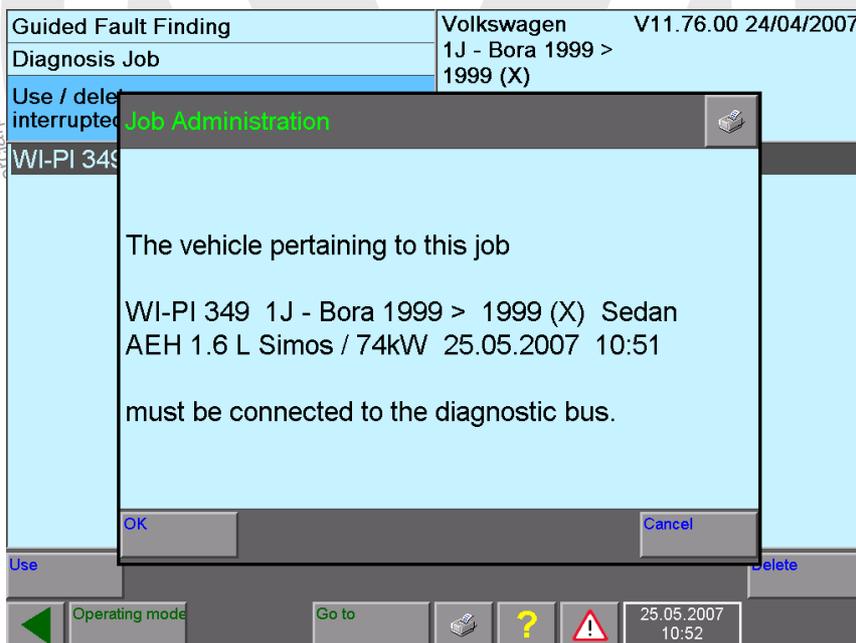


image 6-40 Diagnosis job, “Job Administration” dialog box

Press the “OK” control button to leave the dialog box and switch over to the test plan (see Section 6.10).

6.12.2 Cancel

The “Cancel” function corresponds to the “Exit” function with the difference that you return to the basic “Select brand” mask of “Guided Fault Finding”. In other words, you remain in the “Guided Fault Finding” operating mode. With Exit, the “Guided Fault Finding” operating mode is exited and you go to the start mask.

6.12.3 Exit

You can leave “Guided Fault Finding” using the “Exit” destination in the “Go to” destination menu. A question appears with information for exiting and the answer options “Do not exit”, “Diagnosis log” and “Exit”.

Select “Do not exit” if you want to continue working instead. Select “Exit” to initiate the return to the start mask. All operating modes will be closed.

Before returning to the start mask, all vehicle systems identified will be tested again by a system test. If there are faults set, the fault memories will be erased and then read out again, to display any static faults that may be present.

If there is still a fault memory set, the following message appears:

*All fault memories have been erased
However, relevant faults are still set or have been set again.*

Therefore, if the “Fault memory contents” mask is to be restarted, press the “OK” button.

If you still wish to cancel or exit, press “Cancel”.

You now have the option of continuing with “Guided Fault Finding” or of exiting the program. Before you really do quit, a stop module (if present) will also be started (see Section 6.15) and you will be asked if you wish to print the diagnostic log.

“Permanent Fault Codes” are emissions-relevant malfunction codes which can only be deleted after successfully eliminating the errors according to the specifications for the OBD.

OBD vehicles

In the case of OBD vehicles, the readiness code will be checked after the system test or before the end module runs. If this code is deleted or incorrect, these case examples show how to proceed next:

Example 1: Faults were set in the engine control unit

When the fault memory was erased, the engine control unit's readiness code was also erased. The following message then appears, with a Yes/No question:

The readiness code has been erased. Do you want to generate the readiness code again now?

If the answer is "No", the readiness code remains erased. If you select "Yes", the function test for generating the readiness code will be started.

After the function test has ended, it will be entered with a status symbol in the "User test plan", which will then be displayed. You now have the option of continuing with "Guided Fault Finding" or of cancelling it again via "Go to/Exit".

The readiness code query will only be shown if there is a corresponding function test available for generating the code.

Example 2: No fault set in the engine control unit

When diagnosis is exited, the engine control unit's readiness code is interrogated. If the code is not OK, a note appears with the question:

The readiness code is not OK. Do you want to generate the readiness code again now?

If the answer is "No", the readiness code remains unchanged. If you select "Yes", the function test as per Example 1 for generating the readiness code will be started.



Note

Currently, the readiness code is only evaluated for an engine control unit.

6.13 Diagnostic protocol

If you have accessed the “Test Plan” mask at least once, you can use the “Print/diagnostic protocol” function to print out a “Guided Fault Finding” protocol or save it to an external memory drive. In the latter case, you must enter the vehicle ID number and the license plate number in the print menu, provided the data is not already known from the diagnostic procedure. For printing, refer also to Section 3.5.

Prior to the actual output, you are asked whether you would like to output the diagnostic protocol in short or in complete form.

The “Diagnostic protocol” function is also offered after the end of the end module by means of a dialog box.

The complete diagnostic protocol contains the following information:

- Workshop code, dealership identifier
- Version of the currently installed software system (base CD, brand data and vehicle project name/version of the ODX run-time data for ASAM-ODX control units)
- License plate number and vehicle ID number, if available
- Vehicle brand and identification characteristics (basic feature components)
- Time required for diagnosis in VW units of time (time record for the diagnosis session, derived from the sum of fixed values and actual time required)
- Event memory: List of the detected vehicle systems, their identification data and fault status. If there is a fault, also their fault memory contents with possible ambient requirements
- Work steps performed (list of the main actions in running order), such as: beginning of diagnosis, vehicle identification, vehicle system test (selection), vehicle system test (performance), event memory (fault memory contents), test plan, function tests¹ including start and end modules, beginning and end of an interruption (saving and loading of a diagnostic session)
- Numbered test plans corresponding to the work steps, each subdivided into system test plan and user test plan (where these exist)
- Function tests that have been carried out, numbered according to the work steps listed. The title of a test according to the test plan can be taken from the work steps. All test steps run will be logged, with message output, results and dialog decisions. The communication jobs with control units and their results will be listed under “Diagnosis”. The sections “Beginning sub-function: ...” and “End sub-function: ...” show subprograms loaded during the function test.
At the end of a function test, the full results will be displayed according to the test plan, e.g.: “Function Test OK”
- Malfunction messages of the run-time system are listed together at the end of the protocol. At “Diagnosis job”: messages that were generated during the processing of the test plan are listed.

1. With the ID code. For tests from the test plan, also with the title of the corresponding diagnostic object, as entered in the test plan.

Short form

The short diagnostic protocol does not contain any list of the test plans and function tests.

6.14 Function test log

The “Print/Function Test Log” function corresponds to a different short version of the “Diagnostic protocol”. The list of work steps and test plans is left out and only the last function test carried out is logged.

6.15 End module

The stop module is automatically started when you quit the Guided Fault Finding application and can contain one or more function tests (also see Section 6.1).

Once the end module has finished and before the diagnostic session finally terminates you will be asked whether the diagnostic log should be output. The diagnostic log thus output also includes the progress of the end module function test.

6.16 Online feedback log

During a function test or in the end module of the “Guided Fault Finding” application and depending on the vehicle and manufacturer, a diagnostic protocol or a fault protocol may be sent to the vehicle manufacturer. The tester must be connected to your workshop network for this function.

The online feedback protocol can contain data such as the number of the vehicle (VIN), the number of the tester (equipment no.), the dealership identifier and the fault memory contents read out for all control units. Questions may also be displayed, e.g.: “Was the repair successful?”

If the tester is not connected via the VW workshop network, you need to enter the login for the online connection.

Aborted or unsend online feedback logs are kept on the tester for up to forty days. On starting, the tester checks whether protocols have been saved and whether there is a network connection. If that is the case, the tester offers to send the saved protocols now.

7 Guided Functions

7.1 Overview

Some function tests correspond to vehicle-specific, customer service oriented tasks, such as adaptations, coding etc. The “Guided Functions” operating mode allows you to access these tests directly, after vehicle identification (without always having to run the vehicle system test). Fault-finding programs are not provided here; start and end module do not run.

These tasks can also be accessed in “Guided Fault Finding” after the vehicle-system test and selection of function/component selection.

The run sequence described in the following is depicted in Fig. 7-1; the numbers refer to the numbering in the flow diagram.

(1) Start mask

Guided Functions is launched from the start mask (for further information, see Section 7.2).

(2) Vehicle identification, gateway installation list, basic feature components

After activating “Guided Functions”, you must enter the brand and the **Vehicle identification** with the basic feature components type, year of make, variant and engine code (as in “Guided Fault Finding”) and confirm them. Depending on the type of vehicle, automatic or mixed vehicle identification of the basic feature components may be possible.

(3) Display vehicle systems

The vehicle systems for which “Guided Functions” are available will be displayed.

(4) Select vehicle systems or function

Select the desired vehicle system or function.

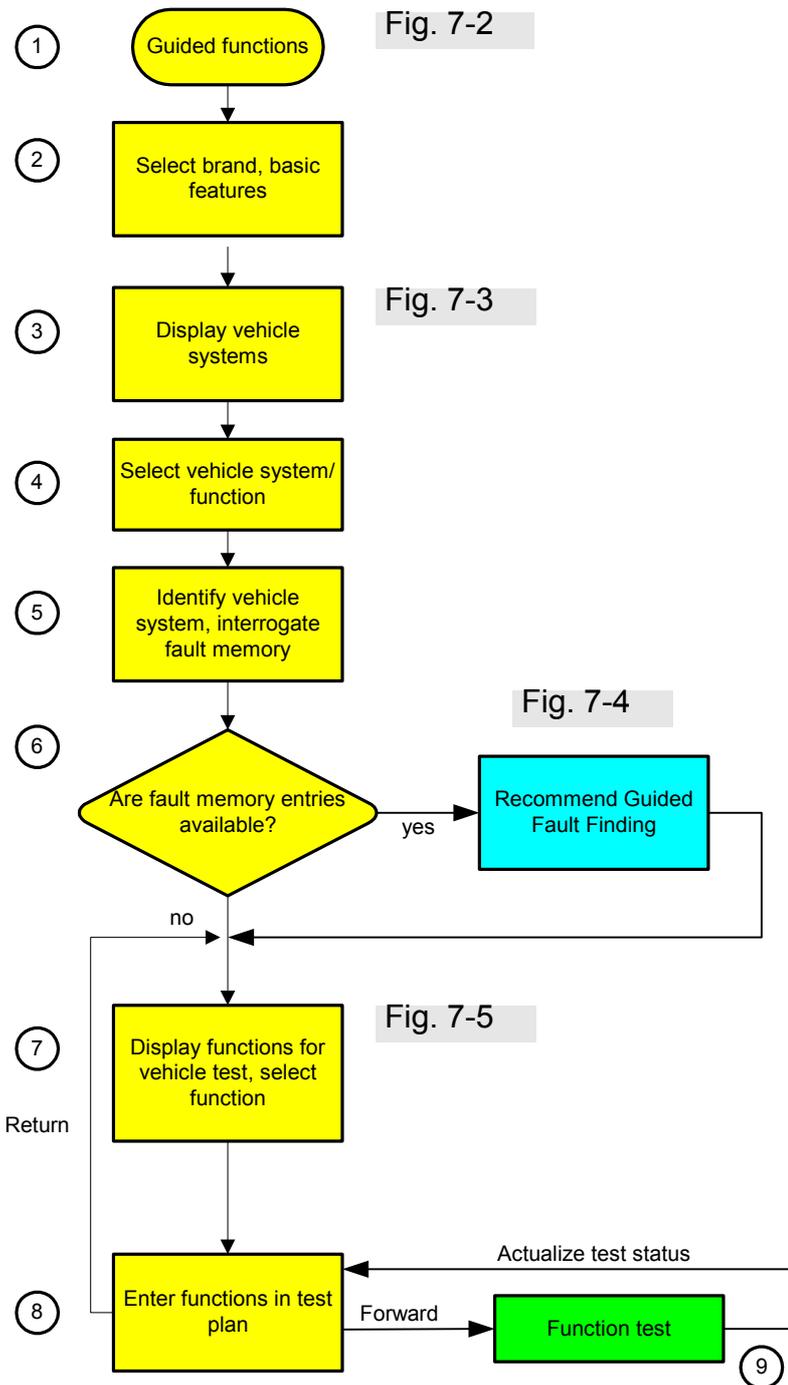


image 7-1 Sequence of the “Guided Functions” operating mode
 The numbers represent the individual stations and refer to the detailed explanations in the text.

(5) Identify vehicle system, interrogate fault memory

When you select a function, only the control unit that relates directly to it is control unit identified automatically and its fault memory read. Questions to help clarify possible variants could be displayed as well. Press the “Vehicle system test” operating button to display the control unit which has been identified. A complete vehicle system test will not be carried out here but it can still be launched with the “Start system test” operating button in the “Vehicle system test” menu. In the case of non-automatic identification of control units, here too it is possible to make a manual selection of individual control units.

(6) Fault memory entries available?

If a fault is detected when the control unit is interrogated, this message will appear:

Faults have been recognised. The faults can be located specifically by switching to the “Guided Fault Finding” operating mode.

When you acknowledge the message, function selection will continue. However, switching to “Guided Fault Finding” to locate the faults is recommended.

You can see which faults occurred by pressing the “Vehicle system test” operating button and then “Continue”. You then return to continuing your function selection by pressing “Continue” once again.

(7) Display vehicle systems, selection of further functions

Further **function selection** is handled the same way as function / component selection in guided fault-finding. You can go back to a higher level of function selection by selecting the corresponding level on the same mask.

You can use the operating mode operating button to switch to the operating modes “Test Instruments” (VAS 5051B only), “Vehicle Self-Diagnosis” or “Guided Fault Finding”. Here, quitting and returning to the start mask is only possible from “Guided Functions” (from the original operating mode).

(8) Enter functions in test plan, function test

After a function is selected, it is entered in the **test plan**. The procedure from that point on is identical to that in Guided Fault Finding (see Section 6.10).

(9) Perform function test

Carry out the function test. The function appears with its status in the Test Plan. From there, you can use the “Back” operating button to switch back to the “Select function” mask.

Switching operating mode

When you switch to the “Guided Fault Finding” operating mode, the identification that has already been carried out will be noted and utilised. The same applies when you switch between the operating modes “Guided Fault Finding” and “Guided Functions”.

The protocols are continued when you change the operating mode. The same protocols apply to both operating modes.

Print functions

The following print functions are available:

- Screen (see Section 3.5)
- Diagnostic protocol (see Section 3.5, Section 6.13)
- Function test log (Section 3.5, Section 6.14)

The print functions correspond to those of “Guided Fault Finding”.



7.2 “Guided Functions” run sequence

“Guided Functions” is activated by pressing the operating button of the same name in the start mask.



image 7-2 Start of “Guided Functions”

It starts as in Guided Fault Finding (Section 6.4), with selection of the brand and definition of the basic features (type, model year, variant and engine code), either automatically (with gateway) or manually.

After confirmation of the vehicle identification, the variants for vehicle fittings might also be queried. In the following mask, the vehicle systems are presented for selection (Fig. 7-3).

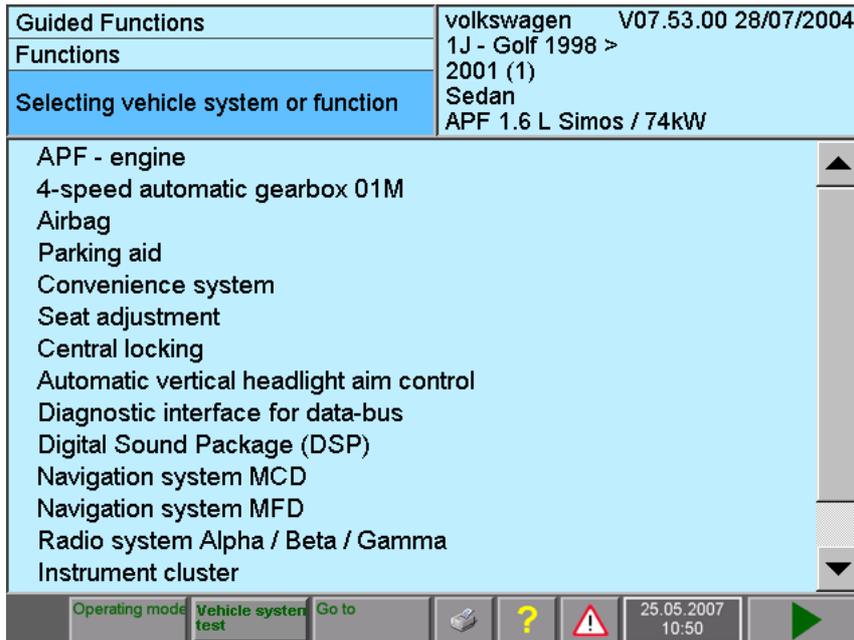


image 7-3 Selecting vehicle system or function

After the vehicle system has been selected, the platform sets up communication to the vehicle system in order to identify it and subsequently read its fault memory. If there are entries in the fault memory, “Guided Fault Finding” is recommended. It uses a knowledge base to relate fault memory entries to components and can therefore generate a test plan automatically.

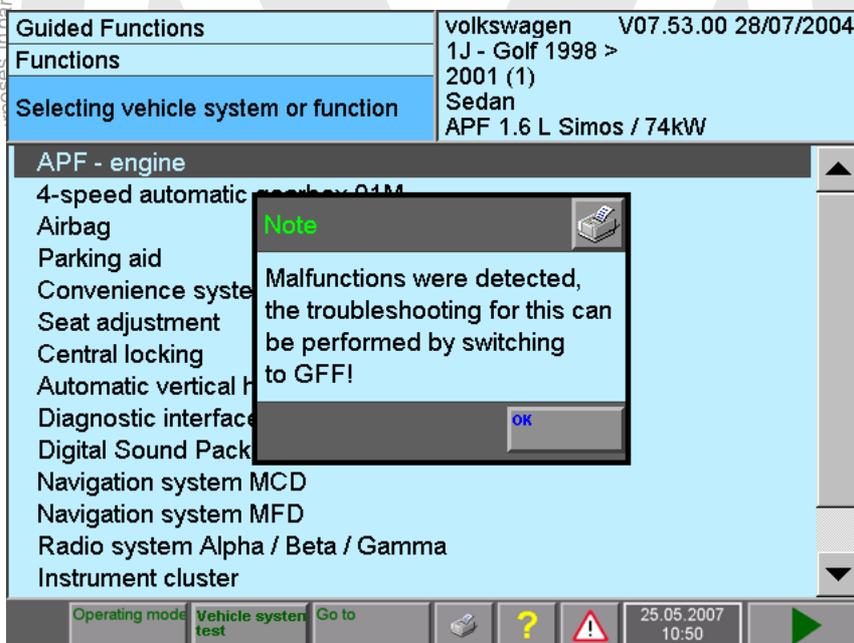


image 7-4 Fault memory entries in the selected vehicle system

When you press the OK operating button (see Fig. 7-4) or, depending on the situation, answer any questions there may be about variants, the functions available for the vehicle system will be displayed.

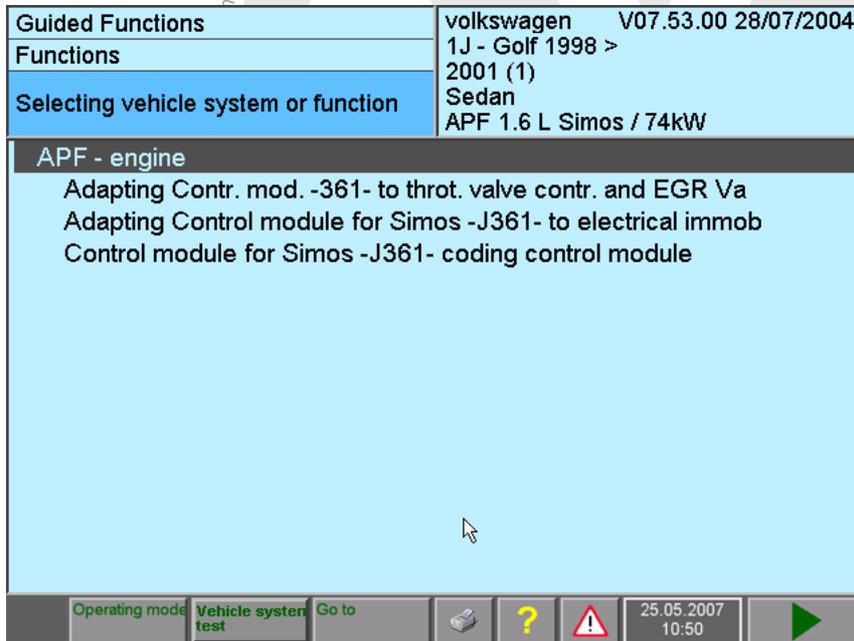


image 7-5 Functions that can be selected for the vehicle system

After selecting the function and pressing the “Continue” button, you switch over to the test plan. There you can carry out the corresponding function test that will perform the customer service oriented task. The procedure in the test plan corresponds to that in Guided Fault Finding (see Section 6.10).

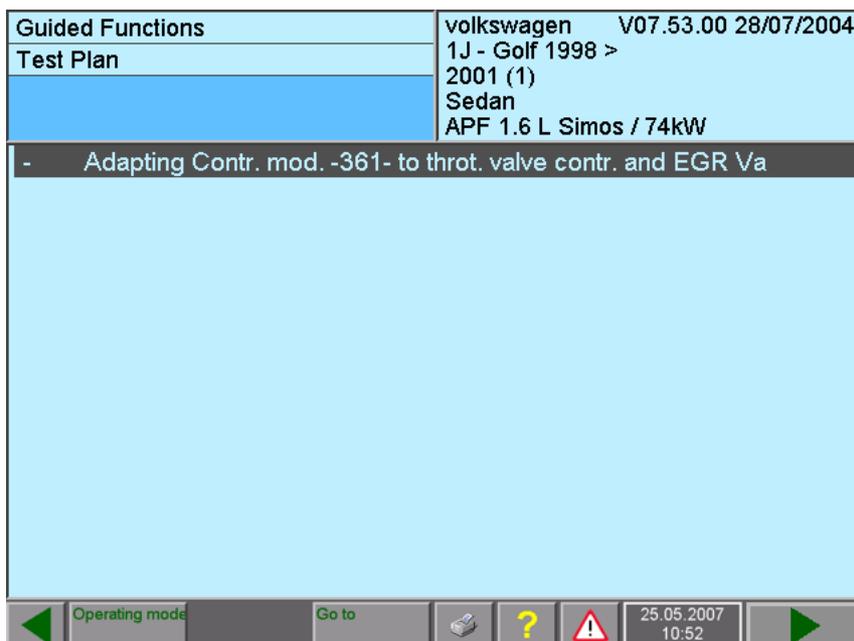


image 7-6 Test plan (after carrying out the function)

8 Audi flashing

8.1 Overview

The “Audi Flashing” operating mode allows quick access to the functions for the Audi-software version management (SVM).

By “flashing”, the updating of new software into the internal “flash memory” of the vehicle's control units is meant. Along with the flashing function, other functions are available in SVM, such as checking the flash status of control units.

The “Audi Flashing” operating button is only displayed in the start mask if an Audi brand CD is installed.

The functions of the SVM can also be listed in “Guided Fault Finding”, the “Function / Component Selection” and “Guided Functions”. To perform the SVM functions, you need the current flash data that you will receive through an inserted CD/DVD or the connected workshop network.

(1) Start mask

The “Audi Flashing” operating mode is retrieved from the start mask (section 8.2).

(2) Vehicle identification and selection of the function

You select the vehicle type after selecting the brand. After that, the function selection of the SVM starts directly. Here, the functions are displayed in the same way as in the function/component selection in Guided Fault Finding (section 6.9). You can go back in the functions by selecting one of the higher ordered levels.

In contrast to “Guided Fault Finding”, no Gateway functions, no further vehicle identification, no start module, and no “Vehicle System Test” run here. Fault memory entries are also neither read nor issued.

(3) Enter functions in test plan, function test

When you have selected a function and pressed the “Continue” key, this function is entered in the test plan. The procedure from that point on is identical to that in Guided Fault Finding (section 6.9), (section 6.10).

(4) Perform function test

Carry out the function test. The function appears with its status in the Test Plan. From there, you can use the “Back” operating button to switch back to the “Select function” mask.

Switching operating mode

You cannot switch to another operating mode from the “Audi Flashing” operating mode. You can only switch to another operating mode by exiting “Audi Flashing” via the “Go to” functions.

“Go to” functions

There is a limited amount of “Go to” functions available (section 3.3.6), (section 6.3).

- Administration
- Test plan
- Documents, analogous to the activation in the “Function / Component Selection”
- Export problem log book
- Test steps already run through

Print functions

The following print functions are available:

- Screen (section 3.5)
- Flash protocol, analogous to the diagnostic protocol (section 3.5),(section 6.13)
- Flash function test log, analogous to the function test log (section 3.5) (section 6.14)

8.2 Audi Flashing sequence

The “Audi Flashing” operating mode is activated by pressing the operating button of the same name in the start mask.



image 8-1 “Audi Flashing” start

This operating mode starts as in “Guided Fault Finding”, with the selection of the brand and the definition of the “Vehicle type” basic feature component.

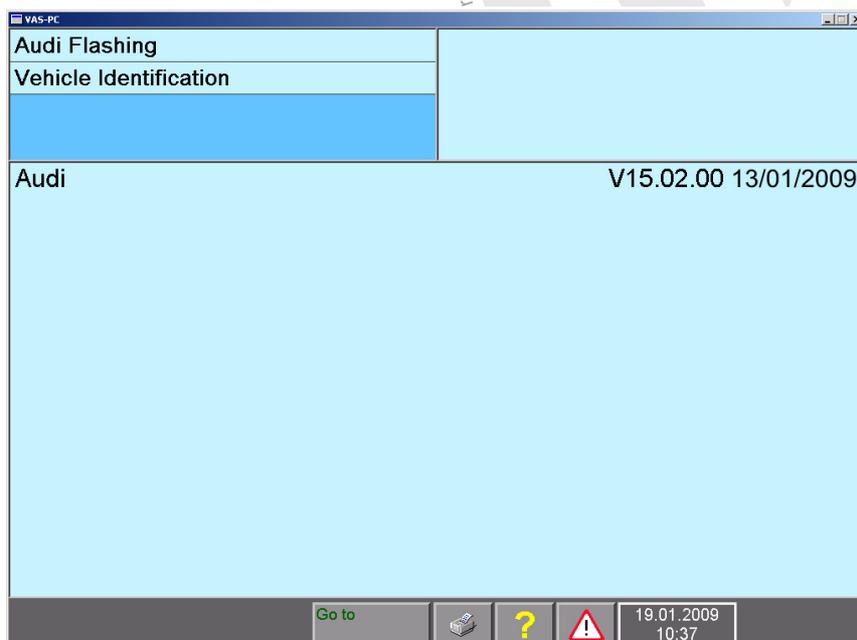


image 8-2 Audi Flashing, select brand

When you have selected the brand and type and confirmed this with “Continue”, you will be in the function selection.



image 8-3 Audi Flashing, select function

Select a function by selecting the relevant line and press the “Continue” key. This is how you reach the test plan (image 8-4).

From sublevels in the function display, you can get back into the basic screen by selecting the uppermost level.

In “Function selection”, you can open a list of the available documents on the relevant function via the “Go to” button and the “Documents” function (section 6.9.1).

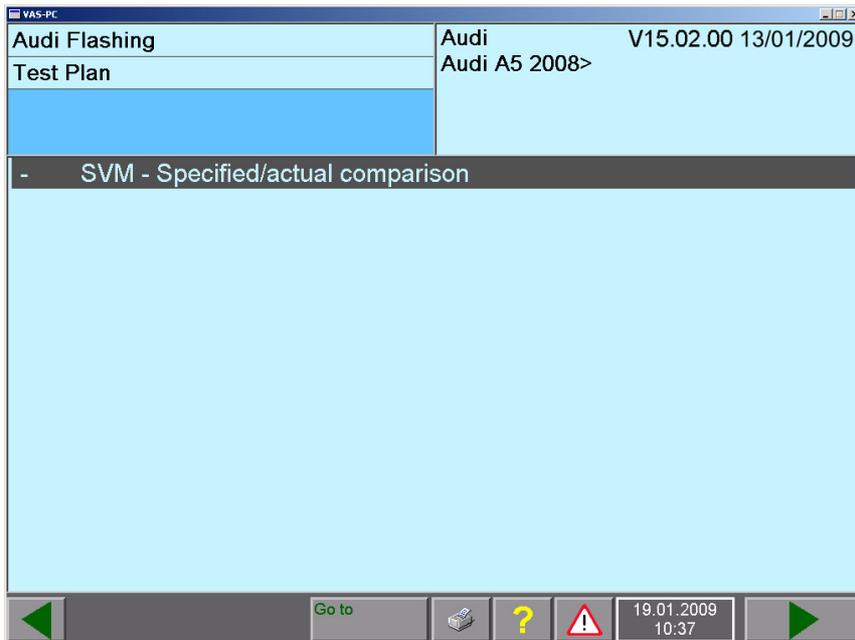


image 8-4 Audi Flashing, test plan

The start and execution of a function test are in accordance with Guided Fault Finding (section 6.10).

After the function test has finished, return to Function selection via the “Back” key.



9 Administration

9.1 Overview

The “Administration” operating mode provides you with functions for internal administration of the tester. Use the following table to find out which functions are available on your platform.

- + Function available
- Function not available.

Some of these functions can also be accessed in other operating modes via the Go to Destination Menu, see Section 3.3.6.

Table 9-1 Functions in “Administration”

Functions	VAS 5051B	VAS 5052A	VAS 61xx	EU5 licence
install update	+	+	+	+
net-update	+	+	+	-
self-test	+	+	+	-
<i>For initial/new installation:</i> Enter workshop code	+	+	+	+
<i>then:</i> Changing the dealership identifier	+	+	+	+
signal generator	+	+	+	+
date/time	+	+	+	+
Expanded functions	+	+	+	+
Select Initial Graphic	+	+	+	+
Contents	+	+	+	+
Touch screen calibration	+	+	-	-
Display user documentation	+	+	+	+
application statistics	+	+	+	-
dimension pressure / temperature	+	+	+	-
Network settings	+	+	+	+
Display network settings	+	+	+	+
Change CentralPartnerNet password	+	+	+	+
Displaying target-URL	+	+	+	+
GeKo test (confidentiality and component protection)	+	+	+	+

Table 9-1 Functions in “Administration”

Functions	VAS 5051B	VAS 5052A	VAS 61xx	EU5 licence
Online-connection	+	+	+	+
Importing importer settings ¹	+	+	+	+
Application tests	+	+	+	-
Activating/deactivating a “Net-update” after restart ²	+	+	+	-
Exporting function test files	+	+	+	-
Import function test files	+	+	+	-
Battery service ³	+	+	-	-
Vehicle communication configuration ⁴	+	-	-	-
Screen resolution	+	+	+	+
System monitor	+	+	-	-

1. “Import importer settings” is available only after previous enabling.
2. “Net-update” is activated after installation. Deactivation and activating alternate.
3. Replaced by SAM (Siemens Accumulation Manager); “Battery Service” function is only available in the “Administration” of AS 5051B until SAM is installed.
4. Only available for VAS5051B with Windows 2000

Vehicle communication configuration

Depending on the platform used, the vehicle communication is configured internally via the “Vehicle communication configuration” or externally by other software. The following table has information about this.

Table 9-2 Availability of the “Vehicle communication configuration” function

	VAS 5051B	VAS 5052A	VAS 6150x	VAS 6160	EU5 licence
“Vehicle communication configuration” available ¹	+	-	-	-	-

1. Only available for VAS5051B with Windows 2000

For platforms whose vehicle communication is configured via external software, three software packages are always also installed: “DTS Configurator”, “EDIC Hardware Installation” and “EDIC Software Configuration”. For configuration, the “DTS Configurator” is always needed, the EDIC applications are only needed when EDIC diagnostic heads for VAS 5054 and VAS 5055 are to be used. The pass-through box is not configured using the EDIC applications.

Table 9-3 Configuration of vehicle communication via external software

	VAS 5052A	VAS 5051B WXP	VAS 615x	VAS 6160	EU5 licence
Configuration of the "DTS Configurator"	+	+	+	+	+
Hardware configuration: EDIC-Hardware Installation	+	+	+	+	-
Software configuration: EDIC Software Configuration	+	+	+	+	-
Country selection via BT-Country software	-	+	-	-	-

9.2 Starting "Administration"

Press the "Administration" operating button in the start menu to call up the "Administration" mask.



image 9-1 Starting Administration

9.3 Selecting function

The “Administration” mask contains a list of all functions that can be activated in “Administration” operating mode (also see Table 9-1).

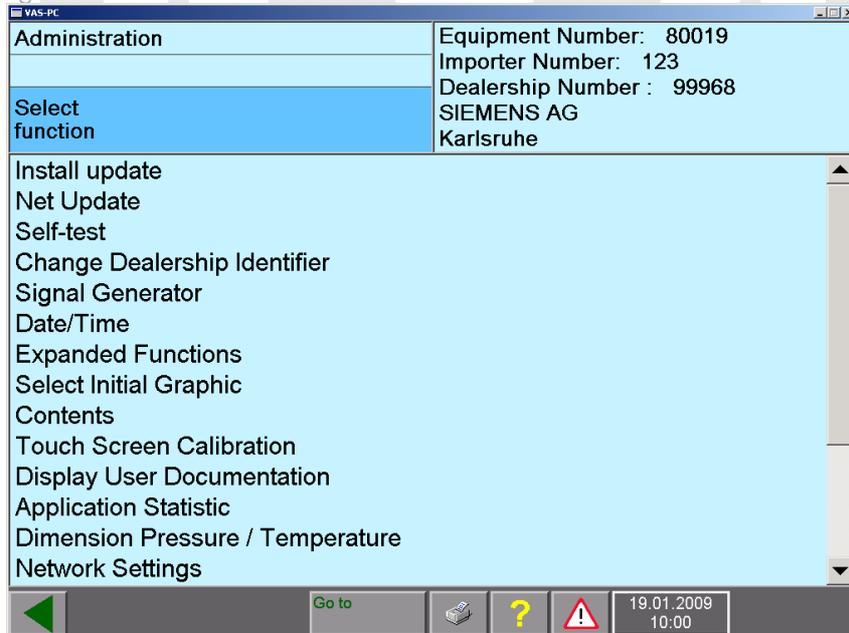


image 9-2 “Administration” mask “Select function” (example VAS 5051B)

You can select the desired function by selecting the corresponding row. Then another mask will be activated for that function, in which you can edit it and execute it. You can access further functions by moving the scroll bar downwards.

9.4 Install update

You can use this function to install brand and flash CDs. When installing, a distinction is made between an:

- **Installation**
Installing a complete version.
- **Install update**
Update of a version already loaded. An update is currently only applied for a brand CD.
- **Increment**
An increment (addition) is possible for brand and flash CDs. Increments can only be loaded by means of a network update (see Section 9.5).

When installing, be sure to check the language and compatibility between base and brand CDs. The version of the data of the base CD appears in the start mask, for example (Fig. 2-1).

If an attempt is made to install a brand CD with a different version code, the installation attempt is aborted with information that the base installation and the brand CD are not compatible.

The version code can be seen in the start menu.



It is composed of:

V17.	00.	00
<i>Version.</i>	<i>Version status.</i>	<i>Increment number</i>

Update CDs, brand CDs and Flash CDs can be installed via the “Install update” function in the “Administration” operating mode, however not via base CDs. Attempting to reinstall the diagnosis software VAS-PC by this method will be aborted with an error message.

9.4.1 Base CD

The base CD contains the installation data and the run-time systems for the individual operating modes. It cannot be booted. Once the base CD has been loaded, you can use all operating modes apart from “Guided fault-finding”, “Guided functions” and “Audi Flashing”. The use of these three diagnostic modules requires a loaded brand CD (see Section 9.4.2).

The “VAS-PC” base CD is used to install or reinstall the diagnostic software. Before installing a new version, the previous version must be completely uninstalled.

9.4.1.1 Reinstallation of a base CD



Note

For a reinstallation, all VAS-PC data already installed is deleted. During this, the workshop code, the loaded brand CDs and the diagnosis jobs which are saved at “Guided Fault Finding” are lost.

The installation generally starts automatically when you insert the base CD. If this is not the case, start the installation by calling up *Setupstart.exe* manually. Proceed as follows:

1. Activate the “Start” button of the Windows operating system and select the menu entry “Run”.
2. Enter the drive letter of the CD drive in the dialog line (it is generally drive E), followed by calling up the program.
If the E drive is your CD drive, the request looks as follows:
E:\setupstart.exe.
3. The “VAS-PC Installation Suite” dialog box opens. Select the “Install update” operating button. The installation of the diagnostic software starts now. Follow the installation procedure as specified in the installation routine.
4. Remove the base CD from the drive after a successful installation. A new link for “VAS-PC” to the diagnosis software is now installed on the desktop.

9.4.2 Brand CD

You can install new or additional brand CDs on the tester.



Note

You can only ever load brand CDs whose compatibility number and language match the base CD; refer here to the description supplied with the CD.

If you try to install a brand CD which does not have the same compatibility number, the installation will be interrupted with the warning that the brand is not compatible with the system.

When a brand CD is installed, saved diagnosis jobs of this brand are lost (see Section 6.12.1). For this reason you should first complete any jobs that may have been saved.

Several brand CDs for different brands can be installed on the tester (VW, Audi, ...).

When a new brand CD is installed, it overwrites any previous installation of the same brand.



- Insert the desired brand CD in the CD/DVD drive. To avoid read errors, the tester should not be tilted more than 15°.
- In “Administration” select the “Install update” function.
- Confirm the security query regarding the installation of the inserted brand CD.
- The contents of the brand CD are now installed on the tester. As soon as installation is complete, the tester switches from “Administration” operating mode back to the start mask (see Fig. 9-1).
- Remove the CD from the drive.

Install additional brand CDs if necessary by repeating steps 1 through 5.

9.4.3 Flash CD

A flash CD is installed in exactly the same way as a brand CD.



Note

If the flash CD cannot be installed, the data for update programming of the control unit are loaded directly from the CD inserted in the drive. Please refer to the description accompanying the CD to find out what kind of flash CD it is.

9.5 Network update

Net-update When this menu item is carried out, the tester searches via the active LAN connection for a software update under the relevant URL address “Mirror server” (see Section 9.17.3). This can be data otherwise located on a brand or a flash CD.

Automatic net-update on start-up

If a LAN connection exists, updates are searched for each time the tester is switched on and started up. If updates are found, a query appears asking whether you want to install the data. The tester should therefore be connected to the LAN network once each day when it is switched on. If the tester is not regularly connected to the LAN network, you should start the “Net-update” function manually.

You can use the “Deactivate network settings/network update after restart” function to deactivate this automatic search for updates, if desired (see Section 9.17.8).

Network update run sequence

If you select the “Network update” function, the tester attempts to connect via its LAN connection to the local dealership mirror server.

If it is not possible to set up a connection, the following fault report appears:

*The contacted HTTP server could not be found.
Please check the connection infrastructure and the “MirrorServer” URL (Administration).*

If the tester is able to establish the connection, it will compare the version levels (of base, brand and flash data). If an update is found, a dialog box appears with a query as to whether this update should be installed. If not, a message is displayed, informing you that no new updates are available.

The data from the mirror server are initially stored temporarily on the tester and are then installed.

If the network connection is interrupted during communication, the tester will attempt to restore the connection. If this does not succeed, a question will appear asking whether further attempts should be made to establish the connection, or whether communication should be cancelled.

Brand data

An update can make changes here up to and including complete replacement of all data. A brand can only be updated on the tester if it is already there on the tester (it must have been installed at least once previously from a CD).

Flash data

During an update, the tester is informed of the flash data present on the mirror server without them being loaded. Any flash data required will only be loaded onto the tester when needed, via online connection.



9.6 Self-test

The “Self-test” functions starts a built-in self-test of the test instruments (only VAS 5051B) or the diagnostic bus. In doing so, you test the diagnostic vehicle connection in the tester, including the diagnostic cable and the internal test instruments unit. If the diagnostic head (VAS 5054 or VAS 5055) is connected, the “Self-test” can test a significant proportion of the diagnostic head's functions.



Note

The self-test of the test instruments does not cover the connected measurement cables. How to test these manually is described in *Operating Manual VAS 505x Hardware /3/*, chapter “Troubleshooting”.

The result will be displayed in the working window:

OK: the self-test is error-free

Not OK: the self-test results in an error. A fault number is transmitted for the “Not OK” message. Please consult the service centre responsible for your region (see *Operating Manual VAS 505x Hardware/3/*).

Administration	Equipment Number: 80113
Self-test	Importer Number: 123
	Dealership Number : 12345
	Volkswagen/Audi Service
	Siemensallee 50, 76187 Karlsruhe
Test Instrument - Unit	OK
Diagnostic bus - unit (internal)	

image 9-3 “Self-test” mask

9.6.1 Diagnostic interface VAS 5055 and VAS 5054

The “Self-test” function checks the main functions of the diagnostic device and the connection to the diagnostic device. If no faults are found during the self-test, “OK” is displayed; if a fault is found, then “not OK” is displayed. In this case, the appropriate DTC number will be issued.

You can find more information in the *VAS 5054/5055 Operating manual I/4*.

9.6.2 Test instruments unit (VAS 5051B)

1. To carry out a self-test of the test instruments, select the “Test Instrument – Unit” line in the function list. The following request appears on the VAS 5051B:

Disconnect all measurement cables from tester.

2. Confirm with the “OK” operating button when you have disconnected all the measurement cables from the tester.



Note

This request appears even if no measurement cables are connected to the tester. In this case, simply confirm with the “OK” operating button.

3. The self-test that will now be performed can take several minutes. No entries can be made during this time. The results of the self-test are displayed in the right-hand section of the work window.
4. Reconnect all the required measurement cables to the tester.

9.6.3 Diagnostic Bus – Unit

In order to start a self-test of the diagnostic bus, select the “Diagnostic Bus – Unit (Internal)” function in the function list. Depending on the tester, various prompts appear to check the diagnostic bus and possibly the connection to the diagnostic unit.

While the self-test is running, follow the instructions that appear on the screen regarding the removal and connection of the diagnostic cable, test adapter (VAS 5052/4) or test adapter cable (VAS 5051B/4). After a few seconds, the results of the self-test are displayed in the right-hand section of the work window.

VAS 5051B sequence:

1. A note appears with instructions on how to connect the diagnostic cables and test adapters.
Terminal 30 is required on the OBD plug of the vehicle for the test; the vehicle model is unimportant.

The self-test will complete without any further messages. The result is displayed on the right of the working window. The self-test may last several minutes.

VAS 5052A, VAS 6150x, VAS 6160 and laptop sequence:

1. A message will appear that an active connection must exist with a Bluetooth diagnostic unit. If the connection is active, press the “OK” operating button.
2. The self-test starts and can last a short time. The diagnostic bus is also checked and the connection with the diagnostic interface.
3. The result of the self-test is displayed in the working window, possibly with an error number.

9.7 Entering the workshop code/changing the dealership identifier

After an installation, the workshop code is to be entered, consisting of the importer and dealership number. Once the workshop code has been saved, it can no longer be changed. After you have entered the workshop code, the function “Enter workshop code” is replaced by “Change Dealership Identifier”. With this function, you can change your dealership identifier at any time.



Note

If it becomes necessary to change the workshop code, please contact your distributor.

enter workshop code

When you activate the “Enter workshop code” function from the function list in the “Administration” mask when the tester is started up for the first time, you can enter your importer number, your dealership number and then your dealership identifier. For further information on initial start-up of a new – or replaced – tester, refer to Chapter 2.

Note about this: the workshop code can only be entered once. Changes are no longer possible after saving the data.

Changing the dealership identifier

The dealership identifier contains the description of the dealership and can be changed at any time after entering the fixed workshop codes.

Two lines are available for the input. They can be activated with the arrow keys. You confirm the input with the white “Q” special key; you use the white “C” special key to delete the last entered character. Confirm with the green “Back” arrow key and cancel the input.

9.8 Signal generator

When certain events occur, e.g. incorrect entries on a virtual keyboard, the tester emits an acoustic signal. You can adjust the duration and pitch of this signal in the “Signal Generator” function. The setting has no effect on the “Battery charge too low” alarm.

Select “Signal generator” in the function list to display the following mask:

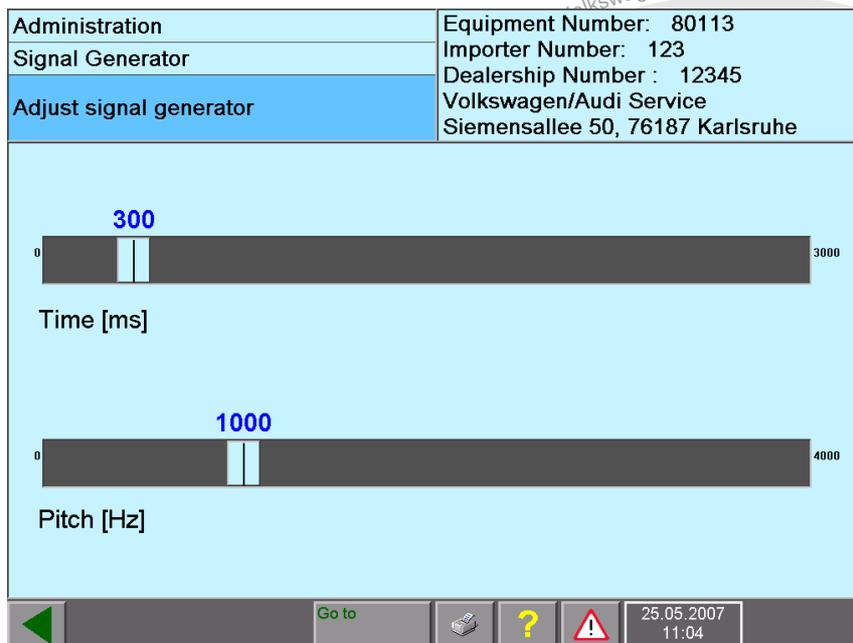


image 9-4 “Signal Generator” mask

You can use the two slide controls to modify the acoustic signal (see Section 3.3.7 for operating instructions). The numeric values above them indicate the currently set values.

- You can modify the time the signal lasts using the upper slide control, marked “Duration”. The setting is continuously adjustable between 0 (furthest setting on the left) and 3000 ms (furthest setting on the right).
- The lower slide control, marked “Pitch”, controls the *frequency* of the signal. The setting is continuously adjustable between 0 (furthest setting on the left) and 4000 Hz (furthest setting on the right). Values under 37 Hz are not implemented.

When you move a slide control, the tester generates a signal with the last pitch and duration set. A low setting is recommended, e.g. a duration of 300 ms and a pitch between 500 and 1000 Hz. The volume of the signal cannot be adjusted.

9.9 Date/time

You can correct the date and time via the “Date/Time” function in the “Administration” mask.

Note about this: you can only change the date once. After that, only time can be corrected.

Select the “Date/Time” function in the “Administration” operating mode.

Select the field (day, month, year, hour or minute) you would like to correct. Two change arrows appear on the right and left of the time display. Activate the respective arrow key to adjust the time display.

Confirm the entry with the “Back” operating button. You will return to the previous screen menu. The set values are accepted as new system time details.

In order to cancel the entry, select the “Go To” operating button and select the “Exit” entry.

9.10 Expanded functions

The “Expanded Functions” allow other functions on the tester to be enabled for servicing and development purposes. They are only available with the use of special key CDs, which are not included in the tester package.

9.11 Select initial graphic

The “Select initial graphic” defines the graphic that appears in the start mask of the tester. You can select a different graphic via the “Continue” operating button. The selected graphic is shown as soon as you switch over to the start mask by pressing the “Back” operating button.

9.12 Contents

If you select the “Contents” function in the function list, the installed base and brand CDs will be displayed for selection in a new mask, along with their version information. Select a CD to view more information about it. Its contents file will then be shown.

Information will be displayed on the software loaded: modifications, new features, contents.

The contents list thus displayed can also be output via the “Contents” function in the print menu.

9.13 Touch Screen Calibration

The touch screen can only be calibrated on the VAS 5051B and VAS 5052x testers.

You can calibrate the touch screen by selecting the “Touch Screen Calibration” function in “Administration”. This might be necessary if the cursor does not follow your touch pen or finger exactly on the screen.

First, a prompt appears asking whether you really want to calibrate the screen. Confirm with “OK”. The calibration starts.

If you are working with VAS 5051B or VAS 5052, read Chapter 9.13.1.

If you are working with VAS 5052A, read Chapter 9.13.2.



Caution!

Exercise great care when adjusting this function. Incorrect or improper usage may cause the touch screen to be put irrevocably out of alignment and thus become inoperable.

If this happens, re-install the base CD (Section 9.4.1).

Tap the indicated touch targets once, quickly and lightly. Tapping with force will actually input for the next touch target which should be somewhere entirely different: the result will be that the touch screen will be very poorly calibrated.

For this reason, it is recommended to calibrate the touch screen with the touch pen to ensure exact positioning of the calibration.

9.13.1 Calibration on VAS 5051B and on VAS 5052



Note

Use a touch pen for calibration in order to achieve as precise a calibration as possible.

You have already started the calibration via the “Touch Screen Calibration” function and answered the security query with “OK”.

Now calibrate the screen by touching it with the touch pen.



The following message will appear first:

Touch the calibration target to start the calibration.

In order to start the calibration, touch the red calibration circle on the screen. A series of circles marked with four arrows will then appear on the screen with a red dot at the centre of each. Touch each dot as precisely as possible until the tester shows the following message:

Touch the screen to see if the cursor jumps to your finger. Press No to calibrate again or Yes to accept the calibration.

Now touch the screen in different places and check whether the cursor jumps to the touching position of the touch pen. Select “No” to repeat the calibration or “Yes” to accept it. Calibration is ended when a setting is accepted.

9.13.2 Calibration of VAS 5052A



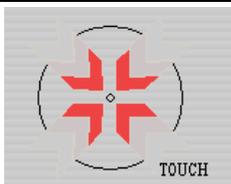
Note

Use a touch pen for calibration in order to achieve as precise a calibration as possible.

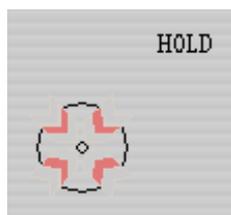
You have already started the calibration via the “Touch Screen Calibration” function and answered the security query with “OK”.

Now calibrate the screen by touching it with the touch pen.

The red cross hairs successively display four positions which you are to touch on the screen as precisely as possible.



Touch the screen with the touch pen.



Hold the position and do not move the pen (duration, about one second).



Let go of the point.
The cross hairs jump to the next target point.

After the fourth test point, the message appears:

“Touch the screen to verify the target moves to your finger.”

Touch the screen at any point and observe whether the cross hairs jump to the contact point. If this is the case, save the new settings with “Accept”.

Abort the process with “Cancel” if you are dissatisfied with the result. The new settings will not be saved.

If you do not do anything for the next 90 seconds, the new settings will be deleted. The old settings are retained.



9.14 Display user documentation

The “Display user documentation” function offers you access to the operating manuals in pdf format. When you select the function, the “Select user documentation” mask opens. All documents available on the tester are listed in the list of the working window. The size of the list displayed may vary.

Select the desired document to open the pdf file. The file is displayed in a second window.

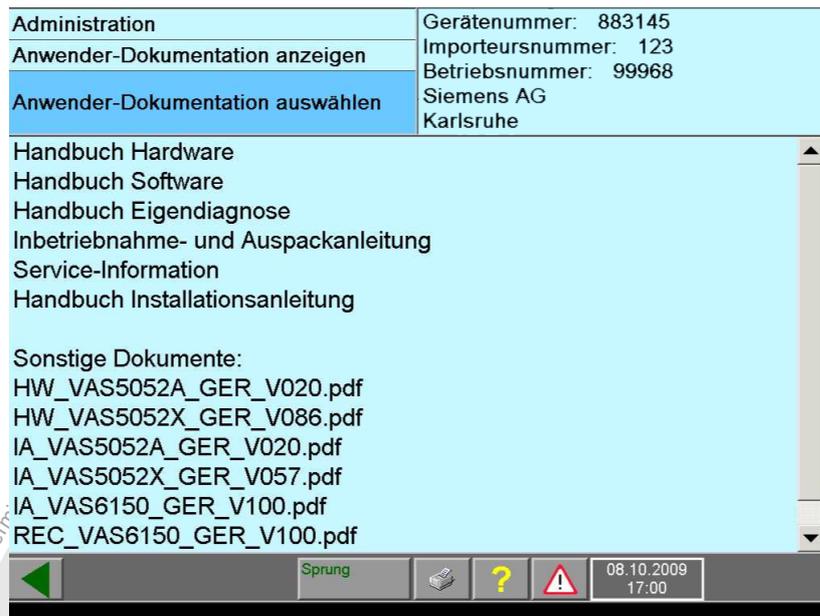


image 9-5 Selecting the user documentation

Close or minimise the document to return to the VAS-PC in order to return to the document at any time by selecting the “Select user documentation” mask. If you select additional documents, they will also be opened.

If you have minimised the document, switch back to VAS-PC via the task bar.

Close Acrobat Reader to close all open pdf documents and return to the VAS-PC.

9.14.1 Displaying a document on the platform

When you call up the “Display user documentation” function, you will receive a list of available documents in pdf format. Select the desired document. It will be opened in a second window outside the VAS-PC in Acrobat Reader. You can use the menu bar there to scroll through the document, print pages or search for additional information.

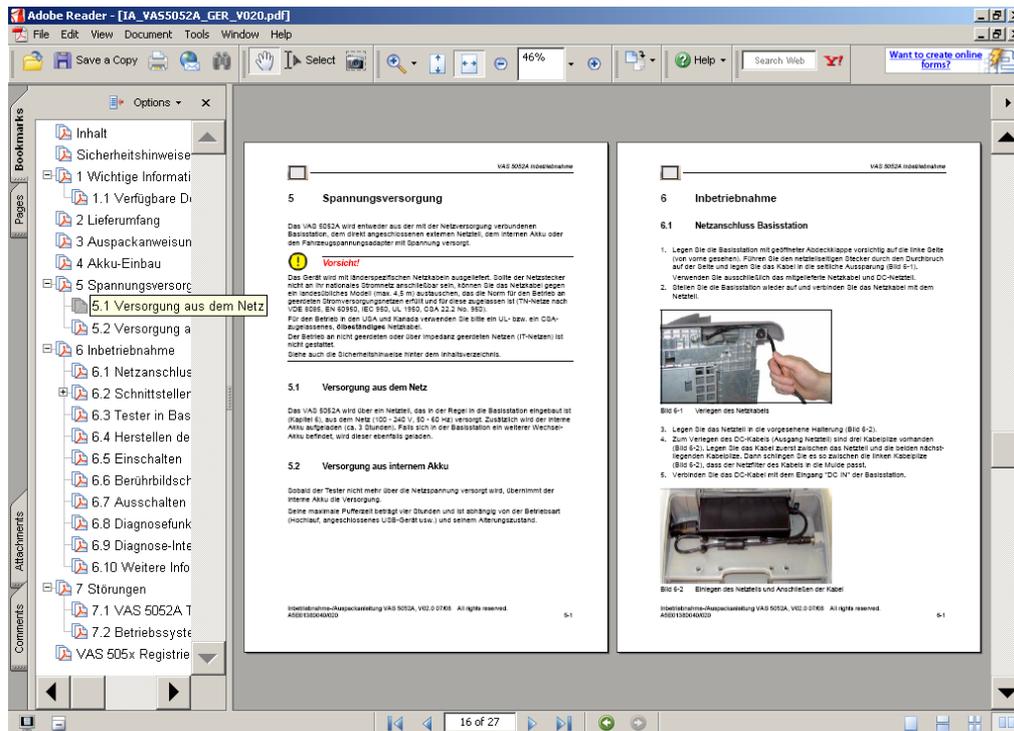


image 9-6 Opened PDF document on the VAS 5052A

9.15 Application statistics

You can use the “Application statistic” function to display statistics indicating how often you have activated the individual operating modes or installed applications (e.g. ELSA, erWin, Bentley Assist) and how long you have used them for. The “Lingering time” column adds the periods of time between the activation of an operating mode at the start mask and deactivating it by returning to the start mask. The “OBD” operating mode is incorporated under the “Vehicle self-diagnosis” operating mode.

Administration	Equipment Number: 80113	
Application statistic	Importer Number: 123	
	Dealership Number : 12345	
	Volkswagen/Audi Service	
	Siemensallee 50, 76187 Karlsruhe	
Workshop code 80113 123 12345	Version V11.00.00 02/04/2007	
Dealership identifier Volkswagen/Audi Service Siemensallee 50, 76187 Karlsruhe		
Initiation point in time: 07.05.2007 12:06	Ending point in time: 25.05.2007 11:06	
Operating mode	Frequency of occurrence	Lingering time Hours : Minutes : Seconds
Guided Fault Finding	14	2 : 23 : 16
Guided Functions	3	0 : 00 : 13
Vehicle Self-Diagnosis	28	20 : 38 : 28
Test Instruments	10	0 : 39 : 25
Administration	48	7 : 53 : 29
Applications	2	0 : 00 : 09
ELSA	0	0 : 00 : 00
erWin	1	0 : 02 : 17

Delete

Go to [Printer] [?] [Warning] 25.05.2007 11:06

image 9-7 Application statistic (here VAS 5051B)

Erase

The application statistics begin to count after a base CD is installed. The “Erase” operating button, however, manually resets the specified frequencies and times to zero.

print

You can use the “Print” function to print out a protocol of the application statistics.

9.16 Dimension pressure / temperature

Country-specific units for pressures and temperatures can be set in the “Dimension pressure / temperature” function. There you configure whether the values for the measurement are displayed in bar or b/in² and measurements of the temperature in °C or °F in independent test instruments (see Section 5.3.8 and Section 5.3.9).

9.17 Network settings

The following mask will appear when you select “Network settings” in the “Administration” mask (see Fig. 9-2).

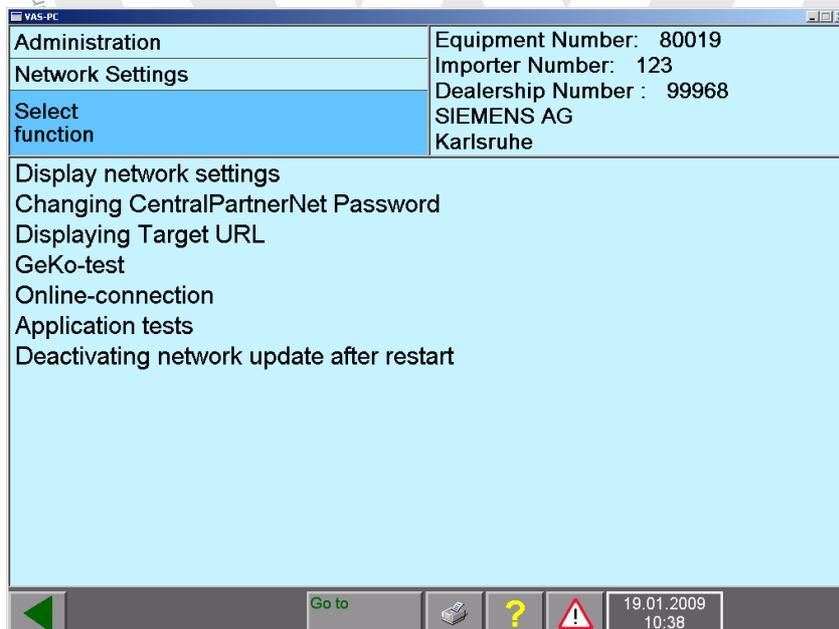


image 9-8 Network settings



Note

The functions described in the following are used for connecting the tester online to the VW database server and enable the exchange of data between the tester and the server. Normally online operation takes place via the workshop network that is enabled for the database server. Independent workshops need to activate the secure client for this purpose (see /8/) and enter an appropriate login with password prior to connection setup.

IP address

The tester is to be set so that it will automatically adopt an address from a DHCP server in the workshop network. It is not possible to enter the address in the network manually. If there is a connection, you can use “Display network settings” to have the assigned IP address displayed (see Section 9.17.1).

9.17.1 Display network settings

When you select this function, all network settings will be listed. The information is designed for a network administrator. The settings can be printed by pressing the “Print” operating button and selecting the “Network settings” menu item.

9.17.2 Changing CentralPartnerNet-password

The password cannot be changed directly on the tester. The following message will appear:

Please change the password centrally in ACC (user administration dealer systems), or have your administrator change it.

9.17.3 Displaying target-URL

In the “Displaying target-URL” mask you can choose between “General URLs” and (with the brand CD installed) “Brand-specific URLs”. The URL addresses available for selection are displayed. These addresses are permanently set by the loaded base and brand CDs and cannot be changed later at the tester.

9.17.4 GeKo test (confidentiality and component protection)

The GeKo-test checks the transmission of data for the Audi brand between the tester and the company database, including user ID verification. The GeKo-test is a more exact test than the “Online connection self-test”. The self-test essentially checks the online connection only, albeit with any destination address you choose.

The GeKo-test requires the user ID issued for authorised persons and the password. An Audi brand CD must be installed for the test, but a vehicle connection is not required.

9.17.5 Online-connection

Before carrying out a self-test of the online connection, ensure that the tester is connected to the workshop network and thus has access to the VW database server.

If you select the “Online-connection” line, a prompt will then be displayed asking you to select a URL address. Select the destination address via which an online connection is to be set up and tested, e.g. “LogonUrl”, “MirrorServer”.

If the connection could not be established, a note will appear to that effect, e.g.:

Mirror server “Online-connection” not OK.

You can view further details via a protocol file. The detailed information is designed for an administrator.

9.17.6 Importing importer settings

This function is only accessible after enabling via “Expanded functions” (Section 9.10) and can then be viewed and selected in the “Network settings” mask (Fig. 9-8).

In different markets, different settings are sometimes necessary within networks regarding security aspects, destination addresses (URLs) in networks and also for telediagnostic procedures. These settings are provided on what is referred to as an “importer CD” for the market in question.

You can use this function to load the data from an inserted importer CD on to the tester.

9.17.7 Application tests

You can use these to activate specially stored function tests via brand data. You test network access including user application, like e.g. for the GeKo-test (see Section 9.17.4).

Prior to the application test, make sure that the tester is connected to the workshop network and thus has access to the VW database server.

If you select the “Application test” line, a general message appears first, prompting you to select an installed vehicle brand. If tests are available for the selected brand, these are displayed to you in a separate selection mask. If necessary, enter the login and password for your online connection. The application test expires and ends with a success or failure message.

9.17.8 Activating/deactivating network update after restart

This function switches off the automatic activation of the “Network update” function on starting the tester (see Section 9.5). If you select it, your display changes to: “Activating network update after restart”. On selecting this function you can resume the automatic search for network updates, if necessary.

9.18 Export function test files

You can use this function to export to a removable storage device files which have been stored on the tester's hard drive by a function test.

The tester presents a list of all relevant files for selection. Choose the desired data and press “Continue” to write them to the removable storage device. Non-exported files more than 60 days old are deleted from the tester.

9.19 Importing function test files

You can use this function to import files of type “*.tpr” onto the tester from an external memory drive. The data is stored on the tester's hard drive. A function test that requires these files can then access them.

9.20 Battery service



Note

The battery service via the “Administration” operating mode described in the following is valid only for testers that do not have the independent application for the battery service (Siemens Accumulator Maintainer/SAM) installed. It is included in the utility CD.

As soon as SAM is installed, the “Battery service” function is no longer needed and is removed from the “Administration” operating mode.

The battery service for the various types of batteries used in the VAS 5051B is described in SAM.

The battery service serves to maintain the installed battery as long as possible at its full capacity. The memory effect should thereby be avoided. It occurs if a battery is repeatedly only partially discharged before it is recharged. The capacity of the battery is exhausted after several of such short cycles – it can no longer be completely recharged. To prevent this effect, the battery service generally discharges the battery, but not up to the complete discharge. Then the battery is completely recharged up to its maximum capacity.

Depending on the current state of charge, this may take a few hours; the tester cannot be operated during this time. That is why it is ideal to perform battery service at night or during a long stationary phase. As soon as the charging status of the battery has reached 30%, the tester can no longer be operated as usual.

It is recommended to perform the battery service regularly, but not more often than once a month.



Note: battery service for the VAS 5052A and 5051B with lithium battery

To maintain the performance of the battery, you should regularly run the tester from the battery. When doing this, be sure the battery periodically runs till it is empty (recommended, every four to six weeks).

VAS 5051B sequence (with NiMH battery):

The batteries of the VAS 5051B automatically detect whether a maintenance cycle needs to be performed. On starting up and with each change back to the start mask, the tester displays a query asking whether to start a maintenance cycle. If you confirm it with “Yes”, the “Battery service” function starts automatically. If you answer with “No”, you can continue to work with your tester as usual.

Whether you start the battery service after being prompted by the menu or start it manually, the software guides you through the following steps. After the confirmation of the security query, the maintenance cycle starts.

9.21 Vehicle communication configuration

The operating system of the VAS5051B can be updated with the recovery DVD V2.0 for VAS5051B on Windows XP. The “Vehicle communication configuration” menu point is no longer present in VAS-PC for Windows XP. The recovery DVD has its own application for configuration of the vehicle communication.

9.21.1 For VAS 5051B with Windows 2000 operating system



Caution!

The diagnostic head VAS 5054A is connected via a Bluetooth interface. This is only permitted if approval has been granted in the relevant country. Authorised countries are listed in the installation manual.



Note

See the *diagnostic head 5054 / diagnostic interface 5055 operating manual/4/* for instructions on how to configure the Bluetooth connection for the VAS 5052A, VAS 61xx and the laptop.

This chapter gives detailed instructions on how to configure the VAS 5051B.

The “Vehicle communication configuration” switches between wired (“internal”) vehicle communication via the diagnostic cable or the USB diagnostics interface VAS 5055 and wireless (“external”) communication via the diagnostic head VAS 5054.

The VAS 5051B, VAS 5052A and 61xx testers have already an integrated Bluetooth interface and a USB interface. With this, these testers can be connected by Bluetooth to the VAS 5054 or by USB to the VAS 5055 diagnostic devices.

The connection and handling of wireless communication may be taken from the description that is enclosed with the relevant units. However, the VAS 5054 can, as with the VAS 5055, also be connected to the tester via USB cable.

After switching on the tester the “internal” configuration is preset. For communication via the VAS 5054, select “external” as connection type.



Note

Please refer to the installation manual for VAS 5054 and VAS 5055 for information on installation and start-up. For more details, see *Diagnostic head VAS 5054 /4/*.

Table 9-4 Connection types of the testers

	Diagnostic cable	USB	Bluetooth
VAS 5051B	+	-	+
VAS 5052A	-	+	+
VAS 6150x / 6160	-	+	+
Connection type	internal	external	external

9.21.2 For VAS 5051B with Windows XP operating system



Caution!

The diagnostic head VAS 5054A is connected via a Bluetooth interface. This is only permitted if approval has been granted in the relevant country. Authorised countries are listed in the installation manual. Please select only countries in the BT-Country application where Bluetooth is permitted.

9.21.2.1 BT-Country selection

The BT-Country application for country selection for Bluetooth communication is also installed by the recovery DVD V2.0 for VAS5051B with a main memory of more than 500 MB.

After the start of the BT-Country application, a warning appears.



image 9-9 Warning

After confirming with "Accept", the selection dialog opens.

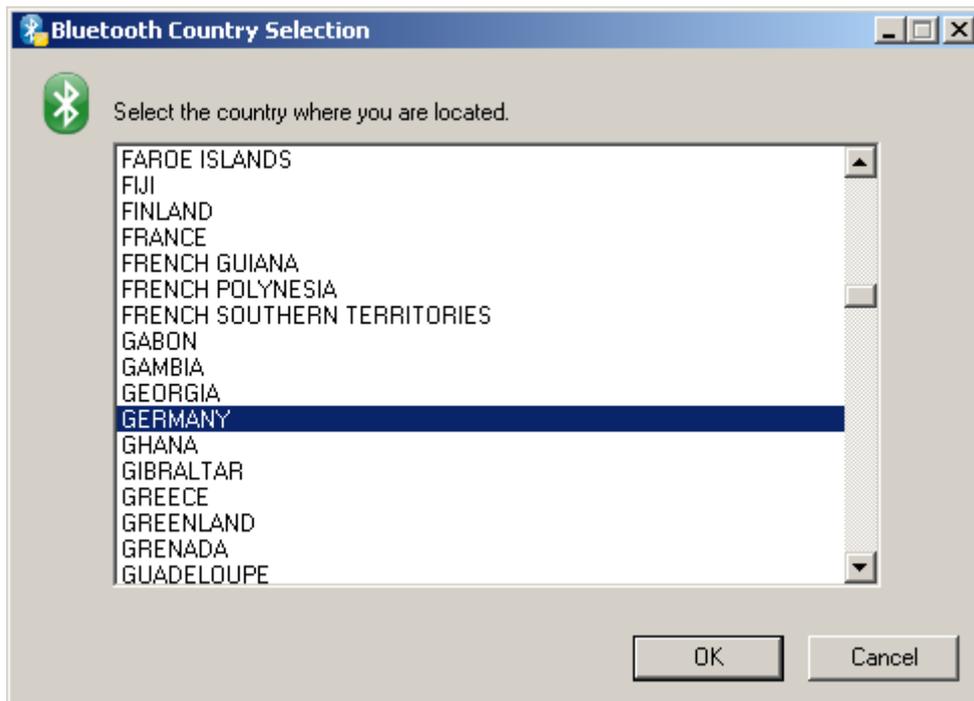


image 9-10 Selection dialog

Select the desired country and confirm with “OK”. After that, you will receive a confirmation that Bluetooth has been successfully activated. Please confirm this with “OK”.



Note

See the *diagnostic head 5054 / diagnostic interface 5055 operating manual/4/* for instructions on how to configure the Bluetooth connection for the VAS 5051B with Windows XP operating system.

This chapter gives detailed instructions on how to configure the VAS 5051B.

The VAS 5051B tester with Windows operating system already has an integrated Bluetooth interface and a USB interface. With this, this tester can be connected by Bluetooth or by USB to the VAS 5054 diagnostic devices.

The connection and handling of wireless communication may be taken from the description that is enclosed with the relevant units. The VAS 5054 can also be connected to the tester via USB cable.

**Note**

Please refer to the installation manual for VAS 5054 and VAS 5055 for information on installation and start-up. For more details, see *Diagnostic head VAS 5054 I4/*.

9.21.3 Vehicle communication via VAS 5054 diagnostic head

9.21.3.1 Installation of the VAS 5054 diagnostic radio head

Before you use the VAS 5054 diagnostic radio head at the tester, it has to be installed as hardware in the operating system and set up. Only afterwards can you set-up and use the diagnostic radio head in the VAC-PC software.

**Note**

You can find further information about the installation and the setting up of the VAS 5055 in the installation manual “*VAS 5054A diagnostic radio head, VAS 5054 diagnostic interface/4/*”.

Once the diagnostic head is installed as Bluetooth device in the operating system and the corresponding drivers are in use, you can configure the radio connection between the tester and the diagnostic head.

**Note**

Make sure that no more than one Bluetooth device is configured at one time. If need be, remove the diagnostic heads that are not being used now from the EDIC hardware configuration. Otherwise, no connection can be established.

9.21.3.2 Establishing a radio connection with the VAS 5054

- Open the “Configuration of vehicle communication” function in the “Administration” operating mode.
- When you select this function for the first time, the “Country selection” mask appears. First of all, select your country. The country selection is not repeated during future activation. Acknowledge the note on the country authorization with “OK”.
- Select the “External” connection type.
- The mask for displaying the available diagnostic heads is displayed (still blank).
- To recognize the available diagnostic heads, these must be connected to the power

supply (connect the VAS 5054 to the diagnostic socket on the vehicle and switch on the ignition).

- Press the “New search” operating button to activate the available diagnostic heads: “VAS 5054 <name> <serial number>”. VAS 5054 devices already connected to other testers are not displayed.
- Select the desired VAS 5054 and press the “Connect” operating button.
- A dialog requesting entry of a PIN is displayed. Select the “PIN:” field. A virtual keyboard appears for entering the identification number of the VAS 5054 which you received along with the tester. The entered PIN is stored on the tester until you activate another VAS 5054 or the PIN no longer matches the VAS 5054 connected.

A correct connection setup is displayed at the top, in the work window. The “Configure” operating button appears next to it. This button can be used, e.g., to change the PIN.

- When you switch to the “Guided Fault Finding” and “Guided Functions” operating modes, the radio connection to the VAS 5054 is checked. A warning appears if there is no connection.

The “external” connection is maintained until it is switched to “internal” or until the tester is switched off.

If a connection to the VAS 5054 cannot be established correctly, disconnect it from the vehicle once and re-establish the connection.



9.21.3.3 Configuring

You can use “Configure” to display and change the VAS 5054 settings:

image 9-11 “VAS 5054 configuration” mask

- **Local name:**
You can change the name of the VAS 5054 here, e.g., to be able to distinguish multiple diagnostic heads more easily. The name is automatically added to the serial number.
- **PIN:**
You can change the PIN number of the VAS 5054 here.
- **Time Buzzer:** If the connection to the tester is disconnected while the diagnostic head is switched on (ignition on), the buzzer of the VAS 5054 sounds when the set interval passes. The value “0” switches the buzzing off.
- **Security Mode and Timer Power Off:** Both values are fixed values that cannot be changed.
- **OK**
Press “OK” to accept the changed settings.
- **Set standard**
This reactivates the original default settings, including the PIN number.



Caution!

Only select the “Set standard” function if you still know the original PIN number.

After accepting the settings, you are asked to disconnect the diagnostic head from the vehicle once and reconnect it.

9.21.3.4 Disconnecting the VAS 5054

The “internal” selection disconnects the VAS 5054. You can re-establish the connection either with the same tester or a different one.

9.21.4 Vehicle communication via USB cable (VAS 5052A)

Installation of the USB connection

- Connect the diagnostics head VAS 5055/VAS 5054 with the tester's diagnostic socket and connect the USB cable with the tester's USB interface. The hardware assistant of the operating system automatically starts.
- Select “No, not this time.” as the answer to the question whether you want to connect with the Windows Update. Select automatic software configuration in the next dialog box and close the assistant with “Finish”.
- If installed correctly, the diagnostic head is automatically registered in the EDIC hardware installation and the EDIC API software configuration. Besides the USB connection, Bluetooth connections can also be entered in the EDIC API software configuration. These are irrelevant for the operation of the USB connection. The configuration does not have to be checked.

Now you can use the diagnostics interface VAS 5055 or VAS 5054 via USB cable connection.



Note

Please refer to the installation manual for VAS 5054 and VAS 5055 for information on installation and start-up under section *diagnostic head VAS 5054/ diagnosis interface VAS 5055 /4/*.

9.22 Screen resolution



Note

The “Screen resolution” function does not require you to confirm your selection of resolution. You cannot change your selection as the selected resolution is immediately implemented. The system closes down and is restarted.

The “Screen Resolution” function changes the set resolution of the screen and adjusts it to the existing conditions. The supported resolution of the screen is selected via the “Automatic” selection, in order to use it optimally.

9.23 System monitor

You will receive more detailed information of the following items via the “System monitor” function:

- Hardware of the PC
- Installed operating system
- Installed software
- Parameters and applications of VAS-PC software
- Libraries used by VAS-PC
- Installed brand CDs

Select the line of the entry for which you want more detailed information.

The individual properties of the parameters are displayed on the right hand side of the working window with their values.

In order to exit the mask, activate the “Back” arrow key or the “Go To” operating button and the following entry “Exit”.

In order to forward information, you can transmit it. Activate the “Printer” operating button and select the following entry:

- Screen: to print or store the parameters as a screenshot
- Print: to print the parameters on an installed printer
- Save: to store the parameters in the PC or another connected storage medium in XML format
- Send online: sending the parameter via the online connection.

10 Help

10.1 Overview

You can call up context-related general operating instructions and function explanations with the “Help” function. The “Help” function does not replace the operating manual but it can still be useful in the workshop in the event of uncertainty in using masks and control buttons, making it unnecessary for you to call up operating manual.

10.2 Starting and closing Help

Every mask of the tester has the “Help” button. It is always at the same position on the navigation bar. Press this button to open the help overview (Section 10.3). When you close the help overview, **the “Help” function stays active until you press the “Help” control button a second time.** In this mode when you touch a control button you get “Help with control button pressed” (Section 10.4).



Help is activated –
the button is engaged



Help is not activated

10.3 Help Overview

After the start of the “Help” function, the “Help Overview” dialog appears. It offers a list of one or more topics for which brief information is available (see Fig. 10-1).

A selection bar highlights the current selected topic. You can move the bar to any entry in the list; the selected topic will be opened once you activate the touchscreen.

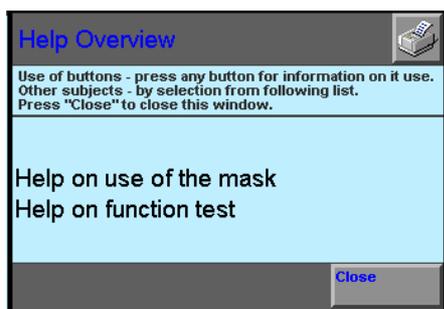


image 10-1 Help overview in the “Test Plan” mask, “Guided Functions” operating mode

The “Close” operating button closes the “Help Overview” to reveal any operating buttons underneath it. However, the tester stays in the “Help” function.

Help on use of the mask

Help with using the mask (for an example, see Fig. 10-2) explains what the mask is for, the symbols on it, and the functions of the operating buttons which are available.

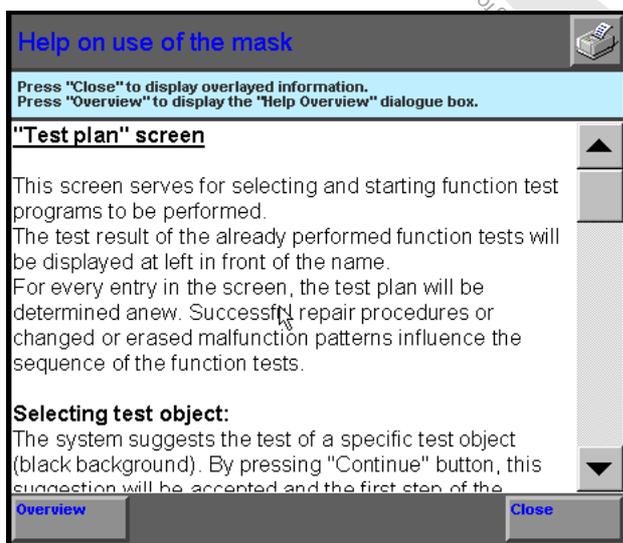


image 10-2 Help on use of the mask

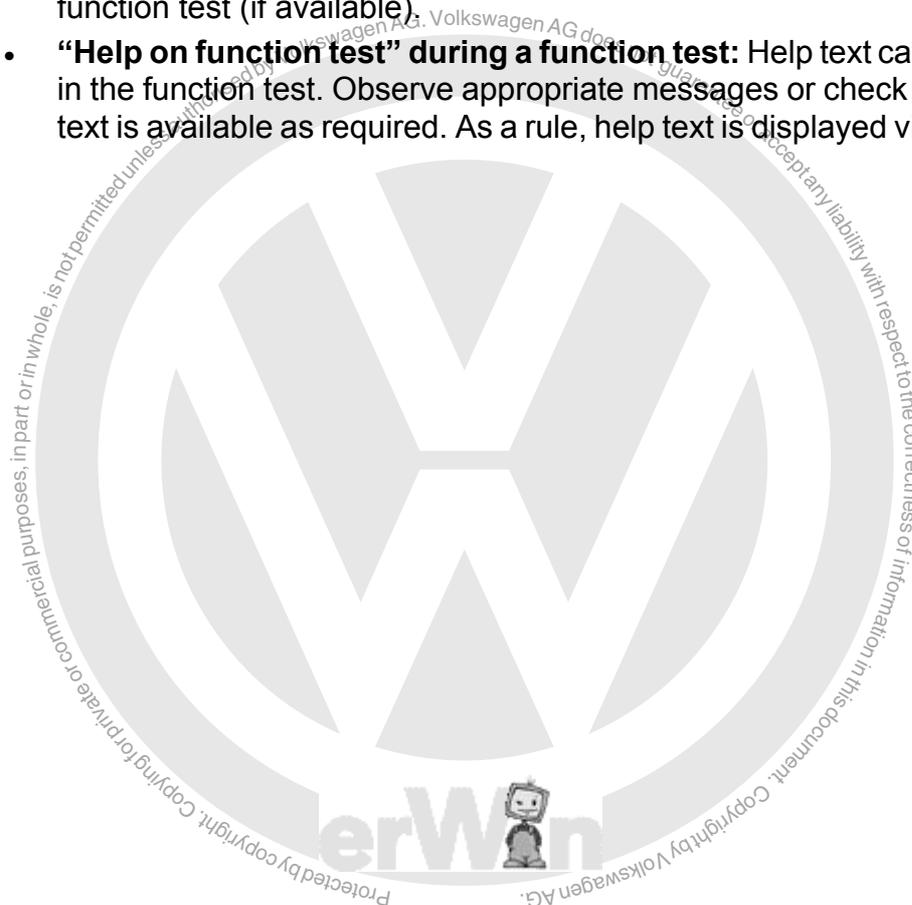
- If the help text in this mask cannot be displayed in its entirety, you can move it up and down with a scroll bar at the right of the screen to read parts which are not visible.

- The “Overview” operating button calls the “Help Overview” again.
- The “Close” operating button closes the “Help” dialog to reveal any operating buttons underneath it. However, the tester stays in the “Help” function.

Help on function test

The “Help on function test” calls up a help text on the selected function test. It includes more explanatory material about the function test provided a help text is available in the program. The following cases are distinguished:

- **“Help on function test” in the test plan:** If you select a function test in the test plan and open the corresponding help, you are given general information on the selected function test (if available).
- **“Help on function test” during a function test:** Help text can be stored at any points in the function test. Observe appropriate messages or check whether a required help text is available as required. As a rule, help text is displayed via the document display.



10.4 Help on pressed button

You can have help displayed for the available operating buttons in every mask.

You press any visible operating button while the tester is in the “Help” function and a brief information of its meaning and use in the respective mask is output in a dialog box (see Fig. 10-3).

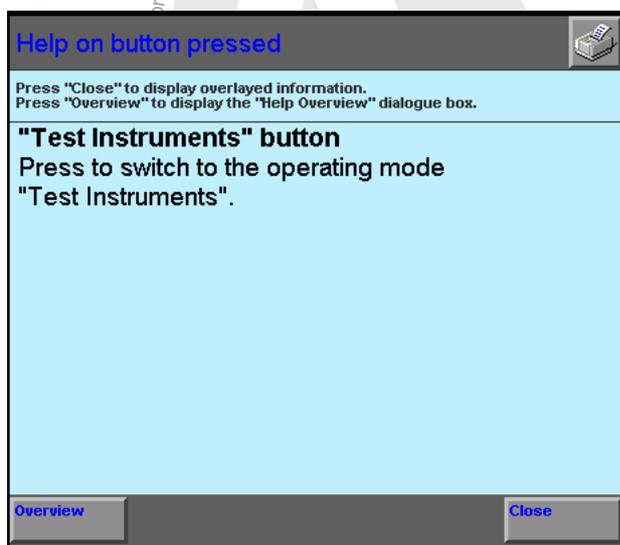


image 10-3 Help with “Test Instruments” operating button pressed (example VAS 5051B)

- The “Overview” operating button calls the “Help Overview” again.
- The “Close” operating button closes the “Help on pressed operating button” dialog box to reveal any operating buttons underneath it. However, the tester stays in the “Help” function.



Note

You cannot call Help for the “Overview”, “Close” and “Help” operating buttons themselves.

11 Abbreviations and terms

Term	Explanation
Acoustic signal	A beeping or whistling tone created by the tester when, for example, the voltage of the battery reaches a limit value in buffer mode.
Adaptation	<p>This service permits interactive changing of parameters of the addressed control system. These changed values (e.g., correction values for idling speed) can be saved (also permanently) in the control units.</p> <p>The user has the possibility of changing the value and transferring it to the control unit's RAM for checking. The control unit then applies the new value to its outputs and the user can check the reaction of the system. If the right correction value has been found, the tester has the control unit transfer the value and the workshop code to the writable EEPROM.</p> <p>In contrast to the basic setting, the control loop in question is in a closed state. With adaptation, system-specific parameters are determined and saved in the vehicle system.</p>
Adaptation value	A set value saved in the control unit which can be adapted to a defined range at the vehicle.
Administration	Operating mode of the diagnosis software; is used for the administration of the platform and the software functions.
Alphanumeric keyboard	Keyboard which can be used to enter numbers and text. See: Numerical keyboard, Hexadecimal keyboard.
Ambient condition	In addition to sending the fault memory entries, newer control units also deliver so-called ambient conditions, by saving further environmental parameters for the error. The time stamp may also be contained here.
Amplitude	The <i>maximum</i> displacement possible for the oscillation of, for example, an alternating current or alternating voltage.
Application operating mode	Sub-group of the operating mode. Application operating modes include: Vehicle self-diagnosis, OBD, Guided Fault Finding and Guided Functions.

Term	Explanation
ASAM-ODX	<p>Association for Standardisation of Automation and Measuring Systems – Open Diagnostic data eXchange.</p> <p>ASAM ODX electronic control units are built in LT3 commercial vehicles in accordance with this standard.</p> <p>The diagnostic procedure and the diagnostics data may differ from those of the electronic control units in the protocols KWP1281/2000/6000, e.g. for the fault memory contents. ASAM ODX electronic control units work in accordance with the UDS protocol.</p>
Audi Flashing	<p>Operating mode of the VAS-PC. This makes it possible to quickly access the customer service functions for flashing and checking the flash status of control units. By “flashing”, the loading of new software into the “flash memory” of control units is meant.</p>
Base CD	<p>Installation CD. Contains the VAS-PC diagnostic software, the Vehicle Self-Diagnosis, programs of the operating modes, help files and documentation. Can be used for a new installation or (starting from CD V17.00) for an update installation. See: brand CD, recovery DVD.</p>
Basic feature component	<p>A vehicle is identified by the basic feature components of type, year of make, variant and engine code. Its fittings are determined in the vehicle system test.</p>
Basic setting	<p>Control units are adapted to peripheral devices with the basic settings.</p>
Bluetooth	<p>Wireless communication link for the more immediate vicinity.</p>
Body version	<p>Body version refers to a defined configuration of equipment possibilities for vehicle system. Some fittings, for example an airbag, may be available in various variants for an identified vehicle. The most important task of the vehicle system test is to find out which variant is actually installed.</p>
Brand CD	<p>Installation CD containing vehicle-specific data, divided by auto brands, required for “Guided Fault Finding” and “Guided Functions”. See: base CD.</p>
Buffered	<p>The power supply of the tester is buffered; that it, in the event of a power failure or change of workstation without a connected power cable, a built-in battery provides power for a limited time.</p>
Calibration (test instruments)	<p>Precise adaptation of a measuring device (e.g.: current pick-up) based on specifications and the correction of a measurement deviation by compensation of systematic faults.</p>

Term	Explanation
Touch screen: calibration	Sets the touch screen so that the actual position of the points touched corresponds to the coordinate values transmitted to the PC.
CD-ROM	C ompact D isk – R ead O nly M emory; data carrier for mass data. A CD-ROM can also be read by a DVD drive.
Channel number	Number of a measured value channel in the control units.
Client	A PC program that ensures the connection to a server. A network client is, for example, the program that establishes the connection to a server in the network so that the PC can be operated as a workstation in the network. Also see: server.
COM	Short for “common”, corresponds to “earth” or “0 V”; see: testing devices input.
Compatibility number	Version code of the base, brand and flash CDs, based on the first numeral block of the version code (e.g., “V17”). All versions (independent of version and incremental update) are compatible with each other. Brand and flash CDs can be installed with the respective base CD.
Confirm, confirmation	A confirming user answer to a question of the platform's which then ends a function of a dialog.
Control unit	Electronic device for control and monitoring of vehicle functions, for example, engine control unit. See: ECU, vehicle system.
Degree of suspicion	Sequence in the probability in which the diagnostic objects are suspected of having a fault.
Deselection	A selection of program functions or list entries is undone. See: selection.
DHCP	Abbreviation for “ D ynamic H ost C onfiguration P rotocol”. DHCP is a protocol file which makes it possible to assign a network configuration to devices via a server. This means that a PC in a network is automatically assigned an IP address as well as further IP settings for the time when it is logged into the network.
Diagnosis	Multi-staged process to find the cause of the fault from the fault characteristics. When this is done, possible faulty functions, component groups, or components are ruled out as faulty one after the other until the faulty component has been localised. In VAS-PC, diagnosis is based on the fault memory entries which are read from a vehicle system, on selected customer complaints, direct function and component selection, or combined procedures.

Term	Explanation
Diagnosis object	The diagnostic function examines different functions, component groups or components of the vehicle for possible faults. These functions, component groups or components are included in the collective term “diagnostic objects”.
Diagnostic cable	Connection between vehicle and tester
Diagnostic radio head	A diagnostic radio head supports the wireless diagnostic operation between the vehicle and platform via a Bluetooth or WLAN interface.
Diagnostic socket	Connecting socket for the diagnostic cable or at the vehicle.
Diagnostic strategy	<p>Course taken by “Guided Fault Finding” on the basis of the information available about a fault, such as:</p> <ol style="list-style-type: none"> 1. Malfunction codes are read out of the vehicle system 2. The user selects terms from the masks which describe symptoms or fault characteristics as complaints or 3. The user selects functions and components of the vehicle directly from the mask as possible sources of the fault. User test plan <p>The three approaches, used either individually or in combination, lead to a calculated test suggestion in the test plan. The strategies (1) and (2) are also designated as system-guided fault finding while (3) is user-guided fault finding.</p>
Dialog box	Information field on the screen which presents messages and accepts user inputs.
Direct current measurement (inline current measurement)	Current measurement during which the tester is inserted directly in the current circuit like an ammeter. The opposite of inductive current measurement using a current pick-up clamped to the cable.
Display group	A defined group of measured values which is read out of a vehicle system.
DNS domain	Generally: Domain Name Server . In this case the name of the workshop domain.
Document	The documents available in the platform contain information (pictures, tests) which the user can use if need be.
DSO	Digital Storage Oscilloscope
DTC	Diagnostic Trouble Code , DTC memory entry, consisting of fault location, type of fault, and, if relevant, ambient conditions.

Term	Explanation
DTC memory	Data storage of the electronic control unit in which all recognised faults are stored. See: DTC.
DVD	D igital V ersatile D isk. a data carrier similar in appearance to the CD but with a larger storage capacity.
ECU	E lectronic C ontrol U nit
ECU identification data	A printable protocol file which is created during vehicle identification. It contains control unit identification data such as control unit designation, software part numbers, and so on.
Empirical rule	If workshop experiences (field experiences) with the diagnostic system are communicated to the diagnostic author, it can convert them into so-called empirical rules and bring them into the diagnostic system. Often these are complex fault symptoms consisting of a unique combination of fault memory entries and any additions communicated by the customer. If the described experience situation occurs in the workshop, the tester can now recognize it automatically and put the relevant suspicious diagnostic objects into the test plan.
End module	An end module can consist of one or more function tests which are started automatically when quitting "Guided Fault Finding" or "Guided Functions". This is used to provide to the vehicle manufacturer, for example.
Energy-saving mode (stand-by mode)	A dvanced P ower M anagement (APM). This is a function for saving energy. If the platform is not used for a certain time, the screen switches off. After touching the screen, the platform is activated again and goes into its normal mode. To activate, select the upper left edge of the screen to avoid faults.
Ethernet	The most common form of network. Here, the connected computers exchange signals via a cable or another medium. Each client checks to see if the other is currently transmitting, and sends his own signals if not.
EU5 licence	Operating mode of VAS-PC software for commercially available computers with a reduced number of operating modes ("Guided Fault Finding", "Guided Functions", "Administration").
External memory drive	Depending on the tester/platform type, data is saved to disk or USB memory. If both storage media are connected, output to the USB memory will be preferred.
Fault characteristics	All effects (fault symptoms) of a malfunction of vehicle functions, component groups or components.

Term	Explanation
Fault symptom	A describable effect of a malfunction of vehicle functions, component groups or components. Together, the symptoms produce the fault characteristics. The platform's data contains the data concerning known symptoms with assignments to suspect diagnosis objects. See: diagnosis.
Flash CD	<p>Data carrier for flash data. On vehicle systems which are flash compatible, its firmware can be updated using a flash CD and the platform. This procedure runs automatically in the vehicle self-diagnosis when the vehicle system is selected. If the platform finds an older version of the firmware in the vehicle system compared to the version on the inserted flash CD (cannot be installed) or the flash data saved in the vehicle system, the "Update programming" function will become available. The flash procedure is then carried out through several masks and the vehicle system is updated.</p> <p>There are also flash CDs which can be installed. In this case, you can save the flash data on the platform's hard drive using the "Administration" function "Update Installation"; then, the data will be available at any time for comparing firmware versions by calling up vehicle self-diagnosis.</p>
Flash data	Flash data consists of loadable program components for a vehicle system which are stored in the permanent memory. The tester offers various ways of comparing the version of the flash data in the vehicle system and loading more recent data onto it.
Flash Memory	EEROM whose data is retained even if there is no power supply. In contrast to factory-programmed memory modules, a flash memory can be updated by a respective update procedure (by flash CD).
Function	An operating mode is composed of different, self-contained activities, the functions. A function starts a goal-oriented action of the platform. Example: "Administration" operating mode, function "Touch Screen Calibration" starts the recalibration.
Function test	The function test includes all measures for carrying out a function test (test program). These include: dialog with the tester, establishing test connections, installation of adapters, carrying out measurements, execution of actions on the vehicle, etc.
Gateway	The central control unit in the vehicle which administers the subordinate control units or vehicle systems. It monitors the vehicle systems and draws up a status list.

Term	Explanation
Gateway installation list	<p>By interrogating the gateway installation list, it is possible to find out for a vehicle system whether its fault memory is set, whether it is registered (coded), or whether communication is possible.</p> <p>The installation list is evaluated as part of vehicle identification and all in all results in a more powerful identification process.</p>
GeKo-test	<p>GeKo: German abbreviation for Geheimnis- (confidentiality) and Komponentenschutz (component protection). Way of testing the code clearance and user logon for online access.</p>
Guided Fault Finding	<p>Operating mode of the platform; abbreviation: "GFF". Here the diagnostic procedure is embedded in an optimised run sequence consisting of vehicle identification, vehicle system test, test plan and function test.</p>
Guided Functions	<p>Operating mode of the platform. This makes it possible to quickly access the customer service functions for the vehicle identified, e.g. "Adapt valve throttle control unit".</p>
Hardware	<p>Hardware primarily refers to the device itself with its mechanical and electrical structure and display and control elements.</p>
Hexadecimal keyboard	<p>Keyboard with which only numbers and letters A to F can be input as hexadecimal numeric values. Also see: alphanumeric keyboard, numeric keyboard.</p>
Inductive current measurement	<p>Measurement of the current using a current pick-up. The opposite of direct current measurement.</p>
Information window (left and right)	<p>The two information windows are located in the upper area of a mask above the work window.</p> <p>The left-hand information window generally contains the following information: operating mode, active function, task.</p> <p>The right-hand information window shows the currently selected components or status messages (operating mode test instruments) or a separate selection list of control units working in conjunction (operating mode vehicle self-diagnosis).</p>
Initial graphic	<p>Replaceable image in which the start mask appears.</p>
Inline current measurement	<p>See: direct current measurement.</p>

Term	Explanation
IP address	Abbreviation for “Internet P rotocol address”. Every computer which is connected to a computer network has a unique IP address for identification by name. The IP address consists of four groups of numbers which are separated by points (e.g. 194.0.0.135). IP addresses can be allocated automatically by DHCP servers.
IrDA	I nfrared D ata A ssociation; describes physical specifications and protocol standards of an infrared interface for the exchange of data using infrared light in the light wave range of 850 to 900 nm. The IrDA interface can create a wireless, infrared contact between the tester and a printer.
ISDN	Abbreviation for “ I ntegrated S ervices D igital N etwork”. Designation for a digital telephone network with higher bandwidth as a conventional telephone network which is conceived for telephone calls, remote data transmission, faxes and other services.
Job code	A unique combination of symbols and letters used to identify interrupted and saved diagnosis jobs.
Key CD	CD-ROM for enabling the expanded functions. It needs to be inserted in the tester's CD/DVD drive for the “expanded functions” to be accessible.
LAN	Abbreviation for L ocal A rea N etwork, local tightly limited computer network which generally includes several rooms but does not extend beyond a property. The cabling is usually done by Ethernet with CAT5 cables or fibreglass cables. Wireless LAN are radio networks and not bound by cable. They make encryption technology necessary.
Mask	Screen display with fixed division in different graphic elements, such as subordinate dialog boxes, operating buttons, entry lines, scroll bars, etc.
Measuring value block	See: display group.
Mirror server	1:1 image of a central server. For VAS-PC, a small area of the dealership server is used for a copy of the data from the central network. There are, for example, the current updates for the platform. The dealership server is connected to the central office and receives the current updates from there. Within a workshop, each tester connected to a LAN fetches the current programs from the dealership server, either automatically when it is switched on or when the “Administration” function “Net-update” is carried out.

Term	Explanation
Mode	The mode determines (“normal” or “EU5”) the range of available operating modes and is dependent on type of licensing.
Mode	See: mode
Navigation bar	Function in the lower part of the mask in order to change from the current mask to another mask as well as to call up help, memory and print functions via operating buttons.
Numerical keyboard	Keypad which can be used to enter numbers but not letters. See: alphanumeric keyboard, hexadecimal keyboard.
OBD vehicle system	Vehicle system of the “ O n- B oard D iagnosis” system, which is integrated into the engine management system and constantly monitors the components related to exhaust and safety.
Old vehicle	Older vehicle models for which no diagnostic data is available (also termed “remainder vehicle”). Only the vehicle identification with vehicle system test and sometimes, depending on the vehicle, a few customer-specific instructions are available for old vehicles which appear in the masks for entering basic feature components.
Online connection	External connection, e.g. to the Internet or to the VW server.
Online protocol	A protocol that is sent via an online connection to the vehicle manufacturer.
Operating mode	Each of the basic functions of the tester which can be called up from the start mask: “Vehicle Self-Diagnosis”, “OBD”, “Test Instruments”, “Guided Fault Finding”, “Guided Functions”, “Administration” and “Applications”. Every operating mode has a series of individual functions. Also see: application operating modes.
Oscilloscope	Measuring and display devices for electrical signals, which represents the timely course of the signal power in the display (e.g. oscillations).
PCMCIA card	Abbreviation for P ersonal C omputer M emory C ard I nternational A ssociation. A card as big as a credit card which is usually used for installation in a laptops or notebook. PCMCIA is what the standardised interface is called which has to hold these devices. PCMCIA cards can be, for example, network cards, ISDN cards or modems. The newest version is called the PC Card Standard.

Term	Explanation
Platform	Overall designation for the hardware upon which the VAS-PC software is installed. Among such devices covered in this operating manual are the testers in the VAS series (VAS 5051B, VAS 5052, VAS 5052A, diagnosis laptop VAS 6150) and commercially available computers (PC or laptop) with EU5 licence.
Potential-free	There is no connection to mains power or to earth.
Preselection	Suggestion of the tester to call up one of several functions from the current mask. The preselection will be marked with a black bar on the screen. It can be changed at any time.
Protocols KW1281, KW2000, KW6000 UDS	The keyword protocols specify the precise procedure to be used for the exchange of data between the control unit and the tester. Older control units use the KW1281 protocol to communicate. Newer control units use KW2000 or KW6000 (CAN diagnosis); ASAM electronic control unit use UDS. In vehicle self-diagnosis the tester automatically ascertains the keyword protocol variants for a control unit before selection of the diagnostic functions.
Proxy server	A proxy server functions as a switching centre between clients and another network. It receives the client's requests and forwards them (sometimes modified or made anonymous) to the original target (in another network, e.g. Internet). Proxies can also save data locally on a temporary basis for future accessing (cache).
Readiness code	8-position binary code which indicates whether all diagnostics relevant to exhaust gas and safety have been run through by engine management.
Recovery DVD	DVD with adapted complete installation of the operating system. It contains all necessary drivers and basic programs in order to carry out a complete new installation of the computer. When this is done, all old data and installations are deleted to enable fault-free function. After the new installation by the recovery DVD, the diagnostic software has to be reinstalled via the base CD.
Replacement value	If the tester (VAS 5051B) has an internal measurement module, then values can be directly accepted. For platforms which do not have their own measurement module (e.g., VAS 5052x, VAS 6150), the necessary measurement is carried out with an external measuring unit. The values from this measurement are entered manually as replacement value in the diagnosis software.
Reversed polarity	Erroneous switching of the connection lines for the voltage supply.
Runtime system	The software installed in the tester.

Term	Explanation
Screen printout	also: hardcopy, screenshot. Paper printout of the screen content (masks, etc.).
Scroll bar	 <p>If the complete text cannot be shown in a dialog box or a mask, a scroll bar will appear on the right-hand side. You can scroll up or down with the arrow symbols or the scroll button.</p>
Selection bar	Marking a selected line by inverting the colours.
Selection, select	Selection of a program function or a text entry from a list. The selected element will be marked on the screen by a black bar. Also see: deselection.
Self-diagnosis	Vehicle systems can also carry out self-diagnosis. That is, they have methods of constantly checking their own functions, connected sensors and control elements. A fault results in an entry of a malfunction code being made in the DTC memory of the vehicle system. The tester knows all the faults saved in its knowledge base, so that on reading the DTC memory it is able to attribute the malfunction code to a fault type and a fault location and thus to make a test suggestion.
Sensor	Technical component that records physical or chemical properties qualitatively or as measured values quantitatively.
Server	In computer technology, the server is a central network computer which provides other computers certain services (printing, e-mail administration) or data. A computer which uses the services of a service is a client.
Shutdown delay	The time between activating the on/off switch to switch off the tester and when it actually switches itself off.
Sporadic fault	Type of fault which only occurs once or occurs irregularly, caused, for example, by loose connections, condensation, or loose components. A sporadic fault is removed via an unlearning counter from the DTC memory.
Start mask	The display that the tester shows on the screen after start of operation. The operating modes can be called up from here.
Start module	A start module can consist of one or more than one function tests which are started automatically after the vehicle system test. They are use to check e.g. whether there is new flash data for a vehicle system.

Term	Explanation
Start-up	The activity of the tester between switching on and first display of the start mask includes loading data, a self-test, etc. During this time no entries are possible.
Static fault	Suspected type of fault which is considered to be permanent, in contrast to a sporadic fault. The unlearning counter controls the classification of static and sporadic faults.
Station name	A tester connected to the LAN requires a unique name in the network. Normally, the device designation (e.g., VAS 5052) is used as name. You can have the station name that is currently set displayed by selecting the "Display network settings" function in Administration, Network settings. If there are several testers of the same type in the network, their names must be different.
Subnet mask	All computers which are part of the same computer network (for example, workshop network, company network) have the same subnet mask. It consists of four groups of numbers which are separated by points (e.g. 255.255.0.0).
SVM	The Audi- S oftware- V ersions- M anagement is used to flash electronic control units, to check the flash status and to execute functions for control unit programming. See: Audi flashing, flash data.
Test instruments	Operating mode of the 5051B. You can use the test instruments to carry out tests yourself, the results of which are then displayed on the tester numerically or graphically. Both a multimeter and an oscilloscope (DSO) are available. For platforms without their own test instruments, the measured values are determined by external measuring devices and manually entered.
Test plan	<p>In "Guided Fault Finding" and "Guided Functions", the diagnostic objects are added to the test plan during the diagnosis session and managed. Particularly in the case of multiple suspicious diagnostic objects the test plan allows the user to keep an overview of things.</p> <p>Each diagnostic object is preceded by a status symbol. The diagnostic objects are added to the test plan via read-out fault memory entries, selected observations, or the function and component selection. In addition, new diagnostic objects can be added to the test plan even from a function test or existing ones set to OK.</p> <p>Also see: User Test Plan</p>
Test step	A single, complete stage in a function test.

Term	Explanation
Time record	The time taken for the diagnosis session is calculated. This occurs in part by recording times which have actually elapsed, and through standard times for particular actions. In the individual phases of "Guided Fault Finding", the time is calculated, added up and written into the diagnosis log in temporal units.
Time stamp	Additional information about the fault, with the date and time at which the corresponding fault occurred. Control units of the new generation provide ambient conditions as well as fault memory entries. Among these is the time stamp.
Touch screen (sensitive surface, touch screen)	A screen which has a touch-sensitive surface. The corresponding hardware and software reacts to it being touched with a touch pen or finger, detects the place touched and launches the function linked with this location (an operating button, for example). The touch screen replaces externally connected input devices such as keyboard or mouse.
Trigger level	Voltage value at which the measurement of a test signal's curve is started.
Trigger signal	The signal used for the start of the curve of a test signal.
Type of measurement	In the "Test Instruments" operating mode, the type of measurement defines whether the measurement will be carried out with direct or alternating voltage. In the "Guided Fault Finding" operating mode, the type of measurement defines whether a current or a voltage will be measured.
UDS	Unified Diagnostic Services ; a protocol for electronic control unit Communication setup, unified per ISO 14229, building on KW2000 for ASAM ODX electronic control units.
Unlearning counter	Should an error occur during a driving cycle (terminal 15 on until terminal 15 off) it is first entered as "static" in the fault memory. If it is not detected during the next driving cycle, the designation is changed to "sporadic" and an unlearning counter with an output value of, for example, 40 is decremented by 1. This is repeated during each fault-free driving cycle until the unlearning counter reaches 0, thus automatically clearing the fault. However, if the registered fault should reoccur during a later driving cycle, then the unlearning cycle is set to its output value and the error provisionally set back to "static" again.

Term	Explanation
Update	<p>Software modification package for updating an existing program to a later version.</p> <ol style="list-style-type: none"> 1. New version of the run-time system, which is updated from the CD ROM. Updates of VAS-PC software can only be installed starting from compatibility number V17. 2. New program version of a vehicle system which is imported by the tester.
URL	<p>Abbreviation for “Uniform Resource Locator”. A URL designates a resource (Website, file, Email, ...) in the Internet with a unique name. Example: http://www.automation.siemens.com</p>
USB	<p>Abbreviation of Universal Serial Bus. USB is a standardised interface for connecting, for example, keyboard, USB memory.</p>
USB storage device	<p>A mobile, easy-to-handle memory unit with a USB interface. It is plugged into the USB port on the tester and is detected automatically by the tester. Assignment takes place with the function “Set output medium on exchangeable data medium” (navigation bar, print). Now you can send, for example, logs or screen shots to the USB memory.</p>
User Test Plan	<p>Diagnostic strategy whereby users select possibly defective functions or components themselves. If faults in the vehicle system are recognised during the diagnostic session or are entered as a complaint report, a distinction is always made between the system test plan and the user test plan.</p>
Variant rule	<p>Rule-driven procedure to determine a model version by yes/no questions. The results of the rule queries determine, among other things, which diagnosis data should be made available.</p>
VAS 5052x	<p>Overall designation of the two testers, VAS 5052 and VAS 5052A</p>
VAS 505x	<p>Higher-order designation of all testers of the VAS family of devices: VAS 5051B, VAS 5052 and VAS 5052A, diagnosis laptop VAS 6150</p>
Vehicle from another source	<p>Vehicle type which is not part of the Volkswagen-Konzern.</p>
Vehicle identification	<p>Vehicle identification is defined by the vehicle's basic feature components (type, model year, body version, engine code) that can be determined automatically or partly automatically in an existing gateway. This data is used to check a list of the possibly installed electronic control units and devices and their installation in the vehicle system test.</p>

Term	Explanation
Vehicle self-diagnosis	Dialog-box-guided operating mode of the platforms in which the vehicle systems available in the vehicle are communicated with and thorough diagnosis can be conducted.
Vehicle system	An electronic control unit known by its name, including the respective sensors, control elements, and wiring.
Vehicle system test	A list of all possibly installed vehicle systems (electronic control units, devices) is generated from the vehicle identification. In the vehicle system test, all systems are examined for availability and their error status is queried. If necessary, inquiries about equipment also appear here.
Version code	<p>Three-part block consisting of several digit sequences which provide information about the installed version, the version status and the installed increment.</p> <p>Example: V16.01.04</p> <p>V16: installed version or compatibility number</p> <p>01: version status 01 (first version)</p> <p>04: installed increment 04</p> <p>At the end of the version code, there is the date of the version release. The installed version defines whether a brand CD can be installed on the platform. Differing version numbers lead to cancelling of the brand installation.</p>
VIN	Vehicle Identification Number
Virtual keyboard	<p>Graphic representation of a keyboard on a touch screen. The individual operating buttons can be operated by touching them with a touch pen in the same way as those of a real keyboard.</p> <p>A virtual keyboard can have alphanumerical, numerical or hexadecimal elements, depending on the required application.</p>
Work window	The work window takes up the largest part of the mask and is located in the middle area. The display changes according to the operating mode and current progress. Results (e.g. in the "Test Instruments") are shown in the work window. Here you make your selection. See: navigation bar, information window.

Version: 2009-11-01.

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We have checked the contents of the documentation to ensure they correspond to the status described. Nevertheless, deviations cannot be entirely excluded and we cannot therefore guarantee complete agreement. The information in this documentation is however regularly reviewed and any corrections necessary will be incorporated in the next edition. We will be grateful to receive suggestions for improvement.



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VOLKSWAGEN AG
After Sales
Fahrzeugdiagnose

38436 Wolfsburg, Germany

Manufacturer:

SIEMENS AG

Industry Sector
Industry Automation Division
Industrial Automation Systems
Factory Automation

I IA AS FA AP
Siemensallee 84
D-76187 Karlsruhe

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Cautions & Warnings

Please read these WARNINGS and CAUTIONS before proceeding with maintenance and repair work. You must answer that you have read and you understand these WARNINGS and CAUTIONS before you will be allowed to view this information.

- If you lack the skills, tools and equipment, or a suitable workshop for any procedure described in this manual, we suggest you leave such repairs to an authorized Volkswagen retailer or other qualified shop. We especially urge you to consult an authorized Volkswagen retailer before beginning repairs on any vehicle that may still be covered wholly or in part by any of the extensive warranties issued by Volkswagen.
- Disconnect the battery negative terminal (ground strap) whenever you work on the fuel system or the electrical system. Do not smoke or work near heaters or other fire hazards. Keep an approved fire extinguisher handy.
- Volkswagen is constantly improving its vehicles and sometimes these changes, both in parts and specifications, are made applicable to earlier models. Therefore, part numbers listed in this manual are for reference only. Always check with your authorized Volkswagen retailer parts department for the latest information.
- Any time the battery has been disconnected on an automatic transmission vehicle, it will be necessary to reestablish Transmission Control Module (TCM) basic settings using the VAG 1551 Scan Tool (ST).
- Never work under a lifted vehicle unless it is solidly supported on stands designed for the purpose. Do not support a vehicle on cinder blocks, hollow tiles or other props that may crumble under continuous load. Never work under a vehicle that is supported solely by a jack. Never work under the vehicle while the engine is running.
- For vehicles equipped with an anti-theft radio, be sure of the correct radio activation code before disconnecting the battery or removing the radio. If the wrong code is entered when the power is restored, the radio may lock up and become inoperable, even if the correct code is used in a later attempt.
- If you are going to work under a vehicle on the ground, make sure that the ground is level. Block the wheels to keep the vehicle from rolling. Disconnect the battery negative terminal (ground strap) to prevent others from starting the vehicle while you are under it.
- Do not attempt to work on your vehicle if you do not feel well. You increase the danger of injury to yourself and others if you are tired, upset or have taken medicine or any other substances that may impair you or keep you from being fully alert.
- Never run the engine unless the work area is well ventilated. Carbon monoxide (CO) kills.
- Always observe good workshop practices. Wear goggles when you operate machine tools or work with acid. Wear goggles, gloves and other protective clothing whenever the job requires working with harmful substances.
- Tie long hair behind your head. Do not wear a necktie, a scarf, loose clothing, or a necklace when you work near machine tools or running engines. If your hair, clothing, or jewelry were to get caught in the machinery, severe injury could result.
- Do not re-use any fasteners that are worn or deformed in normal use. Some fasteners are designed to be used only once and are unreliable and may fail if used a second time. This includes, but is not limited to, nuts, bolts, washers, circlips and cotter pins. Always follow the recommendations in this manual - replace these fasteners with new parts where indicated, and any other time it is deemed necessary by inspection.

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- Illuminate the work area adequately but safely. Use a portable safety light for working inside or under the vehicle. Make sure the bulb is enclosed by a wire cage. The hot filament of an accidentally broken bulb can ignite spilled fuel or oil.
- Friction materials such as brake pads and clutch discs may contain asbestos fibers. Do not create dust by grinding, sanding, or by cleaning with compressed air. Avoid breathing asbestos fibers and asbestos dust. Breathing asbestos can cause serious diseases such as asbestosis or cancer, and may result in death.
- Finger rings should be removed so that they cannot cause electrical shorts, get caught in running machinery, or be crushed by heavy parts.
- Before starting a job, make certain that you have all the necessary tools and parts on hand. Read all the instructions thoroughly; do not attempt shortcuts. Use tools that are appropriate to the work and use only replacement parts meeting Volkswagen specifications. Makeshift tools, parts and procedures will not make good repairs.
- Catch draining fuel, oil or brake fluid in suitable containers. Do not use empty food or beverage containers that might mislead someone into drinking from them. Store flammable fluids away from fire hazards. Wipe up spills at once, but do not store the oily rags, which can ignite and burn spontaneously.
- Use pneumatic and electric tools only to loosen threaded parts and fasteners. Never use these tools to tighten fasteners, especially on light alloy parts. Always use a torque wrench to tighten fasteners to the tightening torque listed.
- Keep sparks, lighted matches, and open flame away from the top of the battery. If escaping hydrogen gas is ignited, it will ignite gas trapped in the cells and cause the battery to explode.
- Be mindful of the environment and ecology. Before you drain the crankcase, find out the proper way to dispose of the oil. Do not pour oil onto the ground, down a drain, or into a stream, pond, or lake. Consult local ordinances that govern the disposal of wastes.
- The air-conditioning (A/C) system is filled with a chemical refrigerant that is hazardous. The A/C system should be serviced only by trained automotive service technicians using approved refrigerant recovery/recycling equipment, trained in related safety precautions, and familiar with regulations governing the discharging and disposal of automotive chemical refrigerants.
- Before doing any electrical welding on vehicles equipped with anti-lock brakes (ABS), disconnect the battery negative terminal (ground strap) and the ABS control module connector.
- Do not expose any part of the A/C system to high temperatures such as open flame. Excessive heat will increase system pressure and may cause the system to burst.
- When boost-charging the battery, first remove the fuses for the Engine Control Module (ECM), the Transmission Control Module (TCM), the ABS control module, and the trip computer. In cases where one or more of these components is not separately fused, disconnect the control module connector(s).
- Some of the vehicles covered by this manual are equipped with a supplemental restraint system (SRS), that automatically deploys an airbag in the event of a frontal impact. The airbag is operated by an explosive device. Handled improperly or without adequate safeguards, it can be accidentally activated and cause serious personal injury. To guard against personal injury or airbag system failure, only trained Volkswagen Service technicians should test, disassemble or service the airbag system.

Cautions & Warnings

- Do not quick-charge the battery (for boost starting) for longer than one minute, and do not exceed 16.5 volts at the battery with the boosting cables attached. Wait at least one minute before boosting the battery a second time.
- Never use a test light to conduct electrical tests of the airbag system. The system must only be tested by trained Volkswagen Service technicians using the VAG 1551 Scan Tool (ST) or an approved equivalent. The airbag unit must never be electrically tested while it is not installed in the vehicle.
- Some aerosol tire inflators are highly flammable. Be extremely cautious when repairing a tire that may have been inflated using an aerosol tire inflator. Keep sparks, open flame or other sources of ignition away from the tire repair area. Inflate and deflate the tire at least four times before breaking the bead from the rim. Completely remove the tire from the rim before attempting any repair.
- When driving or riding in an airbag-equipped vehicle, never hold test equipment in your hands or lap while the vehicle is in motion. Objects between you and the airbag can increase the risk of injury in an accident.

I have read and I understand these Cautions and Warnings.